



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 - 4

Installation of Fiber Reinforced Plastic (FRP) based Withering Fan (31 Troughs, 39 fans)

Objective:

Withering Fans is one of the key utilities in Tea processing units. Most of the units are having Cast Iron (CI), Cast Steel (CS) or Aluminum (Al) based withering fans to cater to their tea leaves withering operations, which consumes significant energy. The project envisaged saving in terms of energy through technology up gradation.

Implementation:

The unit replaced 39 Cast Iron based fan with Fiber Reinforced Plastic based withering fans. The project supported replacement of the existing CI based withering fans with FRP based axial fans to help units become energy efficient and cost competitive.

Principle:

Withering is the first step in tea manufacturing process wherein the moisture in green leaves is reduced by almost 30% (from 90% in fresh green leaf to about 70% moisture in withered leaf). In withering process, axial fans are used to provide the required air-flow for reducing the moisture.

Fan blades made up of Fiber-Glass Reinforced Plastic (FRP) is specially designed with aerodynamic properties to ensure uniform air flow over entire blade length. These blades are corrosion and erosion resistant and deliver more air flow with less power consumption.

Implementation partner

DESL



Unit Profile

Kamakhyabari Tea Estate., incorporated in the year 1982, is a leading CTC tea producer in the region. The unit produces close to 10, 61,898 kg of made-tea annually. Located at Dibrugarh , Assam, the plant has state-of-the-art facilities to produce good quality tea. The unit is equipped with 31 numbers of troughs to cater to their withering requirements.

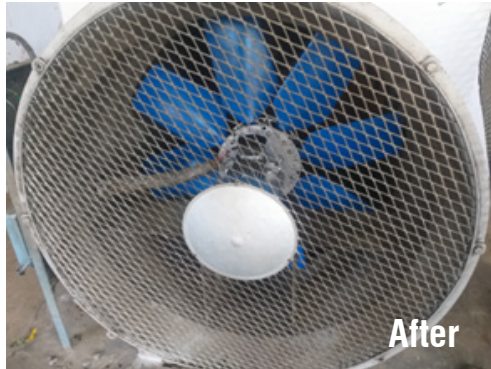
Benefits



- ◆ 10% to 15 % cost saving
- ◆ 10% energy saving
- ◆ Efficient Airflow
- ◆ Corrosion resistance
- ◆ 5% to 10% maintenance cost reduction



Before



After

Project Economic



Savings

₹ 14,81,000



Investment

₹ 8,92,000



Payback

0.6 years

Project Impacts



193,296 kWh of annual energy savings



₹ 8,92,000 of annual cost savings



158 tCO₂ GHG emission reduction per year

Cost Economics

Energy Consumption (Baseline)	136.8 kW
Energy Consumption (Post Implementation)	79.8 kW
Annual Energy Saving	193,296 kWh/y
Annual Monetary Saving	Rs. 14,81,000
Investment	Rs 8,92,000
Simple Payback	0.6 Years

Replication Potential



The technology has significant replication potential in across all industrial process. In Jorhat Tea Cluster, the replication potential is expected in 36% of the units i.e. around 143 units.

Calculation

Savings in terms of energy: Baseline energy consumption (kWh/yr) – Post Implementation energy consumption (kWh / yr).



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