



Turbulent DIFFUSION Technology is the leading provider of custom, guaranteed, fuel efficiency, combustion solutions for thermal processing in the pulp and paper, cement, mineral processing, steel, and petrochemical industries. **Turbulent DIFFUSION Technology** emphasizes the need for process and quality control at a reduced operating cost and sets the industry standard for *fuel efficiency* and *return on investment*. All equipment is custom designed and fabricated for each installation to produce the ideal combustion solution. **Turbulent DIFFUSION Technology** has patents pending on liquid fuel nozzles and solid fuel technology.

Boiler Solutions

When operated according to Turbulent Diffusion's recommendations, our optimized boiler solutions:

- ◇ Reduce fuel consumption
- ◇ Provide up to 22% fuel cost savings
- ◇ Provide a turndown rate of up to 20:1
- ◇ Reduce or eliminate TRS excursions
- ◇ Reduce operating and maintenance costs

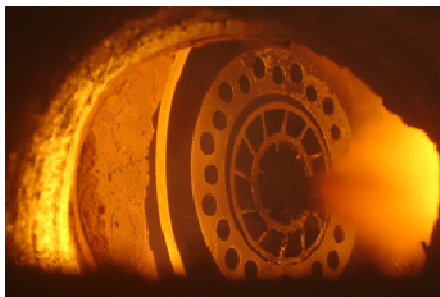
Boiler Burners

There are several types of burners including single, dual and tri fuel burners, solid fuel burners, and synthetic gas burners. Each burner is specially designed for each fuel to increase efficiency and prolong the life of the burner.

Boiler Burner Fuels

Turbulent Diffusion has several installations firing various fuels. Some of these fuels include:

- ◇ Heavy oil
- ◇ Light oil
- ◇ Liquid methanol
- ◇ Recycled oil
- ◇ Natural gas
- ◇ Synthetic gas
- ◇ CNCG's
- ◇ DNCG's
- ◇ SOG's
- ◇ Coal
- ◇ Petroleum coke
- ◇ Wood



Turbulent Diffusion is continuously researching alternative fuels to reduce emissions while still providing maximum heat transfer and efficiency.

Optimized Boiler System Modeling

Mathematical Modeling

Mathematical modeling uses Computational Fluid Dynamics (CFD) to simulate flame and heat transfer and predict the temperature and heat flux profiles within an enclosed furnace. Models are based on two or three dimensional, steady state elemental calculations. These calculations account for the interactive effects of convection, radiation and heat release throughout the enclosure.

Aerodynamic Physical Modeling

When a jet is placed in an enclosed space, such as a boiler its flow pattern is governed by the chamber geometry and aerodynamics. Our physical modeling technique begins with the creation of a scale model of the boiler windbox and its components. The model accurately reproduces the aerodynamics of the boiler, maintaining all similarities. Therefore, allowing us to establish an optimal flame shape and determine the heat transfer characteristics of the flame.

Valve Trains

Each valve train is custom designed and fabricated to ensure optimum quality. All valves and piping are of high quality to help ensure maximum durability and safety. Valve trains are also specifically designed for each burner installation and flow requirements.

