

# Cementing waste material

## Plants are ready to use waste derived fuels such as petroleum refinery sludge

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**E**VEN as the International Cement Week beginning March 22 is expected to discuss the measures the cement industry would take to reduce carbon emissions, Indian firms are already a few notches ahead.

Cement firms like Grasim, Lakshmi and Rajshree have attempted co-firing of tyre-derived fuels in the kilns. This fuel is composed of shredded tyres and they may be mixed with coal or wood to be burned in concrete kilns, power plants or paper mills.

Several plants are ready to use a host of waste derived fuels such as petroleum refinery sludge, shredded tyres, paint sludge and agro-industrial wastes. Some have even invested in environment-friendly systems for collection, handling, pre-processing and conveying of such wastes in their continuous manufacturing process.

The use of scrap tyres reduces the tonnage of the coal used, and consequently lowers the costs of acquiring coal. Finally, the steel component of a tyre can substitute for iron, which then reduces the cost of iron acquisition. Differences in the final product quality were observed only in cement setting time and water demand.

Efforts made by the Indian industry to manage waste include ACC's alternate fuel and raw material (AFR) business that was established in 2005. The cell uses co-processing in cement kilns as a superior and efficient method of waste disposal.

Uthas Parlikar, director, AFR business, ACC says: "Co-processing of wastes in cement kiln has been in practice for more than two decades in most of the devel-



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oped world. This technology ranks higher in waste management hierarchy than the disposal options such as incineration or landfill and is preferred choice for managing wastes." Global experts acknowledge it to be environmentally superior and safe option compared to traditional practices.

Parlikar explains: "Due to very high temperature and long residence time in the cement kiln, all the organic constituents present in the kiln gets combusted as fuel without generating any harmful emissions. The inorganic constituents become part of clinker after taking part in the clinker manufacturing process as raw materials. Hence there is no residue after co-processing the waste. This is what makes it environmentally sound and sustainable technology."

ACC is associated with the Holcim Group, the world's largest cement maker and a pioneer in

waste management. It has adopted cement kiln technology to completely burn the waste and has been disposing industrial wastes such as slag and fly ash (slag now being sold as a by-product).

Parlikar said: "We have installed suitable infrastructure in all our plants for co-processing wastes and have rolled it out successfully to manage different kinds of wastes — both hazardous and non-hazardous. We are currently concentrating on generating more awareness about this among stakeholders. We are targeting to extend this waste management solution countrywide in large scale capacity to all the waste generators — more so the hazardous waste generators — in near future."

The firm has been using waste material as a substitute for hydrocarbon fuels to run its cement kilns and furnaces, which helps in reducing dependence on traditional fuels such as coal. He adds:

"In 2009, we co-processed more than 4 lakh tonne of waste as alternative fuels and raw materials and contributed to preserving equal quantum of natural materials. This does not include slag and fly ash, which are also waste of a kind."

Chandra Bhushan, associate director, industry, Centre for Science and Environment, says: "Cement industry in itself does not produce any waste but it has become a place to process waste produced from other sources. For example, fly ash generated from thermal plant is used for making cement and so is flake produced in the steel industry."

He says the latest development is the use of municipal solid waste to burn and generate cement. Bhushan says: "The only problem with the industry is dust emission because the product used like limestone is dry. This is called fugitive emission (non-point source), which is generated from chimneys and cannot be captured."

As the demand of cement in 2009-2010 is expected to increase by 50 million tonne despite the recession and decline in demand of housing sector, the implementation of such technologies assumes significance in reduction of carbon emissions.

A research by Kamal Kumar, chief general manager, Holtec Consulting, says cement plants in India utilise flyash generated by power plants and granulated slag thrown out by steel plants. Recycling by industrial wastes in manufacture of cement is highest in Japan followed by India. The research says the industry is waiting for waste derived fuel use, which has been held up because of regulatory issues. ■

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