

High Turndown Results in Higher Operating Cost?

One boiler manufacturer published a document where they showed their test results that definitively showed that a high turndown burner cost more money to operate than a “normal” burner. The article was well done and convincing.

But there was an important operating feature in the high turndown burner that they used that is different from some others.

Excess air levels

The burner that they used in their testing required a lot of excess air at low firing rates in order to obtain good mixing of air and fuel for safety purposes. The high excess air level at low fire was high enough that the efficiency of the boiler fell significantly. Therefore the cost per BTU at low fire was high compared to elevated firing rates. When the load allowed the boiler to idle, the fuel cost rose with the high turndown burner compared to a “normal” burner that would cycle on and off at an elevated firing rate.

Every burner made has the ability to turndown to a certain degree before its mixing head efficiency drops off to where significant increases in excess air are required to burn fuel safely. Their testing shows that it is counter-productive to operate a given burner at a turndown range that requires large amounts of excess air. But

Some burners work better than others!

If the burner they had used in their testing had a more efficient mixing head, then the high turndown ratio could be achieved while maintaining low excess air levels. The fuel costs that they found to be significantly higher would be significantly reduced with a more efficient burner.

We sell such burners.