Preferred Utilities Manufacturing Corporation is proud to offer the PAF Low NOx Burner. Founded in 1890, W.N. Best Combustion was a manufacturer of Industrial No.2 through No. 6 oil and gas burners, along with specialty systems and burners for thermal decomposition of sludge and contaminated petroleum products for product regeneration and heat recovery. In 2002, W.N. Best introduced the X-Plus, an industrial, high efficiency, low emissions burner for No. 2 through No. 6 Oil and Gas. To continue the tradition of industry leading combustion products, W.N. Best is now offering the field proven PAF Low NOx Burner. Capable of firing Fuel Gas and the full range of light to heavy oil, the PAF is also fully engineered to handle a variety of specialty and blended gases. To discuss your application contact Preferred Utilities (203) 743-6741 to see how your combustion and emission needs can be met.

Innovative Design

Combustion air enters the PAF burner from the windbox. The windbox must be designed for lower velocity to insure proper air distribution to the register. In addition, the register assembly includes an air distribution barrel. The air distribution barrel forces the combustion air to make a 90° turn. Air baffles are placed at the register bell mouth inlet to prevent any possible rotation.

The bell mouth portion of the register evens out the airflow at a low loss coefficient and therefore affording the total pressure loss to the swirler and the register throat. The register barrel after the bell mouth allows adequate distance from the bell mouth inlet to the swirler area to further “linearize” the air stream before it reaches the swirler. Near the exit of the of the burner barrel, air splits into two air streams. Air flowing through the swirler is the primary air stream. Air flowing outside the swirler is the secondary air zone. Fuel gas from the fuel gas spuds is injected into the secondary air zone. Fuel oil is atomized from the center of the swirler with the primary air.
The swirler imparts a radial spin to the primary air passing through the swirler creating a vortex or a recirculator zone and therefore a low pressure zone at the front of the swirler. The recirculation zone pulls a portion of the fuel gas from the gas spuds or a portion of the fuel oil from the oil gun reacts with this primary air creating a sub-stoichiometric product of combustion. The secondary air zone reacts with the fuel gas or atomized oil. A portion of this partially burned combustion gases from the primary air zone is mixed with the secondary air-fuel mixture and reduces overall NOx emission.

Flame shaping can be done by adjusting the swirler position relative to the burner throat. The spud rotation can also be used for flame shaping. Its rotation and relative position to the swirler can make the flame wider or narrower. Each application will be evaluated and is dependent on the boiler furnace width, height and actual location of the burner throat relative to the furnace volume.

The gas manifold is designed to be fully adjustable and provides an axial adjustments as well as a rotational adjustment externally. All these adjustments can be accomplished at the burner front without having to access the furnace for inspection or maintenance.