



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



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



## PROMOTING ENERGY EFFICIENCY AND RENEWABLE ENERGY IN SELECTED MSME CLUSTERS IN INDIA

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 CO<sub>2</sub> emission, leveraging an investment of USD 150 million towards energy efficiency, during its tenure.

### CASE STUDY - 3

#### Installation of Metallic Recuperator for Pulverized Coal based Steel Re-heating Furnace (12 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 °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 12 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:

One of the pre-dominant losses in a re-heating furnace is the heat taken by the flue gas. Heat is generated by the chemical reaction of the fuel and the combustion air. This flue gas is let out into the atmosphere using a chimney. A significant amount of heat energy is lost in the process. The exit flue gas is often referred as ‘waste’ flue gas. A high efficiency metallic recuperator i.e. a heat exchanger is installed in the flue duct and used to recover the waste heat from the flue gases. In a recuperator, heat exchange takes place between the flue gases and the inlet combustion air. Pre-heated combustion air leads to substantial energy saving.

Implementation partner





## Unit Profile

**SBEG Consultants Private Limited**, located in Bankura, West Bengal was founded in the year 2004. The unit manufactures a broad range of products including angles, channels, flats, rounds, and TMT bars.

## Benefits



- ◆ Reduction in energy consumption by 10-15%
- ◆ Cost of cost of production by 5-7 %
- ◆ Furnace efficiency improvement
- ◆ Productivity improvement
- ◆ Reduction in pollution

## Project Impacts



158.4 Tonne of annual fuel savings (coal)



88 TOE of annual energy savings



334 tCO<sub>2</sub> GHG emission reduction per year



Furnace



Recuperator

## Cost Economics

Coal consumption (Baseline)	800 kg/hr
Coal consumption (Post Implementation)	740 kg/hr
Coal saving	60 kg/hr
Annual Monetary saving	12,00,000
Investment	₹ 18,30,000
Simple payback	19 months

## Project Economic

Savings	₹ 12,00,000
Investment	₹ 18,30,000
Payback	1.5 years (18 months)

## Replication Potential



The technology has significant replication potential in across the sector. In Howrah Mixed Cluster, the replication potential is expected in 23% of the units i.e. around 75 units.

## Calculation

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



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