MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्यम

Ministry of New and Renewable Energy
Government of India

"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 electric grinders in place of pneumatic grinders to save energy in a foundry unit

Objective

To minimize the energy consumption by replacing the pneumatic grinders with electric grinders in a foundry.

Implementation

Pneumatic grinders were used to remove residues from the surface of the products. These were replaced with electric grinders to reduce energy consumption.

Principle

Pneumatic tools are driven by compressed air and compressed air is highly energy intensive as only 10 to 30% of energy reaches the point of end-use and rest is converted to unusable heat energy. Whereas, electrical tools need no such conversionand are efficient. So, using electrical tools in the industry instead of pneumatic tools will eliminate the process of conversion of electrical energy into compressed air, leading to significant energy savings.

Savings
₹ 1,16,363

Investment
₹ 10,000

Pay Back
1 month

Prepared & designed by:
Confederation of Indian Industry

Unit Profile

Pioneer Engineering Industries Ltd. is a medium scale foundry unit located in Ujjain, Madhya Pradesh. The unit manufactures different types of grey iron (GI) casting and spheroidal graphite (SG) iron castings. Average production of unit is about 5,000 tons per year.

Benefits

- Increased energy savings
- Reduced energy costs

Outcomes

- 22,464 kWh of annual energy saving
- ₹ 1,16,363 of annual cost saving
- 18.4 of CO_2 reduction per year (0.82 kg/kWh)

Replication Potential

In all the units with pneumatic hand tools.

Cost Economics

	Before implementation	After implementation
Operating power (kW)	4.2	0.6
Electricity consumption per annum (6,240 hr/yr)	26,208 (kWh/yr)	3,744 (kWh/yr)
Energy saving per annum (kWh/year)	22,464	
Cost savings per year (₹ 5.18/ kWh)	₹ 1,16,363	
Investment cost	₹ 10,000	
Simple Payback period	1 month	

Calculation

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

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