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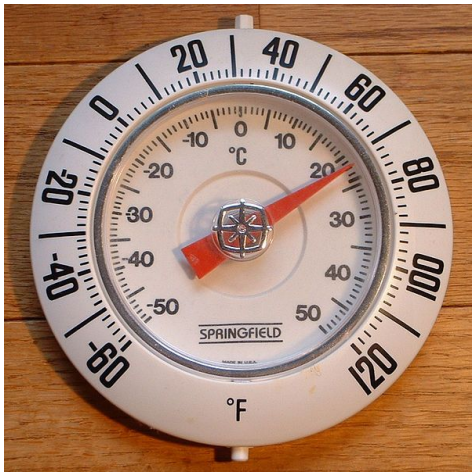
Monday, January 1, 2018

Designing Domestic Hot Water Recirculation Systems: Part 3 Pump Control

Monday Morning Minutes | by Norm Hall, January 1, 2018



(Photo credit: Wikipedia)

Happy New Year! We will start the year with a brief blog.

In the last R. L. Deppmann Monday Morning Minutes we selected a B&G Pump after determining flow rate and pump head. This week we look at the various means of pump control.

Domestic hot water recirc pumps could simply run continuously. This satisfies the requirement to have hot water available at the last fixture. It also satisfies any concern about stagnant flow conditions if the system is properly designed and balanced. Running a pump 24/7 will waste energy. What options are available?

Domestic Hot Water Recirc Pump Timers and Aquastats

Our example from last week was a 4 story commercial building. It had hot water mains of 4" in the basement and about 300 feet long. There were four 2" hot water risers at 80 feet each and each riser at each floor had about 100 feet of run out using pipe less than 1". The flow rate was 8 GPM total with 1/2 GPM per return.

A timer simply turns the pump on and off at certain times of the day. Think lamp timer! The engineer may want the pump off at night in an office but running during the day. The Bell & Gossett TC-1 timer designed for the NBF pump series is an example of this type of control.

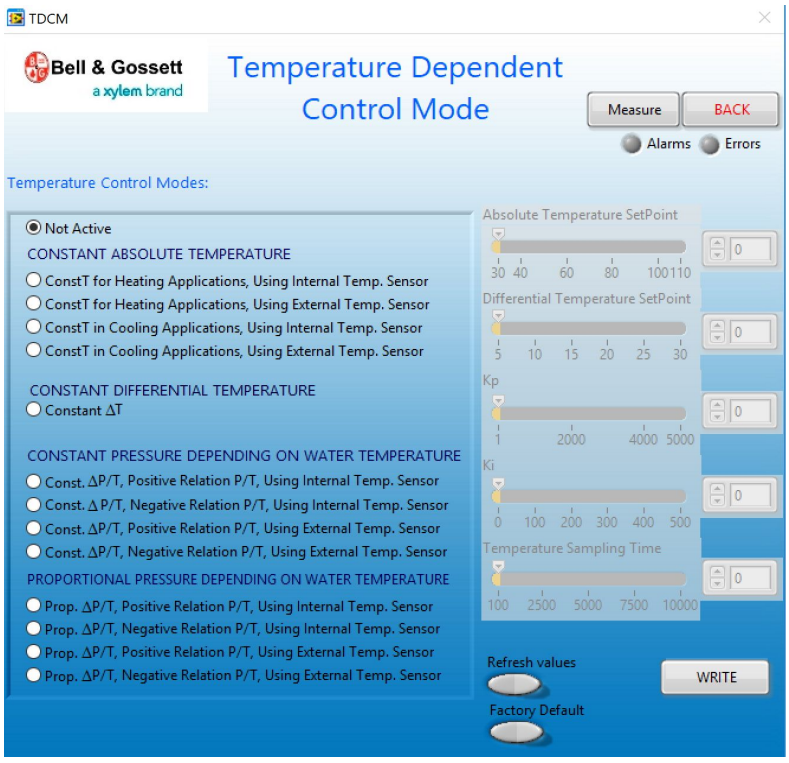
(Photo credit: B&G TC-1 Timer)

An Aquastat similar to the Bell & Gossett AQ-3/4 shown above turns the pump on at 100°F and off at 120°F. Obviously, there are other control brands with more options for temperature. The simple controls mentioned above may be combined. The B&G NBF pump could employ both the TC-1 and AQ. The pump will control the temperature, but only during the times set by the timer control.

(Photo credit: B&G AQ-3/4 Aquastat)

ECM Smart Circulator Pump Control

Once again, I mention the B&G Ecocirc®-XL Smart ECM Pump. This pump has a built-in temperature sensor which will ramp the pump speed up and down to maintain a set temperature. This pump will remove the overheating and react to supply hot water usage to save energy. No other controls needed. The screenshot below shows the simple laptop or iPad interface to set up the internal temperature program and to set the temperature and the sampling time.



Look forward to the next R. L. Deppmann Monday Morning Minutes with a special announcement!