VFD PROJECT SAVINGS

EXAMPLE

ELECTRONIC DRIVES AND CONTROLS, INC.

Integrating new control systems and breathing life into older equipment since 1968

Watch your VFD installations pay for themselves in no time through energy savings and VFD rebate!

The following is an example of a VFD (variable frequency drive) project that includes the installation, wiring and start-up of (2) 30 HP chilled water VFDs with demand controls from BMS (building management system):

Assumptions/Knowns:

1. 2 chilled water pumps (CWPs) 30 HP 460VAC with class F insulation or better
2. Run time is 80 hours per week, 52 weeks per year= 4,160 hours
3. New average speed= 90% resulting from ability to control motor speed based on required load
4. Energy cost= $0.16/kWh
5. Existing BMS and/or VFDs purchased with closed loop capability

Estimated Project Cost $18,000
(30hp VFDs, installation, wiring & start-up)
Expected rebate from Con Ed*..... $13,406
Net Project Cost..... $ 4,594

*2x30 hp CWP x 1176 kWh/hp (NYS TRM 6.0 Appendix K for NYC Office Building x $0.19/kWh (ConEd prescriptive reimbursement rate at the time) = $13,406

				A	B	C	D		
	% Speed	% Load	Motor HP	Shaft KW	Motor EFF	Drive EFF	# Motors	Power, KW	
Full Speed Operation	100%	100%	30	22.5	94.1%	100%	2.0	(A/B/C) x D	
							Existing Motor KW Load:	48.06	F
VFD Operation	90%	72.9%	21.9	16.3	94.1%	97%	2.0	(A/B/C) x D	
	*Load is reduced by the cube of speed						Reduced Speed (VFD) KW:	35.75	G
							KW Savings (F-G):	12.31	(F-G)
							Annual Energy Savings, kWh savingsx 80 hrs/wk x 52 wks/yr (H = 4,160 x (F-G)):	51,224	H
							Annual Savings at $0.16/kWh (H x $0.16/kWh):	$ 8,196	
							Net Project Cost:	$ 4,594	

Simple Payback: 0.56 years, or less than 7 months!

*If average motor speed can be reduced to 80%, annual energy savings are 94,472 kWh or $15,275
Payback is reduced to 4 months!