

Kanoria Chemicals Industries Ltd Ankleshwar

Organisational set up for Energy conservation

- a. Does your organization have an energy conservation cell **Ans:** - yes
- b. If yes who heads the EC cell? Whether energy conservation is his exclusive or additional responsibility? To whom he is reporting. **Ans:** Sr.Mgr (Electrical) heads the EC cell and report directly to VP(Chemical). Additional responsibility has been awarded to Sr.Mgr(Electrical) along with electrical department.
- c. Give salient features of EC cell's constitution, functions, amount of finances available achievements, future plans and strategy followed to implement energy conservation / efficiency programs and policies etc. **Ans:** We are committed towards energy conservation. We are developing On line monitoring of energy for better control over energy conservation, smooth operation of implemented energy conservation projected along with identifying the new area for energy conservations. We do not have funds limitation on any project having a simple pay back of three years up till Rs 1.0 crores. The draft of energy policy is under progress, which is expected to be approved very shortly.
- d. Does your unit have energy accounting and monitoring procedure and system in place? Which department is responsible to maintain such records – EC cell or any other department? **Ans:** We have just started the energy monitoring system for the implemented energy conservation project. It is being planned to monitor the ON line energy consumption of various energy intensive units. Energy Manager is monitoring the energy of various units and whole sole responsibility lies with Electrical department.
- e. Has your unit / organization declared its ' energy management Policy'? If yes attach a copy of the same. **Ans :** No
- f. Has your unit appointed or designated an 'Energy manager'. If yes please give his name, complete plant address, telephone no. Fax No. and e-mail address? **Ans:** Yes . BK Tiwari , Qr- No- F-5/2, KCI Colony Renukoot. Ph No- 05446-252044/55.

14. (a)

- i. Last Energy audit was carried out in Feb –2003. It has been planned to carry out energy audit from external competent party after every two years.
- ii. It was joint venture consisting of internal and external agency. The preliminarily audit was conducted by M/s Teri and M/s TEPS Pune. The details audit was conducted by M/s TEPS in which they have following recommendation:
 - a. Increasing the efficiency of cooling towers by changing the process, replacement of low efficiency pump with high efficiency pumps and motor, temperature & pressure controller, application of VFD etc
 - b. Replacing the process low efficiency pumps and motor
 - c. Substitution of power / energy source
 - d. Replacing low efficiency lights with energy efficient lights
 - e. Replacement of reciprocating comp. With screw type comp (R&D)
- iii. The feasibility report by M/s TEPS is also enclosed for your reference.

(b) M/s TEPS Pune is an ESCO company involved in energy conservation project in world wide. They have also carried out energy conservation at M/s ITC Kolkata.

15. The following are the constraint

1. At present there are lot of manufacturer involved for VFD, Energy Efficient lights etc but their spare does not match due to which we have to either maintain spare of each equipment.
2. No other suppliers attend the problem of other make devices
3. Place is at remote due to which we are not updated with latest trend of energy saving being available in market
4. The electronics equipment model is obsolete by vendors within two- three years and their spare part is not available

Three type of project were considered for energy conservation with M/s TEPS

- 1- Replacement of DG set with UPS system for Hypo plant (This has implemented first time in Chlro Alkalie industry)
- 2- Cooling water system upgrade
- 3- Pumping system up gradation

1- UPS system for Hypo plant:

Background Of the project :

During Manufacturing of Caustic soda Chlorine is liberated as by product which is environmental detrimental. This chlorine is treated with lime and then discarded in atmosphere. Blower is used to transfer the chlorine from cell house to hypo tower hence it is mandatory to provide uninterrupted power for operation of these blower and lime pump to protect our environment from chlorine gas.

Power to hypo plant was supplied by DG set which was only meant for hypo plant and were operated in isolation with grid. There were three DG set of 75KVA capacity out of which only one was being operated in each shift. There was annual 72000 Liter of Diesel consumption for DG set.

Observation :

It was observed that the price of diesel is in increasing trend due to which the cost of hypo plant was in increasing trend. Further with operation of DG set there was sound pollution in near by area. One manpower was involved in each shift. Further there was recurring maintenance cost of Rs 30000/ - per month.

Feasibility:

Fuel Consumption in DG set along with power generated was studied and the specific fuel consumption was verified during study. Power consumption by Hypo blower and pumps were measured during study. It was found that running of Blower and pumps were economical on power generated from Captive power plant instead of DG set.

Impact of implementation:

The DG set was replaced with 2*80KVA UPS system with Back U time of 30Minutes and Designed has been considered for starting current of Hypo blower and pumps.

Estimated Annual Saving: Rs 10 Lacs

Estimated Construction Cost: Rs 31.32 Lacs

Actual Annual Saving: Rs 10.08 Lacs

Actual Construction Cost: Rs 41.06 Lacs

The detailed saving sheet is also attached for your reference.

2- Cooling water system Up gradation:

Background Of the project :

Our various products require cooling water for product cooling at various stages. These cooling tower are located at different locations to avoid pumping cost. One cooling tower was supplying load to different products. The operation of pumps could not be monitored as the header for all products were same and higher capacity motor was in operation even when the plant major load were shut off. The water required for some process were very low but due to high head the higher rating motor was utilized. At one cooling tower the hot water were collected at sump and then again it was being pumped to cooling tower.

Observation:

The following are the various observations

1. Elimination of the intermediate storage and pumping facility for cooling tower can be eliminated
2. Reorientation of various pipe line and header to have better operation according to plant wise water distribution
3. Energy intensive pumps and motor may be replaced
4. Installation of temp controller, pressure controller and VFD's

Feasibility:

Complete flow and power consumption of cooling water pumps and fans were carried out. The same data were utilized and the efficiency of individual cooling tower was assessed in which it was found that efficiency of our complete cooling system was around 45% only.

Impact of implementation:

The above project was implemented and the efficiency of cooling water system has increased up to 75%.

Estimated Annual Saving: Rs 16.0 Lacs
Estimated Construction Cost: Rs 50.18 Lacs

Actual Annual Saving: Rs 10.74 Lacs
Actual Construction Cost: Rs 67.06 Lacs

The detailed saving sheet is also attached for your reference.

3- Pumping system Up gradation:

Background Of the project :

All the various product require pumping of process fluid at various stages. There were losses of water and various fluid from pipeline flanges, air valves etc. During to various modification carried out during last forty year there were large numbers of bend and valves for isolation in each line. Further the pumping efficiency was low as operating the stand by pumps made the requirement.

Observation:

The following are the various observations

1. Reorientation of various pipe line and header to reduce pressure drop
2. Energy intensive pumps and motor may to be replaced
3. Installation of pressure controller
4. Provide storage facility
5. Modify the operating philosophy

Feasibility:

Complete flow and power consumption of various process pumps were carried out. The same data were utilized and the efficiency of individual were assessed in which it was found that pumping efficiency is very low. It was observed that by changing the operating mode and by providing intermediate storage facility extra running of pumps can be stopped.

Impact of implementation:

The above project was implemented and the efficiency of pumping system has increased up to 77%. In this project the DAS system has implemented to monitor the on line energy saving of various pumps considered for energy conservation. Also there is hourly recording of all the necessary electrical parameter for record and further analysis,

Estimated Annual Saving: Rs 8.81 Lacs

Estimated Construction Cost: Rs 40.00 Lacs

Actual Annual Saving: Rs 6.04 Lacs

Actual Construction Cost: Rs 50.06 Lacs

The detailed saving sheet is also attached for your reference.

KANORIA CHEMICALS & INDUSTRIES LTD.
RENUKOOT

FLOW - DIAGRAM

