

WATER & SEWAGE UTILITY

Class H, VPI Rewind Increases Low Voltage Motor Reliability



- Application = Flood Station Water Pump
- Motor Type = Vertical AC Induction
- Manufacturer = Flygt
- HP = 215
- Voltage = 460
- RPM = 900

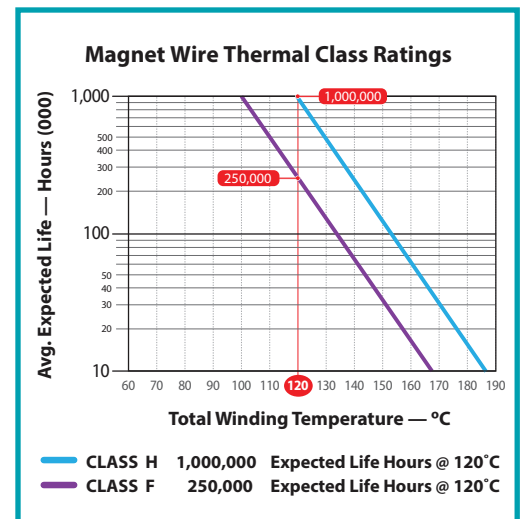
The Challenge

A Midwest municipal sewage district experienced multiple winding failures on a pump motor. Each failure resulted in unexpected downtime and costly repairs. After repeated failures from their current vendor, the customer approached IPS for a longer term solution.

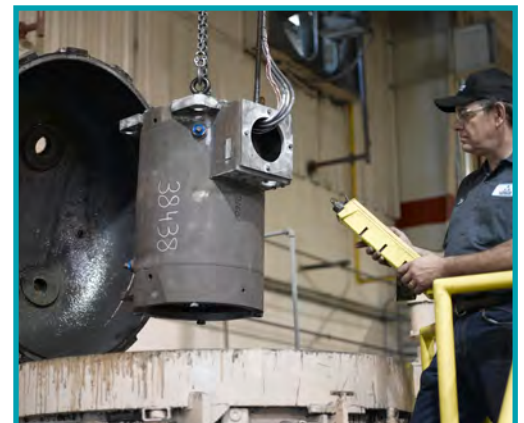
The Solution

During inspection of the failed stator, IPS technicians noticed that the winding insulation had deteriorated due to overheating. IPS recommended and implemented the following solution in order to increase the reliability and life expectancy of the motor:

- Upgrade existing Class F insulation material to Class H insulation material. Class H material (e.g. magnet wire and resin) provides increased average expected life hours at a given temperature over Class F insulation material.
- Rewind the stator utilizing VPI process and winding materials instead of a Dip & Bake rewind providing the following reliability advantages:
 - VPI vacuum removes all the moisture and air from the stator eliminating potential for small voids in the slots.
 - VPI rewind materials allows resin to penetrate the entire stator forming a solid, rugged protective mass improving stator mechanical strength, dielectrics and thermal transfer.



Class H magnet wire has 4X the average expected life hours of Class F magnet wire



VPI rewind process and materials provide a more reliable rewind than Dip & Bake rewinds



TOTAL COST OF OWNERSHIP (TCO)

The Savings

Even though the IPS Class H, VPI rewind was twice the price of a competitive Class F Dip & Bake rewind, the customer has not experienced a failure since putting the motor in service over a year ago. By eliminating the two hours of unplanned downtime to replace the failed motor with a spare, IPS was able to show the customer a real dollar total cost of ownership savings of \$18,800 in the first year. See the below chart for the annual TCO calculation.

COST ITEM	COST DESCRIPTION	ANNUAL TCO	IPS SOLUTION
Production	Unplanned Downtime (Plant)		
	Total events (Qty. / Year)	1	0
	Reduction in Capacity (\$ / Hour)	\$9,000	\$0
	Avg. time per event (Hours)	2	0
	Sub-Total (\$ / Year)	\$18,000	\$0
Labor	Preventive Maintenance (Labor)		
	Total events (Qty. / Year)	2	1
	Mtn. labor rate (\$ / Hour)	\$100	\$100
	Avg. time per event (Hours)	8	8
	Sub-Total (\$ / Year)	\$1,600	\$800
	Planned Downtime (Labor)		
	Total events (Qty. / Year)	1	1
	Mtn. labor rate (\$ / Hour)	\$25	\$25
	Mtn. personnel per event (Qty.)	4	4
	Avg. time per event (Hours)	8	8
Sub-Total (\$ / Year)	\$800	\$800	
Materials	Repair		
	Total events (Qty. / Year)	2	1
	Avg. repair cost (\$)	\$4,000	\$8,000
Sub-Total (\$ / Year)	\$8,000	\$8,000	
1st Year TCO =		\$28,400	\$9,600
IPS SOLUTION SAVINGS =			\$18,800

The Conclusion

IPS offers proven rewind technologies, industry knowledge and engineering capable of increasing the reliability and performance of your critical rotating assets. The quality of your motor rewind takes you well beyond the initial cost of repair. IPS delivers valuable service solutions that helps you minimize unplanned downtime, increase production and potentially return cost avoidance savings to an operation. If you are not currently using IPS for your electric motor and generator repair and would like to receive more information about TCO documented savings, contact your local IPS sales representative

