SPENCE ENGINEERING COMPANY PIPELINE

Applications Newsletter June 2000

Spence Type ED Pressure Regulator

Deaeration Hook Up For A Boiler Feedwater System

As the industry leader in valve technology, fluid control, and steam specialty device manufacturing, Spence Engineering Company prides itself on providing end users with the right valve, with the most accurate control, at the most economical cost for their application. This practice has a positive effect on the way we are perceived throughout the HVAC industry.

Quality service, from our factory and the Reps means satisfied customers, positive brand name recognition and word-of-mouth recommendations. These plusses translate into new and repeat business and opportunities to outsell and replace the competition.

APPLICATION PROBLEM

Occasionally, you will come across an application where you want to accurately control and enhance the deaeration of boiler feedwater by controlling the steam pressure and temperature in the deaerator. In this instance, the operating conditions require you to flow a maximum 6,500#/hour of saturated steam from a supply pressure of 250 PSIG to a reduced pressure of 5 PSIG, using a pilot operated pressure regulator. The deaerator has a 6” flanged inlet and an anticipated minimum load of 500#/hour. This is a situation where high pressure drops and high turndowns are required.

OUR COMPETITOR’S SOLUTION

In the installation manuals of other pressure regulator manufacturers, in applications where the supply pressure is above 125 PSIG, our competitors consistently specify installing an additional pressure regulator ahead of the pressure control valve to reduce the pressure to 125 PSIG. This recommendation, while satisfying the basic requirements of the system, creates several problems for the user which include paying for equipment that will only partially fulfill their needs. The other problems are as follows:

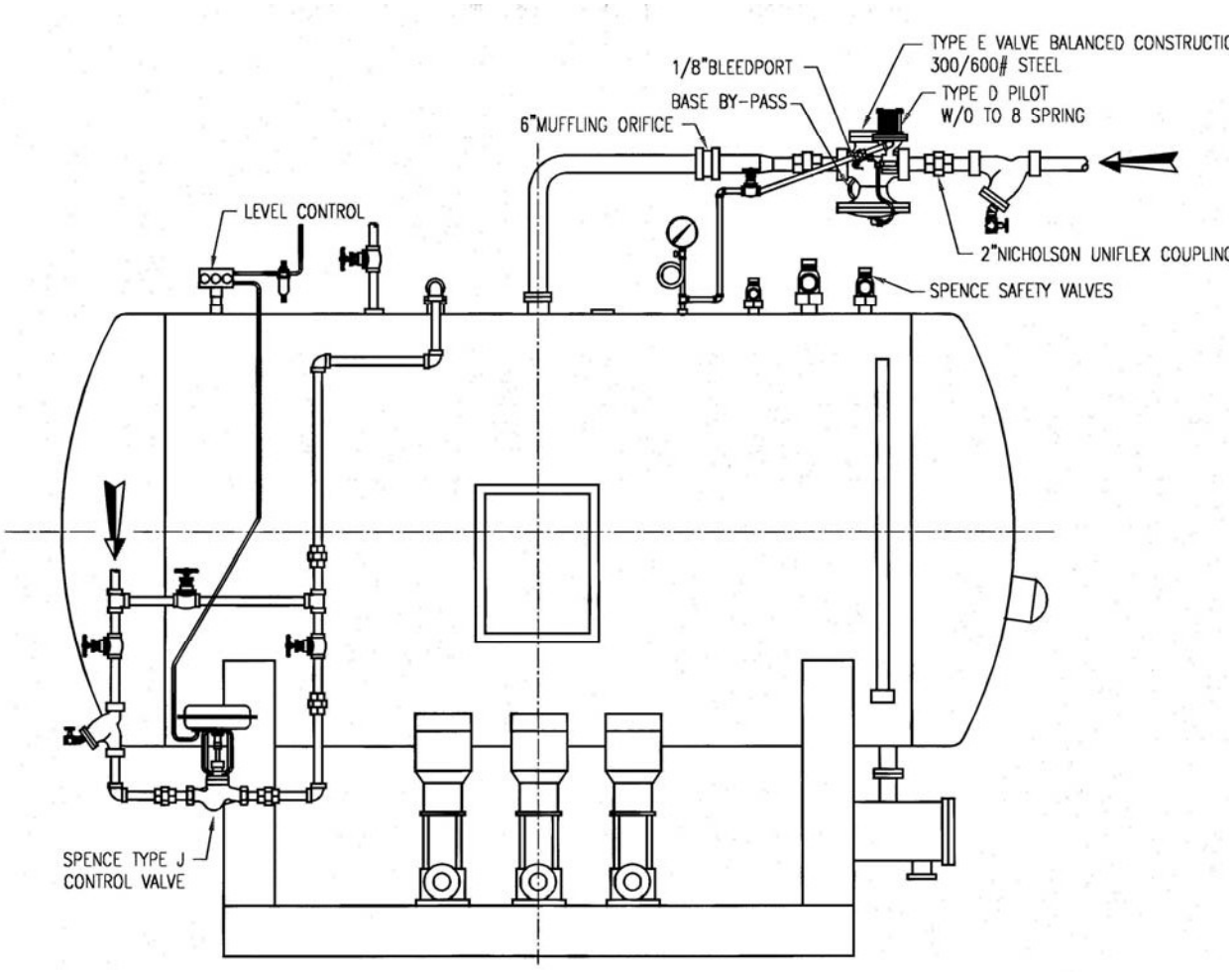
1. The customer purchased two pressure regulators when only one PRV is needed.
2. The high exit velocity of the saturated steam flow will make the system very noisy.
3. The exceptionally light main springs and integrally mounted pilots of competing manufacturers prohibit the use of balanced construction.

THE SPENCE SOLUTION

Using only one Spence, 2”, normal, cast steel, Type E main valve (for pressures to 300 PSIG at 600°F) with a cast steel Type D pressure reducing pilot, replace the standard 1/16” bleedport with a 1/8” bleedport on the main valve bends and fittings assembly. This “balanced construction” will stabilize the position of the disk by controlling the pressure on both sides of the disk thus eliminating erratic movement or “hunting” of the valve. Next, replace the 3 to 25 PSIG spring with a 0 to 8 PSIG spring on the D pressure reducing pilot. The 0 to 8 PSIG spring will enable the user to reduce the pressure from 250 PSIG down to 5 PSIG. Finally, in place of a second pressure

reducing valve, use a 6" Spence Muffling Orifice Plate (MOP) with C_V = 24.17. The muffling orifice plate will act as a secondary pressure reducing valve, reducing the otherwise unacceptably high exit velocity noise at the regulator. The 1/8" bleedport and base-by-pass round out the options for high drop conditions. **(see Figure 1)**.

For additional information on deaeration of boiler feedwater systems, see page A1-10A in the Spence Application Guide (Catalog Number CM AG).



(Figure 1) Deaeration hook up for a Boiler Feedwater System

Specifications: 2" Normal Cast Steel Spence Type E Main Valve, Type D Pressure Reducing Pilot with 0/8 PSIG Adjusting Spring, 6" Spence Muffling Orifice Plate (MOP) with C_V = 24.17