



ENERGY EFFICIENCY SERVICES LIMITED
A JV of PSUs under the Ministry of Power




Ministry of Micro, Small and Medium Enterprises,
Government of India



PROMOTING MARKET TRANSFORMATION FOR ENERGY EFFICIENCY IN MICRO, SMALL & MEDIUM ENTERPRISES

Ministry of micro, small and medium enterprises (MoMSME), Government of India in association with United Nations Industrial Development Organization (UNIDO) is implementing a project funded by Global Environmental Facility (GEF) titled “Promoting Market Transformation for Energy Efficiency in Micro, Small and Medium Enterprises” in India. Energy Efficiency Services Limited (EESL) is the implementing partner for the project.

The overall project objective is to promote the implementation of energy efficiency in the MSME sector; to create and sustain a revolving fund mechanism to ensure replication of energy efficiency measures in the sector; and to address the identified barriers for scaling-up energy efficiency measures and consequently promote a cleaner and more competitive MSME industry in India. The project envisages to extend support to 470 MSME units across 10 identified energy intensive MSME clusters with a target of reduction of energy consumption by 110,000 tonnes of oil equivalent and greenhouse gas emissions by 1 million tonnes of CO₂ emission, leveraging an investment of USD 150 million towards energy efficiency, during its tenure.

CASE STUDY - 1

Installation of Automation and Control System in Pulverized Coal Fired Steel Re-heating Furnace (12 TPH)

Objective:

Steel Re-Rolling Mill units in cluster use top-fired pusher type re-heating furnaces with pulverized coal as fuel. The capacity of re-heating furnaces ranges from 2 t/h to 30 t/h. In re-heating furnace, only 20-30% of the total heat input is converted to useful heat. Due to manual control, the units fail to maintain correct air-fuel ratio which leads to incomplete combustion with a significant percentage of the heat loss through dry flue gas. Also, the temperature and pressure of the furnace is not monitored and controlled. Implementation of a robust automation system is important to monitor and control the key furnace parameters.

Implementation:

The unit has a 12 TPH capacity pulverized coal fired furnace. The project supported installation of a PLC based automation and control system in their Re-heating furnace thus making them energy efficient and cost competitive.

Principle:

The furnace automation and control system works on the principle of a robust monitoring system of key performance parameters and control of the same as per benchmarks. A PLC based integrated system is used for the purpose which takes feedback from the sensors installed at different points. The automation system is a closed loop system wherein the feedback received in the PLC is analyzed and controlled based on the pre-programmed logic. The various parameters are monitored and controlled to the desired level using the PLC based system



Unit Profile

Giriraj Ispat Pvt. Ltd. was founded in the year 2005, Unit manufacture broad range of industrial products including flats, rounds, round cornered squares, hexagon etc. Unit is located at Dhulagarh , Howrah, West Bengal.

Benefits



- ◆ Reduction in energy consumption by 5-15%
- ◆ Reduction in cost of production by 2-7 %
- ◆ Furnace efficiency improvement by 3-5 %
- ◆ Productivity improvement
- ◆ Lower maintenance costs



Furnace



Automation Panel

Project Economic

₹ Savings

₹ 27,00,000

₹ Investment

₹ 18,14,000

Payback

0.7 (8 months)

Project Impacts



169 Tonne/year fuel saving per year



8,862 kWh of annual electricity savings



96 TOE of annual energy savings



366 tCO₂ GHG emission reduction per year

Cost Economics

Coal consumption (Baseline)	90 kg/t
Electricity consumption (Baseline)	141,800 kWh/ year
Coal consumption (Post Implementation)	85.5 kg/t
Electricity consumption (Post Implementation)	132,937 kWh/ year
Annual Coal Saving	169 Tonne/year
Annual Electricity Saving	8,862 kWh/year
Annual Monetary Saving	Rs. 27,00,000
Investment	Rs 18,14,000
Simple Payback	8 months

Replication Potential



The technology has significant replication potential in the sector. In Howrah Mixed Cluster, the replication potential is expected in 23% of the units i.e. around 80 units.

Calculation

Annual Energy Savings = Baseline energy consumption – Post implementation energy consumption.



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