

## "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 a 300 kg 100 kW induction furnace for brass melting in a foundry

#### Objective

Improve the working conditions and overall furnace efficiency in the foundry unit by installing a 100 kW induction furnace.

#### Implementation

Installed a 300 kg 100 kW induction furnace in the foundry unit in place of 300 kg coal fired brass melting furnace.

#### Principle

Electrical induction furnace has more heat transfer and overall efficiency (60 to 70%), no flue gas loss, clean working environment and easy handling compared to coal fired furnace. Precise monitoring and control of temperature is possible with electrical induction furnace resulting in consistent product quality.



Savings

₹ 6,99,156



Investment

₹ 8,00,000



Pay Back

14 months



#### Replication Potential

In all the foundry units with coal fired melting furnace.



## Unit Profile

Turn & Forge Metal Tec is a small scale brass foundry unit located in Jamnagar, Gujarat. It produces brass rods and components as per customer requirements.

## Benefits

- Improved process (furnace) efficiency
- Improved working conditions
- Precise monitoring and control of temperature



## Outcomes



3,780 kg of annual brass saving



₹ 6,99,156 of annual cost saving



## Calculation

Net cost savings, ₹ = (cost saving due to reduction in burning loss per year, ₹ - increase in fuel cost per year due to increase in furnace size, ₹)

## Cost Economics

Parameters	Coal fired furnace	Induction furnace
Yearly fuel consumption	31,608 kg	75,600 kWh
Fuel cost	₹ 22/kg	₹ 7.45/kWh
Fuel cost per annum	₹ 6,95,376	₹ 5,63,220
Increase in fuel costs	₹ 1,32,156	
Production of brass per annum	1,89,000 kg	1,89,000 kg
Burning loss	4.5 %	2.5%
Total burning material	8,505 kg	4,725kg
Material saved per annum	3,780 kg	
Cost saving due to material (₹ 150/kg)	₹ 5,67,000	
Net cost savings	₹ 6,99,156	
Investment	₹ 8,00,000	
Simple payback period	14 months	

### Contact details :

#### Unit

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#### Cluster Leader

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