

"PROMOTING ENERGY EFFICIENCY AND RENEWABLE ENERGY IN SELECTED MSME CLUSTERS IN INDIA"

To develop and promote a market environment for introducing energy efficiency and enhanced use of renewable energy technologies in process applications in the selected energy-intensive MSME clusters, United Nations Industrial Development Organization (UNIDO) in collaboration with Bureau of Energy Efficiency (BEE) is implementing a project titled "Promoting Energy Efficiency and Renewable Energy in selected MSME clusters in India" funded by Global Environment Facility (GEF) and co-financed by Ministry of Micro, Small and Medium Enterprises (MoMSME) and Ministry of New and Renewable Energy (MNRE).

Minimizing energy consumption by installing a new energy efficient motor in a ball mill

Objective

To minimize energy consumption in a ball mill by installing a new energy efficient IE3 motor in place of old rewind IE1 motor.

Implementation

Installed an energy efficient IE3 motor in place of old rewind IE1 motor in a ball mill of ceramic unit.

Principle

Rewinding can affect a number of factors that contribute to deteriorate motor efficiency: winding and slot design, winding material, insulation performance, and operating temperature. So, it is advisable to replace the motor after rewinding 3 times to minimize the energy consumption. Energy efficient motors (IE3) have higher efficiency by design due to latest technology and operate at higher efficiency event at low loads.



Savings

₹ 9,67,200



Investment

₹ 5,24,955



Pay Back

7 months



Unit Profile

Excel Ceramics is a medium scale ceramic unit located in Morbi region. The unit manufactures floor tiles and wall tiles.

Benefits

- Improved efficiency of motor
- Reduced energy consumption & energy costs



Outcomes



1,20,900 kWh of annual energy saving



₹ 9,67,200 of annual cost saving



99.1 T of CO₂ reduction per year (0.82 kg/kWh)



Replication Potential

In all the units with old rewind motors / old generation motors are used

Cost Economics

Energy savings per hour	40.3kWh
Energy saving per annum (3,000hr/year)	1,20,900 kWh
Cost savings per year (₹ 8/kWh)	₹ 9,67,200
Investment cost	₹ 5,24,955
Simple Payback period	7 months



Calculation

Energy savings per annum (kWh/year) = (Energy consumption before implementation- after implementation, kWh/hr) * no of working hours/year

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Unit

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