

"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).

Using alumina grinding balls in the ball mill to reduce the grinding time to reduce the energy consumption

Objective

To reduce energy consumption in the ball mill by reducing the grinding time with use alumina grinding balls in place of natural stone media.

Implementation

In ceramic sanitaryware manufacturing process, ceramic glaze grinding is one of the important process. This process of glaze grinding done in ball mill. Company was using natural stone media in the ball mill. This was replaced with alumina grinding balls to reduce the grinding time.

Principle

Natural stone media are very irregular in shape and size. Thus, take higher time for grinding and generates higher residue. The alumina grinding balls have better performance in terms of wear resistance, uniform size, high density and high mechanical strength. They cause less contamination to the raw material and keep the chemical composition of the raw material stable.



Savings

₹ 2,62,500



Investment

₹ 2,28,000



Pay Back

11 months



Unit Profile

Oswal Pottery Works is a ceramic unit located in Thangadh, Gujarat and established in 1992. Unit manufactures 3,000 MT of sanitaryware per annum.

Benefits

- Improved efficiency of the grinding process
- Reduced energy consumption and energy costs
- Reduction in grinding time



Outcomes



37,500 kWh of annual energy saving



₹ 2,62,500 of annual cost saving



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



Replication Potential

In all the ceramic units with natural stone media in ball mills

Cost Economics

	Before implementation	After implementation
Power consumed per one charge	234.4 kWh	122.7 kWh
Total power consumption per month (28 charges/ month)	6,562 kWh	3,437 kWh
Total power consumption per year	78,744 kWh	41,244 kWh
Energy saving per year		37,500 kWh
Annual cost saving (₹ 7/kWh)		₹ 2,62,500
Investment		₹ 2,28,000
Simple payback period		11 months



Calculation

Energy savings per annum (kWh/year) = (Energy consumption before implementation- after implementation, kWh/charge) *no of charges/year

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Unit

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