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

UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

gef GLOBAL ENVIRONMENT FACILITY

ENERGY IS LIFE BEE CONSERVE IT Bureau of Energy Efficiency

Ministry of New and Renewable Energy सत्यमेव जयते

COMMON MONITORABLE PARAMETERS – JAMNAGAR BRASS CLUSTER

GEF-UNIDO-BEE PROJECT "PROMOTING ENERGY EFFICIENCY & RENEWABLE ENERGY IN SELECTED MSME CLUSTERS IN INDIA"

PROJECT BACKGROUND

The aim of this project is to develop and promote an environment for introducing energy efficiencies and enhanced use of renewable energy technologies in process applications. The project is being executed in 12 selected MSME clusters in five varied sectors identified as the most energy consuming sectors. These include brass, ceramic, dairy, foundry and hand tool sectors. This will result in improving the productivity and competitiveness of the units, as well as, to reduce their overall carbon and improve the local environment.

PROJECT COMPONENTS

The project will work at the cluster level, as well as, support policy-making to achieve its aim. The project has the following components:

- Increasing the level of end-use demand and implementation of energy efficiency and renewable energy technologies and practices by MSMEs
- Increasing the capacity of suppliers of energy efficiency and renewable energy products, service providers and finance providers
- Scaling up the project to a national level
- Strengthening policy, institutional and decision making frameworks

For further information please contact:

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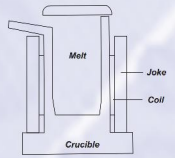
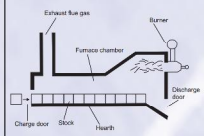
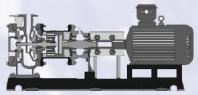
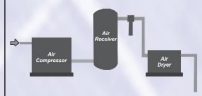
S. No.	Equipment	Parameter	Instrument	Frequency of Measurement	Unit	Ref. Range	Value	Remarks by Supervisor
1	Induction Furnace 	**Temperature of molten metal** *(Heating beyond melting temperature causes more energy consumption and burning loss. Heating lower than required temperature leads to casting defects)*	Pyrometer	Each melt	°C	950 -1100°C		
		Energy Consumption *(Energy consumption per heat helps to calculate the specific energy consumption)*	Energy Meter	Each melt	kWh	As prescribed by the induction furnace supplier		
		Charging Material Weight *(It is essential to evaluate the production performance of the furnace and overall production profile of the plant)*	Electronic Weighing Scale	Each charge	kg			
		Melting Time *(More the time taken to melt and pouring, more will be the energy consumption)*	Electronic Timer	Each melt	min.			
		Cooling Water Temperature *(It indicates cooling of induction furnace and coils)*	Thermometer	Each operation cycle	°C			
2	Reheating Furnace 	**Oxygen Level in Flue Gas** *(An increase in oxygen percentage in flue gas indicates reduced combustion efficiency and increased fuel combustion)*	Oxygen Analyzer	Hourly	%	Furnace Oil : 4 - 5% Natural Gas: 2 - 3%		
		Flue Gas Temperature *(It signifies the amount of sensible heat carried away outside the furnace. Monitor the flue gas temperature on chimney, before any waste heat recovery device)*	Thermocouple	Daily	°C	⩽ 180 - 220 °C		
		Side Wall Temperature *(Helps get insights about refractory lining of the furnace and also heat loss from furnace surface)*	Thermocouple	Daily	°C	⩽ 10°C higher than ambient temperature		
		Soaking Zone Temperature *(It affects the product quality as well as energy consumption in the furnace. Excess temperature causes energy wastage)*	Thermocouple	Hourly	°C	1050-1150°C		
		Furnace Oil Temperature *(It affects the combustion efficiency of the fuel)*	Thermocouple	Hourly	°C	30 - 45°C		
		Hot Material Temperature *(Heating beyond a certain limit results in higher oxidation of material and higher scale losses; while heating below a certain limit results in quality issues)*	Infrared Thermometer	Hourly	°C	1050-1150°C		
3	Motors 	**Voltage** *(Either the extreme high or the extreme low voltages will damage the motor and hence shorten the life of the motor)*	Power Analyzer	Weekly	V	±5% of rated voltage		
		Current *(Over-current can eventually lead to permanent damage to the motor or electrical device)*	Power Analyzer	Weekly	A	±5% of rated current		
		Power Factor *(Low PF can contribute to low efficiency, higher losses, and unnecessary electric utility charges)*	Power Analyzer	Weekly	PF	Close to unity		
4	Pump Set 	**Pressure** *(Regularly check suction and discharge heads and also ensure proper maintenance of pump)*	Pressure Gauge	Weekly	kg/cm²	As per manufacturer's recommendation *(refer to name plate details)*		
		Water Flow Rate *(A good performing pump should deliver required amount of flow)*	Flow Meter	Weekly	m³/hr			
		Power Consumption *(It gives insight about the motor loading and pump efficiency)*	Power Analyzer	Weekly	kW			
5	Compressed Air System 	**Pressure** *(Pressure variation leads to decrease in system efficiency and higher energy consumption)*	Pressure Gauge	Daily	kg/cm²	Main header: ≤ 0.3 bar Distribution Line: ≤ 0.5 bar		
		Temperature *(Increased temperature of compressed air means decrease in efficiency).*	Thermocouple	Daily	°C	As per manufacturer's recommendation		
		Specific Power Consumption *(It gives the energy consumption to produce 1 cfm of compressed air. Comparison of this value with OEM's catalogue gives deviation in SEC.)*	Power Analyzer	Daily	kWh/cfm			
		Loading and Unloading Time *(Running hours and loading hours signifies the actual utilization of the air compressors over the day)*	Electronic Timer	Daily	min.			