



PROMOTING MARKET TRANSFORMATION FOR ENERGY EFFICIENCY IN MICRO, SMALL & MEDIUM ENTERPRISES

Ministry of micro, small and medium enterprises (M/o MSME), 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 - 1

Installation of 18 MT Louisiana State University (LSU) Port Dryer

Objective

Drying is the process that reduces grain moisture content to a level, where it is safe for storage and processing. The dryer is a significant energy guzzler in the rice production process. The project envisages energy savings by replacing energy intensive **Fluidized Bed dryer (FBD) with Louisiana state university (LSU) Port Dryer technology.**

Implementation

The unit replaced one of the Fluidized Bed Dryer of capacity 18 MT with a LSU Port Dryer of same capacity with 8 HP IE 3 standard motor and variable frequency drive (VFD). The installation of VFD enables further reduction in energy consumption and helps the unit to achieve better process control.

Principle

The proposed LSU drying system is known for low energy consumption and producing the best quality grains because of the continuous mixing effect. It consists of alternate open and closed-ends arrangement acting as air inlet and exhaust ports. The presence of staggered V-ports enables good mixing of paddy and improves overall drying rates. In LSU dryer, the main air blower is used for circulating hot air instead of generating sufficient pressure for fluidization, as in the case of FBD dryers. Hence electrical energy consumption of the drying process is significantly reduced by the use of LSU Port Dryer. The Specific Electrical Energy consumption in the Fluidized Bed Dryer ranges about 2 – 2.5 kWh/bag of paddy whereas the Specific Electrical Energy of LSU Port Dryer ranges about 0.7-1.2 kWh/bag of paddy depending on the operating parameter and variety of Rice. Further, low temperature drying in the LSU dryer results in lower steam consumption compared to the FBD dryer.

UNIT PROFILE

M/s. Somu Jamuna Modern Rice Mill incorporated in the year 1990, is situated in Kalleripet Rd, Arani, Tamil Nadu. The unit produces Ponni deluxe and Idly rice variety. The unit caters majorly to Chennai market and export business. The unit is classified under medium business category and has a rated capacity of 27 MT of Paddy processing.

Before



After



Project Impact

Annual Estimate



Electricity savings: 64,959 kWh



Fuel savings: 100 MTOE



Emission Reduction: 53.3 tCO₂



Monetary savings: 14.15 Lakhs

COST ECONOMICS



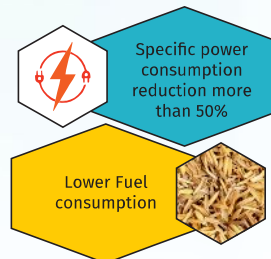
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|---|-------------------|
| Annual Production Capacity | 72,000 Bags/annum |
| Specific Electrical Energy (Baseline) | 345.6 kWh/batch |
| Specific Electrical Energy (Post Implementation) | 129.1 kWh/batch |
| Annual Electrical Energy savings | 64,959 kWh/annum |
| Steam Consumption per annum (Baseline) | 9.08 MT/batch |
| Steam Consumption per annum (Post Implementation) | 5.59 MT/batch |
| Annual Steam savings | 1048 MT/annum |
| Annual Fuel savings | 227.9 MT/ annum |
| Annual Monetary savings | 14.15 lakhs/annum |
| Investment | 25 Lakhs |
| Pay-back | 1.8 years |



Replication Potential

There are many units still operating with FBD dryers for their drying requirement. In Vellore Rice Cluster (Arni), the replication potential is about 15%

Benefits



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