



Design Update Bulletin

Combustion Systems

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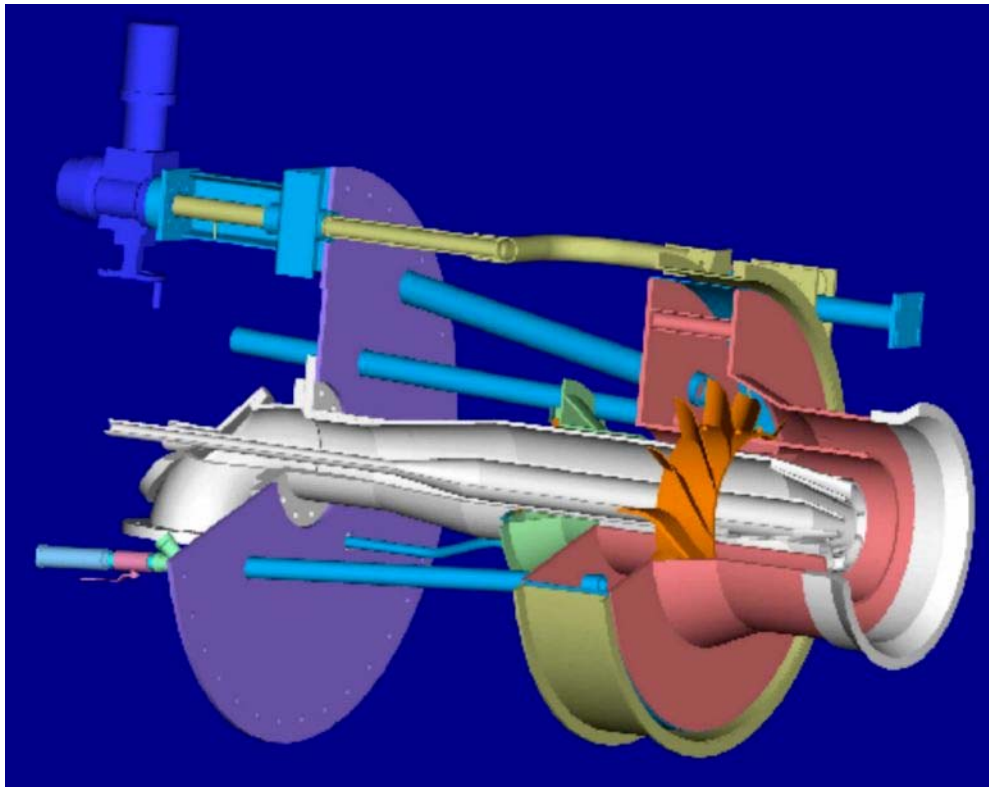
New register efficiently generates swirl with less moving parts...

“Vortex Series Register Upgrade”

New Foster Wheeler Vortex Series Register design eliminates many problems known to registers with moving blades ...

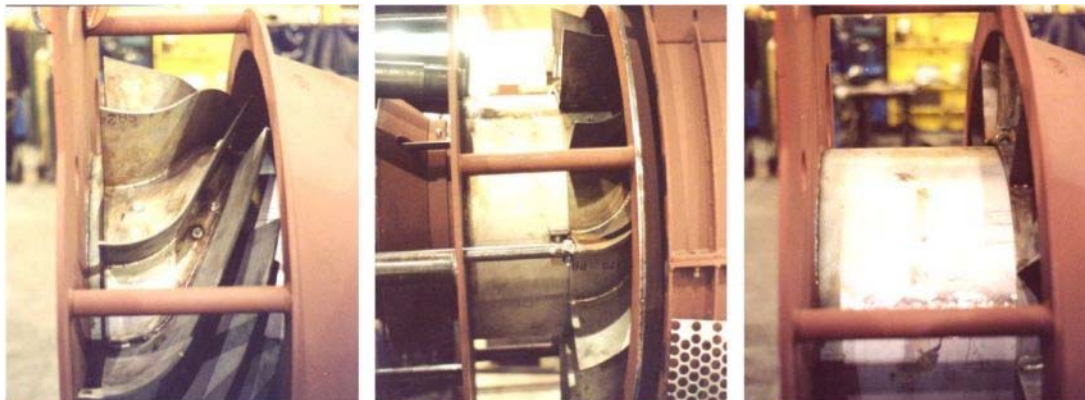
Key features of the new design:

- Register with Only Two Moving Parts
- Very Efficient Swirl Generation
- Most OEM Registers can be Retrofitted
- Very Easy to Maintain
- Independent Control of Swirl and Register Air Flow Rate



Many burner registers generate swirl with a set of moving blades installed in the burner air paths. The radial or axial blades are attached to linkages for synchronous movement. However, the multiple linkages and blades have the tendency to bind and break which results in deteriorating flame stability and NOx performance.

The new Foster Wheeler Vortex Series design eliminates the complexities associated with most burner air registers. Swirl is generated by a set of aerodynamically shaped fixed vanes that are mounted on a hub. The outer periphery of the swirler is conical and fits into a conical section of the register housing. When the swirler is inserted fully into the cone full swirl capability is achieved. By retracting the swirler partly, unswirled air bypasses the swirler and mixes downstream with the swirled air. The movable swirler results in a high degree of swirl adjustability. The air flow through the register is controlled by a movable sleeve damper position around the outer perimeter which covers the air inlet to the register.



Fully Retracted Axial Vanes
- Minimum Swirl

Partially Inserted Axial Vanes
- Moderate Swirl

Inserted Axial Vanes
- Maximum Swirl

Application and Design Features

- Replacement register for aging OEM register with reliability problems
- Fixed swirl vanes on movable hub
- Sleeve damper for air flow control
- Rugged and simple design with only two moving parts

Cost Saving Benefits

- Very cost effective replacement
- Reduces maintenance costs
- Maintains long term operability due to a reduced number of moving parts
- Independent air flow and swirl control increases potential to lower NOx and LOI

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

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