

Successful Implementation – Energy Conservation Measure

Measure
Reduction in Power Cost by Eliminating Compressor Cooling Water Pit Pump
Equipment
Cooling Water Pit Pump
Industry / Sector
Glass Industry
Year of Implementation
2003
Cost Benefit Analysis
<input type="checkbox"/> Type of Measure : Long Term
<input type="checkbox"/> Annual Energy Saving : 60,200 KWH
<input type="checkbox"/> Annual Cost Saving : Rs.2.80 lacs/year
<input type="checkbox"/> Actual Investment : Rs.0.2 lacs
<input type="checkbox"/> Payback : 26 days
Implementation Highlights
<ul style="list-style-type: none"> ▪ By eliminating this compressor cooling pit pump, we not only saved power but also eliminated the wastage of natural resource through overflow & evaporation i.e conservation of water as natural resource. Additional gain was the improvement in housekeeping of the area due to reduced piping. ▪ This success has made us to initiate the complete study of other water related systems to find out the further scope of energy conservation.

Summary

Inadequate piping sizes not only effect the performance of the air compressor but result in more consumption of power directly or indirectly for completing the process requirements.

The efficiency of the compressor or any equipment in general can be achieved by proper designing of the piping as well as proper selection of equipment including correct erection of the system.

Background

We are having 8 nos. of Non-Lubricated Double acting Reciprocating air compressors. All compressors have different pipelines for cooling the intercooler, outer head, inner head & cylinders. Due to the low pressure head in the cylinder cooling line, the cylinder cooling water was used to be transferred into a pit and then through a 10 HP pump, the water was being returned back to cooling tower about 100 mtrs. away.

We therefore replaced the existing cylinder cooling pipeline by ½ inch pipeline directly from cylinder cooling opening to cooling water return line of cooling tower. Now due to sufficient pressure head in line, there is no cooling problem. Also we were able to remove the pit pump which was taking 15 amp. Current.

Pump Details	Unit	Details
Motor Power	HP	10
Motor Current	Amp	15

Principle

We have used the natural head of cooling tower pump and through redesigning of piping of adequate sizes ensured that the sufficient flow and pressure head in cylinder cooling line.

Details of techno-economics:

Particulars	Actual energy savings
Earlier Power Consumption by pump	7 KW
Presently Power Consumption	Zero
Power Saving	7 KW
Annual Power Saving @ 8600 hrs	60,200 KWH
Annual Energy Saving @ Rs.4.65/kwh	Rs.2.80 lacs
Investment	Rs.0.2 lacs
Payback Period	26 days

Implementation issues

- A huge saving potential in water pumping system exists in the plant but it needs a detailed systematic study for identifying the opportunities.
- Identification of such types of wastages which are existing since beginning from the plant are difficult to be found out.
- Also the most important thing is the issue of mindset, taking pains and acceptance of the changed processes and initiatives.