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Industry: Chemical, Oil, and Gas
Application: Chiller Pumps
Products: Baldor•Reliance® RPM XE Motors

DOCUMENTED SAVINGS
CASE STUDY NO. 22

The Challenge

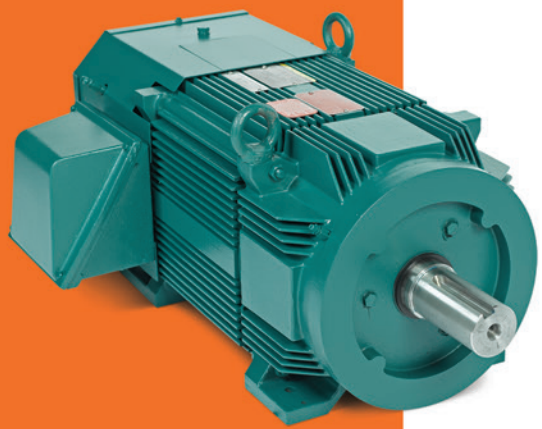
On the DuPont campus in Wilmington, DE we completed a motor performance evaluation to investigate energy savings potential using a new Baldor•Reliance motor offering. The evaluation was between an existing Premium efficient 75 HP induction motor and an RPM XE motor. The driven equipment was a chiller pump on a cooling water loop controlled by an adjustable speed drive.

The Solution

Using calibrated meters and a power analyzer, a battery of tests was conducted on both the induction motor and the Baldor•Reliance RPM XE motor. Testing procedures were identical for both motors measuring; kW, voltage, and amp readings at various speeds for data collection and comparison. It is important to note that electrical data was measured at the INPUT to the ASD – thus the ASD losses are included in the raw data. Test data showed significant savings across a wide speed range using the RPM XE motor. Additionally, the RPM XE motor drew less current and operating frame temperature was 6 degrees Celsius cooler.

Motor Characteristics:

	Existing Induction Motor	RPM XE Motor
Horsepower	75	75
RPM	1780	1800
NEMA Frame	365T	365T
Enclosure	TEFC	TEFC
Voltage	460 V	460 V
FL Amps	85.9	74
NEMA Nom. Eff.	95.4%	96.8%
Power Factor	85.6%	99.2%



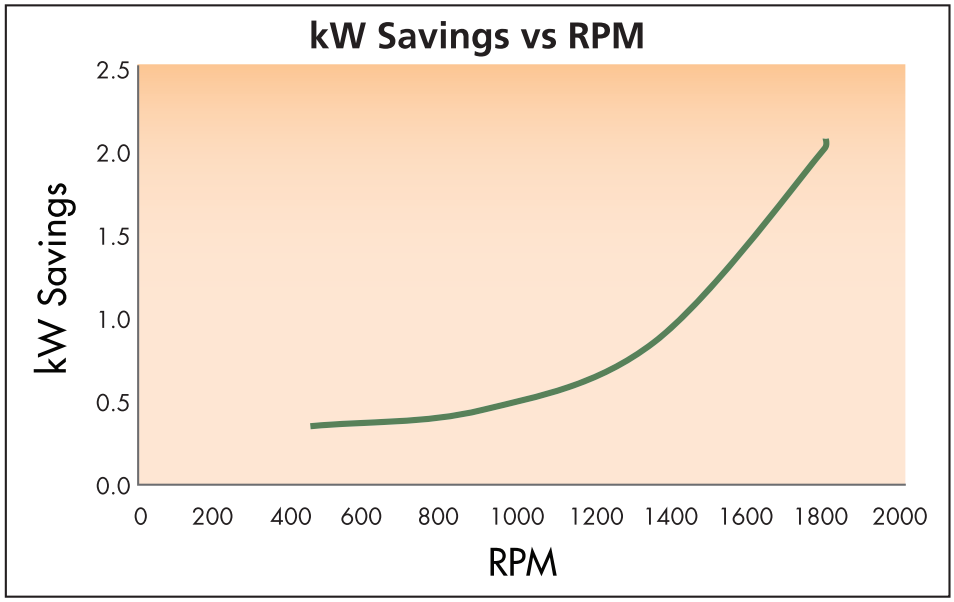
The Step-by-Step Calculation

The Savings

Energy Savings **$1774.48**

Use of the RPM XE motor resulted in a power savings of 2 kilowatts when operating the pump at 1800 RPM. Overall, if the pump was running 24/7 the yearly savings would be $1774.48*. There is potential for greater energy savings at this specific site which has two chiller pumps within the cooling tower.

*This assumes $.10/ kW*hr



The Conclusion

Based on initial testing, the chemical company can reduce energy costs by upgrading to the RPM XE motor. The savings can be contributed to the reduced losses in the electrical design of the RPM XE motor. The drive also has reduction losses due to the lower current required for the motor.

If this was a new installation, potential cost could be reduced even further. Utilizing the RPM XE motors the amperage draw is less which would provide the potential for a smaller drive to be installed as the controller. Also due to the amperage draw, smaller cabling could be installed further reducing the overall installation costs on top of the energy savings received over the life of the motor.

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