

# TECHNICAL BULLETIN

## The Lowdown on High Turndown

Utility Company rebates and higher energy costs have increased the interest in high turndown burners. Turndown is basically the ratio between high fire and low fire. For example, a 10 to 1 (10:1) turndown indicates the low fire rate is 10% of the high fire rate. Increasing the turndown ratio decreases the amount of time a burner cycles on and off and increases efficiency. However, a high turndown burner combined with lower water temperatures can cause problems in a standard firetube or firebox boiler. With flue gas condensation beginning around 230°F, a firetube boiler operating at 140°F with a burner firing at only 10% of high fire can create condensation as shown in the pictures below.



Condensation in a standard firetube boiler operating at 140°F on low fire.

As an alternative, Ryan Company recommends using an ultra high efficiency condensing boiler along with a standard firetube boiler. During milder months, the condensing boiler operates at 80°F to 150°F, and during colder months the firetube boiler operates at 160°F to 190°F. This combination allows you to maximize energy savings, take advantage of utility company rebates and protect your firetube boiler all at the same time.

If you would like to know more about the use of high turndown burners or would like to receive information on condensing boilers, please feel free to contact us.



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