



# **Design Update Bulletin**

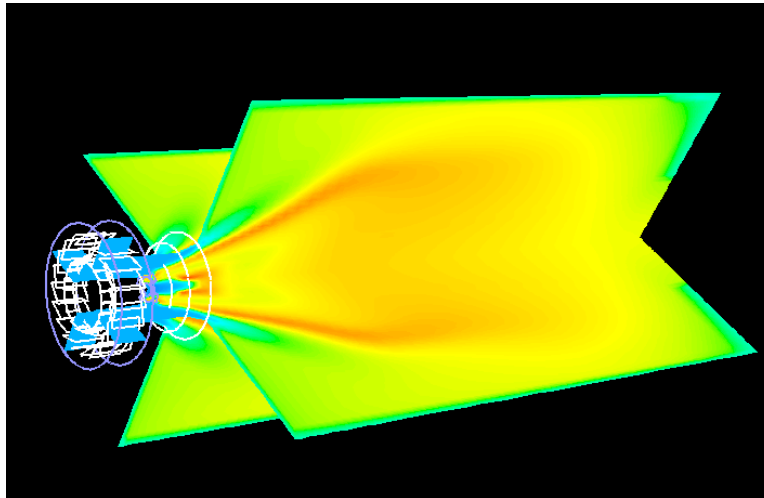
CFD Analysis

November 2002

No. 110.1

**Computational Fluid Dynamic (CFD)  
Simulation can be the key to solving your  
flow and combustion problems...**

## **Combustion Modeling**

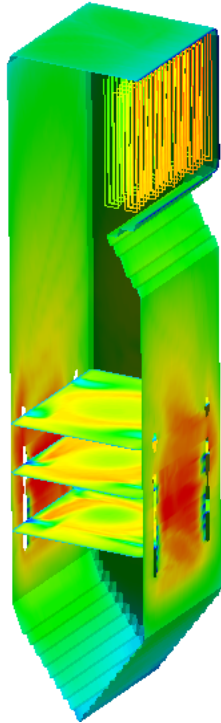


**Foster Wheeler has not only the CFD specialists and advanced tools to model the most complex problems, but we have also the proven designs and operating experience to make sure that the CFD models lead to real improvements.**

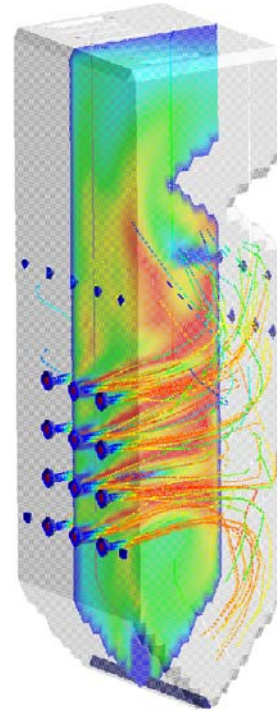
- Chemical Kinetics
- Multiphase Turbulent Gas-Solid Flow
- Radiative and Convective Heat Transfer
- Pollutant Formation (NO<sub>x</sub>, SO<sub>x</sub>, H<sub>2</sub>S, NH<sub>3</sub>)
- Particle Trajectories
- Water Wall Corrosion
- Water Wall Energy Absorption
- FEGT and Particle Burnout
- Convective Tube Bank Simulation

## Foster Wheeler utilizes the following software:

- CFX (AEA Inc.)
- Fluent (Fluent Inc.)
- FW-FIRE (Foster Wheeler Development Corp.)



Temperature and Heat Flux in a Tangentially-Fired Furnace with Pendant Superheater



Temperature and Particle Distribution in a Front Wall-Fired Furnace with Overfire Air

## Sample Applications and Benefits

- Prediction of Low NO<sub>x</sub> burner and OFA performance
- Optimization of burner and furnace configuration to improve boiler performance
- Reduction of pollutant emission by burner adjustments
- Reduction of tube wall corrosion by improved burner and boundary air design
- Reduction of flow and temperature maldistribution to decrease erosion and slagging
- Optimization of windbox air distribution
- Optimization of boiler and SCR flue gas flow

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

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