

## "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).

### Installing IGBT (insulated gate bipolar transistor) controlled induction furnace in place of thyristor control furnace in a foundry

#### Objective

Energy saving by installing IGBT controlled induction furnace in place of thyristor control furnace in a foundry.

#### Implementation

Installed a 750 kg, 250 kW IGBT controlled induction furnace in place of 300 kg, 100 kW thyristor control furnace in a foundry.

#### Principle

IGBT controlled induction furnaces have better heat transfer efficiency compared to thyristor controlled furnaces. IGBT controlled furnaces have precise monitoring and control of temperatures compared to thyristor controlled furnaces, thus having better overall furnace efficiency resulting in power savings.



Savings

₹ 13,08,680



Investment

₹ 33,00,000



Pay Back

31 months



#### Replication Potential

In all the units with incandescent, CFL, fluorescent and sodium vapor lamps.



## Unit Profile

Gayatri Metal Products is a small-scale brass foundry located in Jamnagar, Gujarat. Unit manufactures copper and copper base alloys extruded rods, tube wires and precision brass turn components, etc.

## Benefits

- Improved heat transfer efficiency
- Improved production capacity
- Reduced energy consumption & energy costs



## Outcomes



18,881 kWh of annual energy saving



₹ 13,08,680 of annual cost saving



15.48 T of CO<sub>2</sub> reduction per year (0.82 kg/kWh)



## Calculation

Energy savings per annum (kWh/year) = (Specific energy consumption before implementation - after implementation, kWh/kg) \* annual production, kg

## Cost Economics

	Before implementation	After implementation
Weight per batch (kg)	330	750
Energy consumed per batch (kWh)	125	260
Specific energy consumption per kg	0.378 kWh/kg	0.346 kWh/kg
Annual production (kg)	5,90,040	9,00,000
Reduction in energy consumption per kg	0.032 kWh/kg	
Energy saving per annum (kWh/year)	18,881 (production 5,90,040 kg)	
Cost savings per year ( ₹ 7.75/ kWh)	₹ 1,46,330	
Cost saving in a year due to improved production	₹ 11,62,350	
Net cost savings	₹ 13,08,680	
Investment cost	₹ 33,00,000	
Simple Payback period	31 months	

### Contact details :

#### Unit

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#### Cluster Leader

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