

"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 a soft starter to the existing refrigerator compressor in a dairy industry

Objective

To minimize the energy consumption by the refrigerator system and improves its availability (life) by installing a soft starter.

Implementation

Installed a soft starter to the existing refrigerator compressor to reduce the energy consumption.

Principle

Soft Starters are used in place motor starters to reduce the inrush current surge caused by large loads. These can minimize mechanical damage to belts, gears, and chains.

Refrigeration compressor motors are subjected to frequent loading and unloading due to variation in load. If soft starter is installed to these motors then it starts the motors in a slow and controlled manner, resulting in energy savings and increased availability.



Savings

₹ 4,77,360



Investment

₹ 2,88,000



Pay Back

8 months



Unit Profile

Gopal Dairy is a unit of the Rajkot Milk Union (RMU). This union is a member union of AMUL (Anand Milk Union Ltd.). The dairy produces various milk products such as ghee, butter, butter milk, flavoured milk, and peda.

Benefits

- Improved life of the motors and auxiliary materials
- Reduced energy consumption and energy costs



Outcomes



73,440kWh of annual energy saving



₹ 4,77,360 of annual cost saving



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

Cost Economics

Energy savings per hour	8.5 kWh/hr
Energy savings per day	204 kWh (24 hr/day)
Energy saving per annum	73,440 kWh (360 days/year)
Cost savings per year	₹ 4,77,360 (₹ 6.5/kWh)
Investment cost	₹ 2,88,000
Simple Payback period	8 months



Replication Potential

In all the dairy units with variable refrigeration load and frequent start/stop is happening



Calculation

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

Contact details :

Unit

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