

"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).

Switching off the main grid power supply to induction furnace transformer during no load condition

Objective

Avoid no load losses of the transformer during non-operation of induction furnace by switching off the main grid power supply.

Implementation

Mallika Alloy Cast Pvt. Ltd. has a separate 200 kVA transformer to supply electricity to the induction furnace. Induction furnace was operating only about 30 hours per week. To avoid no load losses, main grid power supply to the transformer was switched off during non-operation of induction furnace.

Principle

Transformer have No-load losses, they are also called core losses. These are fixed losses, caused by hysteresis and eddy current losses. Hysteresis loss is that energy lost by reversing the magnetic field in core as the magnetizing AC rises and falls and reverses the direction. Eddy current loss is a result induced currents circulating in the core. Switching off the main grid power supply to the transformer during the non-operation of furnace eliminates these fixed losses of transformer and results in energy saving.



Savings

₹ 18,240



Investment

Nil



Pay Back

Immediate



Unit Profile

Mallika Alloy Cast Pvt. Ltd. is a small scale foundry unit located in Pithampur, Madhya Pradesh. They manufacture different type of precision investment castings and sand castings. Production capacity of the unit is 650 MT per annum.

Benefits

- **Reduced specific energy consumption**
- **Reduced energy costs**



Outcomes



2,400 kWh of annual energy saving



₹ 18,240 of annual cost saving



1.9 of CO₂ reduction per year (@0.82 kgCO₂/kWh)



Replication Potential

In all the units with transformers on No-load

Cost Economics

Loss of electrical energy per month	200kWh
Annual electrical energy saving	2,400 kWh
Annual cost saving (₹ 7.6/kWh)	₹ 18,240
Investment	Nil
Simple payback period	Immediate



Calculation

Annual energy saving =
Electricity consumption of transformer during No-load per month (kWh) * 12

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Unit

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Cluster Leader

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