MSME forging unit invests in energy efficiency measures—and slashes energy bill by 45%!

Background

Pune, in Maharashtra, is a forging industry cluster. Large-scale units account for about 65–70% of the cluster's forging production, while MSMEs account for the remaining 30–35%. There are over 50 MSMEs producing forged components, with 20 heat treatment MSMEs functioning as their vendors. The production capacity of these units varies from 500 tonnes to over 3500 tonnes per annum (tpa).

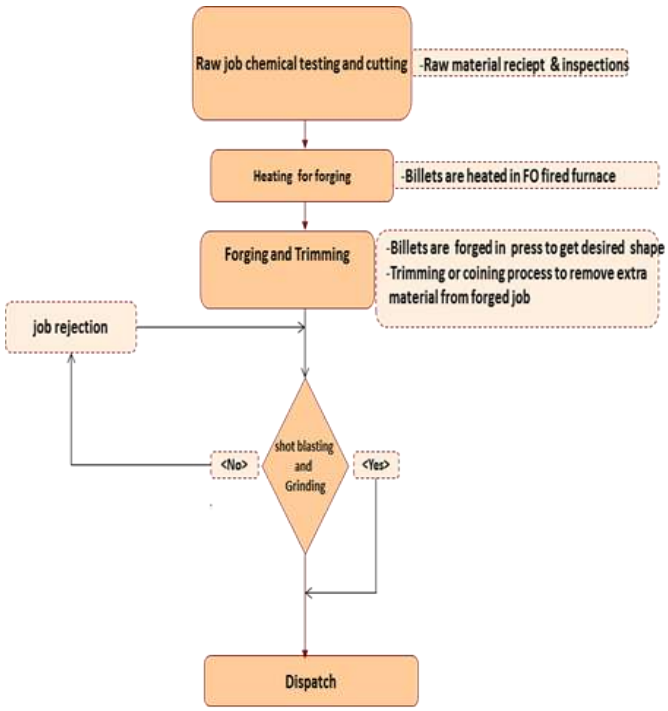
Unit profile

M/s **P5** is an MSME unit that manufactures forged components like gear blanks, shafts and bushes, producing about 532 tonnes annually. The total annual energy bill of the unit was INR 23 lakhs, which was around 9% of turnover. The annual energy consumption was about 63 tonnes of oil equivalent (toe), of which furnace oil (FO) accounted for 71% (45 toe) and grid electricity 29% (18 toe).

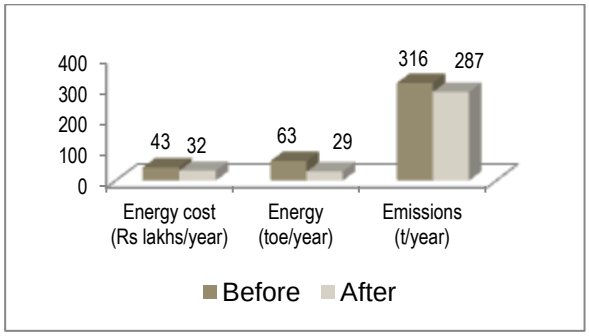
Process description

The manufacturing process involves the cutting of steel bars to billets, which are heated in furnaces, forged with hammers and presses, and trimmed to give the final products.

The main energy consuming equipments used were two forging furnaces (one FO-fired and the other powered by electricity), and electrical motors associated with utilities like air compressor and pumps.



Overall Impact: post- implementation



Overall Impact

45% reduction in total energy bill (i.e. annual savings of INR 11 lakhs) with a simple payback of 2.4 years

This case study has been prepared under WB GEF Project titled "Financing Energy Efficiency at MSMEs in India". The project aims to identify, design & implement Energy Efficiency (EE) solutions in 500 MSMEs in 5 clusters with potential of EE investment of more than Rs. 100 crore and reduction in GHG emissions equivalent to 1.2 million tonne CO_2. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency

INTERVENTIONS

Replacement of existing FO-fired forging furnace with induction billet heater

Baseline Scenario

The unit was operating an FO-fired box type forging furnace of capacity 150 kg per hour, associated with a 300- tonne forging screw press. Its efficiency was less than 8%.

Recommendation

The unit was advised to replace the existing FO-fired forging furnace with an induction billet heater of rating 150 kW (330 kg per hour capacity).

Implemented

As recommended, the unit replaced its existing FO-fired forging furnace with an energy efficient induction billet heater of rating 150 kW (330 kg per hour capacity). The new system consumes 112,300 kWh of electricity annually but saves nearly 44,700 litres of FO.

This investment of INR 25 lakhs is saving INR 10.5 lakhs annually. The simple payback period is 2.4 years.

Support provided under the project

- Walk-through &Detailed energy audit
- Identification of energy efficiency interventions in the unit
- Finalization of specifications for the energy efficiency interventions
- Identification of technology providers/vendors
- Facilitation for interactions between unit and technology providers;
- Technical support during commissioning
- Monitoring & Verification

For further information please contact:

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