



Q&A from 4/26/17 Webinar

Q: There are several condensing boiler manufacturers that are able to fire # 2 fuel oil, some can even condense on ultra-low sulfur # 2 fuel oil. Are Cleaver Brooks boilers able to operate on # 2 fuel oil? If so how many run hours before they need to be cleaned?

A: We are aware of certain manufacturers offering the firing of #2 oil in their condensing boilers. However, there are operational considerations and risks to take into account with a #2 oil condensing boiler. We recommend a hybrid system approach systems requiring #2 fuel oil for back-up. We define a hybrid system as a system with boilers designed to fire fuel oil and condensing boilers designed for Natural gas in the same system. We will be discussing hybrid systems in a later presentation.

Q: How responsive do the controls (flow controls) have to be for decent control?

A: We would recommend a flow meter that has the ability to measure flow down to a minimum of 1 FPS so a high turndown is important, especially at lower flow rates. We would also recommend having an accuracy of about 1% to 2%, which also means that the installation needs to meet the manufacturers requirements for straight pipe upstream and downstream of the flow meter. This can be accomplished with either a standard turbine or electromagnetic flow meter.

Q: What is the maximum delta T in design for both Condensing and non-condensing boilers?

A: The maximum delta T depends on many factors, regardless if it is a condensing or non-condensing boiler. Each boiler manufacturer, and type of boiler, have specific delta T requirements; these can vary from 20 or 30 degree F to 120 degrees F. We recommend verifying the delta T requirements with the manufacturer.

Q: Is Outside Air reset superior to return temp reset?

A: Both are effective in determining proper sequencing of multiple boilers along with their firing rates, but for occupant comfort, and maximizing system efficiency, the outside air reset is the best. Outside air reset also takes advantage of the decreasing building load as outside air temperature decreases, where return hot water temperature reset is independent of what is occurring outside of the system.

Q: Do you suggest using a buffer tank with a variable primary flow, condensing boiler system?

A: This depends on the mass of the boiler and volume (capacity) of connected (primary) piping. We will be addressing this in detail during Part II scheduled for May 31, 2017. Stay tuned...

Q: With Non Condensing FLX Tube boilers can we do Variable primary flow as long as we maintain HWRT above condensing temperature (140F)?

A: Yes, but check with the manufacturer for their limit on return water temperature, as it could be greater than 140 degrees F. It is also important to check with the manufacturer on maximum and minimum flow requirements (if there are any).

Q: Can you employ condensing economizer technology on your boiler stack, even on the condensing boiler.

A: Since condensing boilers already have such a low flue gas temperature, and extract so much heat from the flue gases prior to leaving the boiler, the use of a condensing economizer on a condensing boiler would not result in much efficiency gain. A better investment would be to look at the system design and maximize heat transfer to lower the return water temperature. Stay tuned for future webinars that will explore more system design aspects.

Q: Is a self-contained thermostatic bypass valve really the proper way to help keep return water temps above condensing temps?

A: There are many ways to keep the water back to the boiler above condensing conditions including mixing valves, various pumping circuits, controlling pump speeds, limiting the controls and reset set points, and the self-contained valve as you noted. Our preferred method would be to utilize the control system to do this, which has intelligence and can be monitored through the BAS. Our recommendation would to use a standard water temperature sensor in the pipe, something that is typically found as a temperature sensor input into the BAS system, to sense water temperature. Then based on this temperature, utilize a three-way mixing valve to keep the water temperature above the condensing point.

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