



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 PLC based Automation & Control system for a 10 TPH Boiler and 3000 U Thermic-fluid heater

Objective:

Steam and thermic fluid are used as important utilities used in the textile dyeing and printing process. At present, most of the units in the Surat Textile cluster meet their steam and thermic fluid demand from coal fired boilers and thermic-fluid heaters (thermopac) respectively. Most of the units uses PID based controller to control FD and ID fans. However, most of the units are not equipped with online oxygen analyzer because of which they fail to maintain the correct air fuel ratio required for optimum combustion. Also, the other key parameters including the boiler blow-down is not monitored and controlled in such units. The project envisages implementation of robust automation system to monitor and control the key boiler / thermic-fluid heater parameters.

Implementation:

The unit has a 10 TPH boiler and 3000 U capacity thermic-fluid heater. The project supported installation of a PLC based automation and control system in their boiler & thermic-fluid heater thus making them energy efficient and cost competitive.

Principle:

The boiler/ thermic-fluid heater 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 analysed and controlled based on the pre-programmed logic. The various parameters including the oxygen percentage in the flue gas, air to fuel ratio, FD/ID fan speed, furnace draught, fuel feed, blow-down duration etc are monitored and controlled to the desired level using the PLC based system.

Implementation partner

DESL



Unit Profile

Ratnapriya Dyeing And Printing Mills Private Limited is a company incorporated in the year 2010. Located in Palsana, Surat, the unit is spread over an area of 50,000 sq ft with 120 skilled workers. The unit has both dyeing and printing facility in their premises

Benefits



- ◆ Reduction in energy consumption by 5-7 %
- ◆ Efficiency improvement by 2-5 %
- ◆ Optimum air-fuel ratio
- ◆ Automatic Blow down



Project Economic

Savings
₹ 8,80,000

Investment
₹ 21,26,000

Payback
2.2 (28 months)

Project Impacts



315 Tonne of annual fuel savings (Coal)



427 TOE of annual energy savings



666 tCO₂ GHG emission reduction per year

Cost Economics

Coal consumption in boiler (Baseline)	1,563 kg/h
Coal consumption in thermopac (Baseline)	1,083 kg/h
Coal consumption in boiler (Post Implementation)	1,540 kg/h
Coal consumption in thermopac (Post Implementation)	1,067 kg/h
Annual Coal Saving	315 Tonne/year
Annual Monetary Saving	Rs. 8,80,000
Investment	Rs 21,26,000
Simple Payback	28 month

Replication Potential



The technology has significant replication potential in across all industrial process. In Surat Textile Cluster, the replication potential is expected in 23% of the units i.e. around 80 units.

Calculation

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



Contact details:

Energy Efficiency Services Limited

5th & 6th Floor, Core - 3,
Scope Complex,
Lodhi Road, New Delhi, Delhi 110003

United Nations Industrial Development Organisation

Mr Debajit Das
National Project Coordinator
D.Das@unido.org