Successful Implementation – Energy Conservation Measure

Measure
Stopping of one no. 75 KW Emergency Pump in cooling tower system out of 4 nos. running on site
Equipment
Water Pumping system
Industry / Sector
Chemical
Year of Implementation
2008
Cost Benefit Analysis
❑ Type of Measure : Short term
❑ Annual energy Savings : 4.80 Lacs KWH
❑ Actual cost savings : Rs. 25.90 Lacs
❑ Actual investment : NIL
❑ Payback : Immediate
Implementation Highlights
Low cost Measures - Easy to implement without any external expertise - After my knowledge, After its implementation the Management of Nirma Ltd, Alindra Plant decided to implement it in other plants also

Summary

By stopping of one no. 75 KW emergency Pump, the power consumption from 419 KW dropped down to 362 kW **(Actual)**

Background

A leading chemical company has four cooling tower pumps to meet the various processes cooling water requirements. All these four pumps are operated in a parallel. Cooling water requirement is in Back End & Front End plants.

- The measured total avg. flow with all 4 nos. pump are in the range of 2407-2430 m3/hr.
- The measured operating head with all 4 nos. pumps are found 45 mtr.
- The measured combined operating efficiency of the pumpsets are in the range of 79-805%

Measures :

- After considering the measurement of cooling water pumps with 4 nos. running and also with stopping of one no. pump (i.e. Only running of 3 nos. pumps).
- We saw that when running of all 4 nos. pump in a parallel total flow & power found 2407-2430 m3/hr & 419 kW.
- while when we take a trial with running of 3 nos. pump only the total flow and power found 2326 m3/hr and 362 kW.
- The measured combined efficiency of the 3 nos. pumps found 85%, which is also good one.
- We also take a measurement at Key location of the plant like heat exchanger for flow as well as pressure for full filled the requirement.

The pump details - Before Implementation

Nos. of pumps	: 4
nos, of pump operated	: 4
Rated Flow	: 222.22 LPS &
Rated Head	: 45 Mtr.
Motor KW	: 160 kW
Total power consumption by all pumps	: 419 kW

Particulars	Actual energy savings
❑ Present power consumption of four pumps	**419 kW**
❑ Proposed power after stopping of one no. emergency pump	**362 kW**
❑ Actual Power Savings	**57 kW**
❑ Annual Energy Savings @ 8400 hrs/day	**4.79 Lacs kWh**
❑ Annual Energy Savings	**Rs. 25.90 Lacs***
❑ Investment	**NIL**
❑ Payback	**Immediate**

*An accepted & implemented measures sheet by Nirma Ltd, Alindra is also enclosed in attach format for reference.

Principle

Ensuring flow of pumped water to sections of the plant only when it is required and avoiding this flow when the requirement is not present, considerable pumping energy can be saved. Also an individual user, having light volume or pressure requirements, can be serviced by a separate pump instead of increasing the settings of the entire system.

Implementation issues

Though significant energy saving potential in water pumping system exists, a detailed systematic study is essential to identify the energy saving measure through measurement and analysis.

For any clarification contact:
Mr. Jigar Shah, Dy. Manager (Energy Management Department) Saket Projects Ltd., 1, Panchsheel Society, Ushmanpura, Ahmedabad-380013
Email: jk_shah111@yahoo.com
Mr. A.K. Maheshwari, Sr. Manager (Electrical),
Nirma Ltd., (Alindra Plant), Detergent Complex, Village:Alindra, Ta:Savli, Dist. Baroda
Ph- 02667-251365/262347/251385
Email: electrical_alindra@nirma.co.in