

"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 biomass gasifier for ladle preheating process

Objective

To minimize the energy costs in the ladle preheating process.

Implementation

Installed a biomass gasifier to produce producer gas. This gas is used in place of diesel in the burner for ladle preheating process.

Principle

Biomass gasification is a process of converting solid biomass fuels into a combustible gas (called producer gas) through a sequence of thermo-chemical reactions. Installed biomass gasification technology used wood chips as fuel and has a wide range of applications. It can be used for thermal heat generation and effectively replace fossil fuels for heating applications in kilns, furnaces, etc. It can also be used to generate power to replace captive power generation.



Savings

₹ 3,08,448



Investment

₹ 3,00,000



Pay Back

12 months



Replication Potential

In all the units with diesel fired ladle preheating process. Before implementation, it is advised to assess the continuous availability of biomass feedstock and also suitability of the technology to the existing field conditions.



Unit Profile

I.H. Castings is a leading manufacturer and supplier of iron casting and machine tool accessory and also provides CNC machining service.



Benefits

- Reduction in energy costs
- Production of 2.5 - 3.0 Nm³ of producer gas from 1 kg of biomass
- Renewable energy source

Outcomes



11,232 L of annual diesel saving



₹ 3,08,448 of annual cost saving



31.7 T of CO₂ reduction per year (74.3 kg CO₂/GJ of diesel)



Calculation

Annual cost saving = (diesel consumption per day* cost of diesel - biomass consumption per day * cost of biomass - operation cost of gasifier per day) * no of days of working/ year

Cost Economics

	Before implementation	After implementation
Fuel consumption per hour	6 L	20 kg
Fuel consumption per annum (1872 hr/year)	11,232 L	37,440 kg
Fuel cost	₹ 54/L	₹ 7/kg
Fuel cost per month in	₹ 6,06,528	₹ 2,62,080
Operation cost per annum	-	₹ 36,000
Total cost per annum	₹ 6,06,528	₹ 2,98,080
Cost saving from biomass gasifier		₹ 3,08,448 /year
Investment		₹ 3,00,000
Simple payback period		1 year

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