Tower to Test Maglev Elevators

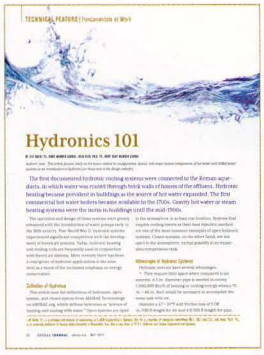
ROTTWEIL, Germany—German manufacturer ThyssenKrupp last year announced plans to develop a revolutionary new type of elevator system. Instead of cables, the "Multi" system is designed to use magnets, similar to "Maglev" trains.

ThyssenKrupp test tower.

The system would enable vertical and horizontal movement of multiple elevators in each shaft. Now, the company has announced it is nearing completion of construction of a test tower for prototypes. The 761 ft (232 m) concrete tower will house 12 elevator shafts. Some of the vertical shafts will test another innovative type of elevator. The fast elevators are designed to travel up to 60 ft/s (18 m/s, or 41 mph). ■

Hydronics 101

The authors of May's "Hydronics 101" imply that they would not encourage use of triple-duty valves or multi-function valves (MFV) in favor of separate devices on variable speed applications. Whether constant or variable speed, the root problem is that the pumps are oversized for the installed system resistance and operate at a higher than designed flow rate if left uncorrected.



Speed reduction can help, but adds the concern of where the zone sensor was located and its setpoint. If those are correct, the fix needs more than speed reduction to get back to design flow.

The MFV could, of course, be left 100% open, and one could proceed in any other fashion deemed appropriate. However, using the MFV pressure ports with manufacturers' flow curves provides a means of throttling to a

reduced design flow on the operating curve, and taking an accurate pressure measurement of the valve pressure drop.

This allows a more accurate means of determining the amount of impeller trim required with system curve analysis. The impeller can then be trimmed and the MFV repositioned back to 100% open afterwards.

The MFV provides the functions of a balancing valve, shutoff valve and check valve, and the labor savings of installing a single valve in a compact configuration. The second set of port taps can complement readings taken at the pump.

I hope the authors would be open to their use. Certainly when used properly they can assist in meeting Standard 90.1's intent.

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The Authors Respond

It is not the opinion of the authors that a multi-functional valve (MFV) should never be used, but rather that it should be applied in appropriate situations. The article's intent is to encourage design engineers to consider the needs of the system they are designing and to specify components that will allow for the greatest performance efficiency.

The argument that installing a MFV in a variable speed application for the purpose of saving space is valid, as is the concern with first cost (installation and component). But, when compared to the additional energy consumption due to the higher pressure drop and the potential for the valve to be misused as a balance valve, it makes sense that this is not the appropriate application.

In response to a MFV helping in the process of trimming the impeller, new variable speed pumps that are properly sized should not require that the impeller be trimmed. The goal of designers should to be correctly size and specify equipment to eliminate unnecessary equipment and focus on the long-term performance of a system since operational costs far exceed first costs of a system.

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