

**Implementation Fitch Fuel Catalyst
 Greensboro Plant NC USA
 May 2019
 Babcock and Wilcox Boiler 75,000 BTU
 FHD15-6-4 NG**



Boiler # 3 fuel catalyst placed in operation on 5/16/2019.

Before installation - Not able to turn boiler down below 10,000 lbs per/hour of steam flow as a result of the amount of excess air that was required to burn clean and not emit high levels of CO (carbon monoxide).

- @ 15% excess air was required between minimum fire and up to 30% of the boiler capacity. - Boiler efficiency ranged between @ 72 - 74% efficiency at lower ranges.

After installation: Boiler combustion testing was performed and we were able to reduce excess air to 9% set point on minimum fire with no measurable amounts of CO. Excess air required is now reduced as the boiler firing rate has increased with a low of 2.7 % excess air being required at the higher firing rates. Boiler efficiency in the lower firing rates improved from 72-74% to 80 -82%.

- As a result of being able to lower excess air a cleaner burn and lower firing rates were obtained. There was also an increase of 6% for gas input BTU(s) to steam output BTU(s).
- Improvements in the higher firing rates went from 85% efficient with the recent installation of economizer and thermo charger to 89% with Catalyst.
- The opportunity to shut off additional steam on weekends to reduce steam demand without losing double digit boiler input/output efficiency as a result of running less efficient smaller boilers can be accomplished. Operating Expense has been reduced at least 3% due to reduction of Natural Gas consumption.

	Firing Range	Efficiency	Excess Air
W/Catalyst	Low/Mid-Range	80%	9.0%
Baseline	Low/Mid-Range	74%	15.0%
W/Catalyst	High Range	89%	2.7%
Baseline	High Range	85%	6.2%