

“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 VFD to the existing compressor to avoid unloading (idle power consumption)

Objective

To minimize the energy consumption in the compressed air system by avoiding unloading of the compressor.

Implementation

Installed a variable frequency drive (VFD) to the existing compressor to meet the fluctuating demand of the compressed air and reduce the energy consumption during unloading.

Principle

Compressed air demand varies with variation in the process requirement. Excess capacity leads to increase in pressure of the compressor, unloading of the compressor resulting in idle power consumption. VFD varies the capacity of the compressor, matches it with the demand by changing speed. Avoids unloading completely, helps to maintain constant header pressure resulting in reduced leakages, power consumption. VFD in a compressor can reduce the energy consumption by 10-40% compared to modulating compressors.



₹ 40,200



Investment

₹ 74,000



Pay Back

24 months



Unit Profile

Techno System is a foundry unit with 800 to 1000 MT of production. It manufactures cast iron castings of pins, connectors and braking systems.

Benefits

- Improved life of the machinery & process output by maintaining constant header pressure
- Constant airflow at uniform pressure
- Reduced leakages
- Reduction in specific energy consumption in the compressed air system.



Outcomes



6,000 kWh of annual energy saving



₹ 40,200 of annual cost saving



4.9 T of CO₂ reduction per year (0.82 kg/kWh)

Cost Economics

Energy saving per annum	6,000 kWh
Cost savings per year (₹ 6.7 /kWh)	₹ 40,200
Investment cost	₹ 74,000
Simple Payback period	2 years



Replication Potential

In all the units with variable compressed air loads



Calculation

Energy savings per annum (kWh/year)
= (Energy consumption before implementation- after implementation, kWh/year)

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