



Shree Cement Limited

Installation of Waste Heat Recovery Unit at Beawar Cement Plant

CASE STUDY



Figure 1: Waste Heat Recovery Plant

Summary

In cement manufacturing pyro-processing/clinkerization is one of the most energy intensive processes. Clinkerization process takes place at a temperature of about 1,400–1,450 °C. From the total heat consumed in burning process, around 55 per cent is used and the remaining 45 per cent remains unused. Therefore, flue gases generated during clinkerization process contain very high amount of thermal energy. These hot exit gases are released into atmosphere from two ends—one from the Pre-Heater (PH) and another at Air Quenched Coolers (AQC). The project activity involved implementation of new and innovative technology of recovering waste heat from the exit gases of the six-stage pre-heater and clinker cooler. Shree Cement commissioned 25 MW cogeneration power projects to utilize the waste heat from the cement plants at our Beawar location.

Objective of Intervention

To lower down the GHG emission and improve the energy efficiency of the system

Type of Intervention and Location

Process Modification at Beawar Cement Plant



Description of Intervention

The flue gases from the top of the Preheater are passed through the Waste Heat Recovery Boiler (WHRB) where steam is generated. The steam generated in the WHRB is to be used for preheating of the feed water in the LP and HP heater of the existing pet coke based power plant. After recovery of the waste heat for steam generation, the flue gases lead to the GCT and then passed through the ESP before being let out to the atmosphere. The practice of extracting steam from the turbine for preheating the feed water in the LP and HP heater is discontinued, thus, reducing the steam generation and consequently the fuel consumption in the pet coke based captive power plant.

Intangible or Tangible Benefit

- Annual saving of 4, 12, 500 KL of water.
- Conservation of 35, 266 tonnes of fuel annually.
- Improved quality of power helps in smooth operation of cement plant.
- Contribute to reduce global warming by way of releasing low temperature gases to atmosphere.
- Reduced GHGs emissions intensity by 39.11 per cent as compared to the 1990 levels. Installation cost of WHRB is around ₹100 million per MW.
- The plant has got a payback period of 7 years.

About Shree Cement

Shree Cement Limited (SCL) is one of the leading cement manufacturing companies, envisioning a prosperous future for all of its stakeholders. With a cement production capacity of 23.6 million tons per annum and employing over 5100 staff members, SCL is creating opportunities for its people and nearby communities. SCL's operations comprise of 3 integrated clinkerization units and 7 cement grinding units at different locations across India. A grinding unit with capacity of 2 Million Ton in the state of Uttar Pradesh is supposed to be commissioned by the end of current calendar year. SCL currently enjoys the highest market share in the states of Rajasthan, Delhi and Haryana, and is among the top suppliers in Punjab, West Uttar Pradesh and Uttarakhand.

SCL is also operating Thermal Power Plants with a capacity of 612 MW including 96 MW Waste Heat Recovery Power Plant which is the largest capacity in the entire world cement industry except China.