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CEMENT, ENERGY and ENVIRONMENT



Cement Manufacturers' Association
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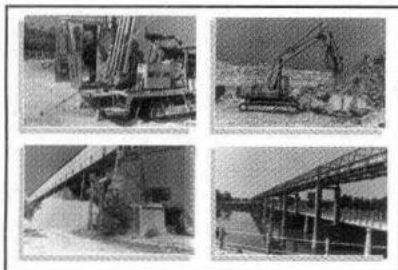
CEMENT, ENERGY and ENVIRONMENT

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Vignettes of environment-friendly mining, conveying and stacking crushed limestone at Birla and Chittor Cement Works (Clock-wise from Top left) Inclined-wet drilling, Hydraulic rock breaking, Dust-free limestone transport by covered conveyor and Water-sprayed stacking of limestone. (see pages 9-12 for detailed article).

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MESSAGE

Dear Readers,

In this issue, we shall briefly survey notable recent developments in the areas of our industry, the country and on the global level. The foremost among them, of course, is the notification by the Ministry of Food, Public Distribution and Consumer Affairs mentioning that imposition of mandatory certification should not be necessary as quality of cement can be better improved with Voluntary Certification. We have some feedback from our Members on the issue — withdrawal of cement from the purview of the *Essential Commodities Act* and compulsory certification. The majority opinion from the industry is in favour of the withdrawal of compulsory certification for two weighty reasons :

Firstly, in a highly competitive and buyers' market, all companies take due care for assuring quality of their product to maintain their market share and brand image. Indeed quality is the industry's sole survival kit in a flagging commodity market to protect its bottomline. So much so, no company today can afford to be slack on the quality assurance front.

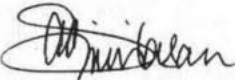
Secondly, any compulsory certification is regulatory in nature and has its pitfalls, like breeding irregularities and corruption. In this context, it will be a welcome change to usher a Voluntary Certification regime. In which case, BIS's role will be one of a consumer oriented service organisation. Incidentally, the world renowned and universally accepted standards for cement like British Standards (BS) and American Standards (ASTM) are purely voluntary. These standards are accepted as password where no other standards are in vogue. Non-compliance with their provisions entails heavy penalty for misuse of the logo. A similar practice can be adopted by Indian cement industry too, which is world's second largest in capacity and production, and in vying with other competitors, is gradually widening its export market.

Another development of interest is the implementation of the provisions of the *Energy Conservation Act, 2001*. The relevant gazette notification had already been reported in our earlier issues. The notification includes a list of 15 industries including cement as "Designated consumers". Following the Act's provisions, a designated consumer of power has to abide by several clauses like : Compulsory energy audit, Deployment of energy experts and energy executives in management, Providing data on energy consuming equipment and apparatus regarding their manufacture, design, energy consumption, etc. The Bureau of Energy Efficiency (BEE), created for monitoring energy consumption, has recently issued an advertisement for enrolment of energy auditors. The eligibility criteria herfor are quite broad and industry associations too are free to apply. Therefore, it has been decided, for the sake of protecting the interest of our member companies, that CMA, with the active support and help of knowledgeable experts working in the industry, will formulate a team and bid for consultancy assignments. Even as the BEE is bracing to acquaint itself with the energy consumption patterns of various industries by holding industry-wise workshops in different regions, we should lose no time to assemble a competent team for protecting the interests of our industry.

Globally speaking, the recently concluded World Summit on Sustainable Development held in South Africa (26th Aug – 4th Sept) and attended by more than 50,000 delegates representing over 200 countries, was a mega, if much hyped event. But its outcome as reported in our national and other foreign press is anything but encouraging for the developing countries. For instance, the Summit has accepted provision of drinking water and sanitation as prime items in its agenda but without any provision for fund sourcing. Developing countries continue to face multifarious hurdles under the draconian provisions of WTO's regulatory regime, particularly in market access of goods to developed countries. Curiously, this was not considered in the Summit. In all, the Summit turned out to be a mixed bag of pious promises but few commitments, leaving most outstanding issues and problems of the developing countries unattended. While global warming no doubt is gradually assuming alarming proportions with its inevitable adverse effect on climate, the GHG reduction commitment by developed countries to compensate the developmental urge of the developing countries remains unanswered. The COP – 8 to be hosted in New Delhi during Oct - Nov 2002 will hopefully address such critical issues for the survival and the sustainable growth of the developing world. Predictably, we look forward to the conference and its outcome with bated breath.

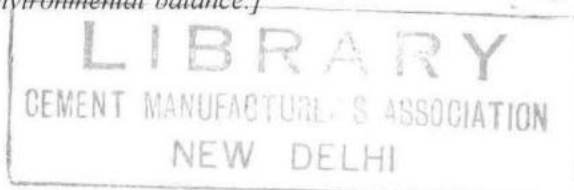
On the environment front, of late, there is a lot of emphasis on using wastes and waste-derived fuels (WDF). Technical literature from the developed countries abound with examples of 100% substitution of kiln fuel by WDF like pet coke, petroleum sludge, agricultural wastes, waste tyres, regenerated oil, pharmaceuticals and pesticides, etc. The guiding principle in promoting the utilisation of such wastes is the basic tenet of waste recycling for environmental protection. In India unfortunately no such legislation by any concerned authority is within any radar of vision. On the contrary, some State Pollution Control Authorities are putting stops on plants raring to use these wastes. Their familiar refrain is protection of the environment from noxious gas emissions. Thus a mediation would seem necessary between the two stands, which should be achievable by facilitating the two parties to decide upon what is imperative in the larger national interest.

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(A.V. Srinivasan)
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EFFECTIVE DUST CONTROL AND ENVIRONMENTAL MANAGEMENT AT BIRLA CEMENT WORKS AND CHITTOR CEMENT WORKS

Dinesh Chanda, J.S. Kalra, M.K. Mehta & M.S. Murugan
Birla Cement Works and Chittor Cement Works, Chittorgarh

Through all-around measures, starting from the mining of limestone, through its transport to and storage at the plant site, ending with the actual manufacturing process, the twin plants of Chittorgarh, Birla Cement Works and Chittor Cement Works, have controlled both fugitive and stack emissions to levels well below the statutory limits. Likewise, wastes produced in and around the two plants are disposed of safely and imaginatively utilised. The article presents a succinct account of these measures along with vignettes of their actual working Ed

Improving environmental quality has always been a prime concern with the plant management of Birla Cement Works (BCW) and Chittor Cement Works (CCW) at Chittorgarh. To this end, the management has been adopting with alacrity state-of-art machinery and systems at considerable investment. Indeed, the plant has invested an impressive Rs 1289 lac on pollution control measures up to 2002. The various control measures taken in this regard are described in the following paragraphs alongside the improvement resulted therefrom.

Fugitive Emissions Control

Mining

Wet drilling and use of hydraulic rock breaker constitute the distinctive environment-friendly features of the plants' mining of limestone. In conventional drilling, dust laden drill cuttings come out of the drill hole through the discharged air from the hammer at the bottom of the hole. Despite arrangement for collection of the dry dust through covering of the hole and installation of a mini cyclone/dust diverter, these were not quite effective. So, the plants switched over to wet drilling, an acknowledged method for dust-free drilling. In wet drilling, the drill machine is equipped with a water storage tank having an inbuilt water pump which delivers water directly at the bottom of the drill hole. The drill cuttings and the dust generated at the bottom of the hole are suppressed by the combined effect of the water sprays and the compressed air. Thus, there is effective wetting of the entire dust and drill cuttings whereby practically no dry dust comes out of the drill hole.

After primary blasting, normally 5-10 per cent large boulders result. These boulders, in turn, are drilled by jack hammer and the holes blasted by a secondary



Figure 1 High-pressure nozzles from top directing powerful water jets over the limestone crusher hopper



Figure 2 Atomised water sprinkling on belt conveyors

blasting using explosives. Through the introduction of hydraulic rock breaker, whose hydraulic hammer breaks all the boulders, secondary blasting has been dispensed with.

Limestone transport to crusher

During the transportation of limestone from the mines to the primary crusher by 35-ton dumpers, a lot of dust gets air-borne from the haulage roads by the constant to-and-fro movements of the dumper trucks. This generation of dust from the roads is minimised though sprinkling of water on the haulage roads. A water sprinkler of 28000 litres capacity is utilised for the purpose.

Limestone crushing and stacking

The process of crushing generates a lot of dust as do the subsequent operations like its conveyance, transfer, stockpiling and reclaiming. To suppress dust emissions at all these stages, atomised water is sprayed by means of high-pressure nozzles at the crusher hopper, the apron feeder, the impact crusher inlet, the impact crusher proper and two places over the conveyor belts which carry the crushed limestone to the stockpile. The atomised water spray system installed has considerably reduced fugitive dust emission at the crusher hopper as well as all belt transfer points; for instance, it is less than $300\text{mg}/\mu^3$ at the transfer point before limestone stacking (mines).

Likewise, moistening has its beneficial effect while stacking the crushed limestone at the stockpile. The stockpile is of 13m height. The crushed limestone having been moistened does not give rise to dust during its fall. In addition, the fall height is normally maintained at 4-5m to minimise dust generation and



Figure 3 Composting pit with leaves dumped

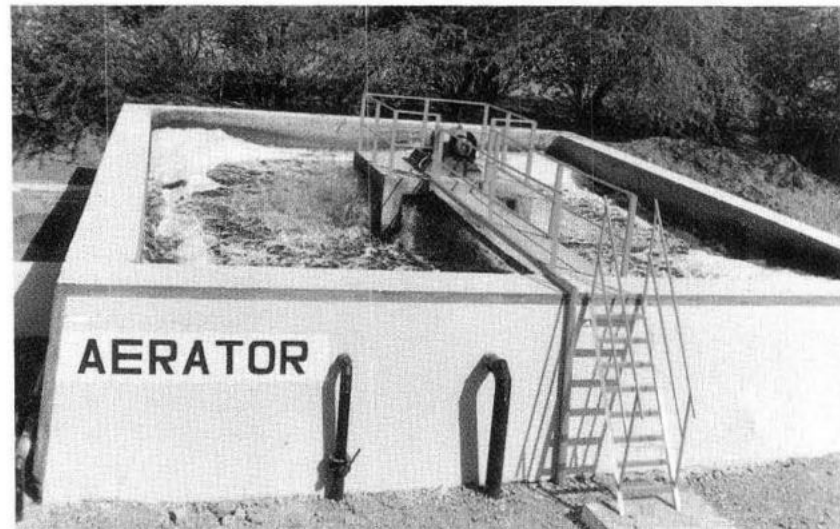


Figure 4 Aerator at work in the sewage water treatment plant



Figure 5 Rain water harvested from exploited mines being utilised for irrigation.

the effect of wind blowing across during the fall. Atomised water spray system is installed also at the belt transfer point before coal stacking at the plant. The total cost of the water spray system is Rs 2 lac.

Crushed limestone transport to cement plant

The crushed limestone is transported to the cement plants by means of a 3.8-km long overland conveyor belt of 900 tph carrying capacity. This belt is covered to reduce fugitive emissions. As a result, the fugitive emission is nil along the entire 4-km distance, while that at the transfer point is just 50 $\mu\text{g}/\text{m}^3$. The cost of the total overland conveyor system was Rs 1450 lac.

As a result of the foregoing efforts, fugitive emissions in the plant premises is 125-330 $\mu\text{g}/\text{Nm}^3$ against the prescribed norms of 500 $\mu\text{g}/\text{Nm}^3$. The figure for the residential area is 90-155 $\mu\text{g}/\text{Nm}^3$ against the norm of 200 $\mu\text{g}/\text{Nm}^3$.

Stack Emissions

The control measures taken for reducing stack emissions and the resulting improvement are summarised in the Table below:

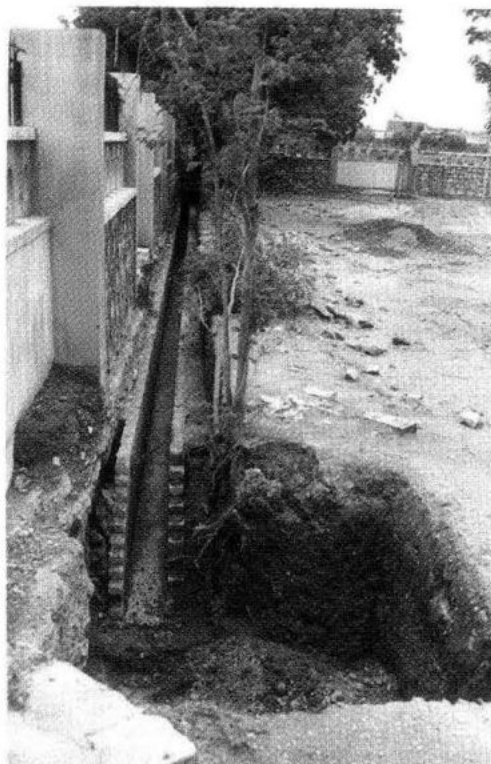


Figure 6 Roof-water drain leading to collection pit adjoining a dug-up well.

S No.	Control measure	Improvement	Remarks
1	Rectification and modification of ESP internals (G.D. screen, collecting, emitting system and hopper partition walls ext.) in BCW kilns 1 and 2, and cement mill.	Considerable reduction in stack emission.	Carried out during plant maintenance. Nil investment
2	Fine-tuning of ESP rapping systems (emitting, collecting and G.D. screen).	Kiln – less than 50 mg/Nm^3	
3	Fine-tuning of ESP control panels and T. R. sets	Cement mill - less than 70 mg/Nm^3	

In effect, the plants consistently maintain the stacks' emission at 70-90 mg/Nm^3 against the prescribed norms of 150 mg/Nm^3 .

Solid Wastes Management

Fly ash – Part of the fly ash produced in the captive power plant is collected by nearby brick manufacturers. The balance is stacked away in an isolated area, covered with top soil to prevent

leaching by rain water and help tree plantation.

Waste oil and grease - These are disposed of to recycling industries approved by the Central Pollution Control Board and the Ministry of Environment and Forests.

Vegetable wastes - A composting pit of 4m x 5m x 4m has been made into which all dry leaves from the plantation are dumped and periodically wetted to make manure.

Biomedical waste – Such waste generated at the Health Centre and dispensary at the plant and the colony is delivered to the neighbouring government hospital for incineration once in two days.

Optimisation of Water Use

Recycling - No used water, whether from the plant or the captive power plant, is allowed to go waste. All cooling

water from machines/mills is collected at the final outlet and used inside the factory at material transfer points, or for watering trees in the plantations, or for dust suppression on *kutch* roads. The waste water generated in the colony is treated in the sewage water treatment plant situated in the colony.

Rain water harvesting - Rain water collected in the exploited

mines is pumped out and diverted to a drain which flows along the fields in neighbouring village. This water is being utilised for irrigation by the villagers. A spin-off from this diversion of the water is a rise in the water table as evidenced in the adjoining wells.

Roof-top rain-water harvesting has been started, to begin with, in select buildings having large

roof-surface area, under consultation of a hydro-geologist. The harvested water recharges dug-up wells during rains.

Green Belt Development

The management has spared no pains in developing greenery around the plants, mines and in the colony. Till March 2002, a total of 1,23,760 trees have been planted over an area of 78.21 hectares.

ASSOCHAM Lauds CMA's role in promoting Energy efficiency

CMA made a presentation in the Open House 'Commercialisation of Energy Efficient Technologies' organised by the Associated Chambers of Commerce and Industry of India (ASSOCHAM) in New Delhi on 5 September 2002. The presentation as well as the points made by Dr. Ghosh, Adviser (Technical), in the Panel Discussion that followed have been acknowledged by ASSOCHAM as 'very informative and significantly added value to the deliberations of the programme'. The Open House appreciated the remarkable energy conservation performance of Indian cement industry over the last decade and called for low-cost funds for further conservation through advanced technologies in comminution and pyroprocessing, and newer technologies like waste heat based cogeneration of power.

With the coming into effect of the *Energy Conservation Act, 2001* from April 2002, there has been a flurry of seminars and workshops on energy efficient technologies. Undoubtedly, adoption and replication of such technologies in industry depend on their successful commercialisation. However, more than peripheral improvement in energy conservation in auxiliary services for most industries, eg. in boilers, pump houses, compressors and fans, which are low-fund intensive soft options, what is critically needed are breakthrough technologies for achieving substantial energy economies. But accessing such technologies requires large investments for which the industry seems not prepared at the moment, given the current phase of recession. Yet, considering the priority of energy conservation in the national economy and the recurring returns it will bring, soft loans and the like for accessing front-runner technologies seem to be the crying need of the day.

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ELECTRICAL ENERGY CONSERVATION MEASURES AT BIRLA CEMENT WORKS AND CHITTOR CEMENT WORKS

Dinesh Chanda, V.K. Hamirwasia & J.S. Kalra
Birla Cement Works and Chittor Cement Works, Chittorgarh

The authors survey the energy conservation measures implemented in the twin plants Birla Cement Works and Chittor Cement Works at Chittorgarh and the incremental energy savings achieved year-to-year from 1997-98 to 2001-02. The investments made and the returns accrued/expected from each of these measures are duly indicated. Ranging from optimisation of the existing systems including technological modifications, to outright replacement, as necessary, the measures touch practically the entire line from the limestone crushing plant to the packing plant...Ed

Introduction

At Chittor there are two plants, namely, Birla Cement Works (BCW) and Chittor Cement Works (CCW). They have a combined clinkerisation capacity of 17.50 LTPA comprised of 2x1000 TPD of BCW and 3300 TPD of CCW.

Since electrical energy is a major cost factor in cement manufacture constituting about 25 per cent of the total production cost, both plants have been taking systematic conservation measures from 1997 onwards. The present

article surveys these measures progressively introduced over the period April 1997 to March 2002 in different sections of the two plants and the savings realised from them.

Measures Taken at Mines

At Jai Mines which feed both the plants, in the limestone crushing system, two bag dust collectors (BDC) had been originally installed to control the dust emission but they were not very efficient. To overcome this problem a dedicated atomised water spray (WS) system was installed during 1997-98. This

not only solved the dust nuisance completely but saved power too as shown below :

Designed power with the original BDC = 1.80 units/ton limestone

Actual with the WS system = 1.40 units/ton limestone

Net savings per annum = Rs. 30 lac (for 15 LTPA clinker @ Rs. 3.29 per ton limestone)

Figure 1 represents the flow diagram of the 1000 TPH limestone crushing plant in which the original BDC's subsequently replaced by the water spray system are also shown.

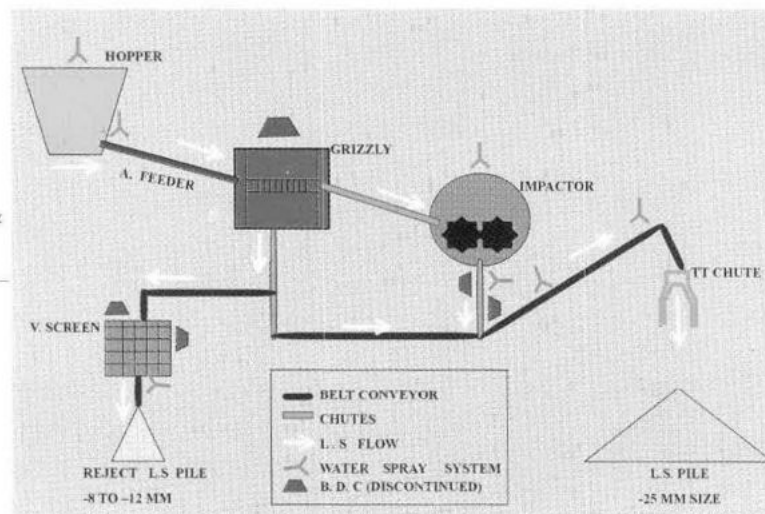


Fig. 1 : Flow diagram of the 1000-TPH limestone crushing plant at Jai Mines

Measures at Birla Cement Works

Following is a yearwise account of the energy conservation measures taken at different sections

of the plant and the respective savings from them - both specific power saving and the actual saving in financial terms for a year.

1997-1998

➤ Kiln section

- Speed of ESP fans of both kilns was reduced by switching over from direct-

coupled to V-belt drive system.

- Primary air fans of both kilns

were modified to optimise their operation as per actual process requirement.

The respective investments for the above measures and the savings accruing them are as follows :

Measure	Investment Rs, Lac	Saving	
		Units/t clinker	Rs Lac/annum
Reduction of ESP fans' speed	1.20	1.90	36.71
Modification of primary air fans	0.48	0.22	4.25
Total	1.68	2.12	40.96

1998-1999

- **Limestone tertiary crusher**
 - Grate bars of the crusher were

modified to achieve finer material, resulting in higher raw mill output @ 6 TPH, besides saving in power.

The investment on the modification and the resulting saving are as follows :

Measure	Investment Rs, Lac	Saving	
		Units/t clinker	Rs Lac/annum
Modification of grate bars of limestone tertiary crusher	1.00	1.46	29.00
Total	1.00	1.46	29.00

1999-2000

- **Packing plant section**
 - Replacement of power-

deficient roots blowers for packing plant silo by reciprocating compressor.

The investment on the replacement and the accrued saving are as follows :

Measure	Investment Rs, Lac	Saving	
		Units/hr of working	Rs Lac/annum
Use of reciprocating compressor instead of roots blowers from available surplus machines	0.13	10.48	3.04
Total	0.13	10.48	3.04

2000-2001

- **Raw mill section**
 - Optimisation of dedusting air of raw meal silos' BDC.

- Optimisation of dedusting air of raw mills feeding system.
- Switch-over from oil to grease lubrication for high-efficiency separators' rotor bearings.

- **Water supply section**
 - Installation of float switches in overhead water tanks.

The respective investments on these measures and the savings accruing from them are as follows :

Measure	Investment Rs, Lac	Saving	
		Units/hr of working	Rs Lac/annum
Optimisation of a) Dedusting of air of raw meal silos' BDC	0.12	10.80	0.37
b) Dedusting air of raw mills feeding system	0.15	8.71	1.66
Modification of lubrication system of separators for rotor bearings	0.10	13.80	3.62
Installation of float switches in overhead water tanks	0.15	6.75	2.35
Total	0.52	40.06	8.00

2001-2002

➤ Raw mill section

- Installation of variable frequency drives (VFD) at vent fans of both raw mills.
- Replacement of the fluxo pumps by high-efficiency tandem bucket elevators for raw meal transportation for both raw mills.

➤ Kiln and coal mill section

- Replacement of the ESP fans of both kilns by high-efficiency fans.
- Installation of high-efficiency bucket elevators in place of airlift for kiln feed transportation system for both kilns
- Replacement of the BDC fans of coal mills 1 and 2 by high-efficiency fans and installation

of variable frequency drives (VFD's).

➤ Cement mill section

- Replacement of the vent fans of cement mills 1 and 2 with high-efficiency fans.

The respective investments for the foregoing measures and the actual/estimated savings therefrom are summarised in the Table below:

Measure	Investment Rs, Lac	Saving	
		Units/hr of working	Rs Lac/annum
Installation of VFD's for the vent fans of raw mills	6.10	20.52	5.70
Installation of high-efficiency tandem bucket elevators for raw meal in place of the fluxo pumps for both the raw mills	70.00	225	58.75
Replacement of the ESP fans of kilns 1 and 2 with high-efficiency fans	10.00	53	<i>To be worked out</i>
Installation of high-efficiency bucket elevators for kiln feed for both kilns in place of airlift	100.00	104	32.95
Replacement of the coal mill BDC fans (2 nos) with high efficiency fans and installation of VFD's	16.50	34	9.0
Replacement of the cement mill vent fans (2 nos) with high-efficiency fans	7.00	28 (<i>Estimated</i>)	<i>To be worked out</i>
Total	209.60	Being worked out	

Figure 2 depicts the progressive reduction in power consumption for cement (OPC 43) and clinker production from 1997-98 to 2001-02 at Birla Cement Works, Chittorgarh

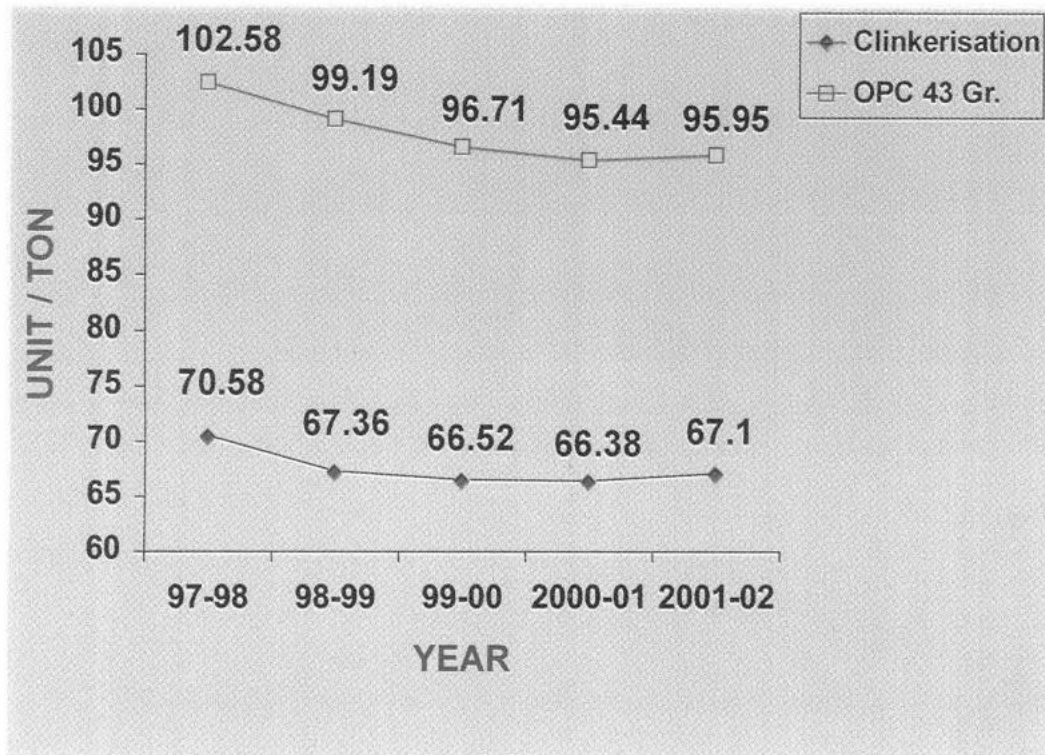


Figure 2 Progressive reduction in power consumption at Birla Cement Works.

Measures at Chittor Cement Works

A similar account of the energy conservation measures implemented and the savings accrued therefrom at Chittor Cement Works is given in the following paragraphs :

1997-1998

➤ Raw mill section

- Replacement of the vent fan by high-efficiency fan.

➤ Kiln section

- Replacement of the cooler

vent fan by high-efficiency fan.

- Replacement of the number of motorised air sluice below BDC hopper by leak-proof gravity flap valves.
- Optimisation of kiln and precalciner (PC) firing air by reducing blowers' rpm.
- Replacement of the cooling-tower-fan aluminium blades by fibre-reinforced plastic (FRP) blades.
- Stopping of the raw coal feeding group BDC's during monsoon months.

➤ Cement mill section

- Optimisation of the cement transport air by reducing the speed of compressors for both cement mills.
- Optimisation of compressed air distribution.

➤ Packing Plant Section

- Twenty-two numbers of motorised bag deflectors replaced with fixed polymer bag deflectors.

The respective investments for the foregoing measures and the savings accruing therefrom are summarised in the Table on the next page :

Measure	Investment Rs, Lac	Saving	
		Units	Rs Lac/annum
Raw mill vent fan change	17.60	0.45 U/t cement	13.18
Cooler vent fan change	64.65	1.94 U/t cement	56.85
Replacement of motorised air sluice with flap valves	Insignificant	4.80 U/hr	1.19
Optimisation of kiln and PC firing blowers	Insignificant	33.56 U/hr	8.34
Replacement of cooling-tower-fan aluminium blades with FRP blades	0.28	2.0 U / hr	0.49
Optimisation of cement transport air	Insignificant	73.00 U / hr	10.85
Optimisation of compressed air distribution	Insignificant	31.00 U / hr	4.32
Replacement of motorised bag deflectors with fixed polymer bag deflectors	Insignificant	7.20 U / hr	2.71
Total	82.53	—	97.33

1998-1999

- **Raw mill section**
 - Direct chute provided in belts of raw mills 1 and 2 for additive-feeding hoppers, eliminating operation of feeding belt.
- **Cement mill section**
 - Optimisation of BDCs' vent air and purging air. The respective investments on these measures and the savings accruing from them are as follows :

Measure	Investment Rs, Lac	Saving	
		Units	Rs Lac/annum
Provision of direct chute eliminating belt feeding to raw mills	Insignificant	28.00 U/Day	0.26
Optimisation of cement mills BDCs' vent air and purging air	Insignificant	15.90 U/Hr	2.77
Total	Insignificant	----	3.03

1999-2000

- **Kiln section**
 - New air slide provided for kiln feed section, retaining the earlier inclined screw conveyor as standby.
- Optimisation of blowers at CF silo and mixing bin.
- VFD installed for V6 cooler fan.
- VFD installed for coal mill BDC fan.
- Stopping of cooling tower fan and hot water pump during winter months.

The respective investments on these measures and the savings accruing from them are as follows :

Measure	Investment Rs, Lac	Saving	
		Units	Rs Lac/annum
New air slide for kiln feed	0.85	5.87 U/hr	1.82
Optimisation of blowers at CF silo and mixing bin	From available surplus machinery	14.00 U/hr	4.34
VFD for			
a) Cooler fan V6	5.28	16.00 U/hr	4.97
b) Coal mill BDC fan	9.24	56.00 U/hr	11.80
Stopping of cooling tower system during winter months	Nil	31.40 U/day	0.10
Total	15.37	—	23.03

2000-2001

➤ **Raw mill section**

- VFD installed at raw mill vent fan.

- Upgradation of raw mill capacity by installing tertiary crusher at raw mill inlet. Figure 3 shows the tertiary crusher.

The raw mill circuit after the modifications is depicted in Figure 4.

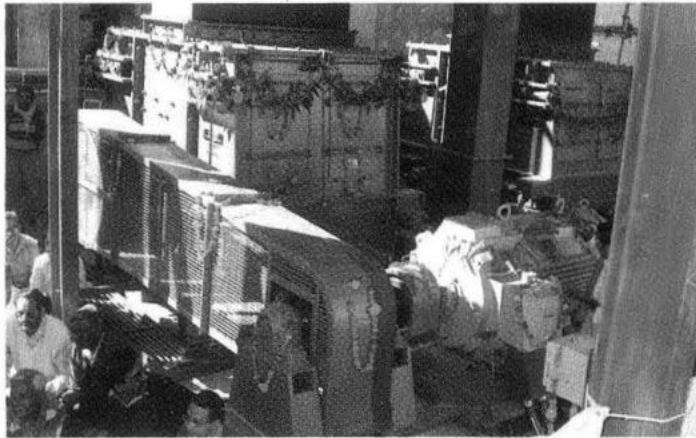


Figure 3 Installation of limestone tertiary crusher

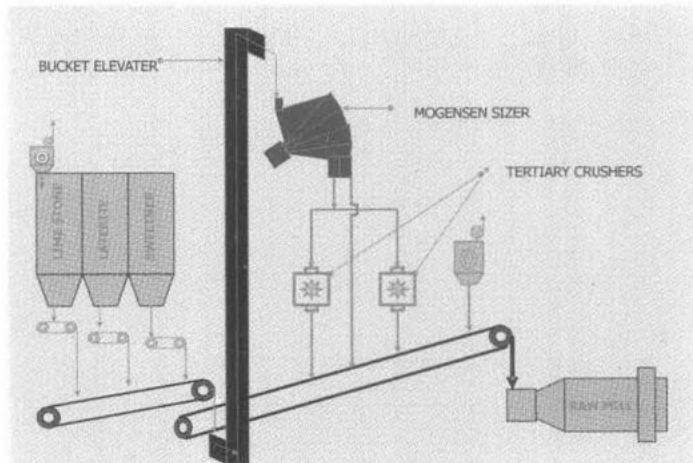


Figure 4 Raw mill circuit after modifications

- **Kiln section**
 - Installation of VFD in cooler fan 2R.
 - Modification of inlet duct of cooler fan V5A.
 - Optimisation of aeration air in kiln feed section by connecting two air slides to a common blower.
- The respective investments on these measures and the savings accruing from them are as follows :

Measure	Investment Rs, Lac	Saving	
		Units	Rs Lac/annum
Installation of VFD at raw mill vent fan	9.24	56.00 U / hr	14.49
Upgradation of raw mill capacity by installation of tertiary crusher *	201.00	0.73 U / ton clinker	33.07
Installation of VFD at cooler fan 2R	5.28	10.00 U / hr	2.94
Modification of inlet duct of cooler fan V5A	0.10	6.00 U / hr	1.86
Optimisation of aeration air in kiln feed section	0.15	1.44 U / hr	0.45
Total	215.77	—	52.81

* Raw mill capacity increased from 200 to 230 TPH.

2001-2002

- **Kiln section**
- VFD provided for cooler fan 2L.
- VFD provided for cooler fan V5A.
- Modification of 2nd, 3rd and 5th cyclones of preheater (PH), riser ducts and downcomer, increase in height of precalcinator, installation of higher capacity and high- efficiency preheater fan and ESP fan.

Figure 5 shows the erection of the 3rd stage riser duct in progress and Figure 6 the high-efficiency preheater fan after assembly.

- **Cement mill section**
 - Installation of flyash feeding system in cement mill No 1 (CM-1) for PPC production.
 - Installation of Sepax separator at CM-2.
- The respective investments on these measures and the savings accruing from them are as follows :

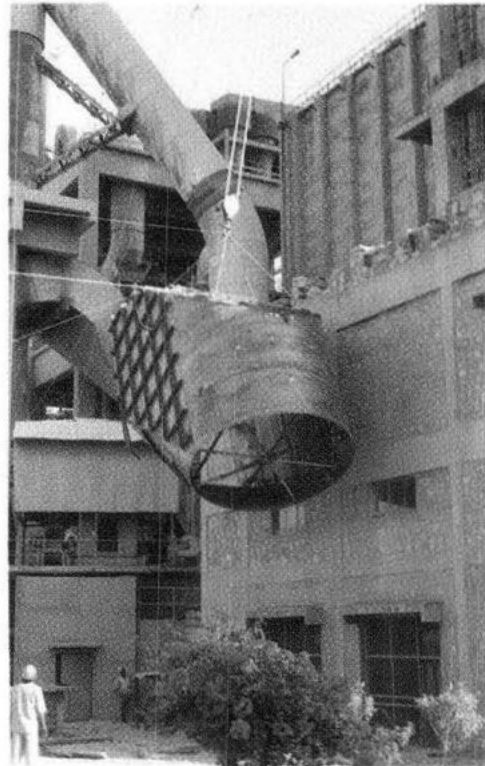


Figure 5 Lifting of 3rd stage riser duct for assembly.

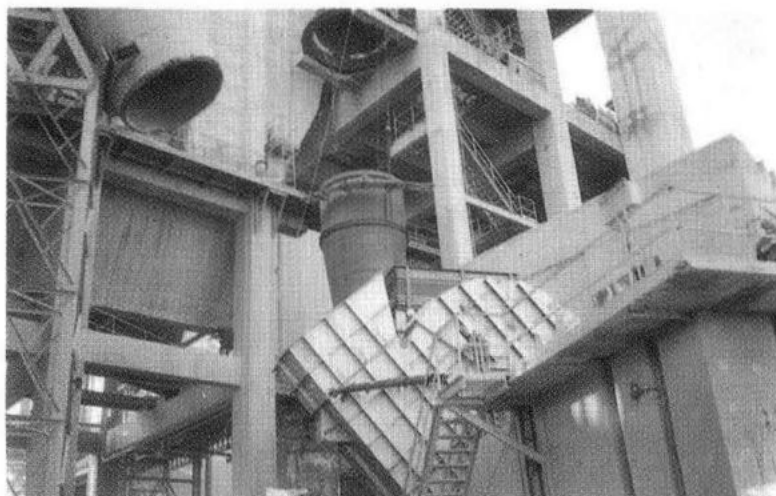


Figure 6 High-efficiency preheater fan after assembly.

Measure	Investment Rs, Lac	Saving	
		Units	Rs Lac/annum
Installation of VFD's on :			
a) Cooler fan 2L	4.90	23.83 U / hr	7.50
b) Cooler fan V5A	4.90	14.73 U / hr	4.64
c) Cooler fan V5B	4.90	6.12 U / hr	2.00
Upgradation of PH tower with LP cyclones along with higher capacity PH fan and ESP fan *	430.00	2.77 U / ton clinker	125.50**
Installation of flyash feeding and weighing system for CM – 1 and Sepax separator for CM –2 closed circuiting	350	—	—
Total	794.70	—	139.64

* Kiln capacity increased from 2800 TPD to 3300 TPD.

** Represents saving accruing from saving in power only, and does not include the contribution from capacity increase.

Figure 7 depicts the progressive reduction in power consumption for cement (OPC 43) and clinker production from 1997-98 to 2001-02 at Chittor Cement Works, Chittorgarh.

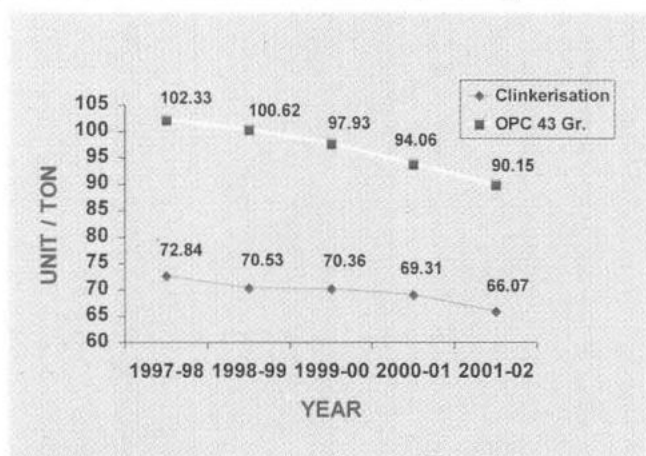


Figure 7 Progressive reduction in power consumption at Chittor Cement Works.

A SUPERIOR VERTICAL-ROLLER PRE-GRINDING MILL

S.C. Jain, Vice-President (Engg. Business)
ACC Machinery Company Limited, Butibori, Nagpur

In the drive for energy conservation in size reduction operations, pre-grinding mills are finding favour with Indian cement industry. The article describes a vertical-roller pre-grinding mill (VRPM) which has proved its superior performance in grinding clinker. The mill, originally designed and developed in Japan, is currently being manufactured indigenously. While three of them are successfully operating in the country in the last four years, three more are in the pipeline....Ed

Introduction

Pre-grinding involves use of a suitable equipment before the conventional ball mill/tube mill to carry out size reduction in a more efficient way at larger particle-size range. In other words, while the input material size for the ball mill/tube mill is less than 25 mm, it will become less than 3 mm after introduction of a pre-grinding system. After detailed research and development, combined with their own extensive experience, Nihon Cement Co Ltd, Japan, developed a superior Vertical-roller pre-grinding mill. With transfer of the technology, ACC Machinery Company Limited, a wholly owned subsidiary of the Associated Cement Companies Ltd (ACC) is in a position to offer this vertical-roller pre-grinding mill (VRPM).

A detailed study has established the superiority of this vertical-roller pre-grinding mill's efficiency in comparison to other available technologies, and its suitability as a solution, both for existing plants to increase their grinding capacity and reduce power consumption, and for new plants seeking lower investments.

Principle of the VRPM

Clinker is fed through a central chute in the VRPM where centrifugal force, combined with the rotation of the table, distributes the product over the table surface. The

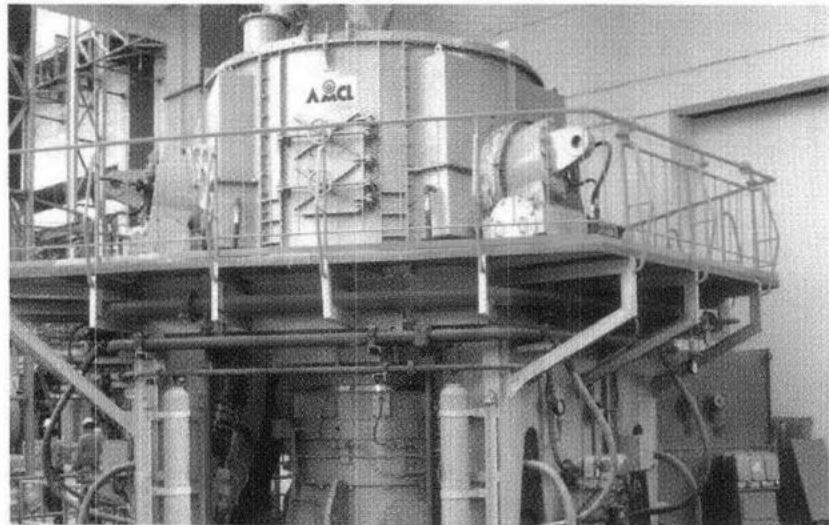


Figure 1 Vertical roller pregrinding mill

table and the rollers then grind the material, which is then extracted from the VRPM by gravity and a little help from a scraper. The grinding force is transmitted to a set of three rollers through a hydraulic system.

Advantages

- Non-air-swept grinding and hence energy efficient.
- Considerable increase in grinding capacity as clinker grinding can be increased by more than 50 per cent and even up to 100 per cent.
- More than 15 per cent reduction in power consumption of the clinker grinding system.
- Requires little maintenance.
- Longer table-liner and roller life, > 10000 hr for table liners and > 20000 hr for rollers.

Salient features

High-efficiency spherical roller grinding mechanism – The spherical rollers used in the VRPM provide high grinding efficiency and a more stable operation. Spherical rollers also offer high compressive force as sliding contact between table and roller is increased and the shearing force that is generated is greater. Thus by the simultaneous compressive and shear forces, high efficiency grinding results.

Grooved spherical roller – The centrifugal force generated by the rotation of the table spreads the material across the entire table surface in a uniform layer, where it is caught between the roller and the table liner segments, and gets crushed before being carried to the outer circumference of the table. At

the same time, the rollers are set above it to produce the grinding action. If the friction between the rollers and the clinker on the table is weakened, the roller slips and vibration occurs, resulting in a fall in the grinding performance. Hence, preventing roller slippage is of paramount importance for maintaining stable operation and increased capacity; this is achieved by adding grooves to the spherical rollers. The grooved spherical rollers used in the VRPM improve performance and efficiency by trapping the clinker in the grooves and rotating in perfect synchrony with the table, thus reducing vibration and enabling stable operation.

Uniform grinding - As spherical rollers have a higher periphery, a wider and uniform

grinding layer is formed; this increases the grinding efficiency.

Coping with quality and quantity fluctuations - Fluctuations in clinker quality and feed rate can easily be accommodated.

Versatility - Several configurations using VRPMs are possible, such as open-circuit mill, closed-circuit mill and the pre-grinding mill feeding more than one ball mill. In fact, VRPM can suit even customers with little extra space since the VRPM is very compact.

Experience in India

The first VRPM (Model 230-3 1100 kW) was installed at ACC-Chanda Cement Works, where the ball mill output (open circuit) has increased by approximately 65 per cent and power consumption

reduced by approximately 17 per cent. This mill has been operating satisfactorily for the last four years.

A second VRPM (Model 230 1200 kW) was installed at ACC Kymore, for feeding two cement mills grinding portland pozzolana cement. This mill too has been operating satisfactorily for the last two years. The actual results are reported in Table 1. Along with the installation of the VRPM, the ball mills were converted to closed-circuit from open-circuit, and the pneumatic conveying system changed to mechanical. The output of the cement mills has since increased by 80 per cent and the power consumption reduced by approximately 20 per cent, a major part of which both is attributable to the installation of VRPM.

Table 1
Improvement in performance of grinding of portland pozzolana cement after installation of a common VRPM for two cement mills

Equipment	Running kW	
	Before installing VRPM	After installing VRPM
VRPM - Main	-	950.00
Auxiliaries	-	70.00
CM # 1 — Main	1550.00	1435.00
CM # — Aux	320.00	298.00
CM # 8 — Main	1550.00	1475.00
CM # — 8 Aux	330.00	320.00
Fly ash handling	240.00	332.00
Total kW	3990.00	4880.00
Total mill output, tph	112.00	200.00
Specific power consumption kWh/t	35.63*	24.40*

*Note : Before installation of VRPM the cement mills were open-circuit with pneumatic conveying system. These were then changed to closed-circuit and mechanical conveying.

One more VRPM (Model 230-3 1200 kW) for Madras Cements Ltd, R R Nagar was successfully commissioned approximately a year ago. Others under various stages of

installation are :

(i) One number (Model 180-3 750 kW) for the Rai Barelli Cement Grinding Unit of Birla Corporation Ltd

(ii) Two numbers (Model 230-3 1200 kW) for Maihar and Century Cement.

DIETHYLENE GLYCOL AS GRINDING AID – R&D at NCB

Use of grinding aids is very common in cement industry abroad and the commonly employed aids are glycols, amines, organo-silicones, organic acetates, etc. Grinding aids are substances that facilitate grinding and are used to secure benefits like reduction in power consumption, increase in production, and improvement in cement properties.

Basis of grinding aids' action

The grinding process involves breaking of particles leading to formation of new surfaces. In this process chemical bonds also break causing development of electrostatic charges of opposite polarity on the newly generated surfaces. Under the influence of electrostatic charges of attraction, the fine particles formed during grinding tend to agglomerate and thus reduce the efficiency of grinding. The electrostatically charged fine particles tend to form a coating on the grinding media, mill walls and extraction screens, which further hampers the grinding process. Grinding aids possess lubricating and/or dispersive

properties and form a coating of mono-molecular thickness on the fine particles. This neutralizes the unbalanced electrostatic charges present on the particle surfaces and helps to prevent the agglomeration of fine particles on grinding media and mill walls, etc. Thus the grinding becomes more efficient than the soft grinding provided by heavily coated media. The reduced tendency of the fine particles to agglomerate also results in higher grinding efficiency. The mill retention time for achieving a given fineness is reduced too, resulting in increased production and lower power consumption.

NCB Study

In a recent study, sponsored by M/s Reliance Industries Ltd, National Council for Cement and Building Materials (NCB) investigated the use of diethylene glycol (DEG) as a grinding aid in cement manufacture. A batch-type ball mill was used in the study to prepare samples of OPC without and with DEG. The power consumption was recorded using an electronic energy meter. The dosage

of DEG was varied in the range of 0.00-0.04 percent.

Following are the findings from the study:

- For the same duration of grinding, use of DEG resulted in higher fineness of cement. The increase in fineness ranged from 7 to 31 m²/kg (see Figure 1) depending on the dosage of DEG and the grinding duration.
- For the same fineness of cement, use of DEG resulted in 4-16 percent lowering of power consumption during grinding (see Figure 2).

The laboratory findings are considered encouraging for conducting plant scale trials to work out the actual measure of power saving and production increase achievable. NCB is in a position to undertake such trials on sponsored basis. Triethanolamine, Celex powder and sulphate lye (a waste product from paper industry) are some other substances that have been found effective as grinding aids.

Courtesy : NCB Newsletter

Vol IV, No. 2, June 2002

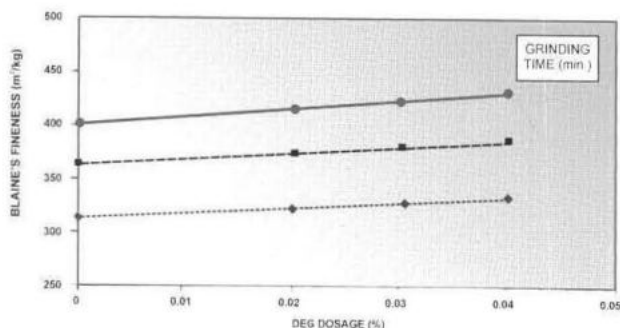


Fig. 1 Effect of dosage of DEG on cement fineness.

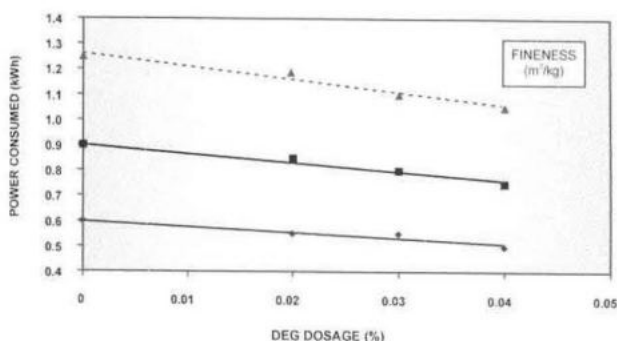


Fig 2 Effect of dosage of DEG on power consumption for cement grinding.

HOLCIM WHITE LTD. DRIVES WHITE CEMENT SALES IN NEW EUROPEAN MARKETS

The establishment of Holcim White Ltd., with headquarters in Zurich's Oerlikon district starting May 2002, marks a drive by the Holcim Group to step up activities in white cement sales to Central and Eastern European markets. Growing demand and desire for stronger professional support prompted the opening up of new sales channels for white cement produced at Holcim Group plants in Slovakia, Romania, and Poland by means of a marketing and sales organization to provide customers with construction solutions using the attractive, high-grade construction material. Holcim White thus reflects and promotes an expanded market arising from white cement's indispensability for several uses, including highly sophisticated concrete applications in contemporary architecture and exposed concrete for today's high-rise buildings. White cement is also becoming increasingly common in prefabricated concrete elements, the manufacture of mortars, and garden landscaping.

Courtesy: Cement Americas

May/June 2002, P15,

Fax: 312-726-4107/2574

E-mail: Books@primediabusiness.com

Web: www.cementamericas.com

EVOLVING MANUFACTURE

ICR Research

We asked a leading technical director of one of the world's largest cement groups to look at the evolution of the global cement industry and to comment on its current status and sophistication. He notes that while a sizeable amount of new process technology has been introduced there is still a

high dependence on older, less efficient technology, and in some areas, a lack of understanding as to the actual process parameters. Market impacts on cement production levels are also discussed.

Courtesy: International Cement Review, July 2002 P37,

E-mail: info@CemNet.co.uk

Web site: CemNet.co.uk

NEW FUEL-SAVING TECHNOLOGY FROM SAIL

Energy Times 24(27): 1 (2002)

The Research and Development Centre for Iron and Steel, Ranchi, of SAIL (Steel Authority of India Ltd) has developed a new technology for igniting the sinter mix in the Sinter Plant-I of the Rourkela Steel Plant. The new multi-slit-burner technology has reduced fuel gas consumption by about 67%, from 60 million calories per tonne to 20 million calories per tonne of sinter, equivalent to savings of 4 litres of oil per tonne. The innovation is expected to save fuel worth nearly Rs 6 lakh annually. The new system has also improved productivity of the sinter machine by about 10%. The multi-slit-burner system comprises small capacity burners assembled together in the form of modules and fitted on the roof of the ignition hood. In the integrated steel plants, finer fractions of iron ore, coke and limestone are sintered into porous lumps by heating. The sinter utilizing waste raw material fines, is used in blast furnaces to improve their productivity. SAIL is planning to use this technology in all its other sinter plants and save fuel worth more than Rs. 8 crore annually.

Courtesy: TIDEE, Mar. 2002, P 7,

Fax: 91 11 4682144,

E-mail: outreach@teri.res.in

Web: www.teriin.org

MIXER SELECTION FOR POWDERS

S. Ramponi, D. Negrini, and M. Passerini, Italy

A mixer is selected by analysing the characteristics of the products to be handled and those of the mixers on the market, and the type of mixing process. The mixing time is only one of the many characteristics which need to be evaluated.

The possibility of obtaining a mixture with constant homogeneity over time must be evaluated on the basis of the differences in particle size and shape, bulk density, superficial characteristics such as the tendency to interlock, cohesiveness, electrostatic forces and moisture content of the particles to be introduced.

It must be kept in mind that risks of segregation exists: should this occur the necessary precautions must be taken. For very cohesive products, mixers which guarantee breaking the lumps and agglomerates with dedicated devices should be used, if the mixer selected is not sufficiently capable of a good deagglomeration effect.

If there are degradation problems, mixers with high inertial action such as high-speed mills and perhaps also belt mixers should be rejected: energy input into the product (temperature increase), whether the treatment is gentle, and the friction which is created between the particles will have to be controlled.

Extremely important are also the dimensions of the load, the degree of loading, the presence of abrasion-resistant components, the possibility of heat exchange, the overall dimensions, fast and complete or partial emptying, the cleaning method, on-the-spot cleaning, energy to start the mixer for the mixing operations, and the

specific energy per ton of product to break the agglomerates in case of liquid injection.

In the case of continuous mixers, also to be taken into consideration is the axial dispersion effect, the possibility to vary the residence time, the hourly production related to the residence time, the degree of loading and the actual loading.

On the basis of the principle and the parameters of mixing, this article describes the mixers most frequently in use in the chemical, building, pharmaceutical, plastics, ceramics, food, environmental etc. industries to mix granular solids between them and in certain cases, also solids with liquids or solids with gas.

The list is not exhaustive, as there are many variants as well as a multitude of possible uses:

- Blending and Homogenising
- Humidification: distribution of liquids in solid masses
- Agglomeration: enlargement of the cross-section of the powder particles introduced
- De-agglomeration: breaking apart of the agglomerates
- Fluidisation: distribution of gas in the solid mass
- Suspension: distribution of solids in liquids
- Coating: formation of a layer on the outer surface of the granules
- Drying: heating to remove the liquid part of the mixture
- Cooling: reduction of the materials temperature during mixing.

By understanding the phenomenon of segregation and through the description of the working principle of each type of mixer it will be possible to interpret the choice criteria.

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Fax: +49 5323 969 796*

*Email: ttp@transtech-online.com
Web: www.transtech-online.com*

SELECTED CASE STUDIES ON THE SILO QUAKING PROBLEM

C. Wensrich, Australia

This paper examines the quaking phenomenon from the perspective of five separate industrial installations where quaking caused a significant problem. In each separate study the details of the installation are outlined and the distinct issues surrounding the quaking problem at each site are described. What is clear from these studies is that quaking can occur in a variety of different systems and a single solution to the problem is far from apparent. In some cases the problem can be addressed by a change in the procedures by which the installation operated, however in some circumstances no solution is apparent. These case studies highlight the need for a better understanding of the phenomenon and its mechanisms.

Although, seeming like very simple systems, the flow of granular materials from silos can often be observed to display large, self induced, dynamic pulsations that are known as quakes. These quakes usually take the form of distinct events that occur very rapidly (of the order of milli-seconds). With several seconds (possibly minutes) between each distinct quake.

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Fax: +49 5323 969796*

*Email: ttp@transtech-online.com
Web: www.transtech-online.com*

TWO DECADES DYNAMICS OF BELT CONVEYOR SYSTEMS

G. Lodewijks, The Netherlands

The quest for a useful design tool that incorporates the effect of dynamics of conveyor belts on the design of a conveyor system started halfway the 1950s. It was however not until halfway 1980s that the first useful design tool became available. In the early days of using dynamics

of belt conveyor systems the attention was focussed on analysis of both the starts and the stops of long overland, high tonnage/lift/speed conveyors. With the significant improvement of drive technology over the last twenty years, however, it is now possible to start and (operationally) stop a belt conveyor in a very smooth manner. For analysis of these non-stationary conditions the application of belt conveyor dynamics is no longer required provided that sufficiently long starting and stopping times are used. Therefore, the attention shifted to the analysis of emergency stops and the determination of 'what if' scenarios. It is an illusion to assume that theoretical analysis gives all the answers. A practical verification of the results is of utmost importance to ensure that the assumptions made in the theoretical analysis were right and the advice given to the client correct.

This paper gives an overview of the work done on the mathematical description of dynamics of belt conveyor systems till date and briefly discusses the most important variables that effect belt conveyor dynamics. It will further give some practical recommendations and examples of the application of belt conveyor dynamics in the design process of conveyor systems, the practical verification of the results and the lessons learned. Finally, it will highlight the latest developments in the field and provide answers to frequently asked questions.

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*Email: ttp@transtech-online.com
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FREE FLOWING PRODUCTIVITY

Dave Laing, Mole Master, USA

In general, almost all types of bulk storage vessels can suffer from bridged, arched, ratholed, lumpy or

hydrated material at some time. Material flow problems are unavoidable given the myriad of different types of storage vessels and the variety of materials that are stored or processed within them.

More importantly, once these problems occur, they have a negative affect on the productivity of the facility, which progressively worsens for each hour or day that the storage problem is allowed to continue. Inefficient material flow and reduced storage capacity can and will have an immediate impact on the profitability of any operation.

Mole Master™ Services Corporation breaks silo cleanout projects into three primary categories: lowdegree of difficulty (LDD), medium degree of difficulty

(MDD) and high degree of difficulty (HDD).

All Mole Master technicians are MSHA 5000-23 certified and trained to comply with all current OSHA standards (US Government mandated) for maintaining a completely safe work environment. The company has completed over three consecutive years without any lost time accidents or recordable injuries. By hiring a qualified contractor, plant officials minimise any potential risk to their own personnel, contractor's personnel, or any of the associated liability risks related to working in this environment.

The best way to eliminate build up problems in a facility is through preventative maintenance programme designed specifically

for that facility. Once the facility has been evaluated, a routine cleanout programme that will virtually eliminate the majority of build up problems can be initiated before they ever become severe. While there is no guarantee that a maintenance programme will completely eliminate all build up problems, it will significantly reduce the risk of their occurrence. Regardless of the project and its level of difficulty, the appropriate training and equipment are absolutely necessary before any project is undertaken.

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PROCESS & OPERATION

MULTIPLICATION AND DIVISION FOR ENGINEERS

R. Farnish, U.K.

In many plants around Europe, the requirement exists to obtain multiple product streams from storage vessels. Although this may seem like a fairly simply achieved requirement, there are many ways in which product processes can be adversely affected as a direct result of the technique applied for obtaining additional material feeds. This article will therefore examine some of the more frequently seen approaches and provide an insight into the "best practice" approaches that should be considered by plant operators and managers.

Faced with a vessel from which an additional product stream is required, there are several approaches that are commonly adopted, these being to split the product stream after it has passed through the existing outlet, simply add as many outlets as required to the vessel or to mechanically extract from the vessel. That additional product streams will be created is guaranteed – but what other problems will accompany these measures? In order to appreciate the nature of the problems that may be generated it is useful for the reader to reacquaint themselves with the basic features of core flow and mass flow.

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Web: www.transtech-online.com*

COMPARISON OF DIFFERENT FEEDING DEVICES FOR VERTICAL AND STEEPLY INCLINED CONVEYING IN SCREW CONVEYORS

F. Kessler, J. Leitner and E. Lichtenecker, Austria

Screw conveyors are not only used for horizontal but also for vertical and steeply inclined conveying of bulk materials. The design of a screw conveyor is rather simple, nevertheless a number of relevant variables caused problems during the construction of this type of conveying system. Today's powerful computers and the wider knowledge base enable us to consider the influence of important variables, like, e.g., diameter, pitch and rotation speed of the screw, or the various properties of the bulk material, on calculating the volume flow and the power requirements of a vertical screw conveyor.

For the practical use of such conveyors, it is also important to select the appropriate type of feeder. Vertical screw conveyors are often fed using the entire screw circumference as intake (surround intake). With increasing intake length the load in the conveyor and, consequently, the volume of material to be conveyed, increases. Another way to increase the mass flow is utilization of conical transport sections (funnels) in the intake area. Feeding can also be accomplished by using a second horizontal screw conveyor to directly convey the material to the intake area of the vertical screw conveyor. In case the horizontal screw has the same shaft and screw diameter as the vertical screw, the horizontal feeding conveyor has to

be operated at a lower speed than the vertical or inclined conveyor.

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*Email: ttp@transtech-online.com
Web: www.transtech-online.com*

UPGRADATION OF ZUARI CEMENT PLANT

Lalji Srivastava, Zuari Cement, Palle Grydgaard, F.L. Smidth & Co., Jayanta Saha and Rakesh Shrama, L&T,

Building a new greenfield cement plant in today's scenario can be an expensive proposition. One of the alternatives is to upgrade the existing plant to utilise the available equipment to full potential and add equipment wherever required for balancing the capacity. This way the overall economy is possible since the existing manpower, infrastructure, colony, etc. can be optimally utilised. The paper discusses the upgradation of a cement plant leading to a reduction in thermal energy consumption.

Texmaco Limited, Yerraguntala was first commissioned in 1985 with a capacity of 1,500 tpd clinker. Main equipment consisted of single string 4-stage cyclone preheater (SP), kiln of 4.55m diameter x 68m long, grate cooler, close circuit ball mill systems for grinding raw meal as well as fine coal and open circuit combidan mill for cement grinding. Complete plant machinery was designed and supplied by F.L. Smidth Denmark and Larsen & Toubro Limited, India. Heat and electrical power consumption were 875 kCal/kg clinker and 150 kWh/T OPC respectively. Dust emission through main stack was ~ 140 mg/Nm³.

In 1995 the plant was taken over by Zuari Agro Group. It was rechristened as Zuari Cement. Efforts towards saving energies and reduction in pollution level continued. In 1997 the plant capacity of 1,850 tpd was achieved. Heat consumption and power consumption reached the level of 850 kCal/kg clinker and 121 kWh/T respectively. In the same year a major decision was taken to go for upgradation, unbelievably, from 1,850 tpd to 5,200 tpd using the existing kiln tube. The whole idea of upgradation is basically conceptualized from the maximum potential available with kiln. The kiln (size: 4.55m diameter x 68m long), has got an effective volume of 919.8m³, with 200mm refractory lining thickness. Especially with Indian raw materials it is now well established that specific volumetric loading (tpd/m³) for kiln with precalciner system, can go up to a maximum 6. Targeted heat consumption, power consumption and emission level were 720 kCal/kg clinker, ~ 105 kWh/T OPC and 50 mg/ Nm³ respectively. The challenge was taken up by a technical team from Zuari Cement, F.L. Smidth and Larsen & Toubro Limited. The upgradation plan to such a large extent was first of its kind in cement industry worldwide.

The existing plant was augmented with additional Atox mills for raw material and coal grinding. A separate line calciner (SLC) string was added in pyro section. Conventional grate cooler was replaced by modern controlled flow grate (CFG) cooler. Cement grinding capacity was enhanced by additional two close circuit Unidan mill systems.

After initial teething trouble the plant was successfully commissioned in March 1999. Average production now achieved

is 5,500 tpd (at peak production of 5,750 tpd) with heat consumption of 95 kWh/T OPC. Emission level has been improved to ~ 50 mg/Nm³.

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*Email: nccbm@gias.dl01.vsnl.net.in
Web: www.cementresearch.com*

‘WHAT IS NOT MEASURED, CANNOT BE CONTROLLED’

Alfredo Santos-Arceo and Conardo Gaytan Materials and Processes Department. Cemex Technology Division, Mexico.

The principle, ‘what is not measured, cannot be controlled’, is the main reason for implementing control and measuring tools in the cement making process. The four main fields where microscopy is applied in Cemex plants are as follows:

- Raw materials: to determine if these materials have a low degree of calcination or the clinker is poor in quality, due to large quartz crystals.
- Raw meal: to identify whether the raw meal chemistry needs to be changed or not, or if the grinding or homogenisation systems have to be improved.
- Process: to correlate some of the clinker’s mineralogical characteristics with some process parameters such as heating speed, maximum kiln temperature, sintering time, primary and secondary cooling speeds, according to ONO’s concepts.
- Operation: to define and set operational parameters, such as primary air pressure, fuel oil temperature, air flow in cooler fans, specific material charge (ton/revolutions).

Within this large and

ambitious effort, is the idea of introducing a digital image processing (DIP) system that provides a standard, easy and fast way to implement the microscopy evaluations. From this, MicroDIP was born, to standardise and speed up microscopy analysis for process and quality control.

MicroDIP automatically provides:

- Phase analysis and percentage determination.
- Crystal characterisation (area, perimeter and axes).
- Crystal quantification (count and histogram).
- Graphics display.
- Analysis statistics.
- Store of information.
- Software evaluation.

The study results revealed that the digital image processing technique provides reliable and repetitive measurements, which always produce samples with a good colour definition for clinker phases.

The system analyses crystals of all sizes produces a more reliable results. This technique has shown the following benefits during its use:

- Faster, accurate and reliable results, in operation and statistically.
- Less interpretation time and analysis, depending on the user’s skill.
- Error reduction in analysis
- Criteria standardisation.
- Cost reduction of the analysis.
- Even those who are not specialists can carry out the analysis.

Most plants still use the free lime parameter to control clinker quality. However, the objective of Cemex is to provide an integral control of the quality of the clinker using microscopy as a process control tool.

So far, Cemex has discovered very surprising benefits from using

this technique even in very efficient plants, which are the following:

- Reduction in specific heat consumption of approximately 1 to 2% of kCal/kg clinker.
- Reduction in specific energy consumption of 3 to 10% of KWh/ton cement.
- Increase in compressive strength values, to optimise the additions proportioning.
- Longer running factor of the kiln, with fewer shutdown times.
- Increase of 35 to 50% in the life of refractory bricks.
- Increase of approximately 10% in kilns throughput.

This tool will be deployed in all the Cemex plants worldwide to contribute in the microscopy implementation effort and to become a standard working technique.

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Fax: +44(0) 1252 718992

Email: mail@worldcement.com

Web: www.worldcement.com

MINIMISING STOPPAGE TIME

TVS Chidambaram and Zamil Al Morkin, Eastern Province Cement Co. Saudi Arabia.

Eastern Province Cement Co. one of the leading cement producers in the Kingdom of Saudi Arabia, has two identical kiln lines with an annual production capacity of 2.3 million t of clinker. Commercial production from the lines started simultaneously during Q4 1984. Both kiln lines were supplied by Krupp Polysius, Germany; each kiln with dimensions of 4.6 m dia x 70 m length, equipped with a 4-stage Depol preheater, an inline Prepol calciner, a grate cooler and a bypass system to vent out alkali salts up to 20%. The rated capacity of each kiln is 3500 tpd, and natural gas is used

as fuel for the main burner, as well as for the calciner. It has become mandatory to run the bypass system at full capacity during normal operation of the kiln due to the presence of high levels of alkali sulphates and chlorides, as well as to meet the low alkali content requirements of customers.

The installed production capacity of cement in the Kingdom is approximately 21.0 million t, whereas demand is only 15-16 million t. Long term strategies were implemented, with the aim of curtailing operating costs targeted towards stable operation of the kilns with maximum production efficiency, by minimising unplanned stoppages in order to increase the run factor of the kilns.

In the Middle East, almost all cement plants operate with a bypass system due to the presence of high levels of volatile impurities in the raw material components, such as alkali sulphates and chlorides. Additional unforeseen stoppages are encountered due to clogging and jamming problems in the kiln inlet region, as well as in the lower part of the preheater.

Although there could be several contributing factors to the stoppages of the kilns, this article will concentrate on two major causes, their impacts on refractory life and practical guidelines to overcome/improve them. The two major causes are as follows:

- Refractory failures due to thermochemical erosion and infiltration of volatile components.
- Refractory failures due to mechanical stresses impaired by kiln components.

Thermochemical erosion – The problem was minimised by avoiding thermal overloads, proper adjustment of flame shape, minimising the variation in raw

meal chemistry and by the installation of premium grade spinel bricks with spinel content in the range of 5-6% instead of 10-12%.

Failure due to alkali salt infiltration – The life of refractories in this area was improved by minimising the variation in the chemistry of raw meal, maintaining better ratio between the alkali sulphates and chlorides, closing brick joints tightly with suitable grade mortars and by installing premium grade spinel bricks with improved resistance against chemical attacks.

Densification and structural failure – Since this area is part of the upper transition zone subject to on and off coating, alkali vapours tend to penetrate the pores of the bricks, or any other gaps available between the brick joints or ring joints, leading to such failures. Selecting spinel grade bricks instead of magnesium bricks, which are resistant to chemical attacks, as well as closing/filling all of the gaps between the rings with suitable mortar grade, helped to reduce such frequent failures.

Corrosion on the kiln shell – At present, tight brick lining is being followed by eliminating all possible gaps within the brick rings by suitable grade mortar. However, trials are underway to coat the kiln shell area with high temperature silicon resin to protect it against corrosion.

Infiltration of alkali salts into the castable mass – Since the raw material is rich in alkali salts, possible alterations were made in the chemistry of the raw meal to balance the ratio between alkali sulphates and chlorides. The use of medium alumina castable with an Al_2O_3 content of less than 40% with 40-45% of zirconium oxide (ZrO_2), as a replacement for alumina also improved the life of castable in this

area. Further trials are underway to extend the life by using either silicon carbide or dense castable in this area.

Alkali bursting of brick lining – Siliceous fire clay bricks with an Al_2O_3 content of less than 28% and lower porosity with 12% AP were tried with great success. Painting the walls with zircon cement to close all the working joints also helped to stop the penetration of alkali vapours. In the coming years, trials are being planned to use either silicon carbide bricks or dense low cement castable in these areas.

Based on the last 18 yrs of operation and failure analysis, it was concluded that most of the frequent brick failures at the lower transition and upper transition zones were attributed to the mechanical stresses generated from the outlet and middle tyre sections unfortunately located in these areas. The following case studies of investigated brick samples taken from these locations reveal the strong relation of mechanical stresses to the rate of failures.

- High alumina brick failure
- Failure of premium grade MA spinel bricks
- Failure of magnesium chrome bricks

Remedies undertaken – Careful investigation and preventive measures were executed through a specialised company, mostly from the OEM service (namely the POLSCAN), once every 2 yrs. The following measurements were regularly undertaken, documented properly as records and corrective measures were implemented:

- Hot alignment of kiln axis by laser and adjustment of rollers.
- Measurement of roundness of supporting rollers and tyres and subsequent grinding of surface if required.

- Measurement and recording of foundation settlements.
- Ovality measurements of kiln sections near the tyres.
- Measurement of kiln shell deformations.
- Inspection of girth gear pinion assembly and measurement of back lash and root clearance.
- Measurement of kiln stresses and Hertz compression of kiln tyres and rollers.

All cement plants are forced to use their existing raw materials to prolong the existence of operation, and very few alternatives are available for plants such as Eastern Province Cement Co. which was the first in the region to reach this (run factor of 344 days) value during 2001, and may be one of the few worldwide who has reached similar bench marks. This achievement is due to an efficient operation crew coupled with the timely preventive maintenance and corrective measures implemented year after year to keep this target active.

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Fax: +44(0) 1252 718992

Email: mail@worldcement.com

Web: www.worldcement.com

MODELING AND SIMULATION OF LIMESTONE CALCINATION IN ROTARY KILNS PART 2: INDUSTRIAL ROTARY KILN

M. A. Martins, L.S. Oliveira, A. S. Franca, Department of Chemical Engineering, University Belo Horizonte, Belo Horizonte/Brazil

Part 1 of this paper presented a one-dimensional model for describing and simulating limestone calcination in rotary kilns: The model was successfully validated on a pilot rotary kiln by

comparing the simulation results with experimental data from the literature. Part 2 of the paper incorporates a flame model in the model presented in Part 1 so that the processes in industrial rotary kilns can be simulated. The flame model, which has already been validated by other researchers, is used successfully in this work for simulating the effects of some operating variables on the performance characteristics of the industrial calcination process.

Mathematical modeling

Combustion model for natural gas

Natural gas is often used as the primary energy source for the limestone calcination in industrial rotary kilns. A double coaxial-type burner which introduces the natural gas into the kiln, is normally used. The model used in this work considers that the combustion reactions are stoichiometric and no residual fuel remains past the flame section. It is also assumed that the combustion reactions occur without chemical dissociation or NO_x formation. Both the primary and secondary airflows are entrained into the flame and immediately mixed and burned with the natural gas.

Implementation

The mathematical model developed in Part 1 of this study, coupled with the flame model presented here, was then used for simulation of a typical rotary kiln. The bed depth was assumed to be constant along the rotary kiln. The industrial kiln uses a double coaxial type burner to burn natural gas.

The model for the limestone calcination in an industrial kiln comprises eight ordinary differential equations (ODE), corresponding to the mass and the

energy conservation equations and a large set of nonlinear algebraic equations. The dependent variables are the calcium carbonate mass fraction in the solid phase, the carbon dioxide mass fraction in the gas phase, and the temperatures of the solid and gas phases. The dependent variables also include the methane, ethane, water and oxygen mass fractions in the gas phase. The limestone feed composition was taken to be 98.6% calcium carbonate. The data listed typical values for rotary lime kilns of the type found in local industries in Brazil.

Simulation Studies

The model developed was verified in Part 1 of this study by comparing the simulation results with the experimental data presented for a pilot rotary kiln by Watkinson and Brimacombe. The aim of the simulation studies in this section is to include a validated model for determination of flame size in that model in order to evaluate the effect of certain variables on the general performance of an industrial rotary kiln.

Simulation studies into the control variables for kiln operation

The four control variables that affect the overall performance of a rotary kiln are the limestone feedrate, the speed of rotation, the fuel feedrate and the flame length. By controlling these variables the kiln operator is able to carry out stable lime production. Clearly, there are many other variables that affect the calcination process. These include the chemical composition and the granulometric distribution of the limestone feed, and the composition and calorific value of the fuel. These variables are usually not controllable. The stability of the production process

is heavily dependent on the correct choice of control variables. The flame length is adjusted by controlling the ratio of primary and secondary airflow. A study of the isolated effects of the control variables on the performance of the process was carried out in this work.

A steady-state one-dimensional model was developed to describe limestone calcination in a rotary kiln. The model provides a description of the calcination reaction kinetics, the heat and mass transfer phenomena between the solid bed and the gas phase, and the rheology of the bed. Simulation results permitted a detailed evaluation of the effects of changes in the operational variables on the performance of the rotary kiln and on the quality of the end product.

The results showed good agreement with experimental data reported in the literature. As the model was also validated by the experimental results measured in a pilot kiln, the model was used to simulate variations in the most important control variables of an industrial rotary kiln. The simulation results provided information which can be used in expert systems, in the design of rotary kilns and also in the analysis of operational conditions used in limestone calcination processes.

*Courtesy: ZKG International No.5
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Fax: +49(0) 6123700122
E mail: zkg@Bauerlag.de.*

MODEL PREDICTIVE CONTROL

Greg Martin and Steve Mc Garel

Expert system solutions for the cement industry have been around for 20 years but have not had unqualified acceptance. Cost versus benefit, systems fallen into disuse, the question of viability for mills,

and the inability to deal with process drift are generally cited as the reasons for widespread skepticism.

Automation using the powerful technique of model predictive control (MPC) has been used for the past 25 years in the oil refining, chemicals, polymers, power, and food industries, with more than 5,000 installations worldwide. In late 1999, it was implemented on a kiln/cooler and a product ball mill, and both installations were accepted as superior to their traditional expert system equivalents. In late 2000, a MPC application was implemented on a vertical mill with similar results; and in early 2001, another was implemented on a finishing mill producing several grades of cement daily.

MPC represents the process dynamics by step responses. Each step response is that of one controlled variable (CV) to a positive unit step in one manipulated variable (MV). These responses are determined by plant tests or engineered. The length of the model is such that the response settles at the new steady-state value.

This mathematical process is analogous to matrix inversion, as indicated by the matrix S . A properly implemented MPC application makes moves similar to an experienced operator. This is, when a new setpoint is entered, one or two large moves come out, and then the controller waits for the process to respond, possibly several control intervals, before a smaller corrective move is made.

Practically, MPC is the dual of an expert system. Almost every aspect is based on a different principle. More specifically:

- MPC uses a model of the process; an expert system uses a model of the operator.

- MPC is predictive; an expert system is algebraic
- MPC is closed-loop control; an expert system is open-loop control.
- MPC is algorithm-based an expert system is rules-based.
- MPC accepts setpoints for controlled variables; an expert system only accepts ranges for the controlled variables.
- MPC includes dynamics; an expert system does not.
- MPC is robust, which means inaccurate models have little impact on performance.

This last feature – robustness – is important because it means that process drift has little impact on closed-loop performance. There are many MPC applications that literally have been on-line continuously for 10 years without re-tuning.

There is one advantage that an expert system has, however. An expert system can be made fast under upset conditions, in that a large move can be put out to the process immediately. This is very important for major upsets such as a kiln “ring” or “coating drop.” For this reason, the forward chaining of expert systems has been added to MPC in the latest applications.

Courtesy: Cement Americas

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BELT CONVEYOR TRANSFERS – A BRIEF REVIEW

S.T. Huque and A. G. McLean

One of the most important areas of bulk solids handling is the efficient flow of materials at transfer points within the system. Bulk material transfer points are found in a wide range of industries, including

mining, mineral processing, chemical processing, thermal power plants and many others that deal with bulk solids.

This paper reviews the progress of conveyor-to-conveyor transfer technology. Many aspects of belt conveyor transfers, especially the various models and design methods available to calculate or predict the relevant parameters (eg material discharge velocities, materials trajectories, dynamics of material impact, air entrainment) are presented.

Many of the widely available methods for trajectory prediction are compared. Existing models that are inaccurate in predicting the relevant transfer point aspects, and areas where the available literature is insufficient are identified.

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Fax: 495323 96 97 96

E mail: ttp@transtech-online.com

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LOOK IN THE FLAME

David Hargreaves

Neural nets are now seen as taking a much more prominent role in process control optimisation. Add to this, the recent development of high speed digital image processing of the actual kiln flame, and you now have the building blocks of a new form of kiln control system which is now under development by a team of enthusiastic German engineers – under the company banner Powitec. In their view, detailed analysis of the visible dynamics of the actual main flame have led to some startling results which can correlate into realistic assessments of clinker composition and product quality. So far this new system is now under test in a number of German and Austrian cement works with recent trials

affirming most of initial findings that flame status dictates final cement quality. In essence, say Powitec, digitally monitor the flame in the visible spectrum, provide an intelligence for adaptive learning and standby for some rapid improvements in cement product quality, higher kiln availability, reduction in fuel consumption, greater use of secondary fuels plus some appreciable savings in production costs due to a more stabilised kiln operation.

Courtesy: International Cement Review,

July 2002 P43,

E-mail: info@CemNet.co.uk

Web site: CemNet.co.uk

PREHEATER IMPROVEMENT

Walter Kronawetter, PMT-Zyklontechnik GmbH, Austria

PMT- Zyklontechnik offers engineering for complete modification of preheater towers in order to reduce the pressure drop significantly, which in turn will increase clinker production or reduce energy costs. Waste fuel preparation plants and installation of chlorine by-pass systems are now providing technology for clients using alternative fuels. Together with its partners in combustion technology, PMT-Zyklontechnik has the availability to create the optimum solution in research, and as a result, the optimum preparation, feeding and burning during the clinker production process. This enables the customer to fall significantly below the official emission standards outlined by government regulations and allows its clients in the cement industry to use the maximum quantity of alternative fuels to reduce production costs.

The HURRICLON® is specially designed cyclone

separator with two dip tubes instead of one. One is situated at the top, as in common cyclones, and one at the bottom. With this doubled area for the clean gases, one can keep the velocity in the dip tubes low and therefore maintain a lower pressure drop.

Additionally, one HURRIVANE® unit is welded to each dip tube, which brings further pressure loss reduction. With this low pressure drop, it is possible to design a smaller outside diameter and reach higher velocities to increase the centrifugal forces, thus resulting in a better separation efficiency. Depending on the particle size distribution, gas quantity and dust load, the HURRICLON® is able to reach a separation efficiency of up to 99%. Compared to common cyclones the HURRICLON® requires less space, therefore the peripheral investment costs are also lower. With this reduced space requirement, it is possible to build a smaller HURRICLON®, or replace two existing cyclones with one HURRICLON® unit.

In the sintering zone of rotary kilns, parts of alkalis, sulphur and chlorine are liquid/gaseous. Above approximately 800 ° C alkalis, sulphur and chlorine start to volatilise. With the gas flow through the kiln, the volatile parts arrive at the cooler preheater, where they condense on the material. This mechanism is the start of recirculation. When diverting part of the gases through the by pass valve, by side-tracking part of the gases in the lowest part of cyclone stage IV riser duct, it is possible to reduce the circuit.

The increase in heat consumption caused by the bypass

operation amounts to 4 – 5 kcal/kg of clinker/1 vol % bypass. The kiln dust turned aside by the bypass valve amounts to approximately 0.1% per 1 vol% by-pass depending on the weight of the raw mix. The temperature of the bypass gases at the bypass valve is approximately 1100 ° C. The chemical/physical behaviour of alkalis, sulphur and chlorine requires the use of cold air for cooling the bypass gases to approximately 450 ° C. This cooling air will be pressed in a quenching chamber, with a fan driven by a speed controlled motor. The gases will be transported through a piping system to an existing/modified electrostatic precipitator in which the gases are dedusted. The gas transport is carried out by an existing/modified fan driven by a speed controlled motor after the electrostatic precipitator. The clean gases after the fan will be used for drying raw material or in a future extension for drying slag.

The materials that can be used in the WASTEPREP® process range from waste oil and solvents, contaminated wood, tyres, plastics and domestic waste to animal meal with calorific values of 2000 – 8000 kcal/kg. The preparation process includes every necessary step from the delivery of the raw alternative material to the burner, including storage, conveying, separating, shredding and dosing. The alternative fuels are brought into the kiln through the main burner, except prepared tyres and rubber, which are fed into the kiln entrance.

Courtesy: World Cement

June 2002, Pp 79-81.

Enquiry no: 20,

Fax: +44(0) 1252718992

Email: mail @ worldcement.com

Web: www.worldcement.com

QUENCHING A HOT TOPIC

Dr. Michael Clark

The Technical Forum receives questions every month concerning flames, fuels and combustion. Normally these questions are answered by emphasising the complexity of these issues and recommending that the advice of a specialist company is sought. Nevertheless, the questions keep coming. Why is this?

Courtesy: International Cement Review,

July 2002 P33,

E-mail: info@CemNet.co.uk

Web site: CemNet.co.uk

SUITABLE MAG-SPINEL BRICKS FOR THE UPPER TRANSITION ZONE OF ROTARY CEMENT KILNS

Magnesia Alumina Spinel Bricks are composed of dead burnt magnesia and different combination of sintered and fused magnesia alumina spinel. These bricks have high thermo mechanic properties like thermal shock, stability and elasticity. Magnesia alumina spinel bricks have high performance at upper transition zone of rotary kiln which has high percentage of alkalies compounds. It is important to choose refractory bricks for upper transition zone of cement rotary kiln after determination of alkali sulphate ratio (ASR) and shell deformation. SP 85 A and SP 90 A are new brick brand names for transition zone of cement rotary kiln which has high amount of alkalies compounds.

Courtesy: Cement and Concrete World,

May-Jun. 2002, P-49,

Fax: (90312) 2879272

E-mail: info@tcma.org.tr

SEEKING PERFECTION

(Orrie Fenn (Operations Director), PPC, Dr Tony Lange (MD), OPTIN & Johan Claasen (General Manager) Dwaalboom cement plant)

In 1999, Pretoria Portland Cement (PPC) introduced a new generation kiln cooler controller at its Dwaalboom cement plant. This controller differs from the well-established, rule-based controllers in that it is based primarily on Model Based Predictive Control technology. The controller provides optimal kiln/cooler control, improving not only the kiln's thermodynamic behaviour but clinker quality as well. The control philosophy employed is novel and has been patented. The controller has been operating successfully for more than two years contributing significantly to clinker quality and production improvements.

It was designed and installed in a collaborative effort between PPC and local experts in the field of control, MES and automation solutions. The strategy was that PPC's cement knowledge, together with externally available control and automation knowledge would facilitate the development of a truly new and innovative kiln cooler controller.

*Courtesy: International Cement Review, Aug. 2002 Pp 63- 68,
E-mail: info@CemNet.co.uk
Web site: CemNet.co.uk*

POSIMETRIC FEEDERS

*Pennsylvania Crusher Corporation
[E-mail bchase@penncrusher.com
Web: penncrusher.com]*

The company originally made its reputation based on the crushers and breakers they've built since 1905. "We produce more types and sizes of crushers and breakers than any other firm in the world" said

Chase, "but the company now offers the unique Posimetric feeder, a break-through in feeding technology that's been proven on the job. In fact, it's rapidly supplanting most older feeder technologies within the US and overseas.

The principle of the Posimetric feeder by using a small Plexiglas model which was open at both ends, and running a piston through it freely. "But fill this empty tube with a dry bulk solid, and it's then impossible to force piston through the tube. The material locks itself firmly against the tube walls, and that demonstrates the principle of operation that makes it so unique.... material bridging! In fact, if the material did not bridge, the feeder cold not feed." When the hollow tube was filled with material, the piston, in fact, would not budge.

Courtesy: Cement Americas

July/Aug. 2002, P 11,

Fax: 312726-4107/312-726-2574

E-mail: primediabusiness.com

Web: www.cementamericas.com

QUALITY AND STANDARD

WHAT IS DELAYED ETTRINGITE FORMATION AND HOW IT CAN BE PREVENTED?

Kshemendra Nath P., RMC Readymix India Ltd.

The damage to concrete caused due to delayed ettringite (calcium sulphoaluminate hydrate) formation (DEF) is assuming immense significance the world over. Damage in conjunction with ettringite formation in hardened concrete was first identified in heat-treated pre-cast concrete element, which during use had being exposed to open-air weathering with frequent wetting.

A characteristic feature of this type of damage is the conspicuous formation of ettringite in voids, cracks and the contact zone between the aggregates and the hardened cement paste without any external sulphate attack having taken place.

Delayed ettringite formation is caused by the heat-induced decomposition of ettringite formed during initial hydration of cement in concrete. With rise in temperature there is drop in the thermodynamics stability of ettringite and it transforms into mono-sulfates. The theoretical temperature for this transformation ranges between 70°C and 90°C. The ettringite decomposes at this temperature to form metastable monosulfates and sulfates. With subsequent cooling and in presence of water, this metastable compound reverts back to from expansive ettringite. Delayed ettringite formation can cause product cracking to suddenly start appearing many years after manufacture.

Courtesy: Materbuilder,

Apr.-May 02, P17.

Fax: 8529259

Email: dicomnet@vsnl.com

Web: www.masterbuilderindia.com

ONLINE MANAGEMENT

Victor Lanz, Analyser Systems (ASYS), USA

The development of new and cost saving quarry raw material management procedures driven by the availability of reliable and accurate real time elemental composition information, has been made possible by the use of so called prompt gamma neutron activation analysis (PGNAA) online analysers. The economic benefits derived from PGNAA are expected to lead to more widespread use of these belt mounted process control sensors, as well as better materials management strategies.

Previously, traditional limestone extraction in the quarry and its preparation for the cement plant, was often based on insufficient knowledge or no knowledge of the rock chemistry on a day-by-day basis.

Sampling efforts eventually resulted in the installation of costly, sophisticated and complex mechanical sampling stations, more or less automated, equipped with sample preparation machinery such as crushers, grinders and dryers.

With the advent of so called PGNA online analysers 17 yrs ago, prospects for effective quarry materials management decidedly took a turn for the better. The first generation of PGNA analysers had a vertical chute that somewhat restricted material flow, but for the first time it was possible to analyse the elemental composition of raw materials in real time, without the need to sample in most cases. The next generation of PGNA analysers eliminated the enclosed chute restriction and, for the first time, allowed the online analysis of the entire material stream carried on a conveyor belt without touching the material.

There remained one constraint in that the material bed height on the belt had to be more or less constant. This final obstacle to freedom from material flow constraints was overcome in late 2000, by ASYS, who introduced the automatic belt load compensation, making it possible for the first time to install the analyser directly at the mouth of a crusher regardless of the material profile. Thus, realtime, online analysis of entire bulk material streams, without flow constraints with respect to variability or maximum flow rate, became a reality. Today, more than

60 PGNA analysers are in operation, controlling or monitoring the chemical composition of preblending piles in cement plants around the world.

While satisfying the demand of high kiln feed quality is an overriding concern that is successfully being addressed by PGNA analysers installed between raw mix proportioning bins and raw mills, the analysers installed at crusher outlets also bring considerable benefits to quarry operations. Quarry managers now have real time visibility; a truckload can be analysed typically in 3-4 min. Many of these benefits, taken individually, are large enough to provide economic justification for PGNA. Taken in concert, they make for powerful arguments and compelling economics that are expected to drive the use of this technology in quarry operations at an accelerated pace.

Raw material sorting

Sorting limestone or other rock material enables the operator to stockpile various grades of materials of precise composition within a selectable range.

Raw material monitoring

The benefits include real time knowledge of composition of all materials for processing downstream and knowledge of the corresponding quarry sections by tracking dump truck movements. In many cases, this optimises quarry utilisation by reducing the use of scarce and maximising the use of abundant materials, thus extending quarry life.

Raw material blending into stockpiles

Benefits include optimal use of quarry materials and imported additives, by avoiding compositional overshoot and material waste for

corrections; a more complete knowledge of quarry chemistry; more consistent kiln feed, as small chemical variations on the stacker belt are eliminated by the pile's homogenising action and a reduced use of corrective materials.

Raw material monitoring/blending in remote quarries

A PGNA device in the quarry enables the operator to ship a product of consistent quality if he has corrective materials available. If he does not, he can at least ship a product of accurately known composition, enabling the plant to plan and optimise the requirements of final raw mix. Benefits include a reduction in the utilisation of corrective materials at the plant.

The availability of real time quarry material composition information has considerably improved the utilisation of raw material resources and the quality of the products blended from them. Whereas drill core sample analysers provide a global picture of quarry composition, PGNA is supplying minute-by-minute chemistry information, as materials are extracted from the quarry and processed into material blends of tightly controlled chemical specifications. Accurate and timely information on quarry material chemistry enables the operator to extend quarry life by optimising its use, and to provide the cement plant with controlled raw material quality of known composition. The results are better raw materials and reduced costs to produce them.

Courtesy: WorldCement

June 2002, Pp 57-59

Enquiry no: 10,

Fax: +44(0) 1252718992

Email: mail @ worldcement.com

Web: www.worldcement.com

INNOVATIVE LEVEL MEASUREMENT

*Dagmar O'Beirne and Willi Schrank.
Endress+Hauser GmbH+CO. KG.
Maulburg, Germany.*

No maintenance in ultrasonic measurement

A specially designed self-cleaning sensor diaphragm was developed for Endress+Hauser's Prosonic. Triggered by ultrasonic pulses, this particularly plane diaphragm start to vibrate. The constant movement and the smooth, Teflon-coated surface prevents buildup, thus ensuring absolutely reliable measurement, which covers the entire range of the silo. Furthermore, the sensor diaphragm is protected by a horn simultaneously amplifying the ultrasonic signals.

Reliable measurement with TDR

Ultrasonic sensors, which reliably measure up to a temperature of 150°C and are not destroyed by possible temperature fluctuations. The non-invasive measurement method is insensitive to changing product properties and, in addition, covers a measuring range of 70m.

Electromagnetic pulses with a high frequency are radiated on to the surface of a rope probe. The pulses follow the rope until they hit the surface of the medium and the signal is reflected. The distance between the process coupling (flange or thread) and the surface of the bulk solids can be determined by the time interval between the signal and the reflected pulse.

This measuring principle is extremely reliable and safe to use in powdery and fine-grained bulk solids. Even during filling, the equipment is not affected even by

extreme case of dust generation or noise.

The ultrasonic and guided microwave radar Time Domain Reflectometer (TDR) methods are particularly suited to continuous level measurement in dusty and granular solids. Both measuring principles have recently set new milestones and ideally complement each other in the cement industry. The maintenance free diaphragm of the ultrasonic sensor and the perfected rope construction in the case of TDR, ensure safe measurements for users.

Courtesy: World Cement Jun. 2002,

Pp 54-56, Enquiry No.9,

Fax: +44 (0) 1252718992

E-mail: mail@worldcement.com

Web: www.worldcement.com

CHARACTERISATION OF CEMENTITIOUS MATERIALS

Lafarge Research & Technical Centres

The proven advantages of X-ray diffraction in combination with Rietveld analysis have been extended to blast furnace slag and fly ash. These materials require the development of new solutions due to their high content of amorphous solution. This article describes the application of X-ray diffraction with Rietveld analysis to measure the amorphous content of slags and flyashes. The study was aimed at developing an easy-to-use quantification suitable for an industrial environment. This is Part III of reports first published in ICR January and June 2001.

Courtesy: International Cement Review,

July 2002 P47,

E-mail: info@CemNet.co.uk

Web site: CemNet.co.uk

SNAPSHOTS & FISHBONES

Dr. Michael Clark

Every month people ask the Technical Forum for advice because some part of the cement manufacturing process is being disturbed or interrupted. Currently there are a spate of these questions relating to (i) ring formations in the kiln inlet, (ii) brick infiltration and shell corrosion, (iii) snowman formation, and (iv) cement mill cooling and ventilation. We do our best answer these questions and give advice but there is always a need to study the underlying reasons for the problem on site. The complexities of these investigations are not to be underestimated and this month we describe a methodology of how to carry them out.

Defining the datasets is the first step, automatically recording the 'snap-shots' is the second step. The third step of these process investigations is conducting the analysis of the recorded 'snap-shots'.

With the assigned reasons for the disturbances an Ishikawa or 'fishbone' diagram can be built up. This allows cause and effect of the disturbances to be linked. The most frequent causes of disturbance can be identified and using the 80:20 rule efforts can be focused to eliminate the most common causes disturbance.

Courtesy: International Cement Review/

Aug. 2002, P 56,

Fax: +44(0) 1306 740660,

E-mail: info@CemNet.co.uk

Web: www.CemNet.com

DISTRIBUTED TRANSFORMER METERING WITH CENTRALIZED CONSUMER METERING TO REDUCE LOSSES IN THE L.T. DISTRIBUTION SYSTEM.

Vithal N. Kamat (*Proceedings International Conference on Energy Conservation, Audit & Metering, 24-25 January 02, Mumbai, pp. 161-169*)

The present energy audit scheme at the 11 kV feeder level is shown to be fraught with numerous disadvantages, the primary of which is its inability to provide a strategy for loss minimizing in the high loss feeders. So also, the existing distributed consumer metering system is known to provide ample scope for tamper of meters and pilferage of energy. This paper describes a fool-proof metering system that is highly resistant to tamper and enables the utilities to effectively curb losses in its LT distribution system.

*Courtesy: Water & Energy Abstracts, CBIP, Jan.-Mar.02, P 19.
Fax: 91-11-6116347
Email: cbip@nda.vsnl.net.in
Web: www.cbip.org*

AUTOMATIC METER READING (AMR) AND PREPAYMENT METERING SYSTEMS

P.D. Thakur, (*Proceedings International Conference on Energy Conservation, Audit & Metering, 24-25 Jan. 02, Mumbai, pp. 258-264*).

Today all over the world utilities are operating in a competitive and deregulated environment. "Metering" assumes

very critical importance in the entire reform process of utilities, in addressing the issues concerned with "revenue", "collection", "improved customer satisfaction" and "improved system performance". As the "energy business" is becoming more and more competitive day by day, the need to be able to communicate very effectively and more frequently with the "consumer" and "consumer meter" is becoming almost imperative. Perhaps this could be the most compelling reason for the utilities consider deployment of "AMR" and "prepayment" systems on a much serious note. The present day technological advancements in the fields of electronics, data processing, metering and communication have made it possible to offer 'state of art' AMR and prepayment system with a vast arrangement of features and at very affordable prices. An attempt is made in this paper to briefly summarise various AMR and prepayment technologies available today as well as the benefit they offer both to the utilities and consumers. Further a suggested approach in implementation of pilot and commercial projects deploying AMR and prepayment meters is briefly touched upon. Finally an overview of the "MSEB-AMR" Pilot project currently under implementation is described.

*Courtesy: Water & Energy Abstracts, CBIP, Jan.-Mar.02, P 16-17.
Fax: 91-11-6116347
Email: cbip@nda.vsnl.net.in
Web: www.cbip.org*

ADVANCEMENT IN METERING

Vikash Kashyap (*Proceedings International Conference on Energy*

Conservation, Audit & Metering, 24-25 Jan.02, Mumbai, pp. 251-257)

Ferraris Wheel meters have served the industry and the power utilities worldwide for over a hundred years. The changed information requirements of the Electricity producers, transmitters, sellers and consumers have lead to the adoption of the state-of-the art electronic meters in most countries across the world. In India, the wide acceptance of static metering technology was led by various utilities because of their requirement for sustained accuracy and tamper detection. Indian utilities are now fully convinced about the functionality and reliability of static meters and are now demanding advanced features to meet their information, planning, revenue protection requirements. Author has taken the sector wise emerging needs and how metering technology helps address these issues.

*Courtesy: Water & Energy Abstracts, CBIP, Jan.-Mar.02, P 17-21
Fax: 91-11-6116347
Email: cbip@nda.vsnl.net.in
Web: www.cbip.org*

IREDA CUTS INTEREST RATES FOR FINANCING SCHEMES FOR THE ENERGY EFFICIENCY AND CONSERVATION SECTOR

IREDA has decided to reduce interest rates applicable for the energy efficiency and conservation sector by 50 basis points for the financial year 2002-03. The new norms for financing are given below. Also see the table.

Concessions/Rebates and Special Provisions from IREDA

- Projects financed by IREDA

from the World Bank Line of Credit are likely to qualify for excise/custom duty exemptions as per a notification issued by the Government of India.

- Rebate of 1 per cent in interest rate for furnishing security of bank guarantee or

unconditional and irrevocable guarantee of All India Public Financial Institution with "AAA" or equivalent rating.

- Rebate of 0.5 per cent in interest rate for timely payment of interest and repayment of loan instalment.
- Special concessions for

entrepreneurs belonging to SC/ST, women, physically handicapped and ex-servicemen categories and those setting up projects in Northeastern states, Sikkim, Jammu & Kashmir, newly created states and islands, including estuaries and desert states.

Scheme	Rate of Interest (%) pa	Maximum Repayment Period Including Moratorium (Years)	Maximum Moratorium (Years)	Minimum Promoter's Contribution (%)	Maximum IREDA Loan (%)
A. PROJECT FINANCING (Including power projects based on waste heat recovery, DSM and ESCO)					
Commercial and Industrial sector	13.00	10	2	30	Up to 70% of total cost
Domestic sector	12.00	5	1	30	-do-
Agriculture sector	12.00	10	2	30	-do-
B. MANUFACTURING OF ENERGY EFFICIENCY EQUIPMENT/SYSTEMS					
All sectors	13.50	8	2	30	Up to 70% of total cost
C. EQUIPMENT FINANCING: Energy conservation/efficiency and equipment systems (including DSM)					
Commercial and Industrial sector	13.00	10	2	25	Up to 70% of total eligible equipment cost
Domestic sector	12.00	5	1	25	-do-
Agriculture sector	12.00	10	2	25	-do-

Courtesy: *The Bulletin on Energy Efficiency*, June 02, P 4.
Fax: 91-11-4682204

Email: efficiency@rediffmail.com
Web: www.renewingindia.org

BUREAU OF ENERGY EFFICIENCY

Given below is the Government of India notification dated April 26, 2002, on the appointment of the Governing Council Members of BEE

(To be published in Part II, Section 3, Sub-section (ii) of the Gazette of India)

Government of India
Ministry of Power

New Delhi, April 26, 2002

Notification

SO _____

In exercise of the powers conferred by sub-sections (1) and (2) of section 4 of the Energy Conservation Act, 2001(52 of 2001), the Central Government hereby establishes the Governing Council of the Bureau of Energy Efficiency (BEE) and appoints the following Members of the Governing Council of the said Bureau, namely:

Appointed under clauses (a) to (n) of sub-section (2) of section

1. The Ministry of Power		Ex-officio Chairperson
2. The Secretary to the Government of India, Ministry of Power, New Delhi		Ex-officio Member
3. The Secretary to the Government of India, Ministry of Petroleum and Natural Gas, New Delhi		Ex-officio Member
4. The Secretary to the Government of India, Ministry of Coal, New Delhi		Ex-officio Member
5. The Secretary to the Government of India, Ministry of Non-conventional Energy Sources, New Delhi		Ex-officio Member
6. The Secretary to the Government of India, Department of Atomic Energy, New Delhi		Ex-officio Member
7. The Secretary to the Government of India, Department of Consumer Affairs, New Delhi		Ex-officio Member
8. The Chairman, Central Electricity Authority		Ex-officio Member
9. The Director General, Central Power Research Institute, New Delhi		Ex-officio Member
10. Executive Director, Petroleum Conservation Research Association, New Delhi		Ex-officio Member
11. Chairman-cum-Managing Director, Central Mine Planning and Design Institute Limited, Ranchi		Ex-officio Member
12. Director General, Bureau of Indian Standards, New Delhi		Ex-officio Member
13. Director General, National Test House, Department of Supply, Ministry of Commerce and Industry, Kolkata		Ex-officio Member
14. Managing Director, Indian Renewable Energy Development Agency Limited, New Delhi		Ex-officio Member

Appointed under clause (o) of sub-section (2) of section 4

15. The Chairman, Northeastern Regional Electricity Board	Representing member of states of Northeastern region	Member
16. The Chairman, Eastern Regional Electricity Board	Representing member of states of Eastern region	Member
17. The Chairman, North Regional Electricity Board	Representing member of states of Northern region	Member
18. The Chairman, Western Regional Electricity Board	Representing member of states of Western region	Member
19. The Chairman, Southern Regional Electricity Board	Representing member of states of Southern region	Member

Appointed under clause (p) of sub-section (2) of section 4 for a period of three years with effect from the date they enter upon the office

20. Tarun Das, Director General, Confederation of Indian Industry, New Delhi	Representing industry	Member
21. Sunil Paresh More, Secretary General, Indian Electrical and Electronics Manufacturers' Association, Mumbai	Representing equipment and appliances manufacturers	Member
22. Shashi Prabhu, 12-A, Ameyanand, Kashinath Dhuru Road, Mumbai	Representing architects	Member
23. Ashish Kulkarni, Building 64/1496, MIG Colony, Adarsha Nagar, Worli, Mumbai	Representing consumers	Member

Appointed under clause (q) of sub-section (2) of section 4 for a period of three years from the date they enter upon the office

24.
25.

Appointed under clause (r) of sub-section (2) of section 4

26. Director General of Bureau	Ex-officio Member Secretary
--------------------------------	-----------------------------

Copy forwarded to:

All members of the Governing Council; PS to Minister of Power; PS to Minister of State for Power; PPS to Secy. (P)/PPS to SS (P)/PPS to AS (P); Chairman, CEA New Delhi; The Controller of Accounts, Ministry of Power; The Pay & Accounts Office, Ministry of Power, Sewa Bhawan, New Delhi; All officers/desk//sections/units in the Ministry of Power; All Public Sector Undertakings/Autonomous Bodies under the administrative control of the Ministry of Power; All State Electricity Boards; All Ministries/departments of the Government of India; Director General, BEE, New Delhi; Secretary, BEE, New Delhi.

Courtesy : S.S. Talwar, Deputy Secretary to the Government of India, Ministry of Power, Shram Shakti Bhawan.

*Courtesy : The Bulletin on Energy Efficiency,
June 02, P 4.
Fax: 91-11-4682204
Email: efficiency@rediffmail.com
Web: www.renewingindia.org*

CASE STUDY ON MANPOWER UTILISATION

*Sanwar M. Misra, J.K. Cement Works,
P.O. Nimbahera- 312617*

In a cement plant, having identified a higher manpower cost per ton of cement, through benchmarking, the management focussed attention on a systematic study, analysis and preparation of a proposal for downsizing.

In this context, highlights of the case are given as under.

Some of the important points of the study comprised the following:

- Organisation
- Allocation
- Job profile
- Work load

Organisation

Analysis of the organisation functions was carried out. It brought to light that in addition to the generally employed main functions e.g. finance, production and Q.C., maintenance (mechanical, electrical, instrumental, civil) human resources management, marketing and sales, materials management, administration, EDP (electronic data processing) some other sub-functions were separately employed, such as, training, insurance, dispatch which could have been merged—training with HRM, insurance with Finance, dispatch with Sales and so on. Creating redundant functions or sub-functions would consume extra resources, unless they justify the cost.

Hierarchy level in the organisation chart was scrutinised. Here, the criteria is that at each level, the contribution to value chain

of the product should justify the creation of the hierarchy level. Where the value addition is low or nil, that layer was eliminated.

Allocation of Manpower

- It was observed that four shift engineers were engaged, i.e. one in each shift of 8-hour duration and the fourth as reliever. As in the general shift, full maintenance staff is available, hence during the day shift the engineer was not required.
- Further, matching the skill to the job revealed that a job could be accomplished by a foreman where an engineer was employed.
- By employing multi-skill training, the operation staff could work for maintenance jobs, thus the manpower was reduced in the limestone crushing department.

Job Profile

Core functional activities done daily and occasionally, together with supporting operations, were prepared for each employee and a sample profile drawn for the job title, Supervisor – Accounts.

Analysis

Supervisor-Accounts working 70 per cent of the time for the core activity and 30 per cent of the time for insurance and dues recovery operations which form the supporting and non-core activity. After all the employees are studied, non-core operations may be combined and outsourced or distributed to other staff who are carrying out similar operations, and are less loaded.

Work Load

Based on the job profile for each activity, time estimates were prepared in order to determine the overall work load level.

These work load figures were later confirmed by Work Sampling Study. A total of 75 employees were studied and the results tabulated and projected in the work load distribution curve.

Study Findings

Present work-load study makes an attempt to differentiate these categories. Top performers fall in the category of over-70-percent work-load, which means working over 5.6 hours/day to a maximum of 6.4 hours/day. Maximum work-load recorded 80 per cent, hence 1.6 hours/day are still available. They are followed by the normal working level staff with a work-load of 57 to 70 percent, i.e. working for 4.6 to 5.6 hours/day. Lastly, there are the poor performers having a work-load of less than 57 percent i.e. less than 4.0 hours per day. Here, an exception may be considered for those who are required on a statutory basis.

Conclusions

- Discretion of the management shall be final regarding the cut-off point or fixing up of the normal work-load level on the classification curve.
- In addition to the work-load estimate, there can be several other considerations where the management reserves the right to take a decision.
- As a result of the study, it became clear to reduce the employee strength by at least 20%.

*Courtesy : Indian Cement Review,
Jul 02, Pp. 18-19
Tel: 022-2976918;
Fax: 022-2072102*

PLUGGING IN TO DIGITAL DETONATION

Russell A. Carter

It's hard to argue with the old blaster's axiom that "explosives are the most powerful tool in the quarry." Producers who properly apply explosives, generally reap subsequent benefits at many points downstream in the production process. Misapply them, and problems can emerge faster than flyrock from a faulty shot.

But, like comedian Rodney Dangerfield, mining's most powerful tool often gets no respect. Or so attendees at the recent International Society of Explosives Engineers' 28th Annual Conference on Explosives and Blasting Techniques were told. Despite the potential payoff, rising economic, regulatory and environmental pressures have some quarry managers viewing blasting as a costly but necessary evil.

The four-day conference offered a potent charge of information about emerging technologies and methods, ranging from the advantages of digital electronic blasting systems to the thorny problem of handling and solving quarry-neighbour complaints about blast noise and vibration. The conference also hit safety issues involving unexpected detonation of shock-tube fuses and emulsion-pump explosions.

Precision from Electronics

Combining electronic blast sequencing and initiation systems, 3 - D laser profiling of highwall faces, and GPS- based drill positioning and monitoring capabilities provide blasters with an unprecedented degree of precision

in blast planning and execution.

The evolution of electronic blasting means that blast designs no longer are constrained by fixed delay times, explains Andrew G. Stirling, Orica USA Inc. "Electronic detonators can be programmed with unique delay times that are best suited to site-specific conditions and to the desired blast results," he says. "The ability to change blast designs on the fly gives flexibility should a hole or deck be lost during loading operations, or if the shot direction needs to be changed."

Courtesy: Rock Products

May 2002, Pp 28-29,

Fax: 312 / 726-2574/726-4107

Web: www.rockproducts.com

THE EFFECTS OF CO₂ EMISSIONS TRADING ON ENERGY-INTENSIVE SECTORS OF INDUSTRY

V. Hoenig, M. Schneider, Dusseldorf Germany

The 1997 Kyoto Protocol first established reduction commitments binding in international law for the signatory states. In addition to project-related flexible mechanisms such as Joint Implementation (JI) and Clean Development Mechanisms (CDM), there was provision for a part of these reduction commitments to be satisfied by trading of emissions certificates. The Bonn conference of the Parties in spring 2001 decided to permit emissions trading at corporate level too. The European Commission submitted a draft Directive for an emissions trading scheme in October 2001 for implementation in Europe, in which selected energy-intensive industries are to participate from 2005. The

introduction of such a trading scheme would have far-reaching effects on the industries concerned. This applies in particular to manufacturing industries with high CO₂ intensity and low value added. This includes the cement industry.

Voluntary agreement at industry level such as exist in Germany are advantageous to energy-intensive industries, because they provide great flexibility in selecting measures to reduce CO₂. It is not feasible for such industry-wide agreements to be compatible with emissions trading that operates only at corporate level.

For many energy-intensive industries, the European Commission's estimated average price level of 20 to 30 EUR per tonne of CO₂ relates to a contribution margin of comparable value. The introduction of pan-European trading in CO₂ emissions rights as proposed by the EU Commission would therefore seriously affect energy-intensive industries. Buying emissions certificates will significantly increase production costs in some parts of these industries. If the cement industry has to buy all its emissions certificates, production costs will roughly double. This will distort competition to the extent of closing down production in Europe. The reason for this is principally the high prices anticipated for CO₂ emissions rights.

Producing cement in Germany involves emissions of approximately 0.7 t CO₂ per tonne, and the value added roughly corresponds to the proceeds from selling the associated emissions shares. Even if the emissions

reductions targets could be achieved without buying in certificates, it would be much more lucrative for cement companies to sell the emissions certificates than to manufacture cement. An emissions trading system as currently proposed by the EU Commission would result in a European cement industry having to reduce production at its domestic locations. Demand for cement can be covered by the world market; there is sufficient excess capacity now available worldwide.

Relocating production would mean more imports into Europe, involving higher transport-related CO₂ emissions. Emissions trading would thus jeopardize European production facilities, with the associated negative economic and social effects, but without achieving any global ecological effect.

Courtesy: ZKG International

No.5/2002, Pp 64-73,

Fax: +49 (0) 6123700122

E-mail: zkg@Bauverlag.

ENERGY EFFICIENCY AND BUILDING CONSTRUCTION IN INDIA

[108]

Tiwari P. 2001 Building and Environment 36 (10): 1127-1135

A comprehensive optimization model for energy accounting in house construction in

India has been developed in this paper. The main concern of the paper is energy consumption in building construction in India. The techniques of construction evaluated are commonly used pucca techniques as well as low-cost construction techniques. An assessment of the magnitude of energy consumption, if housing shortages have to be met, shows that a huge amount of energy would be consumed in the housing sector alone. The associated levels of carbon dioxide emissions associated with this construction would also be prohibitively high. Finally, the paper concludes with recommendations for structural changes in the energy and construction policy in India to minimize energy consumption in building construction. (3 figures, 7 tables, 11 references)

Courtesy: TIDEE, Mar. 2002, P 48,

Fax: 91 11 4682144,

e-mail: outreach@teri.res.in

Web: www.teriin.org

PRIVATE COAL WASHERIES TO MAKE IMPACT SOON

The Hindu Business Line, Kolkata, 09.8.2002

The presence of the private sector in the coal washing business is expected to be felt shortly with two new coal washeries at Talcher

coalfields in Orissa promoted by private investors getting ready to begin commercial production within a month or so.

Both the washeries will have an initial capacity to wash one million tonnes of raw non-coking coal per annum. Informed sources reveal that one washery is being promoted by a Delhi-based company, Global Coal, in technical collaboration with a Chinese company.

This washery is using for the first time in the country 'dry process' to wash non-coking coal in pulverized form.

The other washery, which is to introduce the conventional wet process, is being promoted by the city-based Naresh Kumar & Company in association with the Aryan Coal of Delhi.

Though the technologies being used may vary, both the washeries have a common goal, namely, to sell washed coal to bulk consumers, particularly to thermal power stations.

Both the washeries are reported to have entered into an agreement with a Thapar group company to sell their washed coal.

Courtesy: Cement News Digest,

01-09Aug. 2002, Pp16 &15

Fax: 022-2040582

E-mail:cmabb@bom3vsnl.net.in

Web: www.cmaindia.org

CONTROLLED COMBUSTION

Max H. Vaccaro, Pillard, E.G.C.I.

The operating principle behind low NO_x burners is stepwise combustion, which delays the mixing and input of fuel and air at appropriate stages in order to achieve a controlled combustion process. This results in a fuel-rich flame core and lower peak temperatures. Extensive experience relating to low NO_x burners has been made available since the early 1970s from boiler furnace engineering.

The first Pillard ROTAFLAM burner developed to significantly reduce NO_x formation was installed in a German cement plant in 1989 and showed significantly reduced NO_x emissions and initiated the path for further development.

In 1996, the European Community financed a research programme, handled by the largest Italian cement producer, entitled "NO_x emissions from Cement Manufacture and Evaluation of Various Possibilities for NO_x reduction in the Cement Industry". A series of tests were performed in a cement plant, the aim of which was to demonstrate the potential reduction in NO_x emissions through the optimisation of the main kiln burner design, without affecting clinker quality and production output, but without increasing other pollutant emissions.

For this purpose, a ROTAFLAM low NO_x burner was tested in the Sarche plant. The plant has a 700 tpd Lepol grate cement

kiln, and was originally equipped with an indirect-fired mono channel type burner firing 100% of the total combustion air required (stoichiometric basis). The ROTAFLAM low NO_x burner design was installed to replace the mono channel burner and was commissioned in March 1996.

First it was demonstrated that by design itself, the ROTAFLAM low NO_x kiln burner clearly reduces NO_x emission when compared to a mono channel burner while keeping CO and SO₂ levels to a minimum. Secondly, the influence of primary air on NO_x generation has also been investigated, showing that the reduction in primary air positively influences NO_x emission. However primary air reduction should be kept within certain limits in order to maintain a good and stable kiln operation, especially in the case of using high sulphur and low volatile content pulverised fuel such as petcoke. Lastly, the geometrical feature of the burner is of extreme importance in order to avoid plugging problems that would eventually result in reduced performances.

With a few modifications to the coal milling circuit, it is possible to convert the firing system to semi direct i.e. by adding a cyclone on the primary air stream coming from the coal mill and redirecting this primary air to a ROTAFLAM low NO_x type burner. In this case, the primary air to the burner is indeed higher than with indirect firing, however the effect of flame stability, and combustion staging, as

demonstrated before, may effectively contribute to a reduction in NO_x emissions. This type of semi-direct firing system was commissioned by Pillard in 2001, on two long wet kilns at the Logansport plant in Indiana, US.

Experience gained from the Logansport project has led to a new generation of semi-direct firing systems called the DIRECTFLAM system, which aims to reduce NO_x by installing a ROTAFLAM low NO_x kiln burner design and additionally by reducing the primary air inside the main flame core (Pillard US patent no: 6293208)

In this type of semi-direct firing system, the primary air going into the main flame is limited to the amount necessary to provide the required momentum for flame control. The excess primary air, i.e. that which is not necessary for flame control, is evacuated inside the kiln hood before the burner tip by means of an additional channel surrounding the ROTAFLAM burner. In this way, the excess primary air does not enter the main flame which can now fire with a lower amount of primary air leading to reduced NO_x emissions.

Experience and research in the field of NO_x reduction from the kiln burner standpoint is progressing. In partnership with Italcementi a new campaign of tests will be performed shortly in Europe with the goal of looking at additional design features to further reduce NO_x from the current levels obtainable today with a ROTAFLAM low-NO_x type-burner while maintaining or

improving clinker quality and production performance.

Courtesy: WorldCement,

Jul 02, Pp. 87-94,

Enquiry no. 4

Fax: +44(0) 1252 718992

Email: mail@worldcement.com

Web: www.worldcement.com

CLEANING TO A "SHINE"

Jeob Sondergaard, FLS Mill, Denmark

The close proximity to the city of Kuala Lumpur, also made Rawang plant necessary to improve the air quality to exceed modern standards. The main source of emissions was the single preheater kiln stack, which is tall and clearly visible from afar. For many years, an extreme emission level could be seen in the sky above the plant, visually announcing that the kiln was operating. In 1992, FLS miljo was invited to investigate what measures would be required to reduce the emission level from the kiln, and it was decided to install a new ESP in parallel with the original installation. Consequently, the combined emission was reduced to 40 mg/Nm³, and was therefore no longer visible.

The owner of the Rawang plant (formerly Blue Circle Cement, now Lafarge) decided that a fabric filter would be the most advantageous long-term solution to solve the emission problem. Among many competitors, FLS miljo was awarded the turnkey contract at the end of 2000.

The main sizing criteria was a gas flow of 270 000 /Nm³/hr at 350°C to the inlet of the dedusting system. At the same time, low-temperature filter bags should be used, whereas the temperature to

the fabric filter was not allowed to exceed 120°C. This task required efficient temperature control of the gases, which can be carried out in a number of ways: by water injection in the cooler or in the ducting system, by bleeding in cold air or by an air-to-air heat exchanger.

The polyester fabric media at Rawang is protected during normal operation by the heat exchanger. The heat exchanger is resistant to temperatures of 600°C, and is able to successfully reduce the temperature before the filter to 120°C. A damper is installed before the heat exchanger, which opens in the event of an emergency situation, whereas ambient air is used to keep the temperature below the designed maximum for the system.

The FLS miljo fabric filter at Rawang is a modern type jet pulse filter with six individual compartments and 2592 filter bags, each filter bag being 6 m long. The fabric filter is designed to allow maintenance or bag replacement during operation.

At the test facility in England, FLS miljo continuously strives to improve gas/dust distribution, which is a key parameter in the FabriClean filter design. The company acknowledges the extreme importance of proper distribution of both dust and gases to successfully reduce air and power consumption and extend bag life.

The maximum temperature to the fabric filter of 120°C allows Rawang to use low-priced polyester bags without jeopardising production. The designed air-to-air ratio is 1.05 m/min during normal operation, and 1.22 m/min with one compartment temporarily sealed off for maintenance. The air-to-cloth

ratio describes the relationship between the gas volume and the installed cloth area.

FabriClean filters have a rigid cage support with 360° contact with the tube sheet, which is stiffened to prevent distortion; this is another feature that allows longer filter bags to be used.

The SmartPulse Controller does not only minimise air consumption, but as each bag is cleaned less often at a lower pressure, the lifetime of the filter bag is also extended. The controller also features offline cleaning, in which case the outlet dampers are closed to isolate the particular compartment from the gas flow while a cleaning cycle is initiated.

The ID fan is a standard FLS-type fan, with a frequency controlled motor. FLS fans are low speed and sturdily designed and do not have to be insulated for sound protection, due to the rather low speed. The fan has an impeller diameter of a little over 3 m and a maximum speed of 534 rpm, which yields an efficiency of 78.5%. Fans with higher efficiencies may be purchased in the market; however they are often more expensive, as they must be tailor-made to the particular application in order to achieve high efficiency.

The Rawang plant chose to purchase the bag filter system on a turnkey basis, and FLS miljo was obliged to complete the entire installation within 12 months of the receipt of order. The company is confident it will operate at a far lower emission than the guaranteed 20 mg/Nm³. With low emission levels now from both the preheater kiln and the clinker cooler, the Rawang plant is without doubt a

worthy neighbour to the shining new Kuala Lumpur.

Courtesy: World Cement,

Jul 02, Pp. 77-81,

Enquiry no. 2

Fax: +44(0) 1252 718992

Email: mail@worldcement.com

Web: www.worldcement.com

CENTRE TO TIGHTEN EMISSION NORMS

Shubhjit Roy, The T OI,

27.Jun. 2002.

The Union Ministry for Road Transport and Highways has okayed the Environment Ministry's proposal to raise the standards for checking vehicular emission. The new norms are likely to be notified soon. This move comes close on the heels of the Delhi State Government's drive to scrutinize PUC (pollution under control) certificates, scheduled to begin from 1 July. The Road Transport Ministry would now amend the *Central Motor Vehicle Act's* Rule 115 and include testing of hydrocarbons. At present, pollution checking centres record only carbon monoxide levels. The proposed carbon monoxide levels are also going to be much higher than the current standards.

Courtesy: Teri Newswire,

16-30 June 2002, P21,

Fax: 91 11 4682144

E-mail: outreach@teri.res.in

Web: www.teriin.org

DUSTLESS TRANSFER® OF BULK SOLIDS

Darren H. Wood, USA

Dustless Transfer® is a straight-forward technology for controlling fugitive dust emissions from bulk solids handling operations. It recirculates the induced airflow from the 'take away' conveyor back to the head of

the 'feed' conveyor, which passively controls the flow of dust-laden air. As compared to conventional bag-house or suppression systems, the passive system controls fugitive dust in transfer operations to at least equal and sometimes greater levels.

The primary dust generating mechanism in the transfer of bulk materials is from air induced to flow with falling or projected material. The bulk material creates a frictional drag on the air around it and induces air to flow in its wake. When the falling or projected material comes to rest (on the conveyor or other equipment below), the induced air pressurizes the material handling enclosure and flows out the end of the chute or other leaks under the skirt of tail seal. The escaping air entrains free particulates becoming dustladen. A second dust generating mechanism occurs when dust-laden air is mechanically pushed from under skirting by the flexing of the conveyor belt between support points (idlers) as a result of material impact.

The Dustless Transfer® relieves pressure generated by induced airflow in the load zone of the belt conveyor by providing a low-resistance recirculation path. The air is recirculated from the load zone back to the source (head pulley), which results in internal recirculation of air instead of a net outflow of air from the enclosure. If no air escapes the enclosure, then no dust escapes the enclosure either. The increasing concentration of dust particles inside the recirculation chamber and properly engineered air velocities cause agglomeration from particle collision and settling. The agglomerated dust falls back on to the loaded conveyor and settles into the voids.

The more complex and energy involved in the material transfer, the greater the engineering and design changes required to properly control material and dust-laden airflow. The technology can be successfully applied as a partial Dustless Transfer® when physical constraints do not allow installation of a full recirculation chamber. The technology can also be utilized to supplement or reduce collection air requirements for active dust collection systems, when the Dustless Transfer® alone is not sufficient for dust control.

The Dustless Transfer® is a proven, alternate technology for controlling fugitive dust in conveyor-to-conveyor transfers. It is an effective tool in the available arsenal of dust control measures, when designed and applied properly. The passive system relies on design of a low-resistance recirculation pathway to allow internal recirculation of the induced airflow. The most difficult part of the design is calculating the required induced airflow and adequate designing to accommodate this airflow. Maintenance of sealing components is important to maintain long-term, trouble-free dust control.

The Dustless Transfer® is best suited for conveyor-to-conveyor transfers with reasonable fall heights and enclosures that can be tightly sealed. Partial installations of the technology have resulted in reduction in airborne dust from unacceptably high levels to less than 25% of the respirable dust limit.

Courtesy: Bulk solids handling,

Vol. 22, May-Jun. 2002,

Pp222-223,

Fax: 495323 96 97 96

E mail: ttp@transtech-online.com

Web: www.transtech-online.com

REDUCING POLLUTION FROM FOSSIL FUEL

The Hindu 21 February 2002

Two new clean-up techniques may help to reduce the pollution from burning fossil fuels. Chemists in Germany have used a green solvent to remove sulphur from diesel, while biologists in the US have bred bacteria that gobble up coal contaminants. When oil and coal burn, sulphur contained in them forms the acidic gas sulphur dioxide. This creates acid rain and corrodes fuel-burning equipment. Fossil fuels are now treated with water to strip them of sulphur (a catalyst combines hydrogen with the sulphur, producing H₂S gas). But this can be expensive and leaves residual sulphur, so many power stations still need to scrub their exhaust gases. Andreas Jess and colleagues at the Rheinisch-Westfälische Technische removed sulphur from diesel. Their method is eco-friendly and removes some of the most recalcitrant sulphur compounds. They use an ionic liquid. These liquids are salts that melt at temperatures below 100 °C. They do not give off noxious fumes and dissolve many organic compounds. Jess and colleagues

identified ionic liquids that react with the sulphur-containing compounds in diesel, but not with the fuel itself. So when the two are mixed they separate like oil and water, while chemical reactions draw the sulphur compounds from the diesel into the ionic liquid. On an industrial scale, sulphur-laden ionic liquid could be cleaned and recycled for subsequent extraction steps. The whole process could run at temperatures and pressures that are much lower than those used for the traditional water treatment. Exposing bacteria to such increasingly harsh conditions, the duo identified strains that could survive at high pressure, acidity, and concentrations of toxic metals and at temperatures up to 85 °C, while digesting coal slurry.

NEW TECHNOLOGY DEVELOPED FOR CLEANING POWER PLANT

Green Business Opportunities 2002 8(1) : 18

A new technology that cleans the emissions from coal-fired power plants can perform the task more efficiently and cheaply than is now possible. According to the Ohio

University sources, the technology is an improvement over the electrostatic precipitator that is currently used for cleaning smokestacks emissions. The current design uses steel plates to attract dust particles from the combustion gases before they can enter the environment. This fly ash must be removed from the exhaust prior to release into the environment because of the contaminants it carries. On the other hand, the new technology uses one to three millimeter thick membranes woven from carbon, silicon, and similar fiber-based materials to capture the fine air pollutants and toxic heavy metals. Because of the materials used in their manufacture, the new membranes are not only more efficient than the steel plate type but less expensive, 10 to 20 times lighter and not susceptible to corrosion. Although the main purpose of this technology is to reduce emission from coal fired power plants, the technology could be used for any industry that emits fine air pollutants or trace heavy metals.

Courtesy : TIDEE, Mar. 2002,

Pp 99, 100 & 101

Fax: 91 11 4682144;

E-mail: outreach@teri.res.in

Web: www.teriin.org

WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT (WSSD) IN JOHANNESBURG

The 55th General Assembly Session decided in December 2000 that the Commission on Sustainable Development would serve as the central organizing body for the 2002 World Summit on Sustainable Development. WSSD is scheduled to be held from 26 August to 4 September, 2002 at Johannesburg in South Africa.

The General Assembly also decided that the Commission on Sustainable Development (CSD) would serve as the central organizing body for the Summit and co-ordinate a comprehensive 10-year review of progress achieved in the implementation of Agenda 21.

World governments, concerned citizens, UN agencies, multilateral financial institutions, and other major groups are expected to participate and assess global change since the United Nations Conference on Environment and Development (UNCED) in 1992.

Johannesburg Summit 2002 is an attempt to find answers to a few of the questions like:

What accomplishments have been made since 1992? How have participating countries been implementing Agenda 21? Have they adopted the National Sustainable Development Strategies as they agreed they would by 2002? Have they ratified the conventions they agreed to since 1992? What obstacles have they encountered? What lessons have they learnt about what works and what does not work? What new issues have emerged to change the situation? What mid-course corrections need

to be made to reach the goals? Where should we focus further efforts?

Courtesy: Green Business Opportunities,

Apr-Jun. 02, P 38.

Fax: 468 2229

Email: shikharjain@ciionline.com

JAPAN ACTS ON KYOTO PLEDGE

In a bid to meet carbon dioxide emission targets under the Kyoto Protocol, Japan has taken up a project to repair thermal power plants in Kazakhstan. This is Japan's first agreement under the clean development mechanisms (CDM) within the Kyoto Protocol. CDM allows industrialised nations to invest in environment-friendly energy projects sited in developing countries. As a part of the swap deal, developed countries get clean air credits.

New Energy and Industrial Technology Development Organisation (NEDO), a semi-governmental organisation under the Japanese ministry has inked the pact with Kazakhstan. This agreement will help reduce 62,000 tonnes of carbon dioxide emissions from these plants.

Under the protocol, industrialised nations must cut emissions of greenhouse gases (GHG) by an average of five per cent from 2008 to 2012 as compared to the 1990 levels. Japan pledged to reduce its emissions by six per cent. But as Japan accounted for nearly 8.5 percent of the total global emissions of GHG in 1990, the Kazakhstan agreement would only contribute a small share towards this percentage.

Courtesy: Down to Earth,

Aug 15, 02, P-25.

Fax: 91-11-6085879

Email: cse@cseindia.org

Web: www.cseindia.org

ENVIRONMENTALLY HARMLESS BIODEGRADABLE GREASES

S. Mahanti, (Journal Technology Trends (Electrama-2002 Special), Vol.2, No. 12, December 2001, pp. 53-56

Environmentally friendly lubricants including greases are relatively a new development. There is still some controversy over what makes a lubricant environmentally friendly. Nevertheless, it has been possible to design products meeting almost all performance criteria and at the same time having low environmental impact. In this era of increasing environmental awareness, Biodegradable Lubricating Greases are becoming more and more relevant to the Lubricant Manufactures and users.

Courtesy Water & Energy Abstracts, CBIP, Jan.-Mar.02, P 19.

Fax: 91-11-6116347

Email: cbip@nda.vsnl.net.in

Web: www.cbip.org

THE FLYASH BURDEN

Anand Srivastava

The Notification

- By September 2002, all old coal or lignite-based power plants to ensure 20 per cent utilisation of fly ash. New ones to ensure 30 per cent utilisation.
- Use 25 per cent flyash in bricks and blocks made close to power thermal plants.
- Flyash to be made available for free.

- Within fifteen years from 1999 achieve 100 per cent flyash utilisation.
- Central and state government agencies, state electricity boards and thermal power plants to provide facilities and access for flyash users.
- Manufacture of ash-based products or use of flyash in construction activities in accordance with standards and specifications laid down by concerned agencies.

Currently, 90 million tonnes of flyash is being generated annually in India. With a planned increase in coal-based power plants in coming years, this figure is expected to reach 200 million by 2012. Already 65,000 acres of land is used as ash ponds – land where fly ash is dumped by thermal power plants.

A fly ash utilisation estimate says that only about 12 million tones or 13 per cent of the flyash generated is being utilised in India. The potential use, in comparison, is quite high. Though the situation is far better than in the 1980s when the utilisation was as low as three percent.

The power plants, the flyash contractors and users do not take on the problem in a cohesive fashion.

Ash Utilisation Division of NTPC claims that the target set under the notification will be achieved, but has no plans to share. The Renu Power plant at Renuagar, Uttar Pradesh, privately owned by the Aditya Birla group, with daily ash production of around 5,000 tonnes and NTPC, Shaktinagar with about 8,000-9,000 tonnes per day production also claim that the 20-percent target will be achieved by September 2002. But like their counterparts, cannot explain how they will do it.

*Courtesy: Down to Earth,
July 15, 2002, Pp23-24,
Fax: 91-11- 6085879.*

*E-mail: cse@cseindia.org
Web: www.cseindia.org*

GREATER AWARENESS NEEDED ON CLIMATE CHANGE: BAALU

The Hindu, 14 July 2002

The COP-8 Eighth Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change will be held in New Delhi later this year. Stating this at a seminar, the Union Environment and Forests Minister, Mr. T. R. Baalu, said the meet, to be held during 23 October – 1 November 2002, would be attended by environment ministers, top officials, and non-governmental organisations from the world over. 'It will be an important event in carrying forward the Convention process,' he said. Mr. Baalu was inaugurating a seminar on Climate change and industry: Issues and opportunities, organised by the FICCI, the TERI, and the Union Ministry of Environment and Forests. Pointing out that the Convention, adopted in 1992, was a global effort to stabilize GHG (greenhouse gas) concentrations in the atmosphere at safer levels, Mr. Baalu said, industry had a very important stake in climate change as about one-half of the global GHG emissions were contributed by it. Mr. C. Dasgupta, Distinguished Fellow at TERI and former Indian envoy to China, said climate change posed challenges and opportunities for the Indian industry. The country could make a contribution by implementing projects and measures that moderated carbon emissions and could also be independently justified in terms of their economic or environmental benefits. The Union Environment and Forests Secretary, Mr. P. V. Jayakrishnan, said technology upgradation, renovation, and modernization were the critical elements to bring down GHG emissions and the Indian industry could achieve them through exchange of information. Investment could be attracted for

appropriate technologies. Hinting that there was still scope for re-entry of the US into the Kyoto Protocol on Climate Change, Mr. Vijai Sharma, former Joint Secretary in the Union Ministry, said the Berlin Mandate and Marrakesh Accord too provided space for this possibility.

*Courtesy: Teri Newswire,
1-15 July 2002, P30,
Fax: 91 11 4682144*

*E-mail: outreach@teri.res.in
Web: www.teriin.org*

KYOTO PROTOCOL AND EMISSION TRADING: DOES THE US MAKE A DIFFERENCE?

[207]

*Ciorba U, Lanza A, and Paull F. 2001
Climate Change Modelling and Policy
90.2001: 19 pp.*

The paper focusses on emission trading and different scenarios are presented that correspond to participants in the market as well as the domestic no-trade solution. For each scenario the market price as well as total abatement costs for each country is indicated. While the Kyoto Protocol considers six different GHGs, this paper is limited to the most relevant, i.e. CO₂. It is worth pointing out that not all the countries that signed the Kyoto Protocol are considered in this paper, principally due to a lack of data. However, less than 3% of Annexe I emissions is not included in this study. Current literature focusses on the economic implications for large aggregation of countries. The European Union, in particular, is considered as a single area, even though structural differences persist within the region. However, it is worth underlining that aggregation of countries is largely driven by different modelling approaches. For example Computable General Equilibrium Models, that require a large quantity of information, generally do not

adopt a country-by-country approach. (9 tables, 25 references)

THE ADDITIONALITY CRITERION FOR IDENTIFYING CDM PROJECTS UNDER THE KYOTO PROTOCOL

[211]

Shrestha R. M. and Timilsina G.R. 2001

Energy Policy 30(1): 73-79

The CDM under the Kyoto Protocol is envisioned as a vehicle to encourage developing countries to participate in GHG mitigation efforts. However, a number of issues related to the CDM are yet to be resolved. One such issue is related to the additionality criterion for identifying the CDM projects. This paper argues that while an application of purely economic additionality criterion is essential to ensure the real and long-term mitigation of global GHG emissions, it could also limit the scope of the CDM as an effective vehicle for GHG mitigation. It would therefore be desirable, under some conditions, to include in the CDM, the GHG mitigation projects that are economically attractive but are not implemented due to lack of capital resources. The paper also highlights the need for applying the additionality criterion for assessing candidate CDM projects, especially in the power sector, on the basis of their effects on overall programme or sectoral level GHG mitigation. (1 figure, 2 tables, 29 references)

Courtesy: *TIDEE*, Mar. 2002,

Pp. 162 & 164,

Fax: 91 11 4682144;

E-mail: outreach@teri.res.in

Web: www.teriin.org

ENVIRONMENTAL SERVICES FOR THE CORPORATE SECTOR

TERI Team

Environmental leadership has

become an integral component of corporate leadership as have financial excellence and shareholder satisfaction. Moreover, pressure is mounting on the industry from several quarters to achieve environmental excellence. The government is tightening regulations and their enforcement. Communities and NGOs are better informed and organized than ever before, and demand environmental excellence. Financial institutions are increasingly looking at environmental risks while lending project funds or working capital. The 'polluter-pays' principle has been firmly adopted by the Indian courts.

Studies have shown that companies that outperform their peers environmentally will also outperform them on the stock market. If such potential for enhancing economic competitiveness and profits through better management of resources and adoption of cleaner technologies/practices exists in each company, why does each CEO not have such a success story to tell? First, the opportunities that exist are not so obvious. To identify them, it takes an expert with an eye for realizing these savings and a thorough understanding of the entire production process and backward-forward supply chains. Second, and very important, is the felt need of an industry to invest time and money to take advantage of such opportunities. Undoubtedly, the advantages for those undertaking such initiatives ahead of their competitors are many.

Enterprises around the world are increasingly choosing to report their environmental, social, and economic policies, practices, and performance publicly.

Apart from gaining external credibility, there is a growing recognition of the internal utility of reporting. It enhances the ability to

track progress against specific targets, helps in implementing environmental strategy, and creates awareness of broad environmental issues throughout the organisation. In the words of Frances Cairncross (Chief Editor of *The Economist*), 'Many companies have found that the sheer exercise of measuring their activities has been a spur to better environmental performance'.

ISO 14001 is part of a family of international standards, the ISO 14000 series, published by the Geneva-based independent International Organisation for Standardisation (ISO). It is an Environmental Management Systems (EMS) specification, which is applicable to all types and sizes of organisations irrespective of geographical, cultural, and social conditions.

Key benefits of EMS are:

- Systematic approach to manage environmental issues
- Ensures compliance with prescribed regulations
- Institutionalizes pollution prevention strategies
- Greater employee satisfaction
- Third-party recognition and credibility
- Enhances global market access
- Increases confidence of stakeholders
- Continually improved economic-environmental performance
- Improved public image and community relations

The value of an efficient and effective environmental performance tracking system lies not just in meeting external information/disclosure requirements but also in gaining a better insight into the system's operations and managing risks more effectively. Eco-rating is aimed at providing an indicator of environmental performance or risk associated with corporate facilities.

It may be seen as 'green' equivalent of a credit rating system. It is a tool people can use to independently gauge environmental performance/risk associated with a corporate facility. The salient features of Eco-Rating would be:

- A detailed rating model, which uses sector-specific indicators
- Benchmarks against national and global standards
- Sector-specific testing at live facilities
- Involvement of and ratification by industry experts to ensure the practicability of the system
- Voluntary disclosure of the rating obtained

Eco-rating encompasses all types of performers in its ambit, from the poor to the very best. The rating could be used as the first step towards ISO 14001 certification. Certified units, on the other hand, may use it to monitor their performance over time. Simply put, what gets measured, gets managed!

*Courtesy: FAPCCI Review,
Aug.02,P22 & 23,
Fax: 040-33 95083
E-mail: info@fapcci.org
Web: www.fapcci.org*

MINE ENVIRONMENTAL LEGISLATION: PRESENT ISSUES AND FUTURE PROJECTIONS

*D.P. Pandey and Gaurav Taluja
Grasim Cement, India*

Future perspective, keeping in view the present scenario of industrial and legislative approach, towards environment is discussed in the paper. The general debate concerning social and environmental responsibilities or ethics has been raging for generations. Consequently, the purpose of this paper has been not to resolve the debate but rather to help the reader understand the facts, assumptions and rationales of the fundamental perspective and

perspective legislative changes envisaged.

India is one of the few countries, which has made constitutional provisions for protection and improvement of the environment by amending the constitution in its 42nd constitutional amendment. According to 48(a) of the Constitution of India. "The State shall endeavour to protect and improve environment and safeguard the forest and wild life of the country." The important legislations, which have direct bearing on mining activities, is enumerated in this paper. Even though a plethora of legislative provisions is available for monitoring and regulating, some of the grey areas which have led to judicial observations and interventions in 1990s may need further introspection and active regulation by industry, legislative and judiciary bodies. These constitutional provisions have led to jurisprudential techniques for environment protection on the basic principle of mass jurisprudence, which may further lead to:

- Public participation in environment auditing,
- Joint regulatory and monitoring inspection,
- Damage assessment,
- Compensatory jurisprudence
- PIL: its scope and efficacy,
- Organisational social responsibility

Mining and agriculture are the two most critical activities for sustaining not only industrial growth but for basic sustenance of the human populace and biosphere.

In the context of a country as ours and in respect of the present era and global scenario these two activities are critical and essential to growth itself, and in turn for the growth of the country.

However, this goes with the rider that growth concept and methodology has to follow the

principle of sustainable growth and development so that basic sustenance of future generation is not jeopardised.

Forest cover distribution, which is considered as one of the major affected parameters due to mining activities, may not be absolutely correct statements, as perceived from the following data:

In India out of 1.3 million hectares of forest cover lost every year, the contribution due to mining activity is meagre. Out of every lost hectare of forest cover in India.

agricultural projects,	
percent	: 0.71
river valley projects,	
percent	: 0.12
new industries,	
percent	: 0.04
roads and communication,	
percent	: 0.02
miscellaneous projects,	
percent	: 0.11

There has been considerable awareness and improvement in all respects of impact on environment and other parameters due to mining. However, one area, i.e. exploitation of minerals through small mines is still a matter of concern, which by its very nature renders planned EIA/EMP measures not only uneconomical but unviable. Unfortunately in our country small-scale mines dominate the mining scenario as about 80 to 90 percent operational mines belongs to the category.

There cannot be short-term solutions or capsuled treatment to mitigate or eliminate the impact on environmental parameters due to mining. However, a humble effort has been made through this paper to awaken us to these problems, so that collective and co-operative guidelines may emerge to involve all the related segments of society at large.

*Courtesy: Indian Cement Review,
Jul. 2002, Pp7-11,
Fax: 0091-22-2072102*

ENERGY

POWER STILL AN ATTRACTIVE DESTINATION

Project Monitor, Oct. 16-31, 01

The power sector continues to evoke a lot of interest among investors. The latest quarterly survey carried out by Projects Today, a division of Economic Research India Ltd., reveals that the total investment committed in this sector is Rs.548,375 crore which is roughly a third of the total investment in the country. Of this, thermal power projects account for nearly 24 per cent and hydel-based power 6 per cent. Investments in non-conventional power projects are less than 1 per cent.

Type of Projects	Investment (Rs. Crore)	% of country total inv.
Hydel projects	107,423	6.44
Thermal	397,624	23.83
-Coal/Lignite	220,820	13.23
-Liquid fuel	40,520	2.43
-Gas-based	114,4398	6.86
-Nuclear-based	26,909	1.61
-Non-conventional	16,420	0.98

Source: Project Today

Courtesy: FAR & NEAR in Water & Energy, CBIP, Jan 02, P 33.
Fax: 91-11-6116347

Email: chip@nda.vsnl.net.in
Web: www.chip.org

AMERICAN LIFESTYLE CAN BE COMPROMISED

Zogby International, New York,

Last year, the US rejected the Kyoto Protocol on climate change and reduction of greenhouse gas emissions. As former US President

George Bush declared at the Rio Conference, "The lifestyle of the American people cannot be compromised."

What do the American people want? If a recent opinion poll conducted nationwide is an indication, they want renewable energy resources like wind and solar power to power the country's energy needs.

The American people want fuel efficient cars that give better mileage and stricter energy efficiency norms for air conditioners. And they want it now. Americans have asserted that the time to act on global warming is now.

These were the results of a nationwide opinion poll that Zogby International, a New York-based public opinion research company, conducted between June 14, 2002 and June 19, 2002. (www.ucsus.org/environment/zogby.html).

The company, tracking public opinion on virtually all continents, conducted more than a thousand interviews with Americans.

Working with a panel of experts including psychologists, sociologists, linguists, mathematicians, economists and political scientists, the opinions polled were explored for every nuance of language to arrive at the results.

The verdict was unequivocal. More than 70 per cent of the American people chose renewable energy as against 19 per cent of the voters, who supported tax benefits to energy companies to help them build more coal and nuclear power plants and increase drilling for oil and natural gas.

The poll clearly indicated that nearly 80 per cent of the voters

believe that global warming is a serious problem now or will be in the near future.

They did not support the Bush administration's 'adapt to the inevitable' attitude towards global warming.

Nearly 76 per cent of the voters as against 16 per cent, did not favour a voluntary approach where fossil fuel power plants and industries are simply asked to reduce pollutants to control emissions of carbon dioxide and other heat-trapping gases. Instead these American people wanted the government to take the initiative to set industry standards.

They want to act now to minimise the effects of global warming by using technology to build cars that give better mileage, energy efficient appliances and clean, renewable energy sources.

Do these demands of the American people amount to a compromise of lifestyle? You decide!

Courtesy: Down to Earth, Aug 15, 02, P-54
Fax: 91-11-6085879
Email: cse@cseindia.org
Web: www.cseindia.org

ROYALTY BOOST FOR 7 COAL STATES

Rakesh Sood, The Financial Express, 6 August, 02

Seven coal producing states – Andhra Pradesh, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Orissa, and Uttar Pradesh – will be benefited to the tune of Rs. 4842 million following the revision of royalty rates announced by the Centre. The estimates made by the Coal and Mines Ministry show royalty earnings of these states are likely to go up from the present Rs 20718.5

million to Rs 25 560.5 million per annum. At current prices, royalty ranges between 15% and 19% as against the existing 12.76%. However, the new rates of royalty will not apply to West Bengal which is already charging a cess of around 25% on coal produced in the state which is higher than even the revised royalty rates.

Courtesy: TERI Newswire,

1-15 Aug, 02, P4.

Fax: 4682144 or 4682145

Email: outreach@teri.res.in

Web: www.teriin.org

GASOHOL TO BE MANDATORY IN 9 STATES FROM 2003

The Hindu Business Line, 14 Aug 02

The sale of gasohol would be mandatory in 9 states and four Union Territories from 1 January 2003, according to the Union Petroleum Minister, Mr Ram Naik. The states where the 2003-norm will apply are Andhra Pradesh, Haryana, Goa, Gujarat, Karnataka, Maharashtra, Punjab, Tamil Nadu, and Uttar Pradesh. It will be mandatory in the Union Territories of Chandigarh, Daman and Diu and Nagar Haveli, and Pondicherry. The Minister added that sale of 5-kg LPG cylinders would be launched on 16 August from Shimla. The small-sized cylinder is targeted at people living in the hilly terrains, far-flung areas and the economically weaker sections to enable easier transportation since the conventional cylinder is 30 kg. The deposit for a 5-kg cylinder would be Rs 350 per cylinder.

Courtesy: TERI Newswire,

1-15 Aug, 02, P 14.

Fax: 4682144 or 4682145

Email: outreach@teri.res.in

Web: www.teriin.org

GOVERNMENT PLANS BENCHMARKS FOR POWER REGULATORY PANELS

The Hindu Business Line, 30 Jul 02

The Centre is planning to spell out some benchmarks for the electricity regulatory commissions. These benchmarks would be incorporated in the new tariff policy now under preparation. Mr. R V Shahi, the Power Secretary, said that some benchmarks for the regulatory commission had become necessary in view of the differential approach being employed by the various commissions. It may be mentioned that in the first round of tariff setting by the commission, all the orders have been challenged in the court by the utilities.

Courtesy: TERI Newswire,

16-31 Jul, 02, P20.

Fax: 4682144 or 4682145

Email: outreach@teri.res.in

Web: www.teriin.org

FUEL OIL, NAPHTHA PRICES UP

Business Standard, 5 Aug 02

Prices of naphtha, fuel oil and LSHS for non-fertilizer use have been revised by the pricing committee of the four public sector oil marketing companies. While the price of naphtha has been raised by 1.9%, the price of fuel oil has been increased by 2.44% and that of LSHS by 2.47%. Ex-Mumbai, naphtha prices has gone up from Rs 13 130 per tonne to Rs 13 380 per tonne, while fuel oil prices have been increased for Rs 9810 a kilolitre to Rs 10 050 a kilolitre. LSHS prices have been raised from Rs 10500 to Rs 10760 per tonne.

Courtesy: TERI Newswire,

1-15 Aug 02, P6.

Fax: 4682144 or 4682145

Email: outreach@teri.res.in

Web: www.teriin.org

HONCHOS LAY A SWITCHOVER LINE TO COMPETITIVE MARKET IN POWER

The Financial Express, 28 June 2002

A series of out-of-the-box solutions covering the entire reforms framework in the power sector, has been offered by the group of corporate honchos headed by Mr Deepak Parekh. In a significant recommendation, the committee has called for a smooth transition towards a competitive power market, with introduction of open access to wires and choice to the consumers. Cautioning against the single-buyer model, the committee has strongly advocated for allowing the DISCOMS (distribution companies) to procure power from gencos (generators) of their choice. Citing the cases of reforming states like Orissa, Andhra Pradesh, Rajasthan and Uttar Pradesh, the committee points out that while all these states adopted unbundling, they stopped well short of introducing a competitive market for power supply. Instead, they adopted a single-buyer-model, wherein the state transmission companies are the monopoly purchasers of power.

Courtesy: Teri Newswire,

16-30 June 2002, P 18-19,

Fax: 91 11 4682144

E-mail: outreach@teri.res.in

Web: www.teriin.org

BIO-DIESEL POLICY TO BE OUT SOON

The Hindustan Times, 24 June 2002

The Government is likely to come out with a comprehensive policy regarding biodiesel soon. Minister of State for Rural Development, Mr Annasaheb M K Patil, said, the selling price of biodiesel is expected to be between

Rs 12.50 and Rs 15 per litre. Biodiesel is produced from crushing oil seeds, filtering the oil to remove all impurities and gum and then heating it to 60 degrees centigrade with alcohol, using caustic soda as catalyst. This process, known as transesterification, removes triglyceride molecules from vegetable oil in the form of glycerine – a premium industrial chemical – leaving behind biodiesel. The residue cake is also used as cattlefeed. As the country's sugar industry produces surplus ethyl alcohol, it can be used in place of methyl alcohol commonly used abroad, the Minister said.

Courtesy: Teri Newswire,

16-30 June 2002, P- 10,

Fax: 91 11 4682144/2145

E-mail: outreach@teri.res.in

Web: www.teriin.org

NATIONAL POLICY ON RENEWABLE ENERGY

The objectives of the Draft Renewable Energy Policy Statement are: to enhance the contribution of renewables, viz. solar, wind, biomass and small-hydro for meeting the minimum rural energy needs, providing decentralized/ off-grid supply for agriculture, industry, commercial and household sectors in rural and urban areas; and grid-quality power generation and supply. Among the goals envisaged in the Draft Policy Statement for 2012 is to increase the share of non-conventional energy in the additional installed capacity to 10%, or 10,000 MW, in the next 10 years.

The Working Group on Non-Conventional Energy Sources for the 10th Five-Year Plan has proposed generation of 4227 MW of power from non-conventional energy sources during the 10th Plan period. The break-up of the proposed

capacity is:

Wind Power	- 2000 MW
Small Hydro Power	- 800 MW
Biomass /Cogeneration	-1000 MW
Biomass Gasifier	- 122 MW
Waste-to-Energy	- 150 MW
Solar Power	- 155 MW
Total	4227 MW

Capital costs of non-conventional energy systems are slightly higher at this stage. However costs of generation on a life-cycle basis compare favourably with conventional energy, as there is no recurring fuel cost.

Courtesy: Assocham Parliamentary

Digest No. 5, 22.3. 2002 to 28.3. 2002

ELECTRICITY FROM MUD

Project Monitor, Feb 1-15 2002.

Following the successful harnessing of wind and tidal wave for generating electricity, it has been reported that power can be generated from common mud. According to research conducted by microbiologists at the University of Massachusetts, certain microorganisms can transform organic matter commonly found at the bottom of the ocean into electrical energy.

A report appearing in *Science* quotes Derek R. Lovely of the University as saying that aside from raising the possibility that microbes someday could be used to produce power in subsurface settings, the findings have implications for many industrial and military applications. An understanding of how microbes generate and use electrical energy may also prompt the development of new technologies to decontaminate polluted water and sediment containing organic materials, including petroleum and

other aromatic hydrocarbons.

In the article Lovely explains how his team used water and sediments from Boston Harbour, a collection of mason jars, ordinary electrical wiring, and sterile graphite electrodes determine the science behind the mechanics of a simple sediment battery. The researchers added a layer of common mud to the water in the jars, put one graphite electrode in the mud, another in the overlying water. The resulting electrical current was strong enough to activate a light bulb, or a simple computer.

Through more refined experiments, Lovely's group found that a family of energy harvesting microorganisms, commonly referred to as *Geobacters*, were key to the electrical current. Whereas most life forms, including humans, get their energy by oxidising organic compounds with oxygen, *Geobacters* can grow in environments lacking oxygen by using the iron naturally present in the soil, in place of oxygen. This new research demonstrates that *Geobacters* can also substitute an electrode, for the iron, according to Lovely.

A large number of a *Geobacter* species known as *Desulfuromonas acetoxidans* (*D. acetoxidans*) were found on the anode end of the primitive batteries. When the researchers destroyed the *D. acetoxidans* in the sediment, the current stopped. The group has also found that some *Geobacters* can convert toxic organic compounds, such as toluene, to electricity.

Courtesy: Water And Energy

International

Jan.-Mar. 2002, Pp13-14,

Fax: 91-11-611 6347

E-mail: cbip@nda.vsnl.net.in

Web: www.cbip.org

GLOBAL OIL AND GAS DEPLETION: AN OVERVIEW

[15]

Bentley R W. 2002

Energy Policy 30(3): 189-205 (The Oil Depletion Analysis Centre, Suite 12, 305 Gt Portland Street London W1W 5DA, UK)

This paper discusses the current and future hydrocarbon supply position worldwide. The main findings of the study show (1) rapid decline in global total hydrocarbon production from around 2010 or so; (2) a relatively modest contribution from non-conventional oils, but constraints including cost, energy content, and CO₂ emissions, will prevent these sources from fully offsetting conventional oil's decline; and (3) decline in conventional gas production from about 2020 (9 figures, 35 references)

CASE FOR AN ETHANOL FUEL ECONOMY IN INDIA

[20]

Garg HP. 2001 *IREDA News* 12 (4): 11-17,

The escalating oil import bills, dwindling fossil fuel reserves, and burgeoning pollution levels are amongst the very strong indicators to dictate a change from a purely fossil-fuel mode to that based on a blend of both gasoline and ethanol. This study gives an insight into some of the key aspects like physical potential, production techniques, utilization modes, safety aspects, and importantly, the broad policy-cum-planning frameworks governing the use of ethanol. For a sustainable ethanol fuel programme in India it is necessary to set up more pilot facilities and alter the existing BIS (Bureau of Indian Standards) specifications, so as to allow for an increase of ethanol

blending from the existing 5% to 10%. (6 tables)

Courtesy: *TIDEE*, Mar. 2002,

P 7, 14 & 16;

Fax: 91 11 4682144

E-mail: outreach@teri.res.in

Web: www.teriin.org

GOVT ON POWER SAVE MODE

Times of India & Indian Express dt. 24Aug2002

The Union government is considering the availability of about 25,000 MW of electricity through more efficient use. To this end, Prime Minister Atal Bihari Vajpayee unveiled a roadmap for making available this power through conservation.

Unveiling the action plan, the PM told a FICCI Seminar that his government would reduce energy consumption by 30 per cent in the next five years. To start with, the PM said President APJ Abdul Kalam had agreed to an energy audit of Rashtrapati Bhavan and similar audits would be carried out at the North and South Blocks housing key Ministries, including the Prime Minister's Office.

Vajpayee also called for saving of 20 per cent from the private sector and farmers. Power Minister Suresh Prabhu said the action plan provided a 10-point strategy for demand-side management. For this, dedicated cells would be set up in at least five states by September.

Stating that only about 160 MW of every 1,000 MW generated is used in India, Prabhu said conservation efforts could thus reduce the amount that needed to be spent on adding fresh capacity. He said at a time when the government planned to add 100,000 MW by 2012, a 25,000 MW energy conservation would help save up to Rs 150,000 crore. Prabhu said this

programme must be followed in the form of a national movement.

FCCI Chief R. S. Lodha said India used twice higher amount of energy that of the US and four times that of Japan for each unit of Gross Domestic Product. Efficient use of energy would help Indian industry become globally competitive.

Courtesy: *The Times of India & Indian Express*, dt. 24th Aug. 2002

ENVIRONMENT

WIND ENERGY – NEED OF THE HOUR

Business Standard, March 02

Wind energy causes no harmful pollution in the form of carbon dioxide, sulphur dioxide or nitrogen oxide emissions. It also eliminated production of hazardous or radioactive wastes and is thus fast emerging, as the most popular source of renewable energy across the globe. The current installed capacity prevents emission of between 21 and 27 million tonnes of carbon dioxide every year. Also it saves around 92,500 and 277,500 tonnes of nitrogen oxide and sulphur dioxide, respectively.

Global climate change is now believed to be the most serious environmental threat facing the human race. Scientists have predicted that the average temperature around the world will increase, between 1 and 3.5 degrees celsius by 2010, a rate of warming which has been greater than at any time over the last 10,000 years. This is expected to lead to rising sea levels. Causing flooding to low-lying coasts and islands. More storms and unpredictable weather are also expected. Most of the western countries see the development of renewable energy, especially wind, as a way of

mitigating climate change.

Today, the total of all wind energy installed worldwide stands over 23,000 MW, with cumulative installed capacity in various countries as: Germany, USA, Spain and Denmark, India.

Most of the installed capacity and investment in wind energy sector has been from the developed nations in Europe and America. This has not been due to being blessed with exceptional wind regimes; but because of their commitment to the ecological concerns. Most of these countries have set forth a target to have at least 10% of their total energy requirement, coming from wind energy.

Today the average size of a WEC (Wind Energy Converter- also called turbine) added worldwide crosses the 1 MW mark. This results in higher cost of generation per megawatt and hence moved to wind farms of capacities of 250 MW to derive benefits of economy of scale.

Last three years have seen Maharashtra emerge as a leader in adding wind energy with Suzlon taking about 80% of the share.

Since wind energy is not affected by changes in fuel costs due to global political uncertainties or otherwise, it more or less freezes the cost of power and acts as a wonderful buffer for corporates, entrepreneurs and even to large utilities.

For the 10th plan, the goal set for wind energy is around 6000 MW. To achieve this target the renewables programme, needs support from associated market players like investors, manufacturers, financial institutions, government and most importantly SEB's and utilities.

If we take a look at the history of wind energy in India, the growth in the sector has been inconsistent.

If considered seriously, it may prove as a catalyst to our core industry.

Courtesy : FAR & NEAR in Water & Energy, CBIP, Apr. 02, Pp. 53-55. Fax: 91-11-6116347

Email: cbip@nda.vsnl.net.in Web: www.chip.com

CLIMATE PACT

Happily for World Environment Day, two crucial green developments signal hope. First, all 15 European Union countries and Japan have ratified the 1997 Kyoto pact on global warming. Second, a report of the US government's Environmental Protection Agency (EPA) has conceded the co-relation between human activities and global warming. The Kyoto Protocol (KP) enjoins on industrialised (signatory) countries to reduce their greenhouse gas emissions (GHGs) by 8 per cent of the 1990 level between 2008 and 2012. With the ratification by the EU and Japan, the number of parties of the KP is more than the minimum of 55 needed to grant it legal status. However, for the treaty to become effective, it still needs to be ratified by countries that together account for 55 per cent of global GHGs. Even with the EU and Japan on board, the total share of emissions of the agreement's supporters so far is only 36 per cent of the GHGs. Should Russia also say 'yes' to Kyoto before August, thus joining the western countries in defying the US, the protocol will come into effect in time for the forthcoming Rio plus Ten Johannesburg summit.

The US accounted for 36.1 per cent of emissions in 1990 and continues to be the largest emitter; its GHGs could further increase by 30 per cent instead of reducing by 7 per cent as required by the treaty. Little wonder, president George Bush chose to opt out of the KP last year, "to protect US's economic

interests" – suggesting in effect that good economic excludes environment. Mr Bush's alternative plan stresses of purely voluntary measures to contain emissions. These columns have pointed out earlier that going green does not have to mean giving up on good business – the two need not be incompatible. This has been amply demonstrated by EU countries who have taken the business of reducing emissions very seriously, indeed, setting targets as high as 50 per cent reductions for themselves. It's ironic that while Mr Bush refuses to relate human activities to global warming, the American EPA says there is a definite link between the two. A dithering Japanese government was forced to accept the KP because of strong anti-GHG public opinion. Can we expect a similar performance from the American people in time for the US to vote green at Johannesburg?

Courtesy : The Business Line, June 6, 02, P14.

ENVIRONMENT BENCHMARKING CLUB

BRE News Release, Apr 4, 02

A recently launched Environmental Benchmarking Club gives property managers exclusive access to benchmarking software that calculates the environmental profiles of large commercial building stocks. This self-assessment tool has been developed by UK's Building Research Establishment (BRE) and industry partners so that environmental-performance scores can be produced quickly and easily. The software uses ready data to calculate the performance of building stock against benchmarkers for energy, pollution, transport, water consumption, waste longevity and management issues. By pinpointing where@stock is performing badly,

areas for improvement can be prioritised. The environmental benchmarks can be used as part of an environmental policy or management system, to demonstrate year-on-year improvement and environmental credentials to investors and clients. It is also a risk management tool that can help investment decisions on renovation, disposal or purchasing. The software is available to members of the Environmental Benchmarking Club, and technical support and advice is provided to members. Members contribute to the software development process by providing data to help develop the tool further and refine the benchmarks. A few of the members include: Alliance and Leicester plc; Boots Company plc; Telereal Limited; Royal bank of Scotland, etc.

*Courtesy: WISTA Innovation,
Jul 02, P- 10
Fax: 91-11-4619083
Email: witt@nde.vsnl.net.in
Web: www.witts.org*

STATES ASKED TO FILE ENVIRONMENT REPORTS

The Times of India, 12 Aug 02

In an endeavour to make the states and Union territories more environment-conscious, the Union Environment Ministry has asked them to prepare regular environment reports. The Ministry feels that most states are 'not adequately' sensitized to environmental concerns and don't even have the basic data necessary for analysis or action. Only eight states or Union territories have made an effort to prepare such reports. A Rs 60-million project to help the states to execute this exercise was launched by Union Environment Minister, Mr T R Baalu. His ministry has also signed MoUs with four national host

institutions – TERI; Development Alternatives; Administrative Staff College, Hyderabad; and the Environment Protection, Training and Research Institute, Hyderabad.

*Courtesy: TERI Newswire,
1-15 Aug. 02, P21.
Fax: 4682144 or 4682145
Email: outreach@teri.res.in
Web: www.teriin.org*

GLOBAL WARMING IS BEHIND RAIN FAILURE: UN CLIMATE PANEL HEAD

Pallava Bagla, The Indian Express, 26 Jul 02

The current Indian drought may be directly linked to the larger climate change that is affecting the globe, feels Dr R K Pachauri, Chief of the UN-sponsored IPCC (Intergovernmental Panel on Climate Change), Geneva. It is a position directly at odds with that taken by the IMD (Indian Metrological Department), which says there is no question of climate change. Dr Pachauri, who is also the Director General of TERI, New Delhi, says "It has been a very peculiar summer this year and some perceptible climate change is taking place in India". The way this year's monsoon has behaved- starting off normally, then suddenly petering out – has no doubt surprised many climatologists. The IPCC is a scientific expert body having 192 countries as its members and is mandated by the UN to assess the scientific, social and economic issues related to human-induced climate change. Dr Pachauri feels once the delicate balance in the global circulation patterns is disturbed due to man-made circumstances, 'nonlinear and sudden changes are bound to be the outcome' and emphasizes that this current erratic behaviour of the

monsoon is probably the first strong signal of climate change having had a direct impact on India.

*Courtesy: TERI Newswire,
16-31 Jul, 02, P23
Fax: 4682144 or 4682145
Email: outreach@teri.res.in
Web: www.teriin.org*

KYOTO PROTOCOL MAY OPEN THE BUSINESS DOOR

The Times of India, 9 Aug 02

India's decision to ratify the Kyoto Protocol on combating global warming is seen in official circles as reaffirming its faith in the multilateral process and opening the door for possible business opportunities. The Cabinet approved the ratification, two months ahead of the COP-8 (Eighth Conference of Parties) to the UNFCCC (United Nations Framework Convention on Climate Change), to be held in New Delhi. As the host, and a country trying to persuade others to ratify, India was expected to ratify the 1997 Protocol which sets specific emission reduction targets for developed countries. The Protocol provides for three mechanisms to enable developed countries to get emission reduction credits from outside their own countries. Under the CDM (Clean Development Mechanism), a developed country may take up GHG (greenhouse gas) reduction activities in developing countries. The latter will benefit from the investment and environmentally safe and sound technologies, say officials.

TAKING KYOTO FORWARD

Business Standard, 9 Aug 02

The Union Cabinet's decision to ratify the Kyoto Protocol on climate change, nearly five years after it was signed in 1997, is not

entirely without significance though no immediate benefit would be forthcoming from it. For one thing, the ratification could not be delayed further as India is hosting the COP-8 to the UNFCCC in New Delhi this October. The host country could, for obvious reasons, not be a non-signatory to the Kyoto Protocol which is by far the only achievement of the COPs so far. Besides, India's ratification takes the Kyoto Convention a bit closer to actually coming into force. Its enforcement requires ratification from 55 countries, 6 together accounting for at least 55% of the total GHG emissions. The countries which have already corroborated it account for 36% of the GHG. If the Indian move prompts Russia with 17.5% share of GHG to follow suit, the hurdle would be as good as crossed. Nevertheless, the most unfortunate part of the protracted global negotiations on climate change is the lack of consensus either on the kind of the CDM that the world needs or on who should bear the cost of putting that mechanism in place. What is worse, the world's biggest polluter, the US, accounting for one quarter of the entire GHG emissions, has already rejected the Kyoto accord as well as its predecessor, the Rio declaration of 1992. No doubt, the US has in the meanwhile come out with its own, domestically applicable, recipe for cleaning the atmosphere, but the US exclusion makes any joint global endeavour meaningless. For, as often argued by the EU (European Union), this is not simply an environmental issue; it critically impacts the global economy and the much needed level playing field for the industry and businesses throughout the world. More than that, it concerns sharing of the cost of undoing ecological degradation in proportion to the damage caused by each country.

INDIA TO HOST COP MEET ON CLIMATE CHANGE ON 23 OCTOBER

The Financial Express, 10 Aug 02

New Delhi will host the COP-8 on the UNFCCC on 23 October. The IPCC (Intergovernmental Panel on Climate Change) is now engaged in assessing regional impacts of climate change and appropriate mitigation and adaptation strategies in its Fourth Assessment Report which is likely to be completed by the year 2007. The IPCC Chairman, Dr Rajendra Kumar Pachauri, who is also the Director-General of TERI, stated after the conclusion of the two-day meeting at the World Meteorological Organisation in Geneva outlining the future agenda. This increased regional focus will be assisted by improvements in the scientific understanding of climate change. The IPCC, in its Third Assessment Report, had stated that agriculture is highly vulnerable to the impacts of climate change, particularly in South Asia.

POLLUTION CLOUD THREATENS HEALTH, CROPS IN SOUTH ASIA

Victor Mallet, Business Standard, 13 Aug 02

A vast cloud of pollutants in the sky over South Asia is threatening agricultural output, modifying rainfall patterns and damaging human health, according to a report published by the UNEP (United Nations Environment Programme). Prof. Klaus Toepfer, UNEP Executive Director, said at the launch of the report in Paris. 'It is now absolutely clear that we have a very, very dangerous increase of particulates, especially in the Asia region.' The phenomenon, known as the Asian brown haze or brown cloud, is a 3 km-thick blanket of particles created mainly by the burning of wood and dung, and fuel

for vehicles and power stations. Although smog clouds are often seen in South and East Asia, the UNEP report, based primarily on the observations of more than 200 international scientists taking part in a study called the Indian Ocean Experiment, is the first detailed assessment of the effects of such a cloud. The release of the report coincides with preparations for the WSSD in Johannesburg this month 10 years after the Rio Earth Summit.

Courtesy: TERI Newswire,

1-15 Aug, 02,

P p. 22, 23 & 26

Fax: 4682144 or 4682145

Email: outreach@teri.res.in

Web: www.teriin.org

RS. 20 BILLION JAPANESE AID FOR CLEANING YAMUNA ON THE CARDS

Business Standard, 25 June 2002

The government will soon get Rs 15-20 billion assistance from Japan for the second phase of the Yamuna Action Plan aimed at cleaning the 22-km stretch of the river along the Capital. 'We are in the final stages of negotiation with the Japan Bank of International Cooperation for assistance for the second phase of the Yamuna Action Plan', Union Minister of Environment and Forests, Mr T R Baalu, said, at a workshop organized by TERI. The second phase of the Yamuna Action Plan proposes to divert the 19 main drains and 38 tributary drains discharging wastewater in the river, set up additional sewage treatment capacity with decentralized approach and disinfect treated sewage.

Courtesy: Teri Newswire,

16-30 June 2002, P21,

Fax: 91 11 4682144

E-mail: outreach@teri.res.in

Web: www.teriin.org

SUMMIT DOES NOT HAVE GLOBAL WARMING ON AGENDA

Times News Network

Ten years after nations agreed to unitedly fight global warming the issue isn't even on the formal agenda for the second Earth Summit – the World Summit on Sustainable Development – starting August 26 in South Africa. And, with US President George Bush and several other leaders deciding to stay home, the External Affairs Ministry is skeptical about the viability of the summit, even though it confirmed that Environment Minister T. R. Baalu would be going.

The Centre for Science and Environment director Sunita Narain, however, said, "This largest cooperative human enterprise isn't there because the US said it should not be."

Over the past decade, emissions of the greenhouse gases have only increased. According to official figures, the Canadians are up 31 per cent over the 1990 figures, Spain is up 22 per cent, France is up 13 per cent, Australia and New Zealand are up nine per cent each. According to 1990 figures, the US contributed 36 per cent of emissions by the developed countries – this, too, has been going up.

Kirit Parikh of the Indira Gandhi Institute of Development Research said a 2.5-4.9 degrees Celsius rise in temperatures could cut rice yields by between 15 and 42 per cent, and wheat production by between 25 and 42 per cent.

In 1992, it was agreed upon that since the developed countries had created the problem, they would take the first steps to solve it – by cutting down emissions.

As matters stand now, with India preparing to host the eighth Conference of Parties to the UN Framework Convention on Climate Change in October, 76 countries

have ratified the Kyoto Protocol which sets specific emission reduction targets for developed countries. India is expected to do so before the New Delhi meeting.

This isn't enough, however, to bring the Protocol into force. It's imperative for the biggest emitters to ratify it. But, with the US walking out and refusing to make cuts, it leaves only Russia, which is trying to drive the best bargain possible.

Courtesy: Times of India,

New Delhi Aug. 03, 2002

WASTE TO HEALTH

PUTTING SOLAR TO WORK, USING SOLAR HEAT IN AGRICULTURAL AND INDUSTRIAL PROCESSES

Brian Norton, (Renewable Energy World, Sept. – Oct. 2000, pp. 92-101)

Solar thermal technology can offer so much more than just domestic hot water - it can provide process heat for many industrial and agricultural requirements, can dry crops, extract potable water from brackish or saline supplies, destroy hazardous contaminants and be used in the manufacture of advanced materials. Solar process heat systems are now mature technologies, economically viable in many instances. Solar detoxification and advanced solar-powered manufacturing processes are the subject of ongoing research. The goal of much of the present research is to reduce costs, through technical refinement and use of new materials.

Courtesy: Water & Energy Abstracts, CBIP, Jan.-Mar. 02, P 16

Fax: 91-11-6116347

Email: cbip@nda.vsnl.net.in

Web: www.cbip.org

TURNING SEWAGE WASTE INTO POWER

The Hindu, 30 May 2002

Researchers at the University of Warwick's Warwick Process Technology Group have devised a process that turns wet waste from sewage farms and paper mills into a source of power. University of Warwick researcher Dr. Ashok Bhattacharya and his team have cracked the problem of how to extract very pure levels of hydrogen from wet bio-matter, such as sewage or paper mill waste. This very pure hydrogen can then be used in 'fuel cells' to power homes, factories and cars. Eventually the research team's 'plated membrane reactors' could be built as small industrial units, no bigger than a large room in some cases, and added directly to the sites of sewage plants or paper mills. First the waste biomass is gasified breaking it down into methane, water, carbon monoxide, carbon dioxide, and hydrogen. All these gases are then fed into a reactor, which uses them in a chemical reaction, which extracts the hydrogen from both methane and water.

Courtesy: Teri Newswire,

16-31 May 02, P 27

Fax: 4682144

Email: outreach@teri.res.in

Web: www.teriin.org

HONOLULU PROGRAMME OF WASTE ENERGY RECOVERY

WHOKOBE REPORT

Modern municipal solid wastes disposal requires a careful and well-balanced approach. Any disposal programme must meet minimum environmental criteria, must be cost-effective and must provide a service for the community that meets the expectations of its citizens. Land in Hawaii is expensive. Because of the need to protect Oahu's underground water source from contamination, landfills must be located around the perimeter of the island on what is

frequently the most valuable land consequently, the city has historically used incineration to reduce the volume of material going into landfills.

Today, Honolulu has one of the most modern waste-to-energy facilities in world, H-Power, a 2000-ton-per-day, refuse derived fuel, 50 megawatt, resource recovery plant. In 1997 the H-Power plant converted enough municipal solid waste per day into electricity to power more than 40,000 homes. This facility is equipped with state-of-the-art pollution controls, including acid-gas scrubbers, five-field electrostatic precipitators for removal of particulate material from the exhaust gas, and modern instruments to constantly monitor all the exhaust gas parameters necessary to ensure proper operation of this equipment. In addition, H-Power has modern equipment for the removal of ferrous and non-ferrous metals from the refuse and the ash for recycling.

*Courtesy: ECO-ECHOES,
ICPE Newsletter,
Mar. 02, P 15.
Fax: 91-11-3326379
Email: icpedelhi@sify.com
Web: www.icpeenviro.org*

WASTE GLASS IN CONCRETE CONSTRUCTION

*CSIRO Online Media Release,
May 23, 02*

CSIRO Sustainable Materials Engineering has carried out extensive field and laboratory testing which has shown that waste glass that is crushed and screened is strong, safe and economical when used as a sand-substitute in concrete. Presently, the waste glass is dumped as unsuitable for recycling. CSIRO has prepared a guide for pre-mix concrete utilising the ground glass (cullet). The guide sets out preliminary requirements for material supply, placing and

curing of concrete incorporating glass cullet as sand replacement for municipal and building construction works. Data for this guide has been generated from CSIRO's extensive short-term material performance tests involving laboratory and field evaluation of pre-mix concrete incorporating up to 20 per cent crushed glass blended with conventional sand to meet industry grading specifications. Other common uses for glass cullet include: finely-ground container glass utilised in concrete, road beds, pavement and parking lots, as well as drainage medium, backfill or landscaping purposes; varying levels of cullet up to 100 per cent proposed for general backfill.

Waste glass with concrete could be used for a range of construction applications including bike paths, footpaths, kerbs, gutters and similar works.

*Courtesy: WISTA Innovation,
Jul 02, P- 8
Fax: 91-11-4619083
Email: witt@nde.vsnl.net.in
Web: www.witts.org*

SOLAR ENERGY LIGHTS UP ROOF OF TIBET

The Indian Express, 3 Aug 02

Electricity has finally found its way to the Roof of Tibet, the Ali Prefecture, with the installation of solar power panels. Ali Prefecture, where people have used ghee for lighting their homes and temples over the past 10 centuries, has become the first region in Tibet where everyone will have access to electricity, Xinhua News Agency reported from Lhasa. Over 60 power stations, with a combined generating capacity of 250 kilowatts, have been set up. Some 3000 solar cookers and 12500 solar panels have been installed in households in Ali, 4500 metres above sea level.

*Courtesy: TERI Newswire,
1-15 Aug. 02, P26.
Fax: 4682144 or 4682145
Email: outreach@teri.res.in
Web: www.teriin.org*

NEW FLY ASH TECH HELPS ENHANCED CROP YIELD

The Financial Express, 15 July 2002

A new fly ash technology developed by CFRI (Central Fuel Research Institute), Dhanbad has been found to enhance crop yield significantly. The farmers would be greatly benefited by this technology. The CFRI studies on bulk utilisation of fly ash in agriculture and forestry have well established the efficacy of fly ash in better utilisation-efficiency of chemical fertilizers, reclamation and management of waste, degraded lands and mines.

*Courtesy: Teri Newswire,
1-15 July 2002, P30,
Fax: 91-11-4682144
E-mail: outreach@teri.res.in
Web: www.teriin.org*

WASTELANDS WILL BE USED TO FACILITATE 'BIO-DIESEL' OUTPUT

Ashok B Sharma

The Financial Express, 15 July 2002

The Rural Development Ministry is all set to launch a special project for using wastelands for cultivation of non-edible oil bearing plantations, like Jetropha, Karanja, Mahua and Jojoba for producing 'bio-diesel'. The Centre has already been assured of corporate sector participation in marketing and processing these oil-bearing materials. The Hyderabad-based SBBF (Southern Biofe Bio Fuels) Pvt. Ltd has decided to invest Rs. 420 million in setting up a plant within six months to produce 100 tonnes of 'bio-diesel' per day. It is already producing 1.5 lakh litres annually and sells it for Rs. 13 to 14 per litre. The company's Managing Director, Mr. N. Satish Kumar, has said that the price of 'bio-diesel' will be kept lower than the prevailing market price of diesel. At present, diesel is priced at Rs. 19.50 per litre in Delhi. SBBF's pricing

formula for 'bio-diesel' has found support from the sugar industry, which is engaged in producing another variety of 'bio-diesel' called ethanol.

Courtesy: Teri Newswire,

1- 15 July 2002, Pp 27-28,

Fax: 91-11- 4682144

E-mail: outreach@teri.res.in

Web: www.teriin.org

POWER PLANT TO RUN ON MUNICIPAL SOLID WASTE

Environmental Pollution Control Journal

5(2): 47

The TIFAC (Technology Information, Forecasting and Assessment Council) has evolved a technology by which power plants can be run on solid fuel derived from processing municipal solid wastes. A 6.6 MW power plant will be integrated with the municipal solid waste processing plant commissioned in Hyderabad. The project is expected to cost around Rs. 280 million and completed in about a year. The municipal solid waste plant, also developed with the TIFAC technology, processes about 700 tonnes of wastes per day from which 210 tonnes of solid fuel can be produced. The solid fuel is a viable alternative to coal with higher calorific value and can be burnt to produce electricity. The Chairman of TIFAC describes the institutions as a catalyst and said that it is emerging as a major force in the Indian technology delivery. He further elaborated that the technology selected should be Indo-centric, especially rural oriented, and improvement in quality is essential for enhancing productivity levels to meet global standards.

Courtesy: TIDEE, Mar. 2002, P 102,

Fax: 91 11 4682144;

E-mail: outreach@teri.res.in

Web: www.teriin.org

PLASTIC PRODUCTS, PLASTIC WASTE AND RESOURCE RECOVERY [2000]

PWMI Newsletter No.24, May 2002

The Plastic Waste Management Institute, Japan, conducts annual surveys on matters related to plastic waste. These include a questionnaire-based survey on amount of recycling, a survey on the amount of plastic waste discharge, a survey directed toward local governments on general waste management, and a survey on industrial waste management.

The year 2000 saw the enactment of important laws toward the formation of a recycling-oriented society. This year, in fact, can be viewed as the first year of Japan in the new century as a recycling-oriented society. To make the most effective use of resources, these laws aim to "reduce" the generation of waste, "reuse" products, and "recycle" materials, reflecting a move from "1R to 3R's."

An active "reduce" and "reuse" movement can also be found in the plastics industry. For example, resin manufacturers and processors are working together to develop lighter PET bottles and thinner plastic shopping bags and, in the automotive industry, to integrate the various grades of car-bumper materials.

The outstanding features of this year in recycling and disposal processing are as follows:

1. A utilization rate of 50% was achieved.
2. Energy recovery in the form of incineration with power generation, cement kiln fuel, etc, is on the increase.
3. Material recycling, liquefaction, and gasification and the application of blast

furnace raw materials (including coke-oven chemical materials) have either begun or expanded in conjunction with the enactment of the Containers and Packing Recycling Law.

The 4,940 thousand tons of utilized plastic waste represents an increase of 420 thousand tons over the previous year. This increase features 50 thousand tons for material recycling and 60 thousand tons for liquefaction, gasification, and blast furnace materials (chemical recycling), or 110 thousand tons combined (due, for the most part, to the Containers and Packaging Recycling law). It also includes 100 thousand tons for densified-refuse derived fuel including energy recovery as cement kiln fuel and 220 thousand tons for incineration with power. Each of the above therefore contributes about 1/4, 1/4, and 1/2, respectively, towards this increase.

Among the 1,390 thousand tons of source materials for material recycling, post-use products came to 510 thousand tons (compared to 470 thousand tons the previous year), with PET bottles contributing the most at 125 thousand tons, an increase of about 40 thousand tons from last year.

In the order of descending tonnage, PET bottles are followed by agricultural plastics, wrapping film, expanded polystyrene packing material, etc, containers and the like, electric-wire covering material, automobile parts, pipes, etc, expanded polystyrene trays, home electric-appliance housings, etc, and non-PET bottles.

Courtesy: Eco-Echoes, ICPE Journal, Apr./Jun. 2002, P-15,

Fax: 91-11-3326379

E-mail: icpedelhi@sify.com

Web: www.icpemviro.org

INTERNATIONAL COUNTRY PROFILE, EVENT ETC.

SUCCESS IN THE GULF

Gulf Cement Company, UAE

Gulf Cement Co. (GCC) was established in the Emirate in 1997. The plant is situated at Khor Khwair, just 2 km away from the port of Mina Saqar and adjacent to the large limestone quarry of Ras Al Khaimah Rock Co. The entire plant and machinery were supplied by UBE Industries Japan on a turnkey basis. Erection and commissioning of the single stream cement plant consisting of one silica crusher, two raw grinding mills, a kiln system, two cement grinding mills and a packing plant were also carried out by UBE Industries who initially managed the plant for a period of 3 years.

Only approximately 5% of raw materials required for clinker production, consisting of bauxite and iron ore, are imported. Superior quality raw materials with very low alkali, chloride and magnesia content available in the Emirate, is the main reason for the high grade cement produced in Ras Al Khaimah and the concentration of four cement plants within an area of approximately 2 km².

The excellent teamwork of the company's employees, who have overcome all the problems associated with heating, storage, filtration and pumping this difficult fuel by suitable modifications and careful selection of equipment. Introduction of petcoke as fuel is another achievement in the burning process; the company now has the capability of burning multi fuels (natural gas, fuel oil and petcoke or coal) in its kiln system.

Dust emissions from stacks were reduced to less than 10 mg/Nm³, well below the international limit, by replacing electrostatic precipitators with high efficiency filter bag houses supplied by Fuller

Kovako. The company has also built a huge dome silo to store 100 000 t of clinker, which apart from protecting the clinker from rain and atmospheric moisture, has reduced the emissions of dust still further from storage, handling and transportation. The silo was built by Dome Technology, and Cemag, supplied the material handling equipment.

In 1997, the company began an ambitious project to enhance its production from 1 to 1.25 million tpa by modifying the preheater cyclones, conveying system and clinker cooler. The clinker cooler was modified by introducing an IKN KIDS system for more efficient cooling. Increased kiln output and increasing market demand for slag cement has necessitated decided to install one more cement mill. Consequently, it was decided to install one more cement-mill of 70 tph in addition to the existing two mills of 78 tph. The new mill was to be specially used to produce high Blaine cement and to grind granulated blast furnace slag. Erection of the third cement mill was completed in May 2001. One multi-compartment silo with three compartments with a total capacity of 5000t and an integrated high efficiency blender were also commissioned mid-2001. This has enabled GCC to produce slag cement with any slag content according to customer's requirements.

Other additions to the plant include four micro mills for grinding petcoke and coal, supplied by Fuller a silica rock precrushing system by Svedala, and a clinker pregrinding system supplied by Cemag.

Cement from plant silos is conveyed to the loading plant silos via a 2km long belt conveyor running across the highway. A unique feature of the loading plant is its pneumatic ship loading system, which can directly load cement in

bulk into ship's holds at a rate of 500 tph round the clock. Packing facilities include a rotary packer and autoloader from Mollers, for loading bagged cement into trailers. The packing plant also has facilities for filling jumbo bags and bulk loading of road tankers. In addition to sales in UAE, cement is exported to Mauritius, Sri Lanka and other Gulf countries.

Courtesy: World Cement, Jun 02,

Enquiry no:5 Pp. 40-41

Fax: 44(0) 1252 718992

Email: mail@worldcement.com

Web: www.worldcement.com

BUSINESS OPPORTUNITIES

ABROAD - KAZAKHSTAN

The Republic of Kazakhstan, in Central Asia, is rich in oil, gas and other minerals. As such, of late, is attracting attention of many western countries.

Authorities in Almaty have prioritised investment in fuel and energy, agrarian sector, infrastructure including transport, telecommunication, construction and social infrastructure. As a result, annual volume of the investments has gone up to 2.9 times, to a total of US \$1 billion. The volume of house construction went up 20% which made a total of 500000 sqm in 4 years.

The government has announced its intention to construct a new capital city called Astana for which Master Plan is being prepared with programme to execute the same. As per the master plan requirement, the administrative, business, social economic scientific and educational facilities and centres will be built along with housing facilities of international standards to make it look like capitals of the developed countries. To attract capital and entrepreneur to fulfil this mission, a special regime of privileged taxation is established by Government. The

volume of construction likely to come up pursuant to the approval of this plan would be quite substantial. Indian Construction companies like Larsen and Toubro, etc., are already vying for chunk of the contract.

Some of the relevant observations of working in Kazakshtan as per international business experts are:

Carefully study the market before making any commitments - The country's companies trade with 135 nations having alternative sources of supply and working on different terms at various price ranges. South Asian, Russian, and Eastern European companies carry out aggressive marketing strategies in Kazakhstan. Obtaining a comprehensive understanding of the market may require one or several preliminary on-site visits and some investment into market analysis. These initial investments, however, will save any company a lot, from wasting resources as a result of a poorly chosen market entry strategy.

Take medium to long-term approach - The Kazakshtan market operates with 20-200 per cent profit margins (depending on the types of ventures), paying solid risk premiums. However, typically an SME company/Joint Venture can

count on earning its first profit after 2-3 years of doing business in Kazakshtan. Obviously it varies from project to project and case to case.

Ensure a constant market presence. The first sales usually do not happen immediately since potential local partners, clients, and government officials prefer to get acquainted with outside firm at more informal level before buying. Specifically, establishing a representative office or hiring an individual representative (avoiding establishment of a legal entity) can ensure effective market presence. This option is favorable from the taxation standpoint since Kazakshtan legislation provides for zero rate income tax on representative office and a number of other tax breaks.

Find yourself a tax and legal advisor before forming a partnership or setting up a legal entity - Having competent tax and legal advisor from the outset can be crucial for ensuring effective development of the company.

Maintain positive working relations with governments officials whenever possible and participate in government tenders - In Kazakshtan, government procurement serves as one of the key types of guaranteed demand.

Additionally, fulfilment of government orders and participation in tenders can create a positive company image, providing valuable connections and saving time when dealing with the wide range of inspectors.

Ensure your partner's reliability and try to know intentions - Potential wrong doing on the part of the partner always remain a possibility in Kazakshtan. Consequently, it is advisable to carry out thorough due diligence before the project is launched and occasionally in the course of project implementation. A good consultant can save you from future embarrassing blushes here.

For further queries, information on Kazakshtan, please feel free to write to:

*Mr. Raj Pal Arora
Hon. General Secretary
Builders' Association of India
(Delhi Centre)
101, Shivam House
Karampura Commercial Complex
New Delhi - 110015.
Tel: 5435856, 5934450
Fax: 91-1-5451423
Email: rpcc101@vsnl.net
Web: www.constnindia.com*

*Courtesy : Indian Construction,
Jul 02, P 19-20
Fax: 022- 4950507
Email: bai@vsnl.com
Web: www.buildersindia.com*

WORLD'S LEADING CEMENT CORPORATES AND INDIAN GIANTS – A PROFILE

Cement Group	Lafarge	Holcim	Cemex	Heidelberg	Italcementi	Taiheiyo	Dyckerhoff	RMC Group
Parameters								
Cement capacity (Mt)	135.5	121.2	79.5	61.2	56.9	37.7	25.7	20.5
No. of Plants	----- NA	100	40	-----NA	50	-----NA	-----NA	-----NA
Cement deliveries (Mt)	87.6	84.3	61.2	59.8	42.5	40.4	18.4	NA
Product	Cement, RMC, Aggregates, Roofing, Gypsum	Cement, Concrete, Aggregates & Other	Cement, RMC, Aggregates	Cement, Concrete, Aggregates & other	Cement, Concrete, Aggregates & other	Cement, RMC, Aggregates	Cement, Concrete & other	Cement, lime, RMC, Aggregates & other
Turnover (millions)	13,968 € m	13,644 SwFr- m	6923 US\$ m	6689 € m	4062.7 € m	979,574 Yen m	2443 € m	5214.5 £ m
Net profit (millions)	750 € m	812 SwFr - m	1178 US\$ m	244 € m	201.3 € m	22,121 Yen m	84.1 € m	84.7 £ m
No. of employees	82,892	47,362	25,919	44,072	17,426	19,494	8843	34,064
EBITDA	2993 € m	3335 SwFr - m	2256 US\$ m	1184.6 € m	1028.8 € m	91,907 Yen m	446.4 € m	526.6 £ m
Business policy	Performance improvements and control energy costs	Future growth initiative in Latin America, Asia Pacific region	Core values of openness and flexibility	International expansion of market	Expansion in emerging countries	Industrial development in harmony with global environment	Long term competitiveness & high quality building products	Most consumer focussed building material company
Major landmark	Acquisition of Blue Circle cement	Major stake in PT Semen Cibinong	Integration of Southtown into global network	Control of Indo Cement	Acquisition of Suez Cement company	Modernising distribution system & use of alternative fuel	Consolidation of Russian activities	Purchase of Rugby group
Cement group head & designation	Bertrand Collomb, Chairman & CEO	Markus Akermann, CEO	Lorenzo H Zambrano, Chairman & Chief Executive	Hans Bauer, Chairman	Yves Rene Nanot, Director	Michio Kimura, President	Peter Rohde, Chairman	Stuart Walker, Group Chief Executive

Cement Group	CIMPOR	Buzzi Unicem	Votorantim	ACC	L & T	Grasim	Gujarat Ambuja	India Cements
Parameters								
<i>Cement capacity (Mt)</i>	18.3	15.4	28.0	15.93	15.25	12.71	10.71	8.06
<i>No. of plants</i>	---NA	---NA	---NA	13	9	8	8	8
<i>Cement deliveries (Mt)</i>	16.7	13.1	17.5	12.29	10.98	10.18	9.82	5.77
<i>Product</i>	Cement, Concrete, Aggregates & other	Cement, Concrete, Aggregates & other	Cement, Non-ferrous metal, Energy, Pulp & Paper	Cement, RMC, Refractory, Cement machinery	Cement, RMC, Construction	Cement, RMC, Textiles, Sponge Iron, VSF, Pulp etc.	Cement	Cement, RMC, Concrete products & Sugar
<i>Turnover (millions)</i>	1385.7 € m	1446.5 € m	1308 US\$ m	26318 Rs. m	21937 Rs. m	55824 Rs. m	14480 Rs. m	14418.7 Rs. m
<i>Net profit (millions)</i>	137.8 € m	161.1 € m	683.5 US\$ m	474.8 Rs. m	3151 Rs. m	3779 Rs. m	1860 Rs. m	481.5 Rs. m
<i>No. of employees</i>	5974	3870	22,000	----	----	21473	----	----
<i>EBITDA</i>	504.8 € m	447.3 € m	1,231.6 US\$ m	30318.6 Rs. m	3751 Rs. m	----	4627.7 Rs. m	3218 Rs. m
<i>Business policy</i>	Growth strategy by acquisition	Improved competitiveness	Sustainable development through environmental performance	Integrity of internal control system & enhanced shareholder value	Professionally managed and customer satisfaction	Growing shareholders return year after year..	High degree of integrity & fairness	High level of transparency, accountability, responsibility to stake holders
<i>Major landmark</i>	Good operating performance in Brazil	Syndicated agreement for 68% voting right with Dyckerhoff	Acquisition of St Marys cement	----	----	----	----	----
<i>Cement group head & designation</i>	Ricardo Manuel Simoes, Chairman	Carlo Camerana Chairman	Luiz Vilar Carvalho, Chief Operating Officer	TMM Nambiar, Managing Director	AM Naik, CEO & MD	Kumar Mangalam Birla, Chairman	N.S. Sekhsaria, MD	N. Srinivasan, VC & MD

Note: The data, compiled from diverse sources. hence indicative only

*Legend : Euro = Rs. 47.34
\$ Dollar = Rs. 48.50
£ Pounds = Rs. 74.01
Mt = million tonnes*

Courtesy: International Cement Review, Aug 02, and others

MAKING THE SWITCH

Abdur Razzaq Thaplawal, Lucky Cement, Pakistan

To accommodate capacity under-utilisation and high production costs, Pakistan's cement industry is looking for ways to improve earnings. Products are giving priority to finding ways of reducing fuel costs, namely by switching to a coal – a method championed by Lucky Cement. Here follows a review of the country's domestic industry, putting the use of coal into context alongside other recommended initiatives.

*Courtesy: International Cement Review/June 2002, Pp 43 – 46.
Fax: +44 (0) 1306 740660
Email: info@CemNet.co.uk
Web: www.CemNet.com*

A VOLUNTARY EFFORT TO PROMOTE ALTERNATIVE FUEL VEHICLES IN THE US GOES INTO OVERDRIVE

Chandrachur Ghosh

When the Supreme Court had ordered the Delhi government to run its buses on CNG (compressed natural gas), the directive was sought to be circumvented on the pretext that natural gas technology was not proven and options available were too few. The wide variety of new generation alternative fuel vehicles (AFVS) showcased in the eight National Clean Cities Conference at Oklahoma City in the US, however, gives the lie to such claims.

While Toyota proudly announced the zooming sales of its hybrid electric car at the meet, General Motors divulged details about its own AFVS. Nissan went to town on its zero-emission vehicles and Ford highlighted its role in creating partnerships and infrastructure for AFVS. But Honda's tagline for its CNG car –

emissions are the only thing it lacks – said it all.

Organised by the US department of energy (DOE) from May 11-16, 2002, the conference discussed the issue of promoting the use of AFVS, at the same time looking at future possibilities. Current options and new innovations were critically analysed, as was the likelihood of commercialising emerging technologies. The US conclave is a regular meeting point of citizens, auto manufacturers, local administrators and policymakers at the national level.

*Courtesy: Down to Earth, July 15, 2002, Pp36-37,
Fax: 91-11- 6085879,
E-mail: cse@cseindia.org
Web: www.cseindia.org*

CHINA CHALLENGE

Anna Whitehorn

With Beijing appointed as the host city for the 2008 Olympic Games, the cement groups present in China are set to reap the benefits of the resulting upsurge in demand. This is particularly true for Lafarge. Last month ICR was invited to the official opening of the Dujiangyan cement plant and here reports on the implementations of its three major Chinese projects, proving that to be a major world player, you have to be influential there.

*Courtesy: International Cement Review, July 2002 P25,
E-mail: info@CemNet.co.uk
Web site: CemNet.co.uk*

TURKISH CEMENT ENVIRONMENTAL NEWS

Totally 27 plants which are Turkish Cement Manufacturers' Association (TCMA) members, including 19 integrated cement factories and 8 grinding-packaging plants, have received their emission permits. The latest cement plants which have received emission permits are Set-Afyon, Set-Balikesir

and Bolu. It is expected that in one year time all of the TCMA members will complete receiving their emission permits.

NEWS FROM EUROPE

Council Agrees to Environmental Dimension in Public Procurement Legislation

EU Internal Market Ministers have accepted the Commission's proposal that environmental considerations be given a legal footing in public procurement decisions. The question remaining to be answered is to what extent public authorities will be able to include environmental criteria when awarding contracts. Ministers reached a so-called "Political Agreement" on 21 May 2002.

Climate Change-Emission Trading: the Response from the Cement Industry

Over the last 30 years, through technological change and investment, the European Cement industry has improved its energy efficiency by over 30 % and consequently reduced its CO₂ emissions. Now, as contribution to resolve the climate change issue, CEMBUREAU, the European Cement Association, expresses the collective will of its members to further reduce, where viable, the CO₂ intensity of its products.

European Case Law Develops on Waste Incineration and Shipments

The European Court of Justice has recently delivered two highly significant rulings on EU waste legislation. The first relates to European rules on shipments of waste and gives the first interpretation of what constitutes waste recovery (as opposed to disposal) under Regulation 259/93 on the shipment of waste. The distinction is important because, under the 1993 law, waste destined for recovery enjoys freer cross-

border movement than waste for disposal. The European Court decided that any waste dumped as a filling material should be classified under "recovery" rather than "disposal".

FIRE SAFETY WITH CONCRETE

Summary of the last meeting held on 19. Feb. 2002

The Project Group 2.2, which has been working since March 2001 on fire safety on concrete has lastly met on 19th of February 2002 at Cembureau Building Brussels. Studies of the group is mainly focused on: fire design tools of concrete structures, spalling of special concretes such as SCC (Self Compacted Concrete), HPC (High Performance Concrete), HDC (High Density Concrete) and implementation of a computer programme to be used for fire design part of the concrete structures.

During the last meeting the results of real fire test made on a one to one scale 2 – span 7 –story high strength concrete building in Cardington-UK has been discussed. From the test results it has been observed that the overall durability of the building including spalling effect is satisfactorily good. Although the main problems generally predicted to face with are the failing of the structure caused by the strain development on the members (beams, columns etc.) by temperature change and the corrosion effect after the fire, they have not been come across during or after the test. With a quick repair the corrosion can be overcome to some extent, but the strain changes can only be minimized by using fire design and structural design procedures together. The design tools for fire including structural part have been prepared by the project group with the help of

existing codes of different European Countries and it will probably be finished at the end of 2002.

Project Group 2.2 has also been implementing a user friendly computer programme for fire design of concrete structures. Main parts of the programme has been completed and remaining part of the work will be the adaptation and tracing of the fire design codes to the programme. Computer programme is planned to be finished at the beginning of the next year.

Additionally, in the meeting the tests carried out on spalling of concrete in different countries and the obtained results have been discussed. One interesting issue drawn from the test results obtained in Netherlands is that if the silica fume content is limited to 6% then the spalling effect will be negligible. To verify the idea, 3 different experiments will be done in May 2002. The studies related with this subject are propagated by both project group 2.2 and project group 4.3 which is another technical group studying on 'Building Behaviour'.

Finally, in the next meeting which will be held on 18 June. 2002, as well as the ongoing subjects one new concept called as fire safety of road tunnels will be taken in account. Strategies and the details of the project will be clarified during the meeting.

CONCRETE: 44 –
ASPHALT: 43

In a recent statewide poll of Michigan drivers on highway materials concrete eked out a 44 to 43% edge. Concrete was preferred because of its longer life and durability and providing a safer ride in wet and cold weather. Asphalt was preferred for being cheaper and offering a smoother ride. For new construction nearly two –thirds of drivers preferred concrete. Asphalt was the choice for repairing and repaving.

EDISON AND HIS PATENTS

Thomas A. Edison is known for his inventions in electricity and energy where he owns some 424 U. S. patents. On cement and concrete technology, he received 49 patents between 1900 – 1919 including those on handling bulk materials, buring portland cement clinker, rotary kiln, crushing rolls, belt and bucket conveyers, means for utilizing waste heat in kilns, apparatus for the production of concrete structures.

MEETING ON LEGISLATION FOR EXPLOSIVES

The new legislation for explosives had become effective on May 23, 2001 and had allowed a transition period of three years for the existing explosive storage facilities to comply. Recently TCMB conducted a survey among the member factories to find out the state of their preparations on this matter.

The results of the survey were among the items discussed in a meeting on June 7, 2002 attended by the representatives of the Ministry of Construction, member factories and producers of explosives. Six factories are about to receive their construction permits while the others are experiencing various difficulties mainly due to the vague items in new legislation. At the end of the meeting several lines of action were decided upon to bring solutions to the problems.

BRIEF NEWS FROM TURKEY

17th International Congress of the Precast Concrete Industry was held in Istanbul on May 1-4, 2002. Altogether 61 papers were submitted by participants from different countries. Prof. Asim

Yeginobali, Director of R&D Institute at TCMB, presented a paper on high strength natural lightweight aggregate concretes and their use in prefabrication.

Regional educational activities jointly organized by TCMB and Turkish Ready Mixed Concrete Association continued during the month of May. During

the Istanbul Building Fair, on May 5, a panel entitled "New Horizons in the World of Concrete" was held for the architects. "Applications of Concrete in Architecture" was the theme of a similar meeting which took place in Bursa on May 15.

Mr. Adnan Ignebekcili, president of TCMB, addressed the heads of the schools of architecture

in Turkey during one of their regular meetings in Istanbul on May 10, to initiate specific activities within the TCMB-Schools of architecture Cooperation Programme.

Courtesy: Cement and Concrete World, May-Jun. 2002, Pp-10, 12, 19, 20, 22, 24, & 27
Fax: (90312) 2879272

E-mail: info@tcma.org.tr
URL: www.tcma.org.tr

REGULATION NEWS

ENERGY ACCOUNTING NORMS

The Business Standard, February 9, 02

The government has issued a notification promulgating the Cost Accounting (Electricity) Rules, 2001 with immediate effect making it necessary for energy companies to maintain comprehensive records and file annual returns with the Registrar of Companies (RoC).

Energy companies include those engaged in the generation, distribution, transmission and supply of electricity from thermal power, has turbine, hydro-electric power, atomic power and wind power. The rules provide for covering quantitative information, cost information, statements showing procurement of conventional and non-conventional fuel, cost of generation of power, cost of transmission, consumer service, and billing, allocation and appointment. The rules would, however, exempt companies not exceeding the limits as specified for a small scale industrial undertaking and the companies whose turnover during the financial year does not exceed Rs. 10 crore.

All items of income and expenses in these proforma are required to be reconciled with the financial accounts for the relevant period or year.

Violations of the norms would attract a penalty under Section 209 of the Companies Act, 1956. A maximum fine of Rs. 5000 could be slapped under the provision of the Act, the release said. Continuous contravention of the rules for subsequent years would attract further fines of Rs. 500 per day after the first day during which such contravention continues, it added.

The rules also provide for stringent norms for maintenance of records, material, salaries, wages, service department expenses utilities, repair and maintenance or tool rooms and other overheads.

The rules have also stipulated norms for royalty or technical know-how fees, research and development expenses, interest, expenses or incentives on exports, cost statements, production records, etc.

Courtesy: FAR & NEAR in Water & Energy, CBIP, April 02.

P 23, Fax: 91-11-6116347

Email: cbip@nda.vsnl.net.in

Web: www.cbip.org

DRAFT NOTIFICATION FOR AMENDING THE COASTAL REGULATION ZONE (CRZ) RULES 1991

Sandeep Shrivastava, Counselor, CII-EMD

The following are the prime features of the Draft Notification:

- The distance from the High Tide Line shall apply to both sides in the rivers, creeks and backwaters and may be modified on a case to case basis for reasons to be recorded while preparing Coastal Zone Management (CRZ) plans. However, this distance shall not be less than 100 meters or the width of creek, river or backwaters is to be regulated shall be governed by the distance up to which the tidal effect is experienced in rivers, creeks or backwaters, as the case may be, and shall be clearly identified in the Coastal Zone Management Plans.
- The distance mentioned in the above clause may be reduced to 50 meters or the width of the rivers, creeks and backwaters, whichever is less, for the specified stretches by the

Central Government or an authority designated by it, for permitting construction of the dwelling units for local inhabitants if the following conditions are satisfied:

- (i) the area is not classified as CRZ-I (i)
- (ii) the availability of ground water is assured by the concerned authority in the State/Union Territory and proper facilities for treatment and disposal of waste water and sewage are certified by the concerned local authority
- (iii) the proposed construction is not used for any commercial activity; and
- (iv) at least on of the following conditions is fulfilled:-
 - the area is classified as CRZ-II;
 - the density of the Panchayat/ward area is not less than four hundred persons per square kilometer;
 - the built up in the Panchayat/ward is already one-third of the Panchayat/ward;
 - it's an area with an elevation of more than 10 metres from the Mean Sea Level or any point within 100 metres of the inland tidal water body.

The following amendments are also proposed vide the said notification;

- Non-polluting industries in the field of information technology and other service industries in the CRZ of Special Economic Zones (SEZ) are permitted in the

Coastal Regulation Zone

- The relevant paragraph in the 1991 is to be substituted by Mining of sands, rocks and other sub-strata materials are continue to be not permitted in the CRZ expect a) those rare minerals as prescribed under the Atomic Energy Act, 1962, subject to EIA studies and subjected to mining plan being approved by the Atomic Minerals Directorate for Exploration & Research, and b) exploration and extraction of oil and natural gas subjected to certain conditions.
- For the clearance which shall be given for any activity within the Coastal Regulation Zone if it requires water front and foreshore activities, it is proposed that the assessment shall be completed within a period of ninety days from receipt of the requisite documents and data from the project authorities and decision conveyed within thirty days thereafter.
- In the list of the activities which requires environment clearance from the Ministry of Environment & Forests Govt. of India; the following activities will be added:
 - Housing Schemes in CRZ area
 - Mining of rare minerals
 - Specified activities/facilities in Specific Economic Zones
- In CRZ-I between Low Tide Line (LTL) and High Tide Line (HTL) in areas which are not ecologically sensitive and important, salt harvesting by solar evaporation pond is permitted
- In the CRZ-III, the following activities are permitted:
 - Construction of dispensaries,

school, public rain shelters, community toilets, bridges, roads and provision of facilities for water supply, drainage, sewage which are required for the local inhabitants may be permitted on a case to case basis, by the Central Government or Coastal Zone Management Authority constituted for the State/ Union Territory.

The proposed amendment was also to permit construction of dwelling units for use by local inhabitants on a case to case basis, by the Central Government or the Coastal Zone Management Authority constituted for the State/ Union Territory. Provided that such construction shall be subjected to the following conditions:

- i) the height of an individual unit shall be restricted to 4.5 meters and the total plinth area shall be limited to 100sq.m.
- ii) the individual dwelling units must be constructed by the local inhabitants for his bonafide residential purposes, where settlements are existing in clusters, new dwelling may be allowed adjacent to the existing cluster of settlement landward of the line of the existing structure provided that the total number dwelling units shall not be more than twice the number of existing dwelling units.
- iii) In CRZ-III of notified SEZ, construction of recreational facilities including golf courses, desalination plants, hotel and non polluting industries in the field of information technology and other service industries shall be permitted.
- iv) The local inhabitants will be permitted to use the area between 200-500 square. m of

the high tide line for construction/reconstruction of the dwelling units. This is, however, subjected to the condition that the horizontal extension of existing dwelling unit may be allowed on the ground floor on the landward side subjected to the condition that the total plinth area of the dwelling unit shall not exceed 100 square meters.

Courtesy: Green Business

Opportunities,

Apr.- Jun 02, Pp. 6-7.

Fax: 4682228/9

Email: shikhar.jain@cii-online.org

RECONSTITUTION OF INDIAN BUREAU OF MINES – ADVISORY BOARD

Regarding the above titled subject Federation of Indian Mineral Industries received from the Member Secretary, IBM-Advisory Board, IBM, Nagpur vide their letter No.T-40020/CGBM/97-2002 dated 1 August, 2002 for the members kind perusal and suggestions latest by 17 August, 2002, enabling to take up the same in the forthcoming meeting of IBM-Advisory Board.

CONSTITUTION OF INDIAN BUREAU OF MINES ADVISORY BOARD

(Published in Gazette of India No.24, Part-I, Section I, 15th June 2002)

*Ministry of Coal and Mines
(Department of Mines)
New Delhi, the 31st May 2002*

RESOLUTION

No. 35/1/2002-M.III- Whereas with a view to strengthening the links Indian Bureau of Mines and

the various organisations interested in or connected with the function of the Indian Bureau of Mines and to enable the Government to have objective appraisal of the effectiveness of the working of the Indian Bureau of Mines and of the ways and means by which its utility and effectiveness can be continually enhanced, the Indian Bureau of Mines Review Committee, in its Report submitted in December, 1979 had recommended the formation of an Advisory Board for Indian Bureau of Mines. Accordingly the Central Government vide its Resolution No. 23012/99/80 M. VI dated 12th January, 1981 constituted an Advisory Board for Indian Bureau of Mines.

And whereas vide Resolution No. F. 12014/10/85-M.VI dated 28th January 1986 No. F.12014/2/88-M.VI dated 8th April, 1988, No. F.12014/6/90-M.VI dated 23rd May, 1990 No. 35/1/95-M.III dated 20th July, 1995 and the Office Memorandum No. 35/1/96-M.III dated 23 May, 1997 and Resolution No. 35/2/99-M.III dated 3 November, 1999 the said Advisory Board has been reconstituted from time to time. The composition of the Advisory Board of Indian Bureau of Mines will be as under namely:-

COMPOSITION

CHAIRMAN

1. Secretary, Department of Mines

MEMBERS

2. Additional Secretary, Department of Mines
3. Additional/Joint Secretary & Financial Adviser, Ministry of Coal & Mines
4. Joint Secretary (In-Charge IBM), Department of Mines

5. Director/Deputy Secretary (In Charge IBM), Department of Mines
6. Controller General, Indian Bureau of Mines, Nagpur
7. Director General, Geological Survey of India, Kolkata
8. Director General, Mines Safety, Dhanbad
9. Adviser (I&M), Planning Commission, New Delhi
10. A representative of Department of Steel, New Delhi
11. A representative of Department of Science & Technology, New Delhi
12. A representative of Ministry of Environment & Forests, New Delhi
13. President/Secretary General, Federation of Indian Mineral Industries, New Delhi
14. A representative of Govt. of Chhattisgarh
15. A representative of Govt. of Sikkim
16. A representative of Govt. of Gujarat
17. Director, Central Mining Research Institute, Dhanbad
18. Director, National Environment Engineering Research Institute, Nagpur
19. Chairman-cum-Managing Director, National Mineral Development Corpn. Ltd. Hyderabad
20. Chairman-cum-Managing Director, NALCO
21. Chairman-cum-Managing Director, Madhya Pradesh State Mining Corpn., Bhopal
22. Head of Mining Engineering Department, Jodhpur Engineering College, Jodhpur

MEMBER SECRETARY

Technical Secretary, IBM, Nagpur
The functions of its Board will

be advisory in character. It will advise both the Indian Bureau of Mines and the Government. The Board will be at liberty to correspond directly with Govt. The Indian Bureau of Mines will provide the Secretariat to the Board. The Board should devise its own working rules and procedures but the Government would expect it to meet at least twice a year. The functions of the Board will be as follows:

1. To review and advise on the programme of work during the coming year.
2. To review and advise on the Annual Five Year plan and proposals of Indian Bureau of Mines.
3. To apprise from time to time the work, in different areas done by the Indian Bureau of Mines.
4. To advise on systems of Management Information and Management accounting.
5. To advise on ways and means of making Indian Bureau of Mines functioning more effective.

TENURE

The tenure of the Advisory Board will be for two years.

ORDER

Ordered that this Resolution be communicated to all the State Government and Central Ministries of the Govt. of India, Prime Minister's Office, Cabinet Secretariat, Ministry of Parliamentary Affairs, Planning Commission, Controller and Auditor General of India, Indian Bureau of Mines, Geological Survey of India and Department of Atomic Energy.

DEVENDRA MISHRA,
DIRECTOR

Courtesy: Federation of Indian Mineral Industries FIMI Circular No.24, B/22/02 dated 5 August, 2002

Tel: (011) 6410786, 6410078,

Fax: 91-11-6217004

Email: fedmin@nda.vsnl.net.in

COAL ROYALTY RATE HIKED TO 19% AFTER 8 YEARS

The Economics Times, New Delhi, 31.07.02

After a gap of eight years, the government has hiked the rate of royalty on coal up to 19% from prevailing average of 12.76% benefiting the coal producing states to the tune of Rs 500 crore. The Cabinet Committee on Economic Affairs, at its meeting late on Monday, approved the proposal of the ministry of coal and mines to revise the rates of royalty which would continue to be on per tonne basis, an official spokesperson said on Tuesday.

Courtesy: Cement News Digest, 27-31 Jul 02, P-7

Fax: 022-2040582

Email: cmabb@bom3.vsnl.net.in

Web: www.cmaindia.org

CALIFORNIA TO LEAD USA IN REDUCING GREENHOUSE GAS EMISSION

The Statesman, 22 Jul 02

California is set to lead the US in reducing GHG (greenhouse gas) emission, with the Governor, Mr Gray Davis, expected to sign a landmark global warming Bill. The California Climate Bill, recently passed by the state assembly, makes California the first state requiring automakers to reduce emissions of

carbon dioxide and methane – GHG that contribute to global warming. The state also has more serious pollution problem than any other state and the lion's share of California, carbon dioxide emission comes from the transportation sector. Cars and trucks produce 57% of global warming emissions from fossil fuel combustion in California, compared to 31% for country as a whole. The Bill instructs the California Air Resources Board to develop and adopt regulations that achieve the maximum feasible reduction global warming emissions by passenger vehicles and light duty trucks in California. Not surprisingly, environmental advocates have hailed the bill as the most significant step ever taken to control heat trapping gases in the US, while automakers have opposed it saying that California is taking a unilateral step to increase the fuel efficiency of vehicles.

Courtesy: TERI Newswire,

16-31 Jul, 02, P27

Fax: 4682144 or 4682145

Email: outreach@teri.res.in

Web: www.teriin.org

EPA TO MOVE AHEAD WITH DIESEL TRUCK RULES

Charlotte S. Garvey, Washington Correspondent

A Federal court directed the Environmental Protection Agency to go ahead with rules imposing tougher control standards for diesel emissions from on-road trucks. The rules could impact some aggregate mining operations. The US District Court for the District of Columbia rejected arguments made by the petrochemical and truck engine industries to block the regulations. EPA's new fuel standard is designed

to cut diesel engine emissions by mandating a reduction in sulphur content of diesel fuel from 500 parts per million to 15 ppm for on-road vehicles. The rule will apply to heavy-duty highway engines and vehicles starting with model year 2007. The National Stone, Sand & Gravel Association warns that mines using both-on-and off-road vehicles may need two separate types of diesel fuel. Off-road sulphur content is not covered under the rule.

Courtesy: Rock Products,

Jun 02, Vol. 105 No.6 P6.

Fax: 312/726-4107

Email: markley@primediabusiness.com

Web: www.rockproducts.com

ORISSA EXCLUDED FROM PANEL ON MINERAL ROYALTY

Business Standard

Bhubaneswar, 03.07.2002

Orissa is excluded from the Study Group set up by the Centre for revision of mineral royalty rates despite being known as a front ranking state as far as deposits of major minerals are concerned.

The 12 members Study Group on revision of royalty rate and dead rent on major minerals (other than coal, lignite and sand) constituted recently under the chairmanship of additional secretary, union mines department, has mines secretaries of different states like Rajasthan, Karnataka, Chhattisgarh, Madhya Pradesh and Jharkhand and representatives of various government departments and organizations as members.

Courtesy: Cement News Digest,

01 - 05 July 2002, P-14,

Fax: 022 - 2040582

Email: cmabb@bom3 vsnl. net. in

Web: www.cmaindia.org

CLEAN-UP ACT

The California Air Resources Board (CARB) has recently approved stricter standards for checking particulate matter (PM) in the state. CARB calculations show that realisation of the new standards would reduce 6,500 premature deaths every year. "This is an important step because these particles seriously impact human health, particularly infants, children, the elderly and those with heart or lung problems," CARB chairperson Alan Lloyd is reported to have said.

Lagging Behind

Particulate Matter	India (µg/cum)	California (µg/cum)	California new standards (µg/cum)
24-hour mean	200	50	50
Annual mean (PM 10)	140	30	20
Annual Mean (PM 2.5)	No existing standard	-	12.20

Courtesy: Down to Earth, July 31, 2002

Fax: 11-6085879

E mail: chitra@cseindia.org

Web: www.cseindia.org

NEW POWER TARIFF POLICY WITHIN 3 MONTHS: PRABHU

The Hindu Business Line New Delhi, 06.06.2002

A new power tariff policy is being put in place within the next three months, the Minister for Power, Mr. Suresh Prabhu, announced at New Delhi on 05.06.2002.

Speaking to newsmen on the sidelines of a conference on power organized by the Independent Power Producers Association of India (IPPAI),

Mr. Prabhu said: "The draft policy is ready after consultations with all stakeholders, especially the States. We have now sent the policy for comments to an independent organization".

This – the review by an independent body – has been done to ensure that the interests of all the stakeholders are taken into consideration. The Minister, however, refused to identify the organization that has been entrusted with the task of scrutinizing the draft policy.

When approved, the new power tariff policy will form the model or broad framework based on which the state power regulators will be fixing the tariffs for their respective states. In its absence, as of now, the tariff being charged by the States are nowhere near being uniform.

The fresh reform initiative comes close on the heels of the measures taken at the instance of Mr. Prabhu to bring the power distribution sector back on track.

In this regard, the Central Electricity Regulatory Commission (CERC), it may be recalled, had earlier announced the new 'availability based tariff (ABT) norms which have since been implemented by various power generators and states.

Earlier, inaugurating the seminar, Mr. Prabhu called for the use of new technology in the distribution sector to make the power sector commercially viable

Mr. Prabhu noted that while his Ministry was taking initiatives to bring new technology into the sector, large investments in power – a must for boosting economic growth – was not coming as it was unviable.

" There is an urgent need, therefore, to change the mindsets of the people, who somehow believe that it is the duty of the Government to provide them with electricity," he said.

*Courtesy: Cement News Digest
01-07 Jun 2002, P10,
Fax: 022-2040582*

*E-mail: cmabb@bom3vsnl.net.in
Web: www.cmaindia.org*

GOVERNMENT MULLS CESS ON ENERGY TO KICKSTART INDIA POWER FUND

The financial Express, 21 June 2002

The government is evaluating various options such as levying a cess on power or other energy products like oil, gas, and coal (as is being done for the Central Road Fund) besides diverting annual dividends of central power PSUs for mobilizing resources for the proposed \$ 1 billion IPF (India Power Fund). IPF will be a dedicated fund for the development of power sector and will be administered by the PFC. The corpus of this fund will be raised to \$5 billion within five years of its creation.

*Courtesy: Teri Newswire
16-30 June 2002
Fax: 4682144/45
E-mail: outreach@teri.res.in
Web: www.Teriin.org*

NIOSH PRESSES SILICA RECOMMENDATION

Charlotte S. Garvey

The National Institute of Occupational Safety and Health has triggered concern within the mining industry and in other industry sectors with the recent release of a report that examines the health risks of crystalline silica, reviews findings of recent studies and suggests areas requiring more research. The document reasserts

NIOSH's position that the recommended exposure limit should be 0.05mg/cubic meter. Neither MSHA (Mine Safety and Health Administration) nor the Occupational Safety and Health Administration currently plan to pursue a tighter occupational exposure standard. But release of the NIOSH document could bring additional pressure on the agencies to act.

*Courtesy: Rock Products,
Jul.2002 P 2,
Fax: 312/726 - 4107,
312/726 - 2574*

*E-mail :marklay@primediabusiness.com
Web: www.rockproducts.com*

INCREASE IN COAL ROYALTY TO PUT PRESSURE ON MARGINS OF BIGGIES

The Economic Times Mumbai, 19.08.2002

The cement sector, which is witnessing a sharp slide in profitability due to shrinking realizations, could be headed for tougher days ahead. With the royalty on coal being revised upwards after a gap of eight years, top cement makers like ACC and Grasim Industries, which depend largely on domestic coal, are likely to face increased pressure on their margins.

The royalty on coal, an essential input for the power-intensive cement industry, has been increased from the prevailing average of 12.76% to 19%. Although the notification has not been issued yet, industry sources say that the hike in royalty would be steeper in case of relatively lower grade coal, which is used by the cement industry. Besides, analysts point out that since sales tax is levied post-royalty, the tax levy would also increase as a result.

Says ACC managing director TMM Nambiar: "The hike in royalty on coal would put some additional pressure on the cost front. For ACC, the impact would be around Rs. 4 crore"

However, the impact would be relatively lesser for manufacturers like L&T and Gujarat Ambuja, where domestic coal accounts for less than 50% of the overall requirement. The country's largest cement maker ACC, on the contrary, banks heavily on local coal, which accounts for around 90% of its coal requirements, as against 60% for the industry as a whole.

The company's Madukkarai unit is the only facility to be relying on imported coal. For Grasim Industries, the third largest cement maker, domestic coal meets almost 70% of its overall requirements. Says a Gujarat Ambuja official: "In our case the impact would be much lesser as we depend mainly on imported coal.

Currently, royalty on A and B grade coal, the best quality that is on offer in the domestic markets, is pegged at Rs. 135/tonne. Royalty on C grade coal, which is mostly used by the cement manufacturers, is rs.95/tonne, while that on D grade coal is Rs.70/tonne.

*Courtesy: Cement News Digest,
17-23Aug. 2002, P-7,
Fax: 022-2040582/
011-5738476*

*E-mail:cmabb@bom3vsnl.net.in
Web: www.cmaindia.org*

OFF-ROAD DIESEL REGULATION IN THE WORKS

The U. S. Environmental Protection Agency is getting the ball rolling on a proposed regulation that could influence the cost and type of diesel fuel used in aggregate mining operations.

In early June, EPA and the Office of Management and Budget said they would collaborate to make curbing pollution from non-road diesel vehicles and equipment a top priority.

Allen Schaeffer, executive director of the Diesel Technology Forum, says such a regulation has been in the works for some time. Schaeffer says that off-road diesel emissions account for 3.3% of all fine particles in the air. And although that may seem like a small percentage, the emissions from on-road equipment have fallen so dramatically that it has put a spotlight on off-road equipment, he says.

One area of discrepancy between on-and off-highway equipment is required to use a cleaner-burning diesel.

A small number of aggregate companies have both on-and off-highway equipment. For many of those it means storing two separate fuels. It is very burdensome to maintain separate fueling systems, says Johan Hayden, National Stone, Sand & Gravel Association vice president of environmental services.

"That's one thing under

consideration," Schaeffer says of EPA opting to eliminate off-road fuel. He says it appears the on-road fuel has no adverse effect on off-road fuel.

Schaeffer says it is hard to quantify the cost difference between the two fuels because of varying regional market conditions. However, he estimates that nationally, off-road diesel fuel costs about 6 cents less per gallon than its on-road counterpart.

Courtesy: Rock Products,

Jul. 2002 Pp 10 & 14,

Fax: 312/726 - 4107,

312/726 - 2574

E-mail: marklay@primediabusiness.com

Web: www.rockproducts.com

MANDATORY SPRINKLERS IN CEMENT PLANTS DEFEATED

The Codes and Standards staff of the Portland Cement Association (PCA) successfully defeated a proposal to require sprinklers in cement plants. The international Fire Code Committee had recommended approval of a code change to the International Building code that would mandate that all Group F (manufacturing plants of

low-hazard materials) occupancies install automatic sprinkler systems when they exceed 12,000 sq ft per floor or are more than three stories above grade.

PCA staff testified in opposition to the code change, citing the lack of substantiating fire data to support the code change, which would add substantial cost to new or remodeled cement plants. In response to the committee's approval of the change, a survey was sent to PCA's 119 member-company plants to determine whether automatic sprinkler systems were provided. Of the 66 survey forms that were returned, it was determined that only 11 (or 17%) were equipped with automatic sprinkler systems.

This information resulted in maintaining current code provisions that exempt cement plants from the sprinkler requirements when they are separated from property lines by a minimum of 60 ft.

Courtesy: Cement Americas,

July-Aug. 2002, Pp 11 & 12,

Fax: 312-726-4107

E-mail:

sprokopy@primediabusiness.com

URL: www.cementamericas.com

IS THERE ANY INDIGENOUS KNOWLEDGE ON CONCRETE?

*D. Srinivasan, Secretary General,
Indian Concrete Institute, Chennai*

Knowledge developed by the rural, un-educated and tribal people about health, sanitation, herbal cure, life, plants, water, wild life etc. is generally termed as I.K. It is believed, the knowledge gained over centuries and passed on orally for generations, be it Roman Civilisation, Greek Civilisation, Mesopotamian Civilisation, or Indus Valley Civilisation. Portland Cement came to India less than a century ago. What kind of I.K. could be available in India about it. I.K. in a broader sense, I feel, is a knowledge developed by experience, by men on the job. It is only known how and not know why.

During every concreting they make neat cement slurry and pour along the surfaces of the formwork and vibrate the concrete such that the thick cement slurry forms a thin coat over the entire concrete surface. This surface would be exposed on deshuttering. The slurry does neither change the proportion of the concrete mix nor the water cement ratio but provides a thin coating when the concrete is wet and becomes integral with concrete and becomes part and parcel of the concrete. It neither skin out nor peel off like any subsequent protective coating, which normally is required to be applied periodically if once applied.

I surmise that the in-built thick slurry in thin coating that appear on the form finished surface of the concrete has rendered the concrete extremely impervious and did not

allow the water that was there in the fresh concrete to evaporate and dry out the concrete and this water aided the continuous hydration. Of course, the concrete was cured also well. I wanted to know if my surmise is correct.

Will any willing scientist, research scholar come forward to study the effect of slurry finish on the impermeability of concrete?

The foremen who laid the concrete in the way were primarily interested in getting a good finish, appearance. But I am inclined to believe that this has resulted in a strong and durable concrete, as the extra water that was available in the mix for curing without getting entirely lost to the atmosphere due to evaporation. I request the researchers either to confirm or dismiss my surmise. If they confirm then this I.K. on concrete will greatly help in producing a durable concrete.

*Courtesy: New Building Materials &
Construction World
(NBM&C), June 02,
Pp. 60-61, Fax: 011-6822414
Email: nbmcw@nda.vsnl.net.in*

RS 59,000Cr TO BE SPENT ON ROADS IN TENTH PLAN

Government will spend about Rs 59,000 crore on development of road infrastructure during the Tenth Plan (2002-07), minister of state for road transport and highways B.C. Khanduri said on Monday. Speaking at the Indo-US workshop in New Delhi, he said about Rs 45,000 crore of this would be spent on the ambitious programme of four/six-laning 13,146-km of national highways which is slated for completion in 2007.

*Courtesy: The Financial Express,
21 May, 02, P3.*

BLENDED CEMENT SHARE RISES TO 44.5%

Abinaba Das, Mumbai

With cement makers going on the offensive to drive up margins and shifting customer preferences, consumption, of blended cement has witnessed a sharp increase in recent months.

The share of blended cement, which includes portland pozzolana cement (PPC) and portland slag cement (PSC), shot up to 44.5 per cent as on March 31, 02, from 36 per cent a year ago.

Ordinary Portland Cement (OPC), higher cost cement variety comprising around 95 per cent clinker and small quantities of gypsum, now account for 56 per cent of the total output against 62 per cent just a year ago.

Blended cement, on the other hand, contains a far lesser share of clinker, a more expensive raw material, which is substituted by either fly ash (portland pozzolona cement) or slag (portland slag cement). The catch however is that with a marked shift in consumption pattern in favour of blended cements, where additives account for between 18-45 per cent, the effective cement capacity has been on a steady rise which, according to industry observers, could delay the much awaited demand-supply parity by 3-4 years.

"The consumption of clinker today stands at 86.43 million tonnes as against an operating clinker capacity of 111.53 million tonnes. What it effectively means that with the current quantum of clinker, the industry cement output can increase by another 21 million tonnes. With another 5 million tonnes of cement capacity on the anvil, the demand-

supply parity that the cement industry is awaiting for will have to wait for at least another 3-4 years," said an analyst.

While there is not much cost involved in sourcing fly ash, except the freight, the total cost of sourcing slag, including freight, work out to around Rs 425 per tonne. Clinker, on other hand, is a more expensive raw material at price of around Rs 600 per tonne.

The increase in consumption of blended cements has been driven largely by PPC with its share increasing from 26 per cent to 32 per cent in the last fiscal. The share of PSC has however remained almost flat at around 12.5 per cent.

"Even as the realisation on blended cement is lower by Rs 5-7 per bag, cement manufacturers tend to gain as their cost of production is lower by Rs 12-15 per bag," said an analyst.

According to an industry official: "while it makes sense to sell more of blended cements, it is difficult to keep increasing the output. After all, flyash and slag are available only in select centres and manufacturers can produce more only if their facilities are located next to near the source of the additive."

*Courtesy: The Economics Times
13 May, 02, P10*

VIEWS ON SILICA FUME CONCRETE TECHNOLOGY IN INDIAN CONTEXT

N.P. Rajamane, Scientist, SERC Madras

Silica Fume (SF), also known as 'microsilica' or condensed silica fume, is a by-product from silicon metal or ferrosilicon alloy industries [ASTM C 12401]. Silica Fume is very fine non-crystalline silica produced in electric arc furnaces as a by-product during the production

of elemental silicon or ferro-alloys containing silicon. Its high siliceous composition and very fine particle size were utilised beneficially to improve the properties of fresh and hardened cement concretes. Many structures of importance and public utility have been constructed all over the world with concretes containing SF, exploiting the superior durability and strength characteristics of silica fume concretes (SFCs) [CEB-FIP, 1994]. However, the actual degree of improvement in properties of cement concretes (CCs) depend upon numerous factors such as: type and characteristics of cements and silica fume, properties and proportions of other ingredients of concrete, concrete mixing technique, besides compaction and curing procedures adopted. In spite of usage of SF in many important structures in India and numerous conventional and special structures abroad (including bridges), built successfully over the last few decades, the recent publication (October 2000) of Indian Roads Congress, IRC:21-2000, does not mention explicitly SF (and also other mineral admixtures). There is an urgent need to revise this Code in view of the well established superior durability characteristics of concretes containing silica fume and other mined admixtures (MAs) so that durable concretes can be encouraged in road bridge structures. This is particularly in view of the large-scale infrastructure developmental works being planned in India. It is significant to note that IS: 456-2000 published slightly earlier (June 2000) by Bureau of Indian Standards gives many references to blended cement concretes and also a separate clause on MAs (such as SF, fly ash etc.).

Cement concrete produces calcium hydroxide (CH) to an extent

as much as 20-25 per cent by weight of cement used to make concrete [Neville, 1996]. The pozzolanic reaction occurring between CH and the reactive silica content of SF, results in formation C-S-H gel, which contributes to improvement in properties of, hydrated cement matrix [Hewlett, 1998]. However, the actual advantages achieved in any particular concrete depends upon various factors such as-properties of ingredients of concrete, water-binder ratio, type and dosage of superplasticiser used, workability level of concrete, methods adopted for mixing, compaction and curing, besides properties of SF itself [Dewar, 1999; Larrard, 1999].

Courtesy: Materbuilder,

Apr.-May 02, P 87

Fax: 8529259

Email: dicomnet@vsnl.com

Web: www.masterbuilderindia.com

THE BUGBEAR OF CAPACITY CREATION

The Business Line, Monday, 24 June 02

In a commodity industry where volumes and efficiencies ought to play a major role in influencing profitability levels, it is clear that the cement industry has become dependent on price changes for profit growth. This does not mean that volume growth and efficiencies are not important.

But what this points to is the fact that at the industry level, efficiency improvements are capped and the high proportion of inputs with administered pricing leave little room for manoeuvrability on the cost front. The average price levels for cement in key markets have remained in a very narrow range despite periodic surges and dips.

The dips and flat prices prevail more often as the surges come only where producers put together arrangements to ramp prices up.

When demand-supply factors are in full play, the situation is such that prices cannot but be under pressure. Established and unknown names set up cement capacities to capitalise on the expected rapid growth demand. The capacities duly came up. But what did not is demand. In the last five years, around 50 million tonnes of fresh capacities have been created.

This has pushed the capacity with large players up to 129.43 million tonnes. With another 7-10 million tones in the hands of mini-cement plants, the aggregate capacity is way ahead of 2002-02 demand levels of 102.4 million tonnes, with a growth of 9.4 per cent.

But for the late surge, the demand may have been stuck at around 95 million tonnes. The growth surge was useful in a year when around 13.5 million tonnes was added to the capacities. If a reasonable demand-supply balance has to be restored, the industry will need two-three years of 9-10 per cent growth in demand.

The capacity story has dampened profitability. It has made times difficult for smaller players with capacities of 1-2 million tonnes. Only the likes of Gujarat Ambuja, Grasim, L&T, ACC and Madras Cements have managed to weather the difficult times without too much trouble.

But even these companies have not been able to show sustained earnings growth. However, over the next three years, there is likely to be higher degree of discipline vis-à-vis capacity creation.

Investors in the equity market and lenders are likely to be wary of financing new projects by smaller players. Capacity additions can happen only with L&T-Grasim, Madras Cements, ACC-Gujarat Ambuja and Zuari-Italcementi.

At best 4-5 million tonnes may come up in the next couple of years.

These players are likely to go about capacity expansion in line with likely demand trends rather than in a rushed manner. This, coupled with the consolidation, could lead to more stable trends in prices if the demand-supply gap is narrowed in the next two years or so.

Then we may see major players showing healthy profit levels and decent growth over time. Only then will be companies reap the benefits of consolidation.

Courtesy: Indian Cement Review, Jul 02, P 23.

Tel: 022-2076918;

Fax: 022-2072102

HIGH PERFORMANCE CONCRETE

Dr. N. Bhanumathidas, Advisor – R&D, RRDC. N. Kalidas, Director, INSWAREB, Vishakhapatnam

It is a well known fact that the ratio of concrete to steel is decided based on the concrete grade strength, subject to limitations wherever applicable. While the structural practice was confined largely to M 15 to M 30 concrete, in order to rationalise the concrete in massive constructions HPC is developed with strength class of M 40 and above. For this purpose, three aspects were taken as the advantage:

- The increased grade strength of cement
- The increase in cement content
- Advent of chemical admixtures to control water cement ratio

While the contribution due to chemical admixtures is notable during the preparation and placement of concrete, the same gets nullified on durability front on account of detrimental effects of high grade cements. There are two negative features associated with high grade cements viz., high heat of hydration and high surplus lime. These are surmounted with higher

quantity of cement in HPC to achieve higher strength.

Then the investigations revealed that:

- Strength should not be the only criterion for high performance.
- Strength alone cannot ensure durability.
- What is required is high sustainable performance but not high performance alone.

To meet the above parameters the following factors of cement chemistry have been taken into consideration:

- Reduction in heat of hydration and surplus lime in order to increase the environment for durability.

- For this purpose, the input of net cementitious material is the criterion but not the cement.

- This means, the OPC need to be substituted with complementary cement materials (CCM) such as fly ash, slag, silica fume, rice husk ash etc, in order to meet the net cement input for the mix design of concrete.

- When supplementary cement materials are added, the reactive constituents of these materials react with surplus hydrated lime of OPC to render additional (secondary) mineralogical hydrates and commensurate strength.

- Secondary mineralogical hydrates help to densify the matrix, fill up the pores and thus, contribute for durability enhancement.

Courtesy: Materbuilder,

Apr.-May 02, P 85-107

Fax: 8529259

Email: dicomnet@vsnl.com

Web: www.masterbuilderindia.com

INDIA AND THAILAND TO BE LINKED BY ROAD

Orbit-World, 31 Jul 02

A landmark road project to

boost tourism and trade by laying a road linking northeastern India and western Thailand through Myanmar has been agreed upon by the governments of the 3 Asian nations. The 1600 km highway will be completed in 2 years. Many stretches of the corridor already exist and only need to be improved. The move comes just days after direct flights began lining the northeastern Indian city of Guwahati with Bangkok. Until now, there were no direct flights from abroad to northeastern India.

*Courtesy: Cement News Digest,
17-23 Aug 02, P 11.*

Fax: 011-5738476

Email: cmand@nda.vsn.net.in

Web: www.cmaindia.org

INFRASTRUCTURE PROJECT FINANCING

The Statesman, New Delhi, 14 Aug 02

National Highway Authority of India (NHAI) has raised Rs.2232.43 crore from market borrowings this fiscal for part-funding the ambitious Rs.54,000 crore National Highway Development Project (NHDP).

"In the year 2002-03, NHAI aggressively opened its issue of capital gains exemption bonds under section 54 ED of the IT Act on May 22. By the end of July 31, NHAI collected Rs.2232.43 crore," minister of state for road transport BC Khanduri said at New Delhi.

NHAI has also finalised a Rs.6,000 crore line of credit from Life Insurance Corporation (LIC), which would carry interest rate equivalent to government securities plus 100 basis points, he said. The 25 year loan from LIC would have a moratorium of 3 years and are repayable in 7 years.

NHDP, comprising four laning of national highway connecting four corners of the country, is being part funded from Re cess on petrol and diesel which would raise Rs.5880 crore this year, Rs.2000

crore would be allocated for national highways, Rs.2500 crore for rural and Rs.300 crore to Railways for construction of rail over-bridges and level-crossing, Khanduri said.

"NHAI has also received external assistance (World Bank and Asian Development Bank loans) to the tune of Rs.2240 crore during 1999-2000 to 2002-03," he said. Khanduri said government has approved the first phase if NHDP at a cost of Rs.30,300 crore (at 2000 prices). The phase-I of NHDP consists of the golden quadrilateral, connecting four metros of Delhi, Mumbai, Chennai and Kolkata.

*Courtesy: Cement News Digest,
17-23 Aug 02, P 5.*

Fax: 011-5738476

Email: cmand@nda.vsn.net.in

Web: www.cmaindia.org

LAFARGE IN PACT WITH DVC TO SET UP PLANT IN WEST BENGAL

*The Hindustan Business Line New
Delhi, 06.06 2002*

Cement multinational Lafarge has signed a pact with Damodar Valley Corp to set up a one million tonne plant that will use the fly ash generated by DVC's thermal power plant at Mejia in Bankura district of West Bengal.

DVC, a multipurpose river valley project owned by the Union government and two state governments of Jharkhand and West Bengal, has a command area of 24,235 sq.km.

"We have already signed an MoU with Lafarge, which will consume the entire quantity of fly ash to be generated by the fourth unit of our Mejia Thermal Power Station," DVC's chairman JC Jetli told The Financial Express.

The 210 mw unit, which will involve and investment of Rs. 798 crore and is expected to be commissioned by September 2004, will generate around 1000 tonne of

fly ash and 250 tonne of bottom ash per day.

The cement factory will be set up within the Mejia TPS plant boundary. At Mejia, DVC has in its possession over 2540 acres, which is enough for the fourth unit as well as two more similar expansions and the cement plant.

The Lafarge plant will require around 60 acres. The fifth and sixth unit of Mejia TPS are expected to get the techno-economic clearance of the Central Electricity Authority (CEA) by September.

*Courtesy: Cement News Digest
01-07 June 2002, P 4,*

Fax: 022-2040582

E-mail: cmabb@bom3vsnl.net.in

Web: www.cmaindia.org

SELF-COMPACTING CONCRETE: AN EMERGING TECHNOLOGY IN CONSTRUCTION INDUSTRY

*Dr. Rakesh Kumar & M.V.B. Rao
Central Road Research Institute*

Self-compacting concrete is a type of concrete that gets compacted under its self-weight. It is commonly abbreviated as SCC and defined as the concrete which can be placed and compacted into every corner of a form-work, purely by means of its self-weight by eliminating the need of either external energy input from vibrators or any type of compacting effort. SCC was originally developed at the University of Tokyo, Japan, in collaboration with leading concrete contractors during late 1980s. The intention behind developing this concrete was the concerns regarding the homogeneity and compaction of cast-in-place concrete within intricate, i.e., highly reinforced structures and improvement of overall durability quality of concrete due to lack of skilled labour in Japan. This concrete is highly flowable and cohesive enough to be

handled without segregation. It is also referred as self-leveling concrete, super workable concrete, self-consolidating concrete, highly-flowable concrete, non-vibrating concrete, etc.

Use of fly ash and blast furnace slag reduces the dosages of superplasticizer in self-compacting concrete needed to obtain similar slump/flow compared to concrete made with portland cement only. The well known beneficial advantages of using fly ash in concrete such as improved rheological properties and reduced cracking of concrete due to the reduced heat of hydration of concrete can also be incorporated in SCC by utilisation of this material as a filler. SCC often incorporates several mineral and chemical admixtures, in particular a superplasticizer and a viscosity-modifying admixture (VMA). The superplasticizer is used to insure high fluidity and reduce the water-to-cementitious materials ratio. The VMA is incorporated to enhance the yield value and viscosity of the fluid mixture, hence reducing bleeding of the concrete. The homogeneity and uniformity of the self-compacting concrete is not affected by the skill of workers and shape and bar arrangement of structures because of high fluidity and resisting power of segregation of materials.

*Courtesy: ICI Journal
Jul-Sep. 2002, P-9,
Fax: 91-44-4455148
E mail: ici3@vsnl.in
Web: www.pcsadv.com/ici*

'COST CAN BE REDUCED BY CONCRETE ROADS'

India Express Mumbai, 03. 06. 2002

Minister of State for Commerce and Industry Raman Singh has said the amount of Rs. 2500 crore which is invested every year for rural road development can be saved by usage of concrete roads since maintenance cost, fuel costs

will come down drastically. Stressing on rural road development, Singh said: "developments in states start with roads and good roads contribute immensely to the economy of a state. The Cement Manufacturers' Association and Maharashtra State Road Development Corporation held a seminar in Mumbai to share views about India's first access controlled expressway - Mumbai-Pune'. Inaugurating the seminar Raman Singh congratulated every one involved in successfully completing the Mumbai -Pune Expressway in a record time of 33 months.

*Courtesy: Cement News Digest
01-07 June 2002, P 4,
Fax: 022-2040582*

*E-mail:cmabb@ bom3vsnl. net. in
Web: www.cmaindia. org*

EFFECTS OF RICE HUSK ASH ON THE STRENGTH AND DURABILITY OF CONCRETE

N.R.D. Murthy, P.Rathish Kumar, Seshu D.R.- REC Warangal, M. V. Seshagiri Rao-JNTU College of Engg., Hyderabad

Concrete is a traditional material used in construction industry for the past one century and it has become indispensable despite its inherent deficiencies. The concrete for future has to satisfy the conditions of strength and durability, to meet the requirements of huge construction works with least maintenance costs. Efforts are made all-round the globe for developing concrete of enhanced life. The durability can be determined based upon its resistance to penetration by external agents, resistance to internal deterioration due to the chemical composition of its ingredients and structural requirements. The production of concrete involves selection of suitable ingredients, their careful proportions and quality

control. One of the salient features of concrete with good performance is its strength apart from other things. However it is generally agreed that high performance concrete need not always be of high strength alone. Mehta P. K. et al have discussed in detail the principles of production of High Performance Concrete. The strength requirements are not the only necessity, but it could be more resistant to unacceptable rate of deterioration. As already mentioned, the main ingredients of performance concrete are cement, aggregates, water, mineral admixtures which include micro fillers, chemical admixtures such as superplasticizers, retarders air entraining agents etc. A number of investigations have been reported using mineral admixtures such as silica fume, flyash etc which act as microfillers and thereby the microstructure of the hardened cement material becomes denser and stronger which improves its strength durability characteristics. Mehta P. K. and V M. Malhotra have reported investigations using Rice Husk Ash (RHA) as mineral admixture in place of silica fume, and reported it as an excellent replacement of silica fume. However little work is reported in India about the usage of Rice Husk as an admixture for Indian conditions.

The concrete mixes of normal strengths with and without RHA replacements have been reported. 40% of RHA as partial replacement for cement the strength of concrete of 1: 2:4 mix has improved i.e. for mixes designated A1 to A4, beyond which there is reduction in strength. However, in case of mixes from A6 to A9 and A10 to A12, the improvement in strength with addition of RHA was observed up to 30% ash content, beyond which there was decrease. It can also be noted from the table that the

workability of concrete has reduced with the addition of RHA.

Effects of Chemicals on Rice Husk Ash Concrete

From the chemical resistance results of normal strength concretes subjected to 5% H₂SO₄, it can be seen that RHA concretes are more resistant to all types of acids. It was observed from the experimentation that RHA has significant resistance to H₂SO₄, where a significant improvement in resistance can be noted. The reduction in the weight loss report indicates improved dimensional stability and better integrity of concrete with the addition of RHA.

Permeability Studies on RHA Concrete

The permeability test result of the effect of addition of RHA in normal strength concretes can be clearly seen that the addition of RHA has reduced the permeability ranging from 40% to 60%. The significantly reduced ingress of aggressive agents into concrete means less damage which in turn is an improvement in the durability of concrete.

Courtesy: ICI Journal,

Jul-Sep. 2002, Pp 37-38,

Fax: 91-44-4455148,

E mail: ici 3@vsnl.in

Web: www./pcsadv.com/ici

BATTELLE REPORT ON CEMENT INDUSTRY

Battelle News Release, May 13, 02

The World Business Council for Sustainable Development (WBCSD) hired Battelle to identify and recommend actions that the world cement producers can take to become more sustainable. WBCSD is a global consortium of over 160 companies united by a shared commitment to sustainable development via the three pillars of economic growth, environment protection and social equity.

Battelle studied operations involved in the cement production

process, ranging from limestone quarrying and fuel production to cement plant emissions and safety practices. The study involved detailed exploration of facilities, governance structures, regulatory issues and public interests. Battelle's work includes a series of international stakeholder dialogues held in selected locations on four continents. Battelle identified eight issue areas in which industry needs to improve performance, and developed recommendations and action for each. They include: regional development; community well-being; employee well-being; ecological stewardship; emission reduction; climate protection; resource productivity; and shareholder value. In addition, several recommendations were made in three cross-cutting areas, i.e. business integration of sustainable development, innovation and cooperation between cement companies and other organisations. Highlights of the report include: successful adoption of Sustainable Development (SD) by the cement industry will occur only if there is real synergy between sustainability and profitability. To help make the business case for SD, the Battelle team developed business analysis tools for financial managers, strategic planners, and investment analysis and also documented numerous case studies of companies in cement and other industries that have begun to derive benefits from SD.

Other advantages of adopting SD are: (1) Climate protection is a major issue for the cement industry, which produces 3 per cent of worldwide global warming emissions. Both technology and operating practices were evaluated to show how the threat of adverse financial impacts could be turned into business advantages by

companies committed to implementing SD principles; (2) Most cement companies acknowledged that historically they had a slow pace of innovation in technologies and practices. The study investigated both the cement manufacturing process and cement products, seeking incremental changes as well as more radical innovations that could offer substantial progress towards SD; (3) Cement companies have typically not engaged in regular communication with their stakeholders at the local, national and international levels, in order to discuss their concerns and identify solutions. The study developed an understanding of the needs for stakeholders involvement, and created a guidebook to help cement plant and corporate communications staff in mounting more effective outreach efforts; (4) Increased collaboration among cement companies and their stakeholders is warranted in many aspects of sustainable development. The study recommended specific actions to enhance interactions among government bodies, suppliers, customers, academia and the local stakeholders; and (5) The concept of SD, in many ways, unlike any past internal change initiatives that industrial organisation's have undertaken. Therefore, it is essential to have a well-defined process for gaining internal alignment around SD at all levels of the organisation.

According to Battelle, their goal was to produce a blueprint to illustrate what the industry could do for next 20 years, and to clearly identify the benefits of pursuing various elements of sustainable development. More and more companies are realising that the key elements of sustainability – social and environmental responsibility can give them a competitive advantage.

Courtesy: WISTA Innovation,
Jul 02, P- 19
Fax: 91-11-4619083
Email: witt@nde.vsnl.net.in
Web: www.witts.org

NEW AREAS OF CONTRACTING

R. Ramnathan – Former Member (Finance) in the Telecom Commission

Increasing realization on the part of governments that they cannot find the huge resources needed to finance infrastructure projects has led to the induction of the private sector in a big way in these projects. Infrastructure projects have long gestation periods and to induce private funding, the government has to offer long-term stability of politics and reasonable returns over a period of time. Assurances of minimum usage of the facilities (e.g. in the power sector) with contractual guarantees are some of the features in the entirely new systems of contracting that have spawned.

Projects in highways, rail, road, airport, water resources, waste water management, power projects and utilities operation and management are some of the areas where innovative contracting are being adopted increasingly in many parts of the world. The following types of contracting arrangements are possible:

- (a) Management contracts
- (b) Leasing
- (c) Service contracts
- (d) Build, own and transfer (BOT) and its variations.

Before deciding on the type of contract to be entered into, the Government should have some clarity on the following:

- i What are the problems, which are being faced at present? Which could be resolved by the innovative methods of contracting.
- ii Entrusting the public sector infrastructure projects to

private parties may call for the political consensus without which they cannot be successfully implemented.

- iii The private utility will necessarily entail a higher tariff. Will this be acceptable to the consuming public?
- iv When private sector is permitted to play a large role in what so far have been the principal areas of operation of public sector, then, there is an immediate need for a strong independent regulatory mechanism. Is it in place?

Once these basic questions are answered, then, it will be relatively easy to choose one of the types of contracts mentioned above.

Before the government takes a decision on entrusting a utility or a project to a private party, a good pre-contract analysis would save a lot of trouble later. Detailed analysis and the forms and timing of the private sector involvement, designing of a contract, regulatory regimes and risk management mechanisms should also be gone into sufficient detail. A regulatory mechanism must come before the contracts are awarded. The advice of the regulator must be taken into account in working out of the arrangements.

All long-term contracts involve high risk, and unless arrangements are made to share the risk in a fair manner, these types of contracts will not succeed. The risk to be allocated equitably in the following areas:

- i Construction risk
- ii Financial risk
- iii Political risk
- iv Revenue risk
- v Regulatory risk

There must be agreed parameters for performance measurement as also for the kind of data, including financial data, which the operator is expected to give to the regulator or to the licensor. Asset

transfer can also create legal problems which must be attended to in advance. The types of approvals needed, including environment clearances, by the private party before he can award the work should also be determined. Apart from regulator, there must be a distinct dispute settlement mechanism in place, in advance.

In India, some projects are being taken up especially in the power sector by way of independent power producers. The experience so far has not been happy. But these are early days and much can be learnt from the experience of other countries who have adopted these new forms of contracting to push through many projects to bring in much needed private capital and efficiency of operation.

Courtesy: FICCI Business Digest,

May02, Pp. 5-6.

Fax: 91-11-3320714

Email: power@ficci.com or

power@mantraonline.com

Web: www.ficci.com/energyconservation

HOUSING TO BOOST CEMENT DEMAND, SAYS – CMA

The Statesman, Ahmedabad, 22.07.02

The Cement Manufacturers' Association (CMA) believes that to boost the demand for cement in the country, a more flexible housing loan term can be a strong driver. The CMA has observed that in recent times, because of the lowering of housing loan interest rates by banks and other financial institutions, demand is going up in both the rural and urban areas.

Industry sources said, as per the current estimates, the country faces a shortage of over 20 million dwelling units and this backlog is still growing. It has been also seen that urban development leads to improvement in the demand for housing which in turn plays an important role for economic growth.

'There is no dearth of land to

help construct homes and all that the government needs to do is to help with enabling legislation in making the required extent of land available. Cement and concrete can contribute significantly in facilitating construction of low-cost housing and the industry can offer high quality cement at the cheapest rates in world", said A.K. Jain, spokesperson of CMA. According to Jain, the cement industry has adequate but unutilised capacity to help meet any upsurge in demand. Availability of adequate cement at economical rates is therefore not a constraint and the housing sector can consume, roughly over 50 million tonnes of cement to help clear the backlog of dwelling units. "It is clear that any impetus in housing activity will serve as a powerful driver to boost the growth of the Indian cement industry and in addition, construction activity in itself is highly employment-oriented and thus, it will have a multiplier effect", believes Jain.

"We have already observed in recent times that because of the reduced interest rates, consumption of cement is on the upswing and it can rise more, if the housing loan conditions can be made more flexible", said an official of a large cement manufacturer based in Gujarat.

A CMA report says that besides individual housing, space absorption by corporates is also likely to grow by 50 per cent, during the next few months.

In Bangalore, it is likely to touch 750,000 square feet, in Gurgaon it is likely to touch 300,000 square feet and in Mumbai, it may expand up to 400,000 square feet. "So we hope to grow more with all these development in both the domestic and corporate sectors", said the official. But he added that demand is still constrained due to inadequate access to finance.

*Courtesy: Cement News Digest,
20-26 Jul02, P4
Fax: 022-2040582
Email: cmabb@bom3.vsnl.net.in
Web: www.cmaindia.org*

CEMENT SUSTAINABILITY INITIATIVE

Not one to be left behind, the cement industry too has launched a similar image building campaign. The Cement Sustainability Initiative (CSI) started by the world's 10 largest cement manufacturers has now released a report (mentioned in Cement, Energy and Environment, Oct-Dec 2001, P 44) on their industry's efforts in the field of sustainable development.

The agenda of the CSI, which functions in tandem with the World Business Council for Sustainable Development (WBCSD) includes a three-year programme on six priority issues: climate protection, fuels and raw materials, employee health and safety, emission reduction, local impacts and internal business processes.

However, the industry acknowledges that it will not be easy to implement the recommendations of this report. They point out that the barriers include a lack of trust among stakeholders, who make investment in sustainable development projects only if they are linked to profit.

*Courtesy: Down to Earth,
Aug 31, 02, P-13.
Fax: 91-11-6085879
Email: cse@cseindia.org
Web: www.cseindia.org*

BANGALORE-MYSORE ROAD PROJECT TO TAKE OFF SOON

Work on the Bangalore-Mysore expressway, being executed by the Nandi Infrastructure Corridor Enterprises (NICE), expected to begin in a month.

Talking to reporters after a high level meeting with Karnataka chief secretary A Ravindra, principal finance secretary and commissioner Chiranjeevi Singh, Karnataka Industrial Area Development Board managing director Harish Gowda and chief minister's principal secretary SV Ranganath, NICE MD, Ashok Kheny said the last hurdles in commencing work had been cleared with the government agreeing to issue the necessary 'comfort letter' sought by the financial institutions.

"We expect the consortium of financial institutions led by ICICI to release funds to the Rs.2,000 crore project upon receipt of the comfort letter allaying their reservations over various aspects to facilitate early financial closure", he said and added the work would begin simultaneously from both ends.

Mr. Kheny said the first phase of the 111-km expressway project, which is expected to reduce the present three-hour travel time from the two cities to one hour 15 minutes when completed, is targeted to be completed in 18 months. He said NICE was all set to take up work even during monsoon when earthwork and construction of bridges and underpasses could be handled.

*Courtesy: Indian Cement Review,
Jul 02, P 31.
Tel: 022-2076918;
Fax: 022-2072102*

WORLD'S BIGGEST CEMENT PRODUCTION LINE?

WorldNews

Anhui Conch has just signed contracts with Polysius Germany for a 10,000tpd clinker line to be built at its Chizhou facility on the Yangtze River south of Wuhu City in Anhui Province. This new line is scheduled to be completed by end-2003.

Courtesy: International Cement Review/
July 2002,
Pp 53-58, 10 & 4,
Fax: +44(0) 1306 740660,
E-mail: info@CemNet.co.uk
Web: www.CemNet.com

NETWORK FORUM BEGINS TO TAKE SHAPE

The second meeting of the newly formed Global Cement Network took place late July in London, which took place at the Institute of Directors, Pall Mall, London, brought together a focus group given the tasks of formulating an outline plan for the development of an industry-wide network of specialist within the global cement industry.

First item on the agenda was, not surprisingly, the need to set up a professional register of cement expertise from around the world capable of providing a range of services in the global cement sector, including management and marketing, consultancy, technical advice and 'hands-on' support in troubleshooting, operational management and performance monitoring, and to promote such levels of expertise as widely as possible.

Many cement companies, currently outside the orbit of this new initiative, should be encouraged to become more involved in sustainability issues and should be made more aware of the proposed action plans.

It was decided to explore the current status of training for cement professionals and technicians within the cement industry.

The proposal to provide an international training scheme was mooted, tailored to incoming graduates or technicians as well as more specific courses for those wishing to gain an understanding of the cement industry.

Accordingly it was decided to explore suitable accreditation

procedures, and, as a first step, to provide a detailed outline of a proposed training course for cement technicians utilising on-line training aids, distance learning techniques and coursework modules.

The concept of workshops was noted at becoming much more widespread. Given the levels of expertise within the Global Cement Network, it was felt that suitable workshops could be offered to the industry by members. Here the focus should be on both technical and management issues, while the current focus on sustainability would also lend itself to a suitable workshop format for those management and operations staff given the task of optimising factory performance within a framework that was increasingly tied to stricter emission controls, secondary fuel usage and waste management, to name just three key areas. Accordingly a venue, content and date for the first such 'workshop' would now be explored.

The next meeting will be announced shortly and will most likely take place in London. Meanwhile we invite all who are interested in promoting the aims and objectives of the worldwide cement industry within an independent framework to sign up for further information via our website: www.GlobalCemNetwork.com

Courtesy: International Cement Review
Aug. 2002, P 14,
Fax: +44(0) 1306 740660
E-mail: info@CemNet.co.uk
URL: www.CemNet.com

CEMENTING A NEW FUTURE

Philip Kerton, ICR Research

Paris, on 3 July 2002, saw an unprecedented gathering of five Chief Executives, two chairmen and an executive board member from eight major cement manufacturers and apologies from two others. Their purpose was to make the world aware of a joint commitment

to an initiative for Sustainable Development – covering a third of the world's cement production – and their pledge to report on progress.

The Key commitments highlighted at the launch:

- Publish individual performance data and targets for carbon dioxide emissions by 2006, applying the recently developed protocol to measure, monitor and report their emissions.
- Develop guidelines via stakeholder consultations for the use of fuels and raw materials in kilns, especially industrial by-products and waste, applying the agreed and validated guidelines across their operations.
- Frame common reporting practices and share best practices for health and Safety management.
- Develop a protocol for measurement, monitoring and public reporting of emissions.
- Design common guidelines for assessing Environmental and Social Impact, in consultation with key stakeholders.
- Establish key performance indicators for cement industry Sustainable Development.

The Battelle Memorial Institute is a major independent, non-profit organisation, with headquarters in the USA, specialising in the technical aspects of environment and sustainable development. It was commissioned by the WBSCD to carry out a two-year project, sponsored by ten leading cement manufacturers, members of the WBCSD, and the results of that project from the basis of the new Cement Sustainability Initiative.

Courtesy: International Cement
Review/
Aug. 2002, Pp 51-54,
Fax: +44(0) 1306 740660,
E-mail: info@CemNet.co.uk
Web: www.CemNet.com

HOUSING – AN EMPLOYMENT GENERATOR

“Impact of Investment in Housing sector on GDP and Employment in Indian Economy” - A Study sponsored by HUDCO and prepared by Bakul H. Dholakia and Ravindra H. Dholakia of Indian Institute of Management, Ahmedabad. We are reproducing relevant portions for the benefit of our members.

This study is probably the first such attempt and specifically focusses on:

1. Inter-industry linkages of housing investment; and
2. Impact of investment in housing/construction sector on generation of income and employment in Indian economy.

There are wide variations in the relative strength of backward linkages among different sectors. The coefficient of backward linkages of construction sector and construction-related manufacturing is found to be 0.487 and 0.6818, which can be considered fairly high. Construction-related manufacturing sector and construction sector rank first and fourth among the 14 sectors in terms of the coefficient of direct backward linkage. The two sectors which are found to have higher values of the coefficient of backward linkage in relation to that for the construction sector are: Other Manufacturing and Electricity, Gas & Water Supply. All other sectors of the economy have a coefficient of backward linkage, which is lower than that of the construction sector.

Thus, the construction sector has very strong backward linkages with other sectors, which clearly

indicates that the growth of construction sector would provide significant stimulus for several other sectors to grow. Estimates of Direct Backward Linkage Coefficient prove the point.

It is evident in the light of such Inter-Industry interdependence and linkages that a change in the final demand for the output of a given sector leads to changes in the output levels of almost all sectors of the economy. Moreover when the sectoral output levels change due to a given change in final demand, value added by each sector also changes. This, in turn, leads to a change in national income, and consequently in personal income. It is obvious that any change in sectoral expenditure will have far-reaching implications in the form of a chain of repercussions on the output and income levels in all sectors of the economy. An attempt is made to examine the overall impact of housing investment on income generation, in relation to similar impact of investment in other sectors, in terms of an analysis of income multipliers computed for different sectors of Indian economy.

The income multiplier effect calculation consists of:

- (a) Direct income generated per unit of output in each sector
- (b) Increase in output of various sectors required for providing additional inputs to the given sector whose final demand has undergone an initial increase.
- (c) Increase in output levels of different sectors required to support the additional output generated in second round.

The estimates of income multipliers Type-I computed for each of the fourteen major sectors of Indian economy on the basis of input-output data relating to the year

1996-97 are presented in the Table below. Income multipliers presented in the Table capture the direct and indirect effects of a change in final demand of the given sector on the sectoral output and income levels based on the assumption that the final demand of all other sectors would remain unchanged.

It is evident from the estimates of income multiplier given in the Table that construction sector ranks fourth among 14 broad sectors and Type-I multiplier is 1.95. Construction-related manufacturing sector ranks first and has the highest value of 3.14 as its income multiplier.

S. No.	Sector	Income multiplier	Sector's rank
1	Agriculture	1.4169	6
2	Forest & logging	1.0887	13
3	Fishing	1.1411	12
4	Mining	1.2956	10
5	Construction-related manufacturing	3.1431	1
6	Other manufacturing	2.7027	2
7	Construction	1.9491	4
8	Electricity, gas and water supply	2.0650	3
9	Transport	1.8183	5
10	Trade	1.3301	7
11	Financial services	1.2201	11
12	Social services	1.3023	9
13	Public administration and defence	1.0000	14
14	Other services	1.3047	8

Courtesy: *Indian Construction, BAI, May 02, Pp 5-7.*
Fax: 022-4950507

Email: bai@ysnl.com

Web: www.buildersindia.com

HIGHWAY TO HEAVEN

The Economic Times, 14.07.02

If there is one sector, which is flush with funds, has strong backward linkage and is fuelling big-time growth in the economy, it is surely would-be roads and highways. The last two years saw plans getting firmed up on the

drawing board with the last quarter of 2001-02 seeing visible action and tangible signs of growth offtake in related sectors like steel, cement, building materials and construction. Says Planning Commission Advisor Pronab Sen: "The last quarter of 2001-02 has seen the momentum in the roads sector progressively pick up. This kind of a pace in this sector has not happened in the Indian economy." In fact, till the late 90s, it was the Railways, which was a pampered mode of transport. And, it is only after the Prime Minister's grandiose Rs60,000- crore National Highway Development Programme (NHDP) that this surface transport sector sprang to spotlight.

Roads are the largest consumers of steel and building material, while culverts and bridges would also mean high intake of cement concrete. At present, the national highway programme is not going high on use of concrete as the per-km cost of construction goes up as compared to black-surface roads, industry experts said. However, even with the existing configuration of bridges and culverts, the cement industry has started witnessing signs of growth. According to National Highway Authority of India's estimates, consumption of cement (structure) is pegged at 1,700 metric tonnes/km while steel (structures) consumption is at 100 metric tonnes/km. The annual average requirement for the highway programme is estimated at 4m metric tonnes of cement and 3 lakh metric tonnes of steel.

The NHDP entails four-laning and widening of a length 14,000 km. It has two phases: the Golden Quadrilateral which links the four metro cities, and the North-East-South-West corridors which connect the diagonals of the quadrilateral. In the last quarter of 2001-02, construction sector grew by 7.5 percent against a negative 1.2 per cent in the same period last year.

Experts said that a pickup in road construction activities and housing could explain the sudden spurt towards the fourth quarter last year. And, the cascading good effect of this growth could be seen in the current fiscal too.

Besides, a multiplier effect on related sectors, highway construction is also seen as giving a boost to employment opportunities. As a thumb-rule, there is a requirement of 40 persons per km per day. So, the total requirement of labour for the ongoing Golden Quadrilateral project is estimated at 180 million mandays.

Though the highway revolution may have kick-started much later in India's economic time zone, it is poised to stay active for at least the next five years, which is the deadline for the completion of the mammoth Rs 60,000-crore programme. So, this sector will continue to be a source of economic stimulus for the next five years after which time the forward linkages would start shaping up like reduction in freight costs and easier flow of goods and services.

*Courtesy: Cement News Digest,
13-19 Jul 02*

*Email: cmabb@bom3vsnl.net
Web: www.cmaindia.org*

TECHNOLOGY FUNDING - MORE R&D FUNDS FOR 2002

The total R&D expenditure in the United States is expected to increase by about 3.5 per cent making it to \$285.6 billion in the year 2002. Three factors, change in Presidential administration, faltering economy and events and aftermath of Sept 11 terrorist attack have influenced the state of R&D funding for the upcoming year. The highlights from the forecast include: (i) A 4.7 percent increase over prior year in federal government expenditure on R&D in 2002 is

expected which is \$75.5 billion; (ii) Industry funding on R&D would be \$195 billion which is 3.2 percent increase; (iii) A \$15.4 billion expenditure on Academia and non-profits, which is 3 percent more over 2001, is expected.

*Courtesy: WISTA Innovation,
Jul 02, P- 17*

Fax: 91-11-4619083

Email: witt@nde.vsnl.net.in

Web: www.witts.org

BUILDING THE TOWERS OF OPPORTUNITY

K.P. Singh, DLF Universal

As a nation at the crossroads of history, India has a long way to go to realise the dream of becoming a prosperous country, free from hunger, disease, ignorance and homelessness. Undoubtedly, there have been many outstanding achievements in the past 55 years, notably the Green revolution, White revolution, and lately, the telecom revolution.

State-controlled urban development is largely characterised by almost wilful ignorance of the social dynamics that forge a direct cause-and-effect linkage between building homes, schools, factories and building character. Urban development has to be seen as an instrument to help build the character of our nation by offering its young citizens a healthy environment to grow up in.

As far as the housing and infrastructure sector is concerned, we need to shed the baggage of old ideas and myths. Building cities isn't just about bricks and mortar. It is about understanding the needs and aspirations of the people and creating an enabling environment for good citizenship. It is about nation building. One cannot overemphasise the role of real estate development in the economic growth of a country. In Britain, in the mid-80s, Margaret Thatcher gave a major thrust to housing on

the far-sighted premise that homeowners invariably become law-abiding citizens and responsible members of society with a real stake in community welfare.

It is time India adopted that philosophy. Our vision should be to provide not only housing for all by 2010 but also a living environment conducive to character-building. The only way to achieve this is to jettison outmoded laws. All enabling legislation needs to be put in place for harnessing good developers attracting investments, even from abroad. We believe that if the vision is there, the means will follow.

It is strange the housing sector has been accorded neither industry status nor infrastructure priority. The multiplier effect of growth of housing has not been given the consideration it warrants, even though it is known to be an axiom, as has been borne out even by the latest McKinsey Report. Housing is the largest employment generator. For example, the construction of every one million housing units per year would create 5 million man-years of direct employment and 7.5 million man-years of indirect employment.

Housing can and should be harnessed as an engine of economic growth. It isn't just a matter of developing land and constructing housing units. Our thought processes have to be geared towards developing a society. A society inhabited by those who broadly share common values, have more or less similar needs, and believe in quality of work and life. Urban renaissance is an idea whose time has come. A vision document or White Paper on what kind of urban environment we wish to bequeath to our future citizens, is long overdue. Building cities means nation-building, character-building. That was DLF credo back in 1947. Partition was coming and the

Group- particularly its founder, Chaudhary Ragvendra Singh could see that the influx of refugees would need new localities for rehabilitation.

The day that, as in many developed countries, the number of "New House Starts" is treated as one of the basic economic indicators to measure the health of the economy. I shall begin to feel confident that India is on the right path to national development.

*Courtesy: Indian Construction,
Jul 02, Pp 23-24
Fax: 022- 4950507*

*E-mail: bai@vsnl.com
Web: www.buildersindia.com*

A DUTY TO SAVE THE WORLD, WITHOUT THE RIGHT TO SURVIVE

Anju Sharma

The World Summit on Sustainable Development (WSSD) may not finally amount to much, but the preparatory meetings for the summit have reopened old scabs that received only hasty treatment at Rio. Quite clearly; many of the differences held by Northern 'environmental' groups and Southern 'development' group are as strong as ever.

Many Western groups still see it as their duty to rescue the South from development – at any cost to the South, it seems. Unable to do much to change attitudes to development in their own countries, they are quick to waggle a finger at their Southern counterparts saying, "No, no, development is bad for you." Instead, they point to the section of the store that sells the mirage of sustainable development. "Look, here's something healthy." Of course most of them pointedly ignore the price label. Acknowledging that sustainable development costs more money would require them to get their own governments to at least meet the financial commitments they have

made. This they are plainly not capable of doing, as they have proved over the last so many years. They find it much simpler to deal with Southern governments than their own governments, because Southern governments can be arm-twisted through conditionalities from Northern-dominated financial institutions such as the World Bank and International Monetary Fund (IMF) to do their bidding.

It is for this reason that the 'right to development,' which was agreed to as an inalienable human right by the UN General Assembly in 1986, is still an issue of debate in the draft document that will be accepted at Johannesburg. Like their governments, many Northern groups vehemently oppose any suggestion that all nations should have a right to development. According to these groups, giving Southern nations the right to development would translate into giving them a 'right to pollute.' The most they are willing to concede is a 'right to sustainable development.' In other words, developing countries can meet the needs of their people – but with restrictions. These restrictions take away a right, and instead replace it with a duty.

To begin with, any 'right to sustainable development' will not reflect the fact that unlike industrialised countries, Southern nations have not yet used up their share of global environmental space. So to be fair, they should still have a right to development, while it is the industrialised countries that should have the restriction of sustainable development placed upon them. The right to development, which encompasses the right to equal access to all resources, far better articulates the right of developing countries to grow in the conventional development model until they have used up their environmental space (or until the world community

provides them the financial and technological wherewithal to opt for sustainable development, in which case they should have no objections to making the change).

The second problem is with the definition of 'sustainable development'. Given that the term is a chameleon with no fixed meaning, it is apparent that the South's 'right to sustainable development' will be defined by the whims and fancies of the financial muscle of the North. And as we have learnt over the last so many years, Northern definitions of sustainable development can be very anti-poor and pro-rich. Take the instance of sustainable forestry. Most of the criteria defined for sustainably produced timber favour Northern practices of sustainable forestry. They give no importance to whether the process of producing the timber benefits the poor or further lines the pockets of the rich. Or whether the poor timber producers of the South will be able to compete with the rich producers of the North in meeting the criterion.

A right to sustainable development could become a problem for the poor for two other reasons mentioned before, because the extra funds needed to practice sustainable development are not yet available to the South, and also because there is every likelihood that while the South will be bribed and bullied into keeping their commitment to sustainable development, the North will carry on with business as usual, while there is not a thing the South will be able to do to make them change their ways. Northern NGOs will be as powerless as they now are in their own countries, and will therefore find it more convenient to continue to turn a relative blind eye to the non-performance of their own governments. This is exactly what they have been doing in the case of *global warming. Instead of trying to*

change policies to reduce fossil fuel dependence in their own countries, these groups find it easier to force changes on the South by using their influence on global financial institutions.

*Courtesy: Down to Earth,
Aug 15, 02, P-52.
Fax: 91-11-6085879
Email: cse@cseindia.org
Web: www.cseindia.org*

INDIA SEEKS LONG-TERM ACTION PLAN AT RIO 10 + 8

*Sudha Nagaraj, The Economics Times,
14 Aug 02*

India and other developing countries in the Group 77 will push for the acceptance of the draft implementation agenda for sustainable development in its entirety at WSSD (World Summit on Sustainable Development) to be held at Johannesburg between 28 August and 3 September 2002. The draft plan catering to Agenda 21 agreed to at Rio, has been prepared over a period of one year. But at the last meeting in Bali in May-June, serious differences arose between the North and the South with the developed world refusing to commit to several key issues in continuing sustainable development efforts. The bracketed portions included the all important clause on common but differentiated responsibilities. This implies a multilateral approach to sustainable development with all countries are opposing it. Secondly, there is no consensus on setting deadlines to achieve goals. The targets too have become contentious with the US and Japan sticking to those derived from the Millennium Development goals (like alleviating poverty, providing drinking water) while the EU wants to embrace other issues like sanitation and energy too. Thirdly, developing countries feel the need for new and additional financial resources to *continue sustainable development*

efforts and expect the developed countries to pitch in, whereas developed countries are shifting the onus on the plea that there is a lack of good governance.

*Courtesy: TERI Newswire,
1-15 Aug, 02, P23.
Fax: 4682144 or 4682145
Email: outreach@teri.res.in
Web: www.teriin.org*

HALF A CHEER FOR DEMOCRACY

UNDP's Human Development Report 2002

If you like to judge a book by its cover, here's a mixed metaphor: the title is 'Deepening democracy in a fragmenting world', but the image shows pigeons flying out of drawn out hands. Depth and flight don't make an easy marriage. But this, perhaps, would be reductionism. The Human Development Report 2002 of UNDP offers some vital indicators about the politics-development link.

The report is as much a report card of 173 countries' performance in human development as of democracy, which gained currency in the last two decades as never before. In this period, "81 countries took significant steps towards democracy, and today 140 of the world's nearly 200 countries hold multi-party elections." And then there are the sobering statistics: of the 81 that dallied with democracy, only 47 are 'fully democratic.' Overall, only 82 countries, with 57 per cent of the world's people, are fully democratic.

The answer: "...democracy in itself does not guarantee greater social justice, faster economic growth or increased social and political stability. The links between democracy and human development can be strong – but they are not automatic." If the link is so strong, how does the report explain India – the largest democracy in the world and one of the oldest in the

developing world – being ranked 124, much lower than non-democratic states such as Saudi Arabia (71) or China (96)? Well, it doesn't. One of the reasons democratic institutions fail to deliver, says the report, is that "bureaucrats are underpaid, overworked or both." Now this seems like a joke for anyone who has set a foot in a government office in India.

The report points out that democracy has been reduced to electoralism in many countries. It also talks about decentralisation of power to local governments. "Only if accompanied by strong support to community groups can decentralization empower ordinary people," it recommends. For example, in India, most state governments are yet to make any progress on Panchayati Raj institutions. The report doesn't discuss how poorest people in the developing countries rely on the natural resources, and how this base is degraded and polluted after governments – many of them democratic – have taken over the ownership of these resources away from the communities. The report gives short shrift to environmental concerns.

So what does it say about international democracy? It gives the example of the appointments to top financial bodies. "Formally, all members of the IMF and World Bank executive boards are supposed to appoint the institutions' presidents. But by convention, Europeans select a candidate for director of IMF and the US government selects the head of the World Bank." This lack of democracy also shows in the World Trade Organisation. "Although all countries have a seat and a vote in the WTO, actual decision-making occurs in the "green room" – the small group meetings convened by the director-general and heavily

influenced by Canada, the European Union, Japan and the United States. Most developing countries are usually excluded."

*Courtesy: Down to Earth,
Aug 31, 02, P-20.
Fax: 91-11-6085879
Email: cse@cseindia.org
Web: www.cseindia.org*

UNDERMINING SUSTAINABILITY

Kushal P Syadav

The recent launch of the Mining, Minerals and Sustainable Development (MMSD) project report initiated by the Global Mining Initiative (GMI) – a conglomerate of the world's leading mining companies – seems a step in this direction. In the last decade after the Rio conference, the mining sector has been at the receiving end across the globe with regard to its poor environmental track record. Quite understandably, therefore major mining companies which did not evince much interest in the Rio conference, appear a concerned lot today.

Through initiatives like the MMSD, the industry seems all geared up to improve its tainted image. The project, was the brainchild of 10 major mining companies, which are a part of the mining and minerals working group of the Geneva-based World Business Council for Sustainable Development (WBCSD). The report acknowledges the poor environmental conditions in the mining sector.

However, non-governmental organisations (NGOs) and experts working closely with mining issues have rejected the project. "MMSD is a knee-jerk reaction of the mining industry to put forward a humane face to dirty extractions that they are undertaking," says Ravi R Pragada, national convenor, Mines, Minerals & People, an NGO working with mining issues.

The MMSD report, circulated at the fourth Preparatory Committee Meeting (Prepcom IV) for WSSD at Bali, Indonesia, in May was also criticised. According to a release from Jatam, an Indonesian NGO working closely with local communities affected by mining, Prepcom IV is a sham wherein people's organisations are drawn into meetings, in which they get very little official recognition and clearly exercise no influence on the chairperson's text.

"The mining companies are following the track-II mode as they want dialogues and partnerships with the NGOS and other civil society organisations. But they are not addressing the key issues: forging partnerships with the local communities affected by mining," says Pragada.

Activists affirm that indigenous people in most parts of the world have rejected the dialogue and partnership offered by the mining companies. "Such partnerships remind us of the indiscriminate killing of tribal people in Orissa in December 2000 when they refused to give up their land for mining operations," says Pragada. "The companies and the NGOs which work with them follow the slogan "Digging for change", adds Pragada.

The NGOs are convinced that the mining industry will be successful in pressing for sustainable mining through the MMSD project. And it seems that the voice of the indigenous people will once again go unheard.

*Courtesy: Down to Earth,
Aug 31, 02, P-13.
Fax: 91-11-6085879
Email: cse@cseindia.org
Web: www.cseindia.org*

GLOBAL WARMING: BUSH FEELS THE HEAT

US President George Bush's failure to adopt a comprehensive

policy to curb global warming has drawn flak from 11 US Attorneys General. They have lashed out against Bush for not effectively addressing the issue of global warming and urged the President to rethink his decision of not signing the Kyoto Protocol – the international agreement to curb global warming.

In a letter delivered to the White House, 10 Democrats and one Independent attorney from various states including New York, California, Massachusetts and Alaska, wrote that inaction by the Republican administration had resulted in a confusing tangle of anti-pollution regulations passed by various states.

The letter applauded the US state department's report issued in May 2002 which stated that rising global temperatures and sea levels are a threat to ecosystem and coastlines. The Attorneys have, however, criticised the Bush administration for not acting on the report. "In the light of the report's findings, we urge you now to rethink the administration's policy response to the problem," the letter said.

Although all the signatories are Democrats, the letter was not about politics, Attorney General, Thomas Reilly of Massachusetts said. He explained, "This is about our environment and our future."

*Courtesy: Down to Earth,
Aug 31, 02, P-19.
Fax: 91-11-6085879
Email: cse@cseindia.org
Web: www.cseindia.org*

U.S. COMPANIES ALLAY FEARS OVER KYOTO PACT

The Hindu Business Line, 5 July 2002

A coalition of US manufacturers and energy producers have said they will be harmed when the Kyoto agreement on global warming is adopted by other nations while the Bush

administration and Congress refuse to participate. US companies will lose out to foreign competitors that gain expertise and market share in energy-reducing technologies, and may face trade sanctions against US exports that are made at higher-polluting factories, according to the Business Council for Sustainable Energy, whose 37 members included Honeywell International Inc, Maytag Corp and Covanta Energy Corp. Since federal regulations of carbon dioxide emissions is inevitable, the government is not doing US companies a favour by keeping them outside the worldwide emissions trading system that may be adopted with the Kyoto accord this year, said the council's president, Mr. Michael Marvin.

*Courtesy: Teri Newswire,
1-15 July 2002, P30,
Fax: 91 11 4682144*

*E-mail: outreach@teri.res.in
Web: www.teriin.org*

NHAI ISSUES GUIDELINES TO OIL COMPANIES

The Pioneer, 25 June 2002

The NHAI (National Highways Authority of India), has issued new guidelines asking the oil companies to move their petrol stations away from the highways, build service roads for vehicles to access them, and equip them with a host of other services. NHAI has cited the menace of accidents caused by vehicles that suddenly veer into petrol pumps on highways, as the reason for the new guidelines. It has asked oil companies to construct 5.5 – 7 metre wide service lanes from highways to the relocated petrol pumps. The guidelines propose that vehicles should be guided to petrol pumps through well-located signposts and acceleration and deceleration zones

on highways, which would be built by the oil companies. Respective fuel retailers would also be responsible for the construction of service roads, channelizers and drainage equipment as well as provide signs and markings at their own cost.

*Courtesy: Teri Newswire,
16-30 June 2002, P- 12,
Fax: 91 11 4682144/2145*

*E-mail: outreach@teri.res.in
Web: www.teriin.org*

IMPACT ASSESSMENT OF A COAL WASHERY PROJECT ON SOCIO-ECONOMIC ENVIRONMENT: AN INDIAN CASE STUDY

[131]

Ghose M. K. and Giradhari L.

*Journal of Environmental Studies and Policy
4(1): 35-44*

All industrial developments including coal washery projects are accompanied by changes in socio-economic factors in the project area and surrounding regions. To evaluate the impact of a coal washery project, an investigation was carried out in the Patherdih coal washery of BCCL (Bharat Coking Coal Ltd). The existing socio-economic environmental scenario of the study area has been discussed and the methodology adopted has been described. Socio-economic parameters are analysed on the basis of census reports and a detailed household questionnaire. The survey was carried out in core and buffer zones and the results have been discussed on the basis of socio-economic determinants. The number of households shifted due to the implementation of the project, compensation provided to project affected people, facilities provided by the project authority for the

improvement of the status of the employees and local people and the overall impact on the socio-economic environment have been discussed. The coal washery project appears to have brought significant socio-economic development to the area. It has involved the immigration of industrial workers in the area and opened avenues for different types of employment. (1 figure, 3 tables, 16 references)

EMISSION TRADING UNDER THE KYOTO PROTOCOL-EFFECTS ON FOSSIL FUEL MARKETS UNDER ALTERNATIVE REGIMES

[209]

*Holtmark B and Maestad O. 2001
Energy Policy 30(3): 207-218*

The consequences of the Kyoto Protocol for the fossil fuel markets depend on which policy instruments are used in order to reach the emission targets. This paper uses a numerical model to assess the significance of international emissions trading for the oil, coal and gas markets. Three different trading regimes are compared. Particular attention is devoted to the EU proposal about limits on acquisitions and transfers of emission permits. According to the model simulations, the Kyoto Protocol will lead to surprisingly small reductions in the producer prices of fossil fuels. The authors find that the EU proposal will be non-binding for buyers of emission permits but will significantly constrain the sale of emission permits from Eastern Europe. The EU proposal will increase the level of abatement in Annex B countries and will cause a sharp increase in the price of permits compared to the free trade equilibrium. (10 figures, 2 tables, 14 references).

INDIA AND CLIMATE CHANGE POLICY: BETWEEN DIPLOMATIC DEFENSIVENESS AND INDUSTRIAL TRANSFORMATION

[213]

Gupta J. 2001

Energy and Environment 12(2&3): 217-236

The paper focusses on the evolution of India's climate change policy over the last decade and the key driving factors that have led to changes in the nature of this policy. It argues that although India appears to be taking a defensive position in relation to climate change in the international arena there have been a large number of measures that have been initiated since 1990, within India. Collectively these measures are likely to lead to a decoupling of greenhouse gas emissions from energy development, and possibly, even economic growth. Nevertheless, the government is likely to adopt a cautious position in international negotiations in order to avoid taking on legally binding quantitative commitments and because of their position that the onus lies on the developed countries to take action. Thus, although, *de facto*, India is taking a number of climate related no-regret measures, it will be unwilling to take on *de jure* commitments in the short term. (55 references).

CONTRADICTIONS BETWEEN WTO AND SUSTAINABLE DEVELOPMENT? THE CASE OF ENVIRONMENTAL DUMPING

[227]

Lothe S. 2001

Sustainable Development 9(4): 197-203

This paper discusses how the WTO (World Trade Organization) agreement deals with the environmental and competitiveness concerns linked to trade and environmental policies. As the use of traditional export subsidies and other protectionist trade policies are now strongly restricted in the WTO, many countries will try to find other ways to increase competitiveness. One way of doing this is to use lax environmental taxation or regulation as indirect subsidies (i.e. environmental dumping). If this is done, the reduced possibilities of using traditional protectionist trade policies could harm the environment, thus reducing the overall welfare gain from trade liberalization. Environmental countervailing tariffs have been suggested as a way of reducing incentives for environmental dumping. The WTO rules are examined in order to analyse the feasibility of the uses of environmental countervailing tariffs in the current and future framework of WTO, and the incentives and welfare sequences are analysed under different market scenarios. (19 references)

Courtesy: TIDEE, Mar. 2002,

Pp 105, 163, 165 & 170,

Fax: 91 11 4682144;

E-mail: outreach@teri.res.in

Web: www.teriin.org

ENTERPRISE RELIABILITY

James W. Davis, PE, VP, R&TS, FMSC Group

Faced with the pressure to be increasingly cost-effective and competitive in global markets, executive management at major manufacturing companies have begun to focus on the importance of systems reliability as a critical strategy for improving financial performance. Using Ash Grove Cement as a prime example, this article explains how the correct use

of Enterprise Reliability Strategy (ERS) programmes can be a worthwhile method for enhancing corporate financial performance on a large-scale with relatively little investment of capital funds.

*Courtesy : International Cement Review
July, 2002, Pp 53-58*

Fax : 44(0) 1306 740660

E-mail : info@CemNet.co.uk

Website : www.CemNet.com

WATER AS COMMODITY

The Asian Age, 22 July 2002

As part of its privatization binge, the government has decided that water, as a matter of policy, be declared a commodity. The government has invited private sector participation in the distribution and maintenance of water in cities, metros, villages, and small towns. Looked at another the existing water resources are going to be handed over to the private sector. As it is, privatisation has already been introduced in some states of the country and this was accompanied in a big way by the recommendations of the World Bank and other multilateral bodies. As a matter of fact, the national water policy which was declared a few years ago was a direct consequence of external pressure. Kept out of the policy formulation were the non-governmental organisations, the various departments of the government directly linked to the issue, and others. On their part, these

organisations apparently showed no particular anxiety in playing a role in formulating something as basic as a water policy for the country. Myths that have not been sustained by previous such binges that privatisation will mean better resource management, greater quality control, and so on have been tagged along to the globalization mantra which seems to pervade everywhere. The politics of water management, of course, is too sensitive for such grandiose schemes to worry about. The Cauvery dispute is a ready example of how cussed attitudes can make nonsense of court directives regarding so many cusec litres of water be released by this government to help the other tide over difficult situations.

Courtesy: TERI Newswire,

16- 31 July 2002, P-25,

Fax: 468 2144 ,

E-mail: outreach@teri.res.in

Web: www.teriin.org

ECO-FRIENDLY IT SUPPORT

*A Gwen Eklund, Tom Evans, Steve McGarel, & Wesley Box
Pavilion Technologies, Inc*

Chris Boyd, senior vice-president, Environment and Public Affairs for Lafarge has been quoted as saying: "Sustainability is good business." Sustainability, the triple bottom line of economic profitability, respect for the environment and social

responsibility is becoming the focus of many corporations. Corporate sustainability is an integral part of the business objectives that cement companies strive to attain in order to achieve long-term success. This article demonstrates the link between cement manufacturing and the use of information technology to maximise eco-efficiency in sustainability master plans.

In cement manufacturing, sustainability involves the interconnection of people, processes and resources. Some of the world's leading cement manufacturers are reducing product quality variability, reducing energy consumption, decreasing operating costs, and increasing throughput by applying advanced optimisation technologies to the raw mill, kiln and finish mill manufacturing processes.

Information technology is serving as a 'glue' to enable the collaborative interaction of these processes with people. In its best case, information technology creates a dynamic enterprise framework, a performance dashboard and a sustainability decision support system. Pavilion Technologies' software in process optimisation has added to the eco-efficiencies of cement manufacturing sustainability.

Courtesy: International Cement

Review, Aug. 2002 Pp57-58,

E-mail: info@CemNet.co.uk

Website: CemNet.co.uk

CALENDAR OF EVENTS

SN	EVENT	VENUE	ORGANISER/CONTACT	DATE	FOCUS AREA
1	World Refractory Congress	Singapore	Bernard Kasparas, Tel: +44 20 7827 9977 Fax: +44 20 7827 5253	2-4 June, 2002.	-----
2	6 th International Symposium on Utilisation of High-Strength/High Performance Concrete	Leipzig, Germany	Martina Hoepfner, Secretary, University of Leipzig, Marchnerstrase 31, D-04109, Leipzig, Germany. Tel: (49) 341- 9733-800 Fax: (49) 341- 9733-809 Email: hoepner@wifa.uni.leipzig.de Web: www.HPC202002.de	16-20 Jun, 2002	-----
3	Intercem 2002	Geneva, Switzerland	Secretary Intercem 202002; Tel: +44(0) 20 8669 5222; Fax: +44 (0) 20 8669 9926; Email: info@intercem.co.uk Web: www.intercem.com	26-27 June, 2002	-----
4	Cemtech Conference 2002	Athens, Greece	David Hargreaves, Tel: +44 1306 740 363 Fax: +44 1306 740 660 Email: d.hargreaves@CemNet.co.uk Web: www.CemNet.com	15-18 July, 2002	-----
5	One-Day Seminar on Power Sector Reforms	New Delhi	Central Board of Irrigation and Power, Malcha Marg, Chankyapuri, New Delhi – 11020021, India Tel: 91-11-611 5984. Fax: 91-11-611 6347 Email: cbip@nda.vsnl.net.in Web: www.cbip.org	31 July, 2002	Accelerated power development programme (APDP)
6	Workshop on Implementation of Standard Contract Clauses and Standard General Conditions for Domestic Contracts	New Delhi, India	Builders' Association of India (Northern Region) 101, Shivam House, Karampura Commercial Complex, New Delhi – 110015. Tel: 011-5435856. Fax: 91-11-5451423 Email: rpcc101@vsnl.net Web: www.constnindia.com & www.baidc.com	7 August, 2002	Adoption and implementation of the standards
7	27 th Conference on Our World in Concrete and Structure	Singapore	Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi – 11020021, India Tel: 91-11-611 5984. Fax: 91-11-611 6347 Email: cbip@nda.vsnl.net.in Web: www.cbip.org	26-28 August, 2002	Concrete and structure
8	Construction Summit "Building Infrastructure – Going Global"	New Delhi, India	Confederation of Indian Industry, India Habitat Centre, Core-4A, 4 th Floor, Lodhi Road, New Delhi- 10003. Tel: 011-468230-35 Fax: 011-4682236 Email: babu.khan@ciionline.org kumkum.manaklata@ciionline.org Web: www.ciionline.org	28-29 August, 2002	Management Technologies Financing Training & Safety Environment

SN	EVENT	VENUE	ORGANISER/CONTACT	DATE	FOCUS AREA
9	World Summit on Sustainable Development (WSSD)	Johannesburg, South Africa	Johannesburg Summit Secretariat, Division for Sustainable Development, United Nations Department of Economic and Social Affairs, Two United Nations Plaza, DC2-2220, New York, NY 10017, USA. Web: www.johannesburgsummit.org	Aug. 26 – Sept.4, 202002	Strengthening the global institutional framework for sustainable development Implementation of sustainable practices
10	IRF Asia Pacific Roads Conference and Exhibition 202002	Sydney, Australia	Australian Roads Federation (ARF) Sydney Convention and Exhibition Centre, Sydney, Australia. Email: road@tourhosts.com.au	1-5 September, 2002	Managing roads as a business
11	International Trade Fair for Construction Machinery, Technology and Building Materials- Baucon India 2002	New Delhi, India	Tafcon Projects Pvt. Ltd., C-60, Nizamuddin East, New Delhi – 110013. Fax: 91-11-4352141 Web: www.tafcon.com	4-7 September, 2002	Construction machinery Building materials
12	National Seminar on Manmade & Natural Disasters and Engineering Challenges & Concrete Day Celebrations	Allahabad, India	Indian Concrete Institute, UP Allahabad Centre, A-3, MNR Engineering College Colony, Allahabad – 211004, India. Tel: 0532 54200247, 540 652	10 September, 2002	Concrete and Engineering challenges
13	Conference on Paradigm Shift in Project Management	Goa, India	Greentech Foundation, 809, Vishwadeep Tower, Distt. Centre, Janakpuri, New Delhi – 110058. Tel: 91-11-5554739 Fax: 91-11-5593846 Email: ksharan@mantraonline.com Web: www.greentech.org	12-13 September, 2002	Construction management & strategies Project management: effective implementation and strategies Government initiative for infrastructure development Information technology: opportunities in project management Environment management & statutory clearances Finance management Investment opportunities through liberalized policies Case studies
14	Cement Production Seminar	Florham Park, N.J. USA	F.L. Smidth Institute Fax: +45 36 46 2870 Email: flsinstitute@flsmidth.com	15-20 September, 2002	Cement
15	International Building and Construction Exhibition – Interbuild India 2002	New Delhi, India	Naveen Jain, Sales Manager – India, ITE India Pvt. Ltd., I-83, Lajpat Nagar II, New Delhi-11020024. Fax: 91-11-631 9416 Web: www.intebuild_india.com	17-20 September, 2002	

SN	EVENT	VENUE	ORGANISER/CONTACT	DATE	FOCUS AREA
16	Workshop on Energy Efficient and Environment Friendly Technologies for Rural Development (EETRD-202002)	Kolkata, India	Millenium Institute of Energy and Environment Management, Prof. H.S. Ray, Chairman, Workshop Organising Committee and Emeritus Scientist, CGCRI, 196, Raja SC Mullick Road, Kolkata. Tel: +91-473-3496/69 Email: hs_ray@yahoo.com	20-22 September, 2002	Productivity approach in promoting rural development
17	Sixth International Conference on Greenhouse Gas Control Technologies (GHGT-6)	Japan	GHGT-6 Secretariat, Norifumi Matsumiya, Research Institute of Innovation Technology for the Earth, Planning and Survey Department, 9-2, Kizugawadai, Kizu-cho Soraku-gun, Kyoto 619-200292, Japan. Tel: +81 774 752301 Fax: +81 774 752314 Email: ghgt@rite.or.jp Web: www.rite.or.jp/GHGT6/	1-4 October, 2002	Gas control technologies
18	Businessscem	Almaty, Kazakhstan	Valev, Tel: +7 (0) 95 977 4773 Fax: +7 (0) 95 977 4968 Email: valev@businesscem.msk.ru Web: www.businesscem.msk.ru	14-16 October, 2002	-----
19	The 2 nd International Central Asia Conference "The Cement Industry and the Market"	Almaty, Kazakhstan	Valev, Tel: +7 (0) 95 977 4773 Fax: +7 (0) 95 977 4968 Email: valev@businesscem.msk.ru Web: www.businesscem.msk.ru	14-16 October, 2002	-----
20	International Conference on Electricity Regulation	New Delhi, India	Ms Tanusree De, TERI, Darbari Seth Block, India Habitat Centre, New Delhi -110003 Tel: 4682100/11. Extn. 2209 Email: tanusree@teri.res.in Web: www.teriin.org	18-19 October, 2002	Regulatory framework and restructuring of the electricity sector Effectiveness of independent regulation Attracting private investment Issues in tariff reforms Subsidies and universal services obligations Efficiency improvements
21	18 th National Convention of Environmental Engineers and National Seminar on Solid Waste Management	Bhopal, India	The Hon. Secretary, The Institution of Engineers (India) M.P. State Centre, Dr. M. Visvesvaraya Marg, Near Kasturba Hospital, Hobibganj, Bhopal - 46220024. Tel: +91 755 784572 Email: ieimpssc@sancharnet.in	19-20 October, 2002	Solid waste
22	3 rd EURO Environment Conference on Business and Sustainable Performance	Aalborg, Denmark	Aalborg Kongress Kultur Centre, Europe Plads 4, Box 149-DK-9100 Aalborg, Denmark. Tel: +45 99 355555. Fax: +45 99 355543 Email: euro@akkc.dk Web: www.akkc.dk	21-23 October, 2002	Sustainable business and performance

SN	EVENT	VENUE	ORGANISER/CONTACT	DATE	FOCUS AREA
23	First International Conference on Renewable Energy	New Delhi, India	Mr. S.P. Kaushish, Secretary, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi – 11020021. Tel: +91 11 6115984/6116567 Fax: +91 11 6116347 Email: cbip@nda.vsnl.net.in Web: www.cbip.orgm	22-24 October, 2002	Renewable energy
24	Fourth International Techno-Economic Summit & Expo	NSE Complex Mumbai, India	India-Tech Foundation, Rizvi Nagar, A-208, 2 nd Floor, S.V. Road, Santacruz (W), Mumbai-400 054. Tel: +22 610 3824 Fax: +22 616 2459 Email: itf@india-tech.com Web: www.india-tech.com	22-25 October, 2002	Power, Telecom and Infrastructure Showcase of expertise, capability and shape of the things to come
25	Sustainable Energy Expo 2002	Olympia, London, UK	Source: The Bulletin on Energy Efficiency, June 2002, P 28; Fax: 91-11-6146004 Email: winrock@vsnl.com Web: www.renewingindia.org	22-24 October, 2002	-----
26	COP-8: Eighth Conference of the Parties to the UNFCCC	New Delhi, India	UNFCCC Secretariat, PO Box 260 124, D-53153 Bonn, Germany. Fax: +49 228 815 1999 Email: secretariat@unfccc.int Web: www.unfccc.int	23 Oct. to 1 Nov., 2002	Kyoto Protocol, its ratification and strategies for adaptation
27	Bauma China,	Shanghai, China	Tel: +49 89 949 22116 Web: www.bauma-china.com	5-8 November, 2002	-----
28	First International Conferences on Power Quality: Assessment of Impact	New Delhi, India	Mr. S.P. Kaushish, Secretary, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi – 11020021. Tel: +91 11 6115984/6116567 Fax: +91 11 6116347 Email: cbip@nda.vsnl.net.in Web: www.cbip.orgm	6-7 November, 2002	-----
29	5 th National Conference on Construction	Vigyan Bhavan, New Delhi, India	Mr. P.R. Swarup, Director General, CIDC, 801 (8 th floor), Hemkunt Chambers, 89, Nehru Place, New Delhi – 110019. Tel: 91-11-6489991(D) / 6234770 Fax: 91-11-6451604. Email: cidc@vsnl.com Web: www.cidcindia.net	11-12 November, 2002	“The Way Ahead” Reforms in the construction industry – an overview. Financing & risk assessment. HRD in construction industry & industry academia interaction. Dispute settlement mechanism. Project exports, global strategies. Quality and safety aspects in construction.

SN	EVENT	VENUE	ORGANISER/CONTACT	DATE	FOCUS AREA
30	Clean Fuels: Meet the Low Sulphur Challenge! ERTC 6 th Annual Meeting	Madrid, Spain	Global Technologies Forum, Highway House, Tattenham Crescent, Epsom Downs, Surrey KT18 5 QJ, UK. Fax: +44 1737 365101 Tel: +44 1737 365100 Email: events@gtforum.com	12-14 November, 2002	-----
31	Power India 2001: 3 rd International Exhibition and Conference	Mumbai, India	Winmark Services Pvt. Ltd., Rizvi Nagar, A-208, 2 nd Floor, S.V. Road, Santacruz (W), Mumbai-400 054. Tel: +22 610 3824 Fax: +22 616 2459 Email: winmark@india-tech.com Web: www.india-tech.com	21-24 November, 2002	-----
32	37 th International Cement 202002	Rosemount, Chicago, USA	Steven Prokopy, Editor Cement Americas, 29, N. Wacker Drive, 10 th Floor Chicago, IL 60606, USA. Tel: (+1) 312-609-4335. Fax: (+1) 312-726-4197 Email: sprokopy@primediabusiness.com Web: www.cementamericas.com	8-11, December, 2002	Processing Equipment helped to improve production and reduce costs Environment The Latin American cement industry; Utilizing waste products Marketing Material-handling techniques
33	4 th International R&D Conference, for 21 st Century	Aurangabad, India	Central Board of Irrigation and Power, Malcha Marg, Chankyapuri, New Delhi – 11020021, India Tel: 91-11-611 5984. Fax: 91-11-611 6347 Email: cbip@nda.vsnl.net.in Web: www.cbip.org	17-20 December, 2002	Water and energy
34	International Conference on Engineering of Dams and Appurtenance Works Including Power Houses & Transmission Systems	Hotel Hyatt Regency, New Delhi, India	The Secretary General, Council of Power Utilities, A-2/158, Janak Puri, New Delhi-110058. Tel: 91-11-5618472 Fax: 91-11-5611622 Email: cvj@vsnl.com Web: www.india-power.org	29-31 January, 2002	Conference on dams and development, Financing, planing, design and construction of dams, Design of small and large dams and multipurpose schemes, Masonary dams, arch dams, concrete dams, talling dams etc. Reliability, safety assessment, instrumentation and condition monitering, Materials for construction of dams, Foundations and problems like seepage, Maintenance, management and control systems, Optimisation and expert systems, Rehabilitation and heightening of existing dams, sedimentation management, Legal, economic and environmental issues, GHG emissions, water quality, Case studies, R&D success stories, lessons learnt, Under ground power houses, Tunnels.

SN	EVENT	VENUE	ORGANISER/CONTACT	DATE	FOCUS AREA
35	4 th International Exhibition and Conference on Environmental Technology	Athens, Greece	Consortium Erasmus-Helexpo, Tel: +30 10 72 57 693 Fax: +30 10 72 57 532 - 72 59 347 Email: info@erasmus.gr	30 Jan. to 2 Feb., 2003	-----
36	3 rd International Conference on Fly Ash Utilisation and Disposal	New Delhi, India	Central Board of Irrigation and Power, Malcha Marg, Chankyapuri, New Delhi – 11020021, India Tel: 91-11-611 5984. Fax: 91-11-611 6347 Email: cbip@nda.vsnl.net.in Web: www.cbip.org	19-21 February, 2003	National scenario Management practices scenario Characterisation Collection, handling and transportation Utilisation & disposal Environment aspects Institutional, social and legal framework
37	3 rd International Conference on 'New Dimensions in Bridges, Flyovers, Overpasses & Elevated Structures'	Malaysia	Ci-Premier Pte Ltd. 150, Orchard Road # 07-14, Orchard Plaza, Singapore- 238941 Tel: 065- 6733-2922. Fax: 065 6235-3530 Email: cipremie@signet.com.sg	25-27 March, 2003	Design and Analysis, Innovations Planning and Aesthetics, Architecture Construction and Materials Foundations, Superstructure, Decks Testing and Instrumentation Mechanical, Electrical and Hydraulic aspects Management and Maintenance etc.

MEETING GROUND: VEDAS AND RIO

Executive Secretary of the International Commission on Irrigation and Drainage

At the Rio Earth Summit in June 1992, a document, known as Agenda 21, was issued, which provided 27 guiding principles for sustainable development. Interestingly, several of the 'Rio principles, for environmental conservation were taught and practised in ancient India.

The modern holistic approach for ecological balance is reflected in the most ancient of Indian scriptures, the Vedas. For instance, the first Rio principle enunciates that "human beings are at the centre of sustainable development in harmony with Nature". The ancient seers had prayed: "Maintain us in well-being in summer, winter, dew-time, spring, autumn, and rainy season. Grant us happiness in cattle and children. May we enjoy your unassailed protection". The Prithivi Sukta of the Atharvaveda especially propounds man's close relationship with Nature.

The fourth Rio principle says that "environmental protection shall constitute an integral part of development"; several Vedic hymns expressly instructed people not to harm the waters, vegetation, and environment – "prithiveem ma himseeh", "antariksham ma himseeh", "mapo maushad heerhimeesh" (yajurveda). a prayer in the Rigveda says: "We offer our reverence to Nature's great bounties, to those who are old, and to the young, may we speak with the force at our command, the glory of all divine powers. May we not overlook any of them".

The seventh Rio principle

prescribes that the "earth's ecosystem should be conserved, protected and restored". Along with land, protection of water bodies, as well as flora and fauna has been integral to India's ancient tradition. People were exhorted to conserve the environment, for as is mentioned in the Rigveda: "That is the forest, which is the tree out of which (the gods) have fabricated heaven and earth, ever stationary and undecaying, giving protection to the deities; through numerous days and dawns (men) praise (the gods for this)".

The Earth was revered as mother. According to the Atharvaveda, bhoomih mata putroham prithivyah", - like a mother of warth is to be respected and protected. The basics of maintaining ecological balance were well understood. Nature demands: "Dehi me dadami te", - you give me, and I give you (Yajurveda). We see the consequences globally now for not following this basic Nature without nurturing her return. Our ancient seers realised that doing so would harm Nature's delicate balance.

Several Vedic hymns are prayers for maintaining balance in the functioning of all aspects of Nature, like this Rigvedic hymn: "I invoke the vast and beautiful day and night, heaven and earth, Mitra and Varuna with Aryaman, Indra the Maruts, the mountains, the waters (of earth), the Adityas, heaven and earth, the waters (of the firmament), the whole (host of gods)"

The twenty-fifth Rio principle talks about how "peace, development and environmental protection are interdependent and indivisible". In ancient India, it was well understood that ecological

balance is dependent on actions, good or bad, of individuals and society.

The Vedas are great treasures of knowledge. The scientific approach presented by them in viewing various entities of Nature and visualising the process of creation is amazing, given that modern tools of scientific enquiry were not available then. It is unfortunate that we have forgotten the golden principles set out in them and are proceeding towards self-destruction.

Courtesy: The Business Line,

6 June 02, P 14

SHOCKS & SPARKS

Smile and get the world infected

Smiling is infectious, you catch it like the flu, when someone smiled at me today! I started smiling too. I thought about that smile, then I realised its worth. A single smile, just like mine, could travel round the earth.

When I walked this morning, someone greeted me with a smile, I smiled at the next person and he started grinning, on my way back I saw several people greeting me with a smile.

Lets start greeting smiling and get the world infected.

Most households are happier, when the mother is relaxed and this is far more important than an immaculate home. There is more to home making than housekeeping and more to parenthood than hygiene. A simple meal eaten in a happy atmosphere is far more enjoyable and better digested, than a gourmet dinner served by an exhausted mother seething with irritation.

Slow and Steady wins the Race – When you watch, the water

flow whether fast, or whether slow, think how in its course, it gains in power and in force.

Talking Aloud – I thought about how mothers in India feed their babies with tiny little spoons and so I wondered what do Chinese mothers use? Tooth picks?

I was thinking about how people seem to read Geeta a whole lot more as they get older; then it dawned on me. They are cramming for their final exam..... *RG Keswani*

To find Rest - Everywhere, I have sought rest and found it not, except sitting with a good book..... *Thomas Kempis*

This is Our Fate – Without hypocrisy, lying, punishments, prisons, fortresses and murders, no new power can arise and no existing can hold on its own.....*Leo Tolstoy*

Burning with Hate – Hating people, is like burning down your own house to get rid of a rat.....*Blaise Pascal*

The cynic is a man who knows the price of everything and value of nothing.....*Oscar Wilde*

The Worst Sin – The worst sin, towards our fellow creatures, is not to hate them, but to be indifferent to them, that's the essence of inhumanities.....*G Bernard Shaw*

How to impress Others – Trying to impress others does usually in quite the opposite way.....*Malcom Forbes*

You can suffocate a thought – by expressing it in too many words.....*Frank Clark*

It is not the employer who pays wages – he only handles the money. It is the product that pays wages.....*Henry Ford*

Nothing is harder on your laurels – than resting on them.....*Franklin Jones*

Temper is a valuable possession – Don't lose it.

Why must the phrase "It none of my business" always be followed by the world "But"?*MJ*

*Courtesy: IEEMA Journal, Aug02, P 74
Fax: +91(0) 22 4932705
Email: mumbai@ieema.org
Web: www.ieema.org*

A SIMPLE TRIED CURE

B. V. Chauhan, XEN, GSEB, Wanakhori 388 239

Implement following diet practice to get rid of any kind of disease whether acute, chronic or latent.

- Leave Breakfast (do not eat anything even water till noon).
- Take green salads and green vegetables in natural form and seasonal fruit in Lunch.
- For dinner fill ¼ Stomach with vegetables and less quantity of grain food. Avoid Beans in night. Sleep immediately after dinner.
- Observe fast every fortnight by taking 2 to 3 glasses of water with honey and lemon.

These principles are of Ram Charit Manas propagated by Swami Akhileshji.

I have put them in my daily routine and since last 9 years I have faced no disease even of smallest nature like headache, etc. No medicine, even Ayurvedic is not required. The result is disease and fatigue free, cheerful life as well as mental health. Many people even Doctors have tried and benefited.

*Courtesy: Ieema Journal, July 2002 P-62,
Fax: +91(0) 22 493 2705
E-mail: mumbai@ieema.org*

ROYAL CIVIL – STILL ROYAL?

E-mail: adeshgogna@rediffmail.com

A civil engineer can work in various capacities to plan and build the water supply, sanitation and transport systems that one depends on everyday. It is he who is responsible for the analysis, design, construction and maintenance of structures. He even works as an

environment activist and develops environmental friendly materials and techniques for the structures.

The World Trade Center was designed even to withstand the impact of an airplane hit. The structural engineer had the insight that such a high building could be hit accidentally by an airplane. This was the only reason why the structure did not collapse immediately after the crash.

The effect of burning of the airplane fuel could not be taken into account. The intense heat produced by the burning of the fuel caused the steel columns to melt which ultimately led to the collapse of the structure.

These facts make people wonder how skilled and insightful the task of a civil engineer is. Though one feels really proud of belonging to such a community of civil engineers, it is sad to know about the problems faced by the civil engineer of today.

Ailments of the Civil Sector:

- Low compensation level:
- Unfavourable working conditions:
- Lack of exposure:

What should be done:

The industry demands the creation of an IT-enabled civil engineer. He should be able to reap the benefits of the latest technological advances and at the same time should have a firm hold on his subject. This is possible only if the civil engineering course structure is redefined. Some of the areas that need to be stressed in the revised curriculum are IT, project management, human resources, economics etc. This will make him qualified for various kinds of jobs within the civil sector itself. In addition educational institutions should also help the students form their career plans.

In order to meet the requirements of the industry, we

have to change the face of civil engineering education and redefine the curriculum. Proper exposure should be given to students to enhance their interest in civil engineering so that they appreciate the education they receive and continue civil engineering as their career. This responsibility lies collectively on the shoulders of the construction industry, other civil sector enterprises and the educational institutions. It is only by their combined effort that civil engineering can again emerge as 'Royal Civil', yes the same Royal civil which I opted for.

*Courtesy: Indian Construction,
July 2002, Pp21-22,*

E-mail: -bai@vsnl.com

Web: http://www.buildersindia.com

VISION OF LATE DHIRUBHAI AMBANI-AN ILLUSTRIOUS INDUSTRIALIST

"Those who do not produce wealth discredit those who create wealth. This attitude kills the productive spirit. A society, which condemns creators of wealth, will always remain poor and miserable"

"Think big, think fast, think ahead. Ideas are no one's monopoly"

"If you work with determination and with perfection, success will follow"

"Pursue your goals even in the face of difficulties, and convert adversities"

MUSINGS ON ENVIRONMENT

Justic I. P. Rao

Environmental Friendliness is not all a new phenomena though, it came to the forefront recently. The perfect example of waste avoidance can be seen in the teachings of Lord Buddha.

Shyarnavati, the queen-consort of King Udayana, offered five hundred garments to Ananda (the favourite disciple of Buddha) who received these with great satisfaction.

The king, hearing of it, suspected Ananda of dishonesty and went to Ananda and asked what he was going to do with the five hundred garments. Ananda replied "oh king, man of the brothers in the order are in rags; I am going to

distribute the garments among the brothers.

What will you do with the old garments?

We will make bed-covers out of them.

What will you do with the old bed covers?

We will make pillow cases.

What will you do with the old pillow cases?

We will make floor covers of them.

What will you do with old floor covers?

We will use them for foot towels.

What will you do with the old foot towels?

We will use them for floor mops.

What will you do with the old floor mops?

Your highness, we will tear them into pieces, mix them with mud and use the mud to plaster the house walls.

*Courtesy: FAPCCI Review,
Aug.02, P4-16,*

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