

Successful Implementation – Energy Conservation Measure

Measure	
Synchronizing flow and changing position of pulp pump to save back water pump power and unnecessary circulation of water in the system.	
Equipment	
Open Impeller type Slurry Pump	
Industry / Sector	
Small Scale Sun-dry Paper Board Plant	
Year of Implementation	
2000	
Cost Benefit Analysis	
□ Type of Measure	: Permanent
□ Annual energy Savings	: 43,000\-
□ Actual cost savings	: 43,000\-
□ Actual investment	: 15,000\-
□ Payback	: 4.2 Months
Implementation Highlights	
<ul style="list-style-type: none"> ◇ Easy to implement at very marginal cost. ◇ The permanent nature of measure enables saving over entire project life. ◇ Other collateral benefits such as lower maintenance cost of pump. 	

Summary

Readjusting Flow and location of pulp pump to enable to save power of back water pump and avoid unnecessary circulation of water in system.

Background

The small scale sundry plant employ open impeller type pulp pump (3 HP) and back water pump (3 HP) as shown in Schematic Diagram A to feed water and pulp to flow box which in turns feed to Cylinder Mould machine.

Motor Rating for Back water Pump : 3 HP

Studying of the water flow, level differences, hours of operations of both pulp pump and back water pump actual process layout with level difference from Ground level was carried. Actual process was studied. The details were as per Schematic Diagram A.

After studying process and subsequent discussion held with technicians, new proposed scheme with use of back water only in the beginning of moulding process and introduction of new position of pulp pump below Ground Level etc as per Schematic Diagram B planned.

As per existing old process before modification water from back water tank and pulp from agitator was pumped individually to Sand trap cum flow box (above Ground level). Sand trap cum flow box then fed to Cylinder mould by Gravity.

Measures

The new modified system features are as follow-

- a) The pulp from agitator is fed by gravity intermediate flow box (New proposed) which is at below Ground level. The back water from Cylinder mould collected below the cylinder mould machine is fed to intermediate flow box.
- b) Only excess water from cylinder mould machine sump which is not required by intermediate flow box is sent to back water tank.
- c) The water and pulp mixture from intermediate flow box is fed to Flow box at above ground level (Sand trap cum Flow Box) which feeds by gravity to cylinder mould machine.

By introduction of new system, power for back water pump (3HP) saved which was earlier continuously used.

Principle

Unnecessary circulation of water in the system causes loss of power. Proper utilization of Potential difference of fluids in the system can be used to save the costly power.

Details of techno-economics:

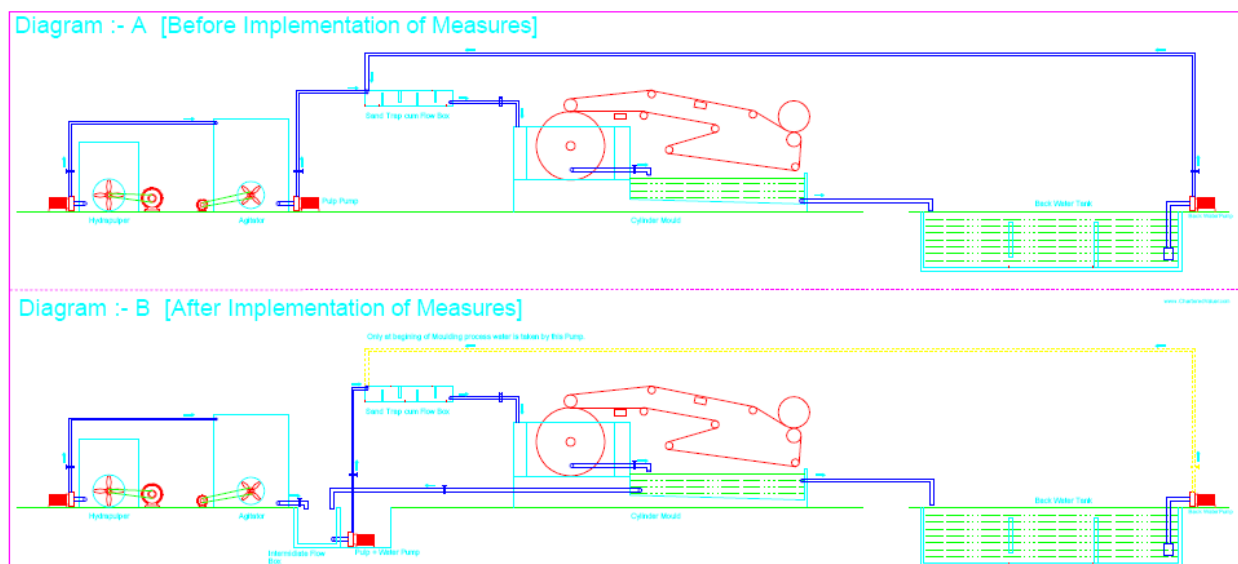
Annual Energy Saving = 2.238 KW X 20 Hrs/day X 200 days (For Sundry Plant)/ Anum.
 = 8952 KW/Annum
 = 8952 X Rs.4.80\ - per KW
 = Rs. 42969.6\ -
 = 43,000\ - (Rounded)

Investment Needed For:- a) Intermediate Flow Box below GL, Pump reinstallation for intermediate flow box, additional valve etc.

Investment Needed = 15,000\ - Pay Back Period
 = 4.20 Months

Implementation issues

Necessary modification in the air drying tower to fix the demister pad was done by maintenance team.



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