

"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).

Reduce energy consumption by modifying the lining of ladle in a foundry.

Objective

To minimize the energy consumption by modifying the lining of the ladle in a foundry.

Implementation

Changed the lining of the ladle in a foundry to castable material with higher refractory properties to minimize energy consumption.

Principle

Maintaining the tapping temperature is a critical activity in any foundry. Minimizing or optimizing the tapping temperature mainly depends on ladle condition and heat retention capacity of the ladle. Improved heat retention capacity helps in reducing the tapping temperature, leading to energy conservation. To improve heat retention capacity, ladle lining has modified to a castable material with higher refractory properties. The modified lining has a better lining life compared to traditional ones.



Savings

₹ 9,06,750



Investment

₹ 6,13,900



Pay Back

9 months



Unit Profile

AKP Ferrocast Pvt. Ltd. is a foundry unit located in Belgaum region. Unit manufactures products like swing post, carriage and brackets, etc. Average production of the unit is in the range of 1000 to 1200 MT per month.

Benefits

- Improved lining life
- Reduced radiation loss, energy consumption and energy costs



Outcomes



1,17,000 kWh of annual energy saving



₹ 9,06,750 of annual cost saving



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



Replication Potential

In all the foundry units with traditional ladle lining.

Cost Economics

Reduction in tapping temperature	15 °C
Energy saving per MT of production	15 kWh/MT
Production per day	25 MT
Energy saving per day	375 kWh
Energy saving per year (312 days/year)	1,17,000 kWh
Annual cost saving (₹ 7.75/kWh)	₹ 9,06,750
Investment cost	₹ 6,13,900
Simple Payback period	9 months



Calculation

Energy savings per annum (kWh/year) = (Energy consumption before implementation- after implementation, kWh/day) * no of working days/year

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