



Design Update Bulletin

Combustion Systems

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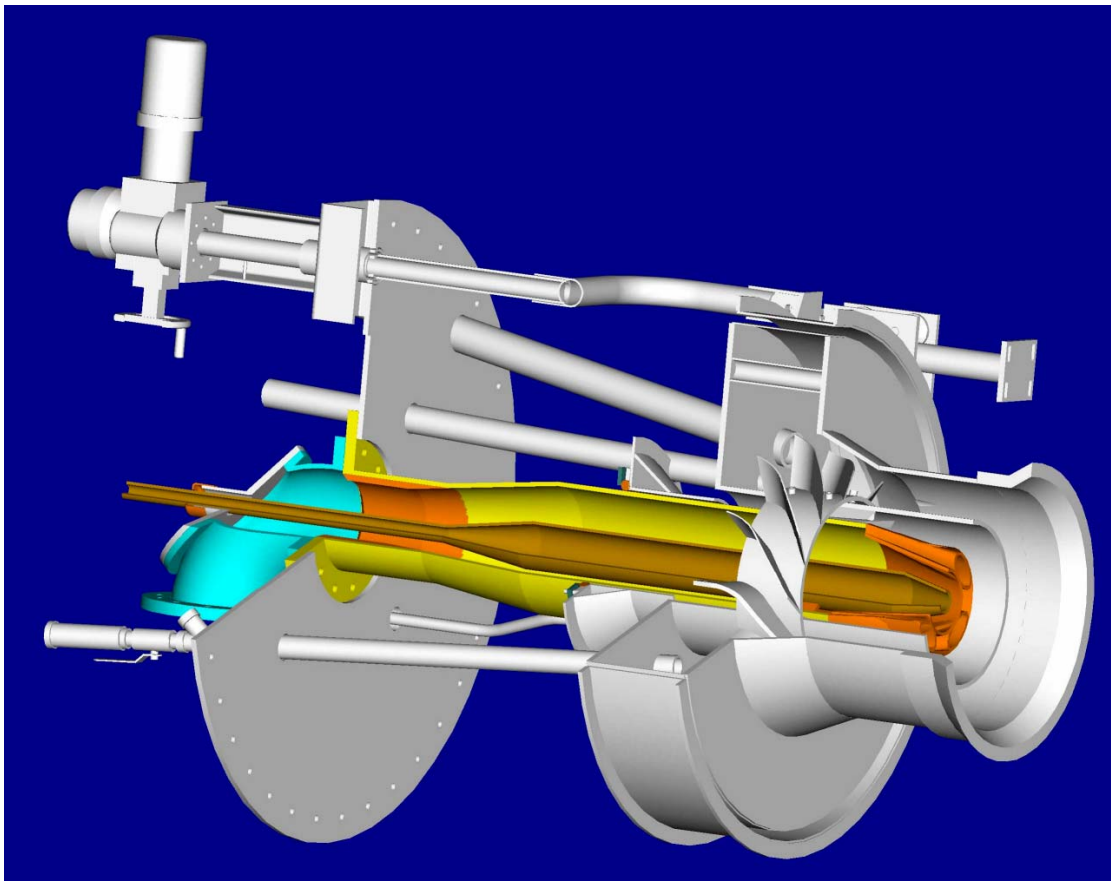
New Axial Inlet Fuel Injector offers design and retrofit options...

“Axial Inlet Fuel Injector”

The new Axial Inlet Fuel Injector design allows the retrofit of elbow style burners with Foster Wheeler's Low NO_x combustion technology.

The new design offers:

- Improved fuel distribution at Split Flame Tip
- Primary air velocity control at nozzle
- Pipe-in-pipe design for inner barrel
- Simplified design of burner barrel
- Wear resistant inserts



Foster Wheeler's low NOx burners are known since 1979 for their performance and ruggedness. Almost 5000 burners were installed of the CF/SF and IFS burner series. These burners have a dual register and a Split Flame coal nozzle as key features.

A new elbow fuel inlet was designed to offer Foster Wheeler's low NOx technology to a broader base of boilers. The fuel injector consists of a cylindrical outer burner barrel with a Split Flame tip at the furnace end. The inner burner barrel is designed as a reliable new sliding tip configuration. In conjunction with the Split Flame tip, the movable inner tip offers adjustability to changes in primary air flow, a feature unique to Foster Wheeler's line of Low NOx burners.

In retrofit applications, the design utilizes the existing burner elbow. The outer burner barrel is matched with the elbow. Since the elbow concentrates the fuel on the outer radius, a fuel distributor mounted immediately after the elbow re-distributes the fuel rope towards the burner centerline. The distributor is made from wear resistant material and can be easily replaced. Upstream of the Split Flame tip, a second distributor displaces the coal particles to the outside. This device concentrates the fuel before the flow enters the four ports of the split flame nozzle. The concentrated fuel jets improve fuel ignition and provide local fuel staging for Low NOx combustion. The new fuel injector design was developed with the help of extensive two-phase flow tests.

The new axial inlet fuel injector has already been incorporated into more than 250 burners. Combined with the new Vortex Series Register, the elbow fuel injector provides a low cost, high performance solution for entire burner retrofits.

Application and Design Features

- Proven FW Split Flame Low NOx technology
- Simple retrofit for axial inlet burners
- Reliable primary air velocity control
- Modular burner retrofit is possible

Cost Saving Benefits

- High Value retrofit for elbow style fuel injectors
- Cost effective NOx reduction
- Maintains long term adjustability to different operating conditions

The information presented above is continually updated. Please contact your local Foster Wheeler Power Group office for specific details.

Foster Wheeler Power Group – U.S./International Service Centers

Hdqtrs. Clinton, New Jersey
Perryville Corporate Park
Clinton, NJ 08809-4000
(908) 713-2260
Fax: (908) 713-2285
parts@fwc.com

Chicago Illinois
1401 Branding Lane Suite 315
Downers Grove, IL 60515
(630) 241-2050
Fax: (630) 241-2050

Atlanta, Georgia
1000 Johnson Ferry Road
Marietta, GA 30068
(770) 509-0337
Fax: (770) 509-0797

International Office
9645 Scranton Road Suite 230
San Diego, CA 92121-1761
(858) 458-3187
Fax: (858) 558-3406