



Horizontal rotary kiln

Excellence – No Finish Line

From operational excellence to state-of-the-art technology and from energy efficiency to safety standards, UltraTech Cement's latest Greenfield plant Kotputli Cement Works is raising the bar across the board.

UltraTech Cement as a brand is associated with modernity, technology and innovation. Its manufacturing plants are testimony to how the organisation has focused on technology that enhances sustainability and productivity, with an unwavering focus on safety. The largest grey cement manufacturer in India, UltraTech has a pan-India presence with 12 integrated units, 12 grinding units, and five bulk terminals.

"India's cement industry is one of the most energy efficient in the world. Our plants are modern with some of the best and latest technologies. At UltraTech, we combine technology, process and concern for the environment and society to create solutions and opportunities for our stakeholders. Our Kotputli plant, with a production capacity of 3.30 MTPA, is UltraTech's latest Greenfield project and one of the lowest power consuming units in the industry. It has pioneered several

initiatives for the safety of the environment and its people and some of these best practices are being rolled out at other units of UltraTech as well," says OP Puranmalka, MD, UltraTech Cement Limited.

The plant is fully automated, centrally controlled, energy efficient and environment-friendly. With two grinding facilities at Kotputli Cement Works (KCW) and Panipat Cement Works, it manufactures clinker and cement of OPC-43, OPC-53 and PPC grades.

System certifications

Within a short span of five years from its commissioning, KCW has been awarded with the following certifications from agencies of repute:

- ISO 9001:2008
- ISO 14001:2004
- OHSAS 18001:2007
- ISO 27001:2013
- ISO 50001:2011

A strategic location

KCW gets a distinct advantage with its location which gives it seamless connectivity to major markets. The strategic location of the plant gives it accessibility to various modes of cement logistics. The plant is located between Delhi (109 km) and Jaipur (141 km). It has three railway stations in its vicinity - Dabla (35 km), Alwar (70 km) and Neem Ka Thana (45 km). It is just 2.5 kilometres away from the

national highway that connects it to Jaipur and Delhi.

Focus on technology

KCW is equipped with state-of-the-art cement technology from KHD & Loesche with pyro floor design coolers. Salient features of the plant include cross belt analyzers and vertical roller mills (VRM) for raw material and cement grinding. Novel systems include bulk reception units (BRU) for handling clinker stored outside silos, bulk loading facility, covered storage and mechanised handling of fuels and additives, and circulating fluidized bed combustion (CFBC) boilers registered for clean development mechanism (CDM) benefits.

The covered shed for coal has dimensions of 96 x 300 sq m and is the largest in Asia. KCW also has sheds to ensure pollution free and environment-friendly storage of additives and raw materials.

Thermal power plant

The thermal power plant at KCW (2 x 23 MW capacity) is equipped to use multiple fuels (coal, pet coke, and lignite). This is the world's first small scale CFBC boiler project

Awards and recognitions

1st prize in cement sector (Rajasthan Energy Conservation Award (RECA) 2014

Chairman's WCM Bronze Award- 2013

CII Excellent Energy Efficient Unit award for 2012, 13, 14

CII Excellent Energy Efficient Unit award in Power sector

to get CDM benefits from United Nations Framework Convention on Climate Change (UNFCCC). The fly ash generated is being used in cement manufacturing. The CDM benefit is availed based on boiler efficiency. The boiler efficiency has improved by 3.3 percent in CFBC boiler as compared to atmospheric fluidized bed combustion (AFBC) boiler used earlier.

KCW is one of the lowest power consuming units in the industry. Its boilers are registered with UNFCCC for carbon credits. The total credit of CO₂ will be 21509 tonnes/year. KCW has consistently won the National Award for Excellence in Energy Management instituted by CII.

Mines

The limestone mine is attached to it has total mineral reserves of 217 MT and total mine area of 867.56 hectares. While seven percent of production is through primary breaker, 93 percent is conventional mining. Since inception, KCW is using primary breakers to deal with hill edges, with conventional mining being used at the remaining part of the mine. This enables the unit to ensure scientific development of the mine.

The mines have witnessed continuous improvement in blasting performance parameters and won various accolades during Mines Safety Week and Mines Environment Week. One of the outstanding features of the mines is its state-of-the-art workshop with centralised distribution system for electric and pneumatic power, and highly mechanised lubricant dispensing system with metering units.

An eye on the environment

The cement industry promotes the use of waste as an alternative to raw materials and fossil fuels. KCW has obtained permission from Central as well as State Pollution Control Board for usage of non hazardous wastes. In addition, KCW has also received requisite permission for using hazardous wastes from automobiles, soft drink industries and pharmaceutical industry

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OP Puranmalka
MD, UltraTech Cement Limited.



Raw Material Handling section

as fuel. Currently, it utilises only non-hazardous waste like carbon black which is a product of tyre pyrolysis plants.

Fly ash is a waste generated at power plants, and is used as a raw material in the cement industry for manufacturing of Pozzolona Portland Cement (PPC). The increase of fly ash utilisation in cement manufacturing helps in the CO₂ emission reduction as well in solid waste management. In alignment with its sustainability objectives, KCW has increased the fly ash utilisation up to 32 percent and achieved the clinker factor of 1.31 till December 2014.

Conservation of natural resources like fossil fuels is ensured through utilisation of petcoke up to 100 percent in the cement and power plant. Natural resource conservation and ground water resource augmentation is ensured through development of artificial rain water harvesting structures at the plant, colony, mines and nearby areas. At KCW, it is ensured that rain water harvesting is done on a large scale.

Safety

Safety is a core philosophy at UltraTech, and this is reflected in the measures undertaken at KCW to ensure safety across operations and processes. Between July 2013 and October 2014, it recorded 6.46 million loss-time injury (LTI) free man hours. There is a reducing trend in FAC/fire, property damage, non-compliance in PPEs, and tools and equipment. The plant has also achieved 100 percent compliance to second party safety audit points.

The importance of safety at KCW can be gauged by the fact that it includes Safety Professionals in the selection process for all recruitments. The plant has trained 16 supervisors on Employee Action in Improving Safety (EAIS), a business-wide initiative at UltraTech Cement for empowering employees to promote safety culture across the organisation. These supervisors will further train other identified employees, and in turn safe behaviour will percolate down to every single workman involved in the unit.

A unique safety feature at KCW is *Samvaad* - an initiative to enhance safe behaviour at the shop floor. It aims to establish two-way communication among employees and contract workers. Under *Samvaad*, employees are trained in safety standards in classroom by teams comprising members from HR, safety, subject matter experts and area in-charges. Inputs are gathered and scope of improvement is prepared in terms of safe behav-



Preheater tower having 6 stages and 2 strings

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our. Check points are prepared connected to safety standards. These teams visit the shop floor based on the inputs and probe check points. They appreciate good performers and give feedback for improvements. Employees are also recognised for good safety behaviour with different awards such as Good Citizen Award and initiatives like *Khatra Pehchano* (recognise danger) drive, among others.

To make driving within and outside the plant safe, KCW has started a seat belt interlock mechanism which ensures that the engine of a vehicle doesn't start unless the driver wears the seat belt. KCW has also made its packing operation safe for its employees. It has started using compressed air breathing apparatus that is generally used in the pharmaceutical industry. It has modified the product to suit its requirement in collaboration with the supplier. The product ensures that the person in charge of packing the cement bags doesn't inhale the dust, while the air around his face is kept cool.

KCW is also the first unit at UltraTech Cement to build a park that showcases our safety standards. Live demonstration of various safety practices and standards is made at the safety park for better understanding of safety concepts among contractor workers.

Eye on Wheels – a unique initiative in logistics

To enhance logistics productivity, KCW introduced a unique system named 'Eye on Wheels' for reducing truck turnaround times. Launched in late 2013, the system has reduced the truck turnaround time at the unit by more than 70 percent. The moment a truck arrives at the yard gate, it is sensed by the sensor and gets registered in the system. The dispatch instructions / lorry receipt (DI/LR) is issued by the concerned department and the vehicle sequencing position and allotted packer number is displayed to the driver. After making an entry into the plant, vehicles approach the automated weigh bridges for weighing and go to the final destination for loading or unloading.

Way forward

Having achieved some impressive milestones, KCW now plans to consolidate its performance and work on the finer aspects of the plant with a continued focus on sustainability. Skill building among wage board employees and ingraining the Group culture in them is what the unit aspires for in the days to come. 