MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्यम

Ministry of New and Renewable Energy
Government of India

"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).

Installation of VFD to the existing 250 HP ball mill used in powder grinding operation

Objective

To minimize the energy consumption of the grinding process by maintaining the required speed of motor during the course of operation.

Implementation

Installed a variable frequency drive (VFD) to the existing 250 HP ball mill used in the powder grinding operation to reduce the energy consumption.

Principle

Powder grinding is a batch operation, where the ball mill motor needs to run at full speed during the start of the operation and after certain time it could rotate at low speed. VFD is a specific type of adjustable-speed drive which controls the speed of motor according to the requirement. Installing a VFD to the ball mill motor with time adjustment program will result in 15% saving in electricity consumption.

Savings
₹ 6,82,738

Investment
₹ 2,75,000

Pay Back
5 months

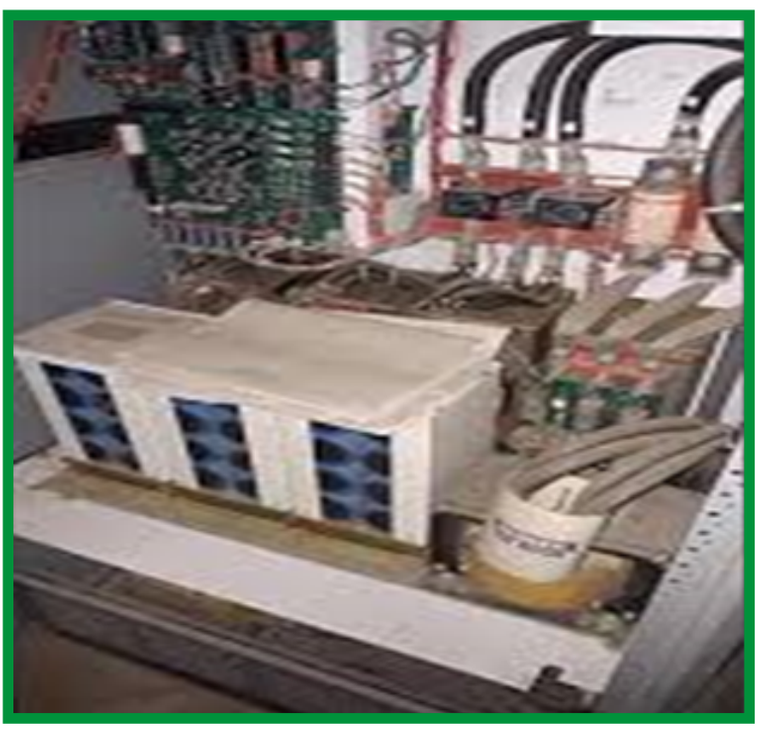
Prepared & designed by:
Confederation of Indian Industry

Unit Profile

Uday Ceramic is a medium scale digital tiles manufacturing unit located in Lalpar road, Morbi, Gujarat.

Benefits

- **Reduced specific energy consumption**
- **Increased equipment efficiency**
- **Reduced energy costs**
- **Increased equipment life**



Outcomes

- **97,534 kWh of annual energy saving**
- **₹ 6,82,738 of annual cost saving**
- **80 T of CO_2 reduction per year (0.82 kg/kWh)**

Replication Potential

This method can be adopted in all other units where similar kind of ball mill is used

Cost Economics

250 HP ball mill past annual energy consumption	**6,50,226 kWh**
250 HP ball mill annual energy consumption after intervention	**5,52,692 kWh**
Annual energy savings	**97,534 kWh**
Annual monetary savings (₹ 7/ kWh)	**₹ 6,82,738**
Investment	**₹ 2,75,000**
Simple payback period	**5 months**

Calculation

Energy savings per annum (kWh/year) = (Energy consumption before implementation- after implementation, kWh/year)

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