

TECHNICAL SESSION – XIII A

ENERGY CONSERVATION



Shri Sushil Paneri (left), Shri Anil Kumar Pillai (centre), Shri A K Mishra, JD-NCB (right)

Chairman : Shri Anil Kumar Pillai, Director & CEO, M/s JSW Cement Ltd
Co-Chairman : Shri Sushil Paneri, VP (operation), Ambuja Cement Ltd.
Venue & Date : Zorawar Auditorium, Manekshaw Centre, New Delhi. 04-12.2015

Summary

The session highlighted various energy conservation measures, benchmarking parameters adopted by cement plants in pyro processing, grinding system, automation etc to optimize energy consumption. EC Act-2001, BEE-PAT scheme played a significant role to take India way ahead of other developing countries by adopting policy measures for conservation of energy. However there still exists enough scope in the areas of WHRS, co-processing of waste, nano technology based new products, CO₂ sequestration and renewable energy usage which require favourable government policies.

Highlights of the Presented Papers

1. Multiple Ways of Energy Conservation and Cost Reduction in Cement Industry

S Peddanna and D H Thanki, *ERCOM Engineers Pvt Ltd, India*

One way for cost reduction is to reduce the thermal energy consumption by adopting measures such as optimization of the pyro process, homogenized raw material, fuel quality and alternative cheaper fuels to reduce the energy cost and the other way is to save the electrical energy consumption by optimization of all process operations, blended cements consuming less clinker per tonne of cement employing cheaper sources of energy such as waste heat recovery power generation, captive thermal power plants, solar power (to a limited extent) wherever feasible.

2. Energy Audit and Management – Cement Industry Perspective

Tapendu Datta, D Fernandes and Suresh Krishna I P, *ACC Ltd, India*

Verification, monitoring, analysis of use of energy is the prime focus of any Energy Audit besides creating roadmap for implementation of measures to be taken to improve energy intensity considering availability of various technologies and techno economic feasibility of implementation. Energy management encompasses energy audit as a part besides strategizing, adjusting and optimizing energy use through systems and procedures to reduce energy intensity while maximizing profits (cost reduction) and enhancing competitive edge to have a sustainable business case.

3. Role of Regulatory Provisions in Energy Conservation in India

K N Rao, Tapendu Datta, D Fernandes and Suresh Krishna I P, *ACC Ltd, India*

The author of the paper stressed on some changes in regulatory provision for Waste Heat Recovery (WHR) System, co-processing of waste, use of R&D for latest technology, Revision in IS standards for improving clinker factor and CO₂ sequestration to convert CO₂ into product.

4. Driving Business Sustainability – A Case Study of Ambuja Cements

Sandeep Shrivastava, *Ambuja Cements Ltd, India*

The author of this paper presented various KPIs for sustainability like Renewable Energy & Biomass, CO₂, Co-Processing of wastes and plastics and Water Conservation. The focus is to increase the use of biomass in Captive Power Plants, to generate a significant amount of renewable energy. The organisation is currently monitoring and reporting CO₂ emissions as per the WBCSD Cement Sustainability Initiative (CSI) protocol. Other initiatives for sustainability were highlighted like Water Positive Initiative – 4 times Water Positive, Co-processing of Wastes, Pro Sustain – A Label for our Sustainability and The Concept of True Value.

5. Energy Conservation in Modern Cement Plant by Process Optimization – A Case Study

J Mishra, S C Srivastava, B Sharma and D Hemrajani, *Jaiprakash Associates Ltd, India*

The author from a cement plant presented the various initiatives taken up by the plant to reduce thermal & electrical energy consumption as a part of Energy Conservation. The plant adopted various latest technologies like Online Cross Belt analyzer, AC variable frequency drive (VFD) for all the major fans, GRR in both the coal mills for pet coke grinding.

6. Operational Efficiencies through DCS / Automation in Pyro-process, Mills & Limestone Crusher (In House Development)

O P Verma, *Birla Corporation Ltd, India*

Although there are various optimization software solutions available in the market to control the standard kiln & mills optimization, but this kind of optimization software is really not workable in the retrofitted cement plant, as kiln operation become sensitive. Further factors affecting the kiln operation like various types of fuel fired including AFR, WHRS boiler at PH outlet and at cooler, Kiln Balance bag house, additional raw & coal mills also makes them unviable. To overcome the above issues, auto control predictive & self learning mathematical logics in DCS was developed to run the complete plant in auto mode. DCS are very powerful in terms of sufficient memory and very fast cycle time, in which own super complex mathematical self-learning predictive control logics can be written.

7. Water Conservation - Our Innovative Efforts Resulting in Saving of 1000 cub. M/Day

Rajamohan R, *Dalmia Cement Bharat Ltd, India*

The authors presented several implemented conservation initiatives. Some of the improvement actions implemented were auto valve system to eliminate overflow loss in our CVRMs, Daily Water Monitoring System introduced and followed to monitor the consumption closely. Around 130 Ordinary tap cocks were replaced with Lifting & Push type tap Cock in plant, colony, Community Centre. Float Valves were repaired at Colony Over Head Tanks – to avoid Overflow, Leakage of Water taps in Colony was arrested by Inspection, Repairing & Replacement in all Colony Houses, Schools and Guest House.

8. In-Situ Machining, Critical Gear Unit and On-Line Monitoring Services

K Chandrasekar and K Gnanamurthy, *Eurotech Global Solution India Pvt Ltd, India*

The authors of this paper presented various in-situ services like In-situ Flange facing, In-situ Shaft & Crankshaft grinding, Metal stitching, Roller press journal grinding etc offered by his organisation. They have special Critical Gearbox Care Center (CGCC). The CGCC is handled by a team of experts attending to the requirements of gear box repair, rehabilitation and maintenance at site as well as in CGCC.

9. Operation of Cement Mill with Roller Press in Finished Mode

Anil Kumar Pillai, *JSW Cement Ltd, India*

The author presented that various modifications such as Installation of separate weigh feeders for RP1 and RP2 fresh feed distribution, Change of feed belt orientation from perpendicular to parallel with roller press, Installation of pre-bin above Roller press for choke-feeding, V-separator Gas by-pass duct installation. Ball mill vent bag filter dust diversion to product in his plant. The plant has converted its roller press mill from semi finish mode to finish mode.

Chairman and Co-Chairman Remarks

The Chairman Sh A K Pillai and Co-chairman Sh S Paneri appreciated the relevant topic “Energy conservation” selected for the session and also congratulated all the speakers for their presentations which blended with environment conservation, machine efficiency and sustainability. The chairman indicated that as in a cement plant 75% of the total cost is due to thermal and electrical energy therefore, energy conservation is a parameter that can make or break a cement plant. Thus, all efforts are required to maximize productivity and improve maintainability that would help in reducing our energy consumption.

The Co-chairman highlighted that energy conservation is a way of life and explained that conservation and sustainability are two sides of the same coin. Without conservation there is no sustainability and sustaining is required to conserve. He also explained that we need to take small steps like arresting of false air, arresting water leakages, increasing the net availability index of equipment. These can do magic in increasing the efficiency and conserve more in future.