



Promoting Market Transformation for Energy Efficiency in Micro, Small & Medium Enterprises

Ministry of Micro, Small & Medium Enterprises (MoMSME), Government of India in collaboration with United Nations Industrial Development Organization (UNIDO), with funding support from Global Environment Facility (GEF) is executing this project across 10 MSME clusters in India. The project is being implemented by Energy Efficiency Services Limited (EESL), a Joint Venture of public sector undertakings (PSUs) under the Ministry of Power, Govt. of India. The project supports MSME units in implementing various Energy Efficient technologies through innovative Energy Service Contracting (ESCO) model and this result in reduction in energy consumption and greenhouse gas emissions.

Energy Efficiency Improvement by Replacing Oil Fired Furnaces with Induction Billet Heater



Company profile

Skyway Forge is leading manufacturer of automotive parts located at Jugiana, Ludhiana in Punjab Forging and Foundry Cluster.



Objective

Reduce specific energy consumption per ton of billets heated by switchover to cleaner fuel.



Technology

Replaced the oil-fired furnace with new IGBT Induction billet heater



Outcomes

- Reduction in specific energy consumption
- Low start-up time
- Superior billet quality
- Increased production rate

Background:

Thermal equipment is central for production in foundry units for raising the temperature of raw material to 1250°C. Most of the units use old oil-fired furnace to cater the thermal demand. The specific fuel consumption of the existing furnace is much on the higher side. It is recommended to replace the in-efficient oil-fired furnace with energy efficient induction billet heater to reduce the energy consumption and improve efficiency.

Principle of operation

- ✓ Digitally controlled Voltage Fed IGBT based solid state power supply unit
- ✓ Demineralized water circulation unit for power supply and induction heating coil
- ✓ Electrolyte induction heating coils of size like billet heating requirement
- ✓ Mechanical handling system with quick extractor and V-guide assembly
- ✓ Pyrometer for precise temperature monitoring

Technology implementation

- ✓ The unit replaced single 3-4 tonne capacity oil-fired furnace with one 350 kW semi-automatic induction billet heater.
- ✓ To fulfil the heat requirement of high billet size cooling system is added



Cost-Benefits

Maximum daily production:	1.90 ton/day
Cost of energy in heating (baseline):	10,281.75 ₹/ton
Cost of energy in heating (post-implementation):	3,181 ₹/ton
Annual cost savings:	40,42,928 ₹
Investment:	37,38,000 ₹
Payback:	16 months

Results



Replication potential

- 1 The technology has high replication potential in all manufacturing units of Forging and Foundry cluster.
- 2 In B JL cluster the replication potential is expected around 40 % of the units. i.e. 30 units

Contact Details

Beneficiary Unit

M/S. Skyway Forge
 Address: VPO Jugiana, G.T. Road, Ludhiana,
 India
 Mr. K. K. Gupta
 Email: info@skywayforge.com

Energy Efficiency Services Limited

Mr. Girja Shankar
 General Manager (Tech.)
 Head (Corporate Driven Programs)
 Corporate Office: Core-3, 5th Floor, SCOPE
 Complex, Lodhi Road, New Delhi
 Tel: 011- 45801260
 Email: gshankar@eesl.co.in

United Nations Industrial Development Organization

Mr. Debajit Das
 National Project Coordinator
 GEF-UNIDO-EESL Project
 Address: 55 Lodhi Estate, New Delhi.
 Tel: 9999384380
 Email: d.das@unido.org