Centerville, Indiana Water Treatment Plant Project

High Service Pump and Motor Replacement Including VFDs

Summary

- The project includes replacement of the existing vertical pressure filters, construction of a new detention tank, lift station, replacement of the existing high service pumps and motors, and installation of VFDs .
- Estimated loan amount = $400,000
  - Pumps, motors, and VFDs = $113,000
  - Other costs = $287,000
- Estimated energy efficiency portion of loan = 28%

Background

- The existing high service pumps are over 45 years old and operate as either on or off. The existing pumps are rated at 250 gpm at approximately 150 feet. The original operating efficiency of the pump and motors is unavailable due to their age. Since they are so old it is anticipated that they are operating well below their original efficiency.

Results

- The new high service pumps will each be rated at 500 gpm at 190 feet because water demand in the community has increased.
- Incorporating VFDs into the project allow the pumps to have an overall efficiency of 90.6% as opposed to 79.7% for fixed speed pumps.
- The VFDs will amount to an estimated annual savings of $3,500 over fixed speed pumps. This equates to an overall energy savings of 28%.

Conclusion

- Replacement of the existing high service pumps was necessary as part of the project due to the new required capacity and the age of the existing pumps. By incorporating VFDs into the project it will save the owner approximately $3,500 per year over fixed speed pumps.

Attachment A

ITT

PUMPSMART

PUMPSMART FLOW ECONOMY ESTIMATES

FIXED SPEED

19.4
gpm/kW

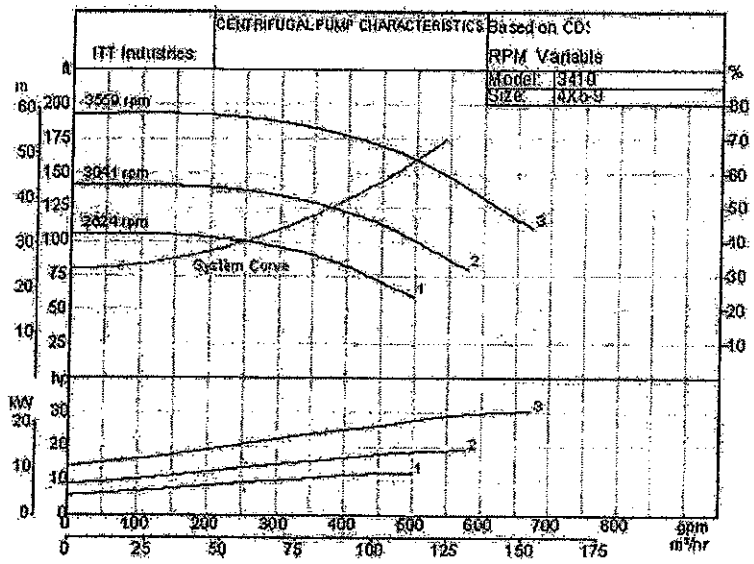
Expected range for typical operation 15.3 to 23.0 gpm/kW

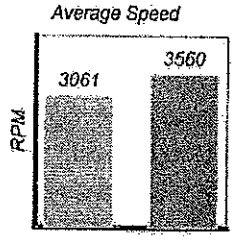
PUMPSMART

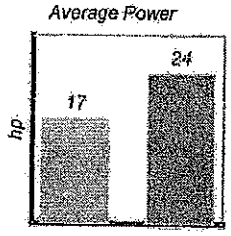
28.5
gpm/kW

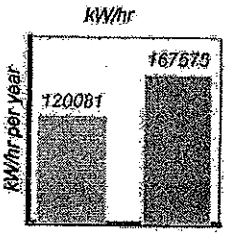
Expected range for typical operation 22.5 to 33.0 gpm/kW

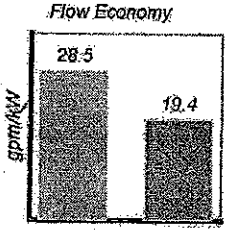
Estimated Annual Savings 3,562 USD

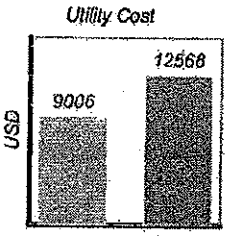












PUMPSMART
FIXED SPEED

Calculations based on:
Operating hrs 8,760.00
Cost per kW/hr 0.075 USD

PUMPSMART

Ratings	% Time	FLOW (gpm)	HEAD (ft)	SPEED (rpm)	POWER (hp)	%BEP	Flow Economy (gpm /KW)	Utility Cost (USD)
Qmin	20	250.0	100.0	2624	9.4	72.1	33.0	994
Qnormal	60	375.0	125.0	3041	16.1	93.3	29.0	5,089
Qmax	20	500.0	159.9	3559	27.6	106.3	22.5	2,923
	100	375.0	128.3	3061	17.0	90.6	28.5	9006

FIXED SPEED

Ratings	% Time	FLOW (gpm)	HEAD (ft)	SPEED (rpm)	POWER (hp)	%BEP	Flow Economy (gpm /KW)	Utility Cost (USD)
Qmin	20	250.0	190.5	3560	20.6	53.1	16.3	2,154
Qnormal	60	375.0	190.2	3560	24.3	79.7	19.6	7,557
Qmax	20	500.0	160.0	3560	27.6	106.3	23.0	2,857
	100	375.0	176.9	3560	24.2	79.7	19.4	12568

The following analysis is a comparison between running a pump with traditional fixed speed control versus PumpSmart control. PumpSmart is a variable speed drive imbedded with pump specific logic to protect your pump from upset conditions, increase your pump system efficiency and overall operating cost of the pump

This analysis was completed with simple assumptions about your pumping system based on the pump service and selection. Our sales force is well versed in pump system and can help you customize this report to the exact specifics of your system. For a customized report and a detailed PumpSmart quote please contact:
Luis.Rivas@itt.com

Customer: HENRY P THOMPSON CO
Serial No:
Customer P.O. No:
Item No: 1 & 2
Project No: Centerville WTP Pumps
End User: HENRY P THOMPSON CO
Service: High Service Pumps No. 1 & 2