



Promoting Market Transformation for Energy Efficiency in Micro, Small & Medium Enterprises

Ministry of Micro, Small & Medium Enterprises (MoMSME), Government of India in collaboration with United Nations Industrial Development Organization (UNIDO), with funding support from Global Environment Facility (GEF) is executing this project across 10 MSME clusters in India. The project is being implemented by Energy Efficiency Services Limited (EESL), a Joint Venture of public sector undertakings (PSUs) under the Ministry of Power, Govt. of India. The project supports MSME units in implementing various Energy Efficient technologies through innovative Energy Service Contracting (ESCO) model and this result in reduction in energy consumption and greenhouse gas emissions.



Company profile

This case study identifies with a typical manufacturer of textiles located at Varanasi, Uttar Pradesh in the Textile Cluster.



Objective

Reduce specific energy consumption of the boiler by installation of combustion control system.



Technology

The combustion control system using oxygen analyzer and closed loop control of ID and FD fan using VFD will be used in boiler operation of the unit

Energy Efficiency Improvement by Installing Combustion Control System for Boilers in Textile Units

Background:

- The unit was operating with a coal-based boiler furnace with an efficiency of 74.09%.
- The installation of combustion control system using oxygen analyzer and closed loop control of ID and FD fan using VFD for boiler was recommended for energy saving

Principle of operation:

- The oxygen analyzer will analyze the oxygen content in the flue gases, draft sensor will sense and measure the draft in the combustion chamber
- Both sensors will send a feedback signal of 0-20mA to VFD which will then regulate the speed of the ID and FD fans.

Advantage of Combustion Control System

- Optimization of oxygen/air flow as per actual requirement will reduce fuel consumption
- Reduction of speed of ID and FD fans with VFD will reduce electricity consumption in these two motors. Thereby, eliminating the need of mechanical damper



Cost - Benefits

- Efficiency before implementation: 74.09%
- Efficiency after implementation: 84.95%
- Payback: 34.28 Months
- Savings in Cost: 4.15 Lakhs / Year
- Investment: 9.75 Lakhs / Year



Replication Potential

1

- ✓ High Replicability in Boilers of Textile Units
- ✓ Potential in over 10 Units of Varanasi Textile Cluster

2

- ✓ Attractive Payback periods
- ✓ Recurring benefits every year
- ✓ Better Monitoring and Control

Project Impacts



46,889 kg of annual fuel savings



9,588 kWh of annual electricity savings



415,164 ₹ of annual cost savings



122.6 tCO₂ GHG emission reduction per year



Contact Information

United Nations Industrial Development Organization

Mr. Debajit Das
National Project Coordinator
GEF-UNIDO-EESL Project
Address: 55 Lodhi Estate, New Delhi.
Email: d.das@unido.org

Energy Efficiency Services Limited

Mr. Balendu Bhushan Pandey
Cluster Co-ordinator | Varanasi Cluster
Corporate Office: Core-3, 5th Floor, SCOPE
Complex, Lodhi Road, New Delhi.
Ph: 7903654149
Email: u_bpandey@eesl.co.in

Deloitte Touché Tohmatsu India LLP

Mr. Utsav Tayade
Cluster Representative | Varanasi Cluster
KRB Towers, Plot No to 4, & 4A, 1st, 2nd & 3rd
Floor, Jubilee Enclave, Madhapur, Hyderabad.
Ph: 8600306589
Email: utayade@deloitte.com