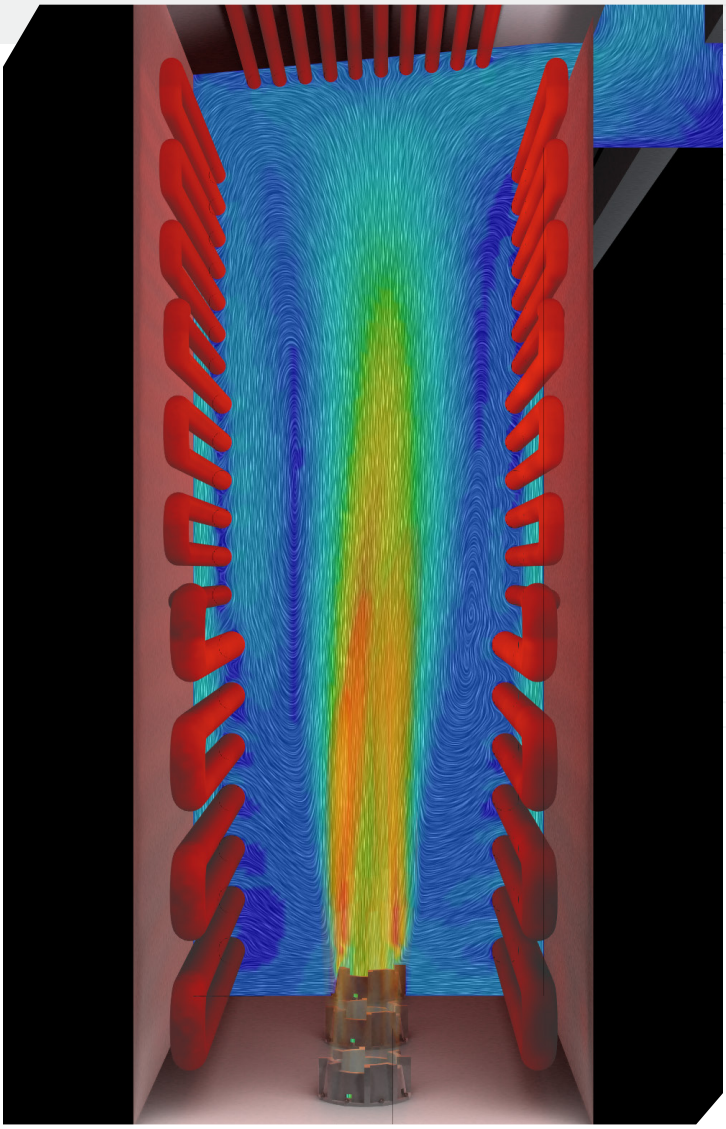
JOHN ZINK™
A KOCH ENGINEERED SOLUTIONS BUSINESS

# CFD MODELING CAPABILITIES

## FOR FIRED HEATERS



### Utilize CFD to Optimize Burner and Heater Performance

To optimize how our burners perform in your application, John Zink, a Koch Engineered Solutions business, has developed extensive in-house computational fluid dynamics (CFD) modeling capabilities over the past 25 years.

Our team understands the importance of actual burner design where even slight changes can have significant impact on performance, and that simple generic or burner placeholder geometries simply do not allow for optimum results. We know that a burner that performs well in a single burner test does not always perform well in a multi-burner situation where flame interactions and flue gas circulation patterns can result in lengthened or leaning flames. These situations can produce undesirable tubeskin temperatures, potentially leading to premature fouling and elevated NOx emissions.

Our team of CFD engineers works with our expert burner engineers, world-class test facilities and field technical services team to bring CFD-led design changes to gas tip drillings, air dampers and other burner features to drive heater performance in accordance with customers' objectives. John Zink has unrivaled testing capabilities for single and multiple burner configurations that enable improvements to our CFD models using real-world data. Our investment in high performance computing includes substantial on-premises compute clusters and virtually unlimited cloud computing resources which enable us to deliver on customers' most challenging applications in short time.

Having CFD, design capability, on-site testing and high-performance computing capability all in-house, allows us to meet customers' demands to simulate furnaces with hundreds of burners and to iterate design revisions in hours and days, not weeks and months.

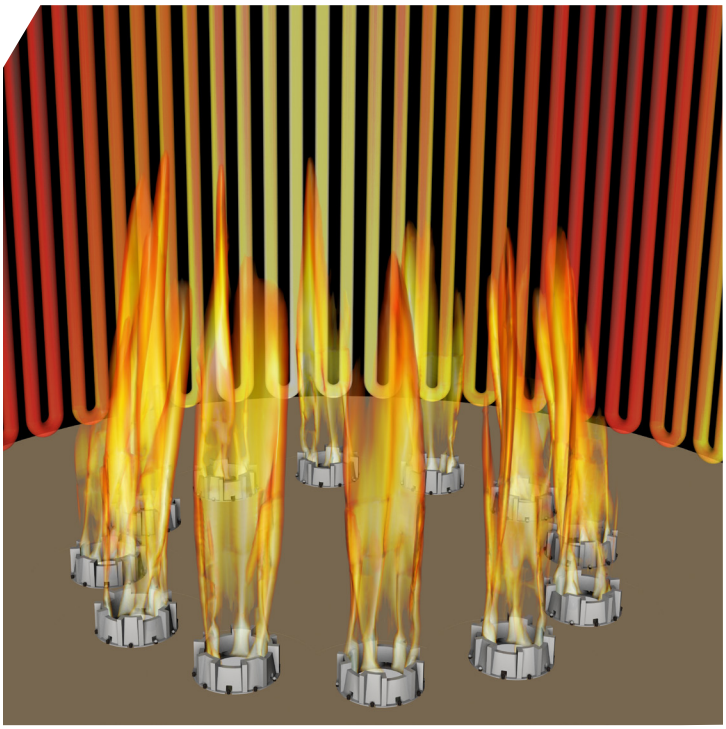
## CAPABILITY DEVELOPMENT

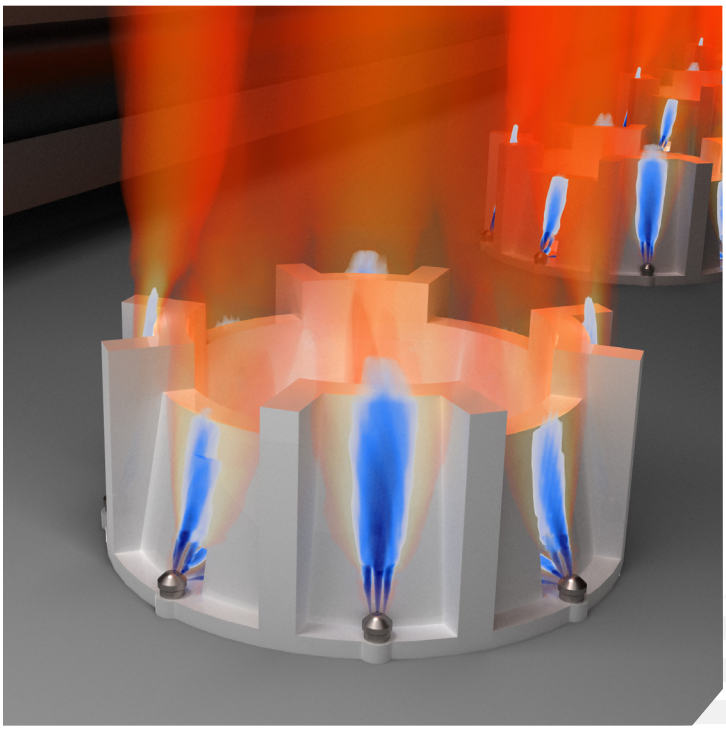
NOx predictions are complicated, and the accuracy of those predictions are tied to relative industry experience, testing and the application of CFD. Not only have we done more CFD modeling, but because of our investment, in-house testing capability and actual field performance, our prediction capabilities will evolve at a faster rate than others in the industry.

**CFD Applications Include:**

- Revamp an existing fired heater
- New heater installation
- Downfired reformers
- Ethylene pyrolysis furnaces
- Combustion air ducting (including dampers)
- Root causes in existing heater operations
- Burner placement and heat release optimization

John Zink is your one source for solutions, offering CFD engineering, design, fabrication, installation, training and on-site service. That means we can help you achieve your goals seamlessly and without the costly delays associated with multiple providers. Our deep industry experience allows us to help customers manage trade-offs to eliminate negative outcomes including expensive field issues, and produce the best result for our customers.







**Contact us today to learn more about how John Zink can help you overcome your challenges.**

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