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 - 6

Installation of PLC based Automation & Control system for a 3500 U Thermic-fluid heater

Objective:

Thermic-fluid (oil) is one of the important utilities used in the textile dyeing and printing process. At present, most of the units in the Surat Textile cluster thermic fluid demand from coal fired thermic-fluid heaters (thermopac). 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. The project envisages implementation of robust automation system to monitor and control the key thermopac parameters.

Implementation:

The unit have a 3500 U capacity thermic-fluid heater. The project supported installation of a PLC based automation and control system in the thermic-fluid heater thus making them energy efficient and cost competitive.

Principle:

The 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, furnace draught, fuel feed, etc are monitored and controlled to the desired level using the PLC based system.

Implementation partner DESL

Unit Profile

Kalakruti Processors Private Limited is a company incorporated in the year 2010. Located in Palsana, Surat, the unit has both dyeing and printing facility in their premises.

Benefits

- Reduction in energy consumption by 5-7%
- Efficiency improvement 2-5 %
- Optimum air-fuel ratio
- Optimum thermic fluid temperature

Project Economic

Savings
₹ 6,44,000

Investment
₹ 15,60,000

Payback
2.2 (28 months)

Project Impacts

230 Tonne/y of annual fuel savings

312 Tonne/year annual energy savings

486 tCO_2 GHG emission reduction per year

Cost Economics

Coal consumption in thermopac (Baseline)	1,583 kg/h
Coal consumption in thermopac (Post Implementation)	1,551 kg/h
Annual Coal Saving	230 Tonne/year
Annual Monetary Saving	Rs. 6,44,000
Annual Monetary Saving	Rs. 4,89,000
Investment	Rs 15,60,000
Simple Payback	28 months

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.

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