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 Auto Power Factor Controller (APFC) panel to maintain unity power factor in a foundry unit

Objective

Reduce the electricity bill by maintaining unity power factor in a foundry unit.

Implementation

Installed a 50 kVar APFC panel to improve the power factor from 0.85 to 1.00 in a foundry unit.

Principle

Power factor (PF) is a ratio of active power (kW) to total power (kVA). It is in the range of 0 to 1. Improving the PF to unity will reduce the maximum demand (kVA) charges and distribution losses. Some electricity boards impose penalty for low PF and provide incentives for maintaining the PF near unity. These penalties could be avoided and incentives could be availed by maintaining the PF to unity with installation of APFC panel with capacitor banks.

Savings
₹ 19,200

Investment
₹ 75,000

Pay Back
47 months

Prepared & designed by:
Confederation of Indian Industry

Unit Profile

Viking Industries is a foundry unit located in Coimbatore. The unit manufactures cast iron based rough castings for textile, engineering and other industries. Production capacity of the unit is 60t per annum.

Benefits

- **Reduction in maximum demand and demand charges**
- **Reduced distribution losses with in plant**
- **Incentive due to unity PF**

Outcomes

2,400 kWh of annual energy saving

₹ 75,000 of annual cost saving

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

Replication Potential

In all the units with low PF

Calculation

kVAr Rating=kW (tanØ1- tanØ2); kVAr = size of the capacitor needed, kW= average power drawn, Ø1= $\cos^{-1}$(existing PF), Ø2= $\cos^{-1}$(improved PF)

Cost Economics

Reduction in energy consumption per month	**200 kWh**
Reduction in energy consumption per year	**2,400 kWh**
Cost savings per annum (₹ 8/kWh)	**₹ 19,200**
Investment cost	**₹ 75,000**
Simple Payback period	**47 months**

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