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October 4th 2010 ~ Monday Morning Minutes:

Glycol in for HVAC Systems (Part 3) – Pump Corrections

R. L. Deppmann Company Monday Morning Minutes addressed corrections to system GPM (gallons per minute) and system friction head during the last three weeks. **Today we look at the pump selection.** Centrifugal pump curves and the brake horsepower required changes depending on the fluid. In HVAC design we normally assume water is the pumped fluid. There are many times when the assumption is water, since there is no fluid mentioned on the schedule, yet we find a glycol makeup unit attached to the system. **The design engineer should schedule the fluid type and temperature range expected as well as the flow rate and pump head required.**

The curves below show some of the effects of different fluids. The first curve is a Bell and Gossett 1510 pump for water. The impeller is 10.125” and the brake horsepower is about 15HP. The second curve uses 50% Ethylene Glycol/Water. The impeller remains 10.125” but the horsepower required goes up to 17.11. Notice the pump curve. The blue line is the normal flow/head curve and the green line is corrected for the fluid. They are the same. In fact, the only effect that makes a difference is the horsepower. The third curve shows the effect of pumping a Quench Oil, not your typical HVAC fluid! Notice the horsepower is now 24.31 HP. Also notice the impeller diameter must be greater due to flow/head corrections. Click the images below to study the curves.

	<p>Typical Pump Curve for Water:</p> <p>600 GPM of Water at 60°F at 80 ft.</p> <p>BHP (Brake Horsepower) = 15.14</p>
	<p>Same selection using 50% Ethylene Glycol/Water solution at 45°F</p> <p>600 GPM of 50% EG at 45°F at 80 ft.</p> <p>BHP (Brake Horsepower) = 17.11</p>
	<p>Same selection using a Quench Oil at 70°F</p> <p>600 GPM of Q Oil at 70°F at 80 ft.</p> <p>BHP (Brake Horsepower) = 24.31</p>

REMEMBER: Correct the system flow and head for the fluid being used and then schedule the fluid type and temperature range. Let Deppmann or the B&G selection software make the corrections to the curve.

Get the **right** fluids for your HVAC System

DowFrost* and DowTherm*
 Freeze and Corrosion Resistance

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