11% reduction in energy bill of a food processing MSME unit through Energy Efficiency Measures

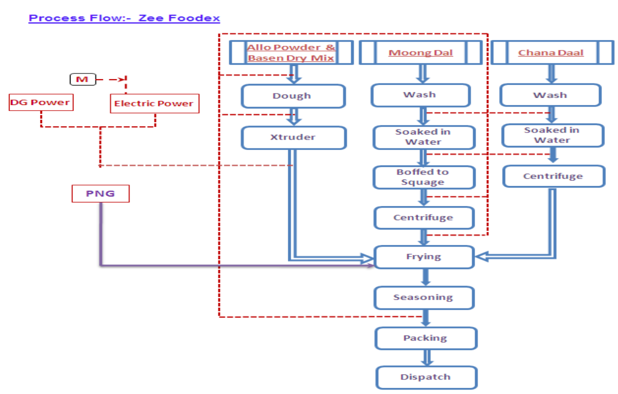
Background

Faridabad is a mixed cluster in Haryana having over 12000 MSMEs majorily manufacturing various kinds of automobile parts, sheet metal components and fabrics. There are majorly 15 industrial segments in the cluster with a high range of products from soaps to tractors.

Unit Profile

M/s ABC is a MSME unit engaged in manufacturing of processed foods producing about 1100 tpa. Total Energy bill of the unit was Rs.77.29 lakh per annum. About 56% of the unit's energy bill was on account of Diesel-DG and remaining 44% accounted for Grid electricity.

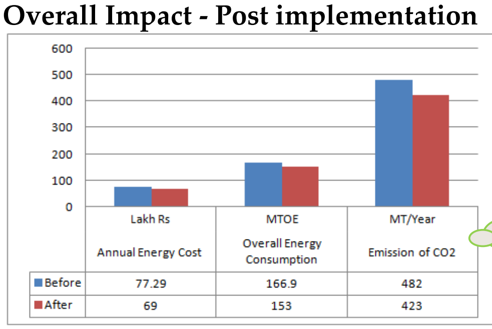
Process description



The manufacturing process is as follows: Formulation Section Includes Soaking, Centrifuge and Grinder. Here raw material like Peas, Chana Dal is soaked in big containers with fresh water for stipulated time, to make it ready for frying. There are centrifuge machines, to remove excess water, in case the material needs to be kept dry for the next process. There are grinders and chakki to grind different type of dal and spices, for the preparation of seasoning required for each variety of the product. Main Processing Section is having Fryer, Roaster, Oil Separator and Mixer. Here prepared raw material is fried in the several types of fryers/bhatti as per requirement. There is a roaster for roasting and an oil separator used for separating oil from fried peanuts,boondi and masoor dal. Finally, the packing is done into polypacks.

Diesel and Grid Electricity were used to operate major energy consuming equipments in the unit i.e. fryer, bhatti, grinder, casting and other utilities i.e. pumps, motors associated with equipments, and lighting.

Overall Impact - Post implementation



	Lakh Rs Annual Energy Cost	MTOE Overall Energy Consumption	MT/Year Emission of CO2
Before	77.29	166.9	482
After	69	153	423

Overall Impact

11% reduction in Total Energy bill (i.e. savings of INR 8.3 lakh p.a.) Simple payback of 23 months

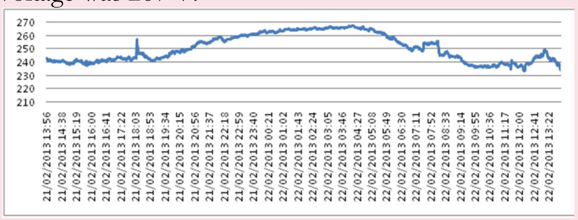
This case study has been prepared under WB GEF Project titled "Financing Energy Efficiency at MSMEs in India". The project aims to identify, design & implement Energy Efficiency (EE) solutions in 500 MSMEs in 5 clusters with potential of EE investment of more than Rs. 100 crore and reduction in GHG emissions equivalent to 1.2 million tonne CO_2. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency (BEE).

INTERVENTIONS

Optimization of Voltage for Single Phase Load

Baseline Scenario

The line to neutral voltage of the unit was measured using the three phase power analyser (portable instrument) for 24 hrs. The average line to neutral voltage was around 251V and the maximum recorded voltage was 267 V.



Recommendation

The unit was advised to install aservo stabilizer to maintain output voltage at 210 V.

Implemented Scenario

Based on the project's recommendation, the unit installed a servo stabilizer to maintain line to neutral voltage at 210 V.

Newly installed system consumes 44935 kWh of energy per annum.

The Investment of Rs.3 lakh made by the unit has resulted in monetary savings in energy cost of Rs.2 lakh per year with simple payback period of 23 months.

Reduction in Air Leakage

The average % air leakage in compressor was around 37%. As suggested, the unit has installed an air flow meter to mnitor air supply.. This has helped the unit to reduce air leakage percentage and overall energy consumption.

Replacement of Low Efficacy fixtures with High Efficacy Fixtures

The unit was lighting the production area through low efficacy fixtures. With the suggested recommendation, the unit has replaced all th FTL's with LEDs. This has resulted in an annual energy saving of 8064 kWh of electricity, equivalent to about Rs. 72,000 per year.

Support provided under the Project

- Walk Through & Detailed Energy Audit
- Identification of Energy Efficiency Interventions in the unit
- Finalization of the specifications for the Energy Efficiency Interventions
- Identification of technology providers/vendors
- Facilitation for an interactions between the unit and technology providers;
- Technical support during commissioning
- Monitoring & Verification

For Further Information please contact at

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