TRANSDUCER SIZING

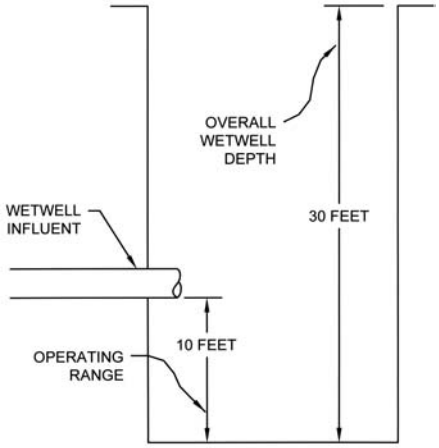

FIGURE 1

The purpose of this document is to explain the importance of matching the transducer to the Lift Station wetwell in order to ensure optimal performance of the Lift Station level controls.

A transducer will be rated to provide a 4-20mA signal over a certain range of span. The most common are:

5 psi - 4-20mA signal over the range from 0 to 11.5 ft
10 psi - 4-20mA signal over the range from 0 to 23.1 ft
15 psi - 4-20mA signal over the range from 0 to 34.6 ft.

To match the transducer to the application, you need to know the operating range of the wetwell. Referring to Figure 1, the operating range of the wetwell is typically from the bottom of the wetwell to the bottom of the influent pipe. The operating range includes all of the pump control on/off points, and the high level alarm point. The ability to measure level for a few more feet above the operating range is usually desired.

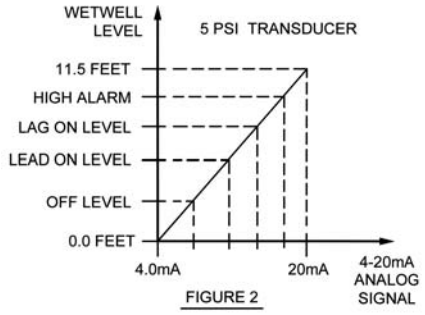

FIGURE 2

Referring to Figure 2 where a 5 psi transducer is used, good level control setpoint resolution is obtained.

In Figure 3 we have the same operating range as in Figure 2, but now a 10 psi transducer is used. It is clear that about 50 % of the available resolution is lost. Figure 4 shows an even further reduction in resolution when a 15 psi transducer is used for an application that should use a 5 psi transducer.

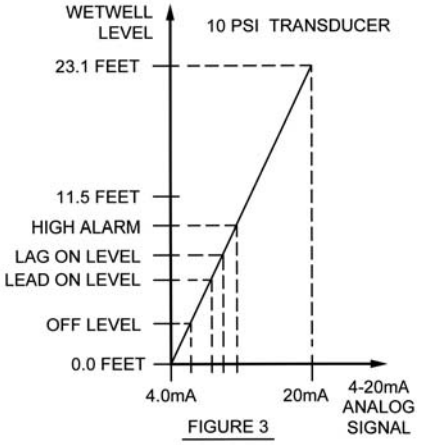

FIGURE 3

The good resolution obtained from having a properly sized transducer is especially important in applications that have VFDs. This will ensure that the VFD speed reference will be smooth, and not have noticeable step changes in speed as the level changes.

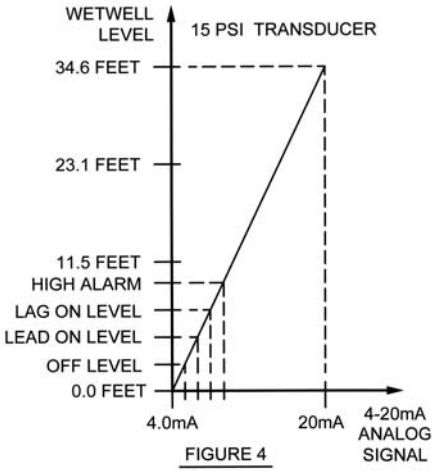

FIGURE 4

The calibration of a pressure transducer is subject to drift over time, and may be affected slightly by temperature fluctuations. Electrical noise can also affect the accuracy of the level measurement. The properly sized transducer is less susceptible to all these problems.

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