

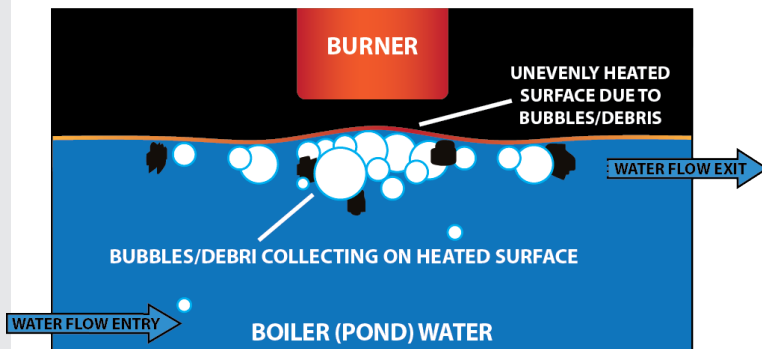
The Perils of Firetube Condensing Boilers

Lesson #4: Say it Ain't Flow

YOU are not the only one that has chosen a condensing boiler based on waterside characteristics. Lower flow rates, smaller pumping requirements, and even variable primary piping arrangements in lieu of primary secondary have led many engineers down the vertical condensing firetube path. Perhaps instead of led, let's use "marketed", and instead of marketed let's use "bombarded" without another option.

Lower flow became important when condensing appeared vs. high efficiency copper. Copper was the dominant platform, it needed flow, bigger pumps, and primary secondary piping. Funny how these have become the "must have characteristics" of a condensing boiler and what can drive product selection. But should it?

I agree lower flow rates and smaller pumps are desirable traits, but you shouldn't do them in vertical firetube. There is too much Peril that will trap you.



A vertical firetube is a large vessel of water. Imagine a pond if you will, sitting still with non-detectable movement. A systems piping is more like a small river flowing into that pond. The river has velocity; it carries everything to the pond and deposits it there before exiting again at the other end of the pond (firetube boiler). Much of what gets deposited in ponds falls to the bottom. However with boilers there is a heat source and these particles love to collect on the hottest parts. Unfortunately for vertical firetubes, this is the top tube sheet and upper portions of the tubes. Drawn to the hottest points, debris sticks here, accumulates and insulates. Varying depths of debris, instead of water, lead to uneven heat transfer, warping, and heat exchanger failure. This design uses the most expensive part of your heating system as a trap and your firm's reputation is in it.

But what choice do you have? As you look at most of the condensing boilers, they all look the same... large, welded square boxes housing volumes of water, with the burner way up on top, firing inches from a tube sheet. No thought of service, access to heat exchanger or maintenance. We like to call this the "me too" movement. "Hey look at me", and you know what, the heat exchangers are all same with the same "Perilous" flaws that come with the vertical firetube design.

You do have a choice, the next wave of condensing products allows you to lower flow rates and use variable piping without being "trapped." The next wave of condensing products has repairable heat exchangers. They are service and maintenance oriented... just like non-condensing products. Condensing firetubes have had their run, it's been 23 years. Turn off the marketing bombardment of the big guys, a lack of longevity and commonsense maintenance practices have many turning to us. Come see the Arctic and AMP condensing boilers from Thermal Solutions, you won't believe what you've missing.

Move Beyond the Vertical Standard



Arctic Series
1000-6000 MBH



AMP Series
1000-4000 MBH



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