ISO 9001-2000 Certified

CONZERV™
Smart Energy Management

Excellence in Energy Management...
CASE STUDIES

A case study of a Sugar Industry

The user is a market leader in India in the sugar industry with a turnover of US $ 20.8 Million.

Energy Consumption Pattern

The major energy consumption in sugar industry is Crushing Mill, Juice Clarification & Screening, Evaporation, Sugar Crystallization, Boiler House, Drying, Grading & Bagging.

System Configuration

The Network comprises of 9 Power & Energy Meter located at the TG, Crushing Mills and at the Juice Clarification feeders. Energy Meters are connected to individual load like cane chopper, Boiler etc. which are linked to a PC through PLCs. The software is customized to the user's requirements.

On Line Monitoring

Before all the readings were monitored manually, as the meters are located at different locations it was difficult to take the reading on real time basis. Specific Energy Consumption pattern was not computed accurately.

After installation of Conzerv's eLAN® Energy Management System, the reading is recorded at a centralized PC and accurate Specific Energy Consumption was determined.

Benefits: Energy Balance (generated vs consumed) and identification of losses closely monitored.

Specific Energy Consumption

Before. There are considerable differences between a process-automation system and an energy management system. Thus, while the sugar manufacturing was fully automated for process parameters, energy computations still had to be manually and tediously done to arrive at stage wise consumption patterns.

After installation of the eLAN®, on-line patterns were immediately available.

Benefits: Accurate data. Reports generated instantly. Saving on time

- Automobiles
- Beverages
- Cement
- Chemicals
- Engineering
- Fertilizers
- FMCG
- Glass
- Hotels
- Hospitals
- IT
- Paints
- Paper / Pulp
- Petrochemicals
- Pharmaceuticals
- Textiles
- Shoes
- Steel
- **Sugar**
- Wind Mills
- Shopping Malls

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(formerly Enercon Systems Pvt Ltd)

and labour. Immediate corrective actions. Adequate data for longer-term preventive actions.

Captive Power Plant (Co-generation) Planning

Before. The Co-generation plant installed capacity is 9MW and the sugar plant has a requirement of only 6.5 MW. Spare load available was not monitored very closely.

After. The Energy Management System is available to monitor the excess power plant capacity for planned and profitable export to the grid.

Benefits: Excess power export to the grid generates steady revenue for company.

Distributed Power Factor Management

Before: The overall power factor at the main incoming point was well corrected. However, variations in individual power factor at critical, large load points went un-noticed. Therefore, distribution losses within the plant were high.

After the Energy Management System was installed, monitoring the running PF helped identify these losses. The data helped to connect the correct Capacitor banks at the major loads as required from time-to-time. Individual power factors improved considerably. Cable loading also came down, freeing up cable capacity.

Benefits: Saving of US $ 417 per month

"How To" Points

1. Close Focus on individual load centers helps pinpoint improvements. A good Energy Management System can bring considerable clarity. Aggregates of loads often tend to "average out" so that improvements made by one group often get cancelled out by inefficiency elsewhere and can go un-noticed, un-rewarded and un-learnt.
2. Deploying this "pin-pointed" learning can reduce loading and free up existing capacity. This can help postpone expansions and save a lot of money.

Energy Management and "Soft Sensing"

The Energy Management System can provide clear data and reports on Specific Energy Consumption. ie, energy input, per unit output of the shop or plant. Good Energy Management Systems go a step further in utilizing this energy efficiency metric in powerful "Soft-Sensing" (ie, indirect process measurement).

Some examples:

1. Identifying Machines due for maintenance (thru higher energy losses than norm). Eg. ring-frame maintenance scheduling can be improved in a Spinning Mill, saving on down-time and maintenance cost, through need-based frequency.
2. Identifying Leaks in Airconditioning or compressor lines (thru higher consumption than norm)
3. Optimisation of process parameters (eg kW waveform of kiln drive in a Cement mill indicates any potential kiln rotational instability due to mis-match of feed rate)
4. Similarly, kW waveform of Pulp Chest stirrer drive in paper industry can give an on-line, indirect indication of the consistency of the pulp. This is quite difficult to determine on-line directly. A direct measurement might then provide a periodic "calibration".