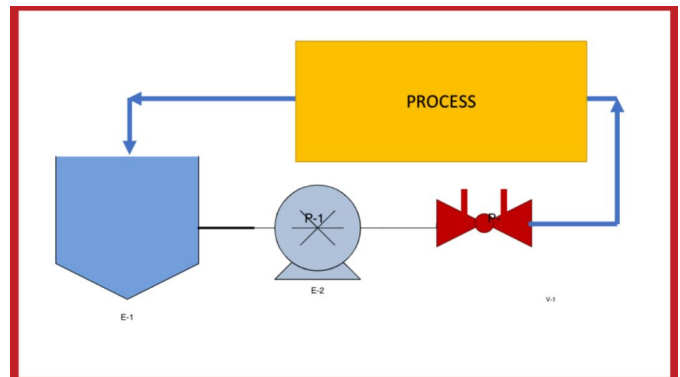


Monday, October 5, 2020

Circuit Setter Balance Valve and Flow Meter Sizing and Turndown

Monday Morning Minutes | by Norm Hall, October 5, 2020

We recently received an email from an engineer in Western Michigan concerning a low-flow, high-head pump process application and the proper balance valve specification. This seems like a simple question and solution, but this application had a twist and a very thorough engineer.



The pump model was used on an application where the actual pressure needed could vary depending on the brand of machine purchased. The capacity was 6.7 GPM at 150 PSIG and the pipe was 1" copper. We needed a valve with the ability to set the flow with a low pressure drop but also be able to possibly throttle 50% of the pump head depending on the type of process machine purchased later.

Three Possible Options in the System

I could think of multiple options to solve the question. I immediately thought of three choices.

1. Use a [variable frequency drive \(VFD\) to balance the pump and save the energy.](#)

2. Use an [automatic flow limiting balance valve](#) such as Griswold set at the 6.7 GPM.
3. Or, use a manual balancing flow meter valve such as the [B&G circuit setter](#).

Did I Mention How Often This Would Run and What it was Pumping?

It is always good to ask questions. When the email came in, I thought about a process water system operating through the entire shift. The engineer advised that the process being used is a testing operation and it may run for a single ½ hour test, once a day. That dropped the VFD option from my suggestions.

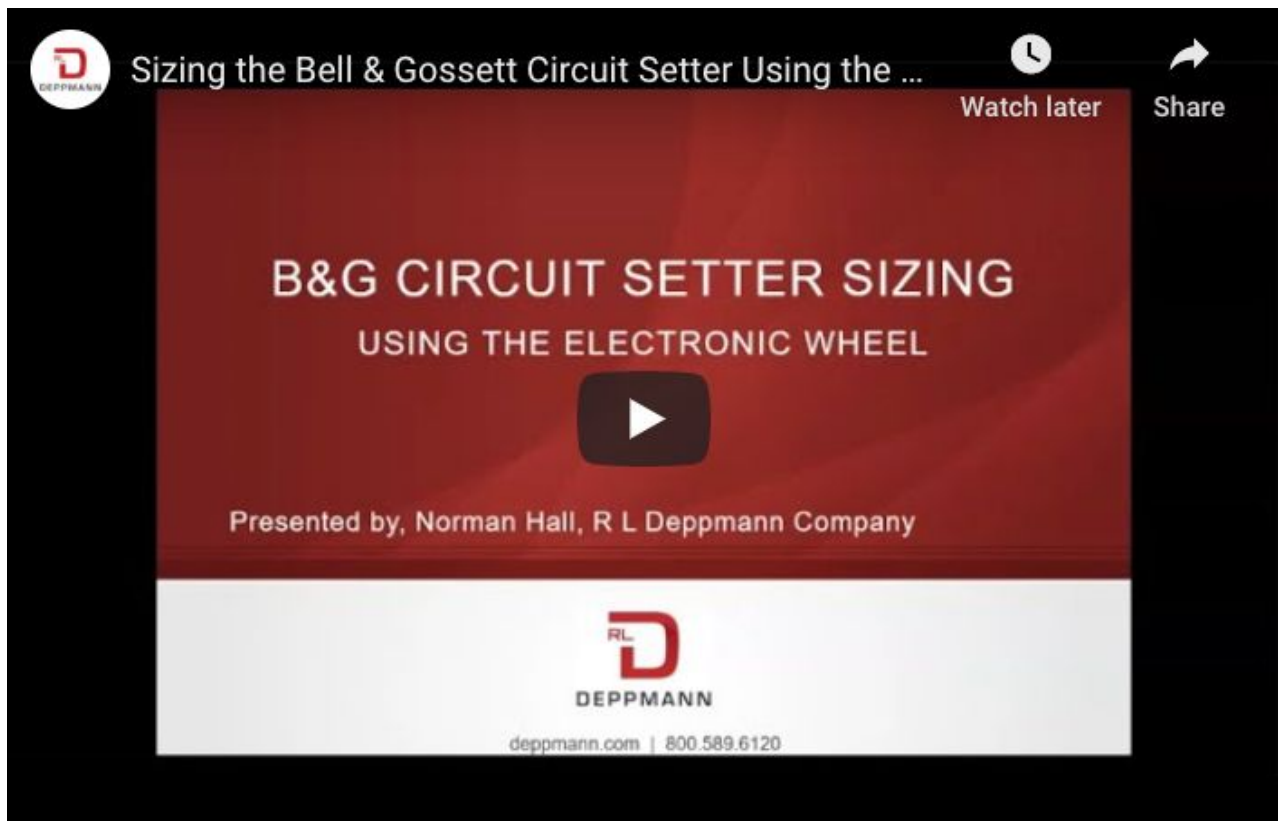
The engineer gave a piece of information I missed on the first read. The pump being used was a [progressive cavity pump \(PCP\)](#). These pumps are normally used in applications with polymers or oil-water-sand mixes. YIKES! I better ask what we are pumping. Turns out it is a water sampling tank with some particulate. The materials of construction and operating pressure/temperature required were simple enough. The particulate eliminated the automatic balance valve due to the smaller openings characteristic of this type of device.

Due to materials of construction and pressure ratings, the Bell & Gossett Circuit Setter was the best choice in this application.



Sizing the Bell & Gossett (B&G) Circuit Setter Using the Electronic System Syzer

How did I make sure the 1" circuit setter was the right size for the job? I used the B&G Electronic System Syzer and [here is a video](#) showing how I used it.



The B&G model CB-1S is made with sweat connections, materials of construction that match those needed in this process, and the turndown required for a variety of potential throttling needs. This was a great lesson in asking the right questions and understanding the application in order to choose the best solution.