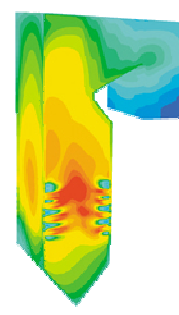
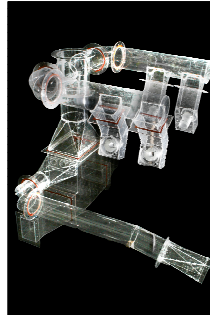
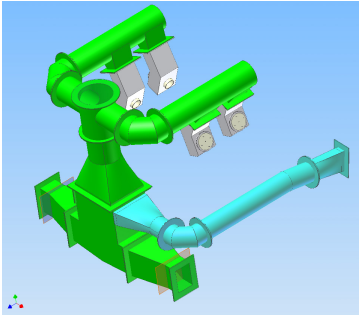


# DATASHEET

## SMARTflow™ Modeling Services



Hamworthy Peabody Combustion offers both **SMARTflow™** CFD (Computational Fluid Dynamics) and **SMARTflow™** Physical Flow Modeling.

Based on **SMARTflow™** flow modeling analysis, strategically placed baffles and diverters can be designed to avoid in advance, or solve existing, problems:

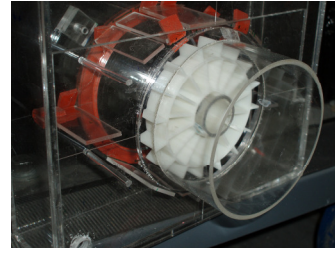
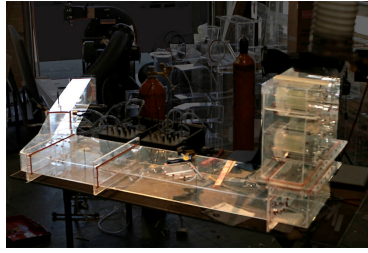
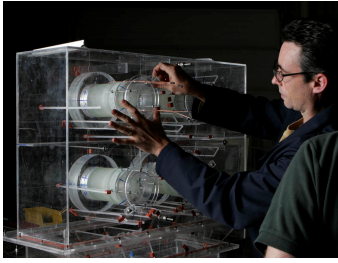
- Eliminate Vibration
- Reduce Emissions
- Increase Turndown
- Increase Capacity
- Reduce Carbon Footprint
- Reduce Excess Air/Increase Efficiency
- Decrease Power Utilization Costs: fan power and static requirements
- Reduce Maintenance Costs due to Vibration, Flame Impingement, and Incomplete Combustion.

Applications analyzed include both new & retrofit:

- Multi-Burner Turbo-Furnace
- Multi-Burner Wall-Fired
- Tangentially-Fired
- Single-Burner Package
- Air Heaters
- Fluid-Bed Boilers

Besides combustion air flow, **SMARTflow™** flow modeling is useful in analyzing and solving problems, including the following:

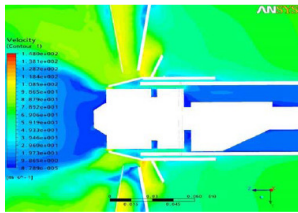
- Flue Gas Recirculation Systems
- Secondary Air Systems
- Two-Phase Coal Flow Pipe & Fuel Distribution Systems
- Stack Modeling:
  - Improved CEM Repeatability
- Improved Emissions Reporting



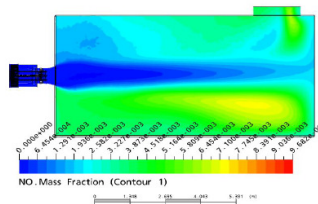
## SMARTflow™ Advanced Physical Flow Modeling

The most common application of flow modeling is combustion air flow. Burner design and performance is always based on three assumptions; flow modeling assures that what actually takes place will correspond to these assumptions:

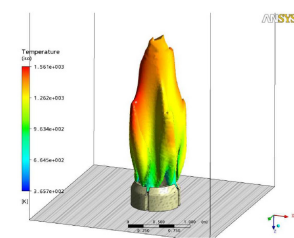
- Each burner (applicable in multi-burner systems) gets equal amounts of air flow.
- Air enters the burner evenly around the periphery of the burner.
- Air enters the burner radially, that is, with no tangential components.



Velocity profiles used to design nozzles



Prediction of NO production by CFD



## SMARTflow™ CFD Modeling

SMARTflow™ Computational Fluid Dynamics can be used to quickly, and accurately, model critical parameters in the design, analysis, and troubleshooting of critical combustion processes, including (but not limited to) the following parameters and the interaction of these parameters:

- Flow of Multiple Fluids (e.g. Fuels, Air, Flue Gases, etc.) and their Interaction
- Temperature, Heat Release Patterns, and Heat Transfer
- Velocity
- Flame Dynamics, Shape, and Interactions
- Emissions
- Particle Size

This results in a very precise visualization and prediction of what takes place, as well as the ability and flexibility to quickly make changes based on Hamworthy Peabody Combustion's many years of experience. We can then determine the results of these changes without time-consuming trial & error testing, costly fuel consumption, and downtime on the jobsite.

For further information on combustion equipment, please contact:

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 Shelton, CT 06484  
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 Fax: 203-922-9413  
 Email: sales@hamworthy-peabody.com  
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