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 - 5

Installation of Pulverized Coal Fired Swirl Burner in Billet Re-heating Furnace (10 TPH)

Objective:

Steel Re-Rolling Mill units in the cluster use re-heating furnaces with pulverized coal as fuel. The capacity of re-heating furnaces ranges from 2 t/h to 30 t/h. The re-heating furnace forms the main energy guzzler in typical steel re-rolling mill unit. The furnace is used to heat the steel ingots or billets to the re-crystallization temperature of steel before being extracted and sent to the rolling mill. The process generated significant amount of flue gas which is wasted and let out in the atmosphere at an elevated temperature of 400-650 ^{0}C. Implementation of high efficiency recuperator can lead to effective utilization of the heat energy which is otherwise wasted into the atmosphere.

Implementation:

The unit has a 10 TPH capacity pulverized coal fired furnace. The project supported installation of high efficiency metallic recuperator in the unit making it energy efficient and cost competitive.

Principle:

This burner works on the principle of three T's of combustion:

- Time: Sufficient time for burning
- Temperature: Ignition temperature must be achieved
- Turbulence: Proper mixing of fuel and air, which is achieved by swirl burner

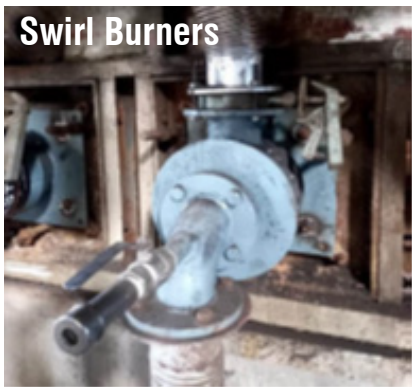
The purpose of using a swirl burner is to achieve a stable flame and to ensure proper mixing of air and fuel. In a swirl burner, secondary air is supplied along with primary air in annular arrangement. Both primary air and secondary air are hot air drawn from the recuperator. The swirl burner typically has three inputs; the closest input towards the furnace is for primary air, which is directly fed from the recuperator; coal is fed from the next input on a controlled manner. The third input is for the secondary air which pushes the coal into the burner. The hot secondary air is also utilized for complete combustion of powder coal.

Unit Profile

M/s Micky Metals Ltd. located in Dubrajpur Road, Suri, Dist. Birbhum, West Bengal was founded in the year 1972. The unit manufactures a broad range of products including Flat bars , Angle bar, MS channel & TMT Bar

Benefits

- Reduction in energy consumption by 2-3%
- Cost of cost of production by 3-4 %
- Furnace efficiency improvement
- Productivity improvement
- Reduction in pollution



Project Economic

Savings
₹ 8,50,000

Cost of equipment
₹ 4,00,000

Payback
0.6 Year (6 months)

Project Impacts

85 Tonne of annual fuel saving (coal)

51 TOE of annual energy savings

180 tCO_2 GHG emission reduction per year

Cost Economics

Coal consumption (Baseline)	85 kg/t
Coal consumption (Post Implementation)	83.3 kg/t
Coal saving	85 Tonne / year (coal)
Annual Monetary Saving	₹ 8,50,000
Cost of equipment	₹ 4,00,000
Simple Payback	6 month

Replication Potential

The technology has significant replication potential in across the sector. In Howrah Mixed Cluster, the replication potential is expected in 32 % of the units i.e. around 75 units.

Calculation

Annual coal Savings = Baseline coal consumption – Post implementation coal consumption

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