

Services for the Power Industry



The staff at Thaker Simulation Technologies has over 15 years of experience delivering CFD and FEA services to the power industry. We provide equipment and process simulation capabilities on an as-needed basis for clients, eliminating the alternative costs of hiring full time experts in simulation, purchasing costly software, or developing multiple expensive prototypes. Our experience in simulation ensures accurate results and quick delivery to meet challenging deadlines that require rapid turnaround times and reliable data.



Benefits of Outsourcing to Thaker Simulation Technologies

- 15 years of experience with the power industry and specifically with FLUENT and ANSYS software tools
- Rapid turn around times to meet strict deadlines, customization requirements, and performance and operation guarantees
- Quick and simple contracting process that helps avoid contracting and sales hassles associated with larger simulation firms
- Data and findings of virtual prototypes are accessible without having to purchase and learn how to use costly and complex simulation software



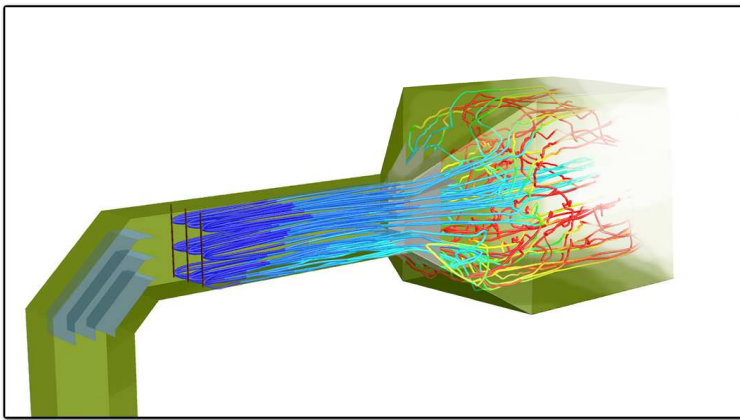
fluid, chemical, and structural design
optimization services for



equipment design ■ turbines ■ furnaces ■ blade design ■ exhaust ■ emissions ■ pulverizers ■ structural design ■ process design ■ fluid handling ■ combustion processes ■ material transport to furnace ■ powder handling ■ refrigeration ■ heat management ■ emissions control ■ exhaust gas management ■ SCR ■ baghouses ■ FGD processes ■ stack design ■ spray dryers ■ renewables ■ windturbines ■ solar ■ wind loading ■ site evaluation

Sample Case: Emissions in Flue Ducts

Challenge: Reactions between reagents and pollutants in exhaust gas streams require specific temperature ranges in order to result in effective emissions reductions. The injection of reagent into flue ducts must be performed such that it induces effective mixing with exhaust gases, ensuring high reaction rates while also providing the reagent with a residence time that allows its temperature to rise to the necessary range before the intended reaction area. If not managed properly, the reagent is wasted and the process ineffective, resulting in increased reagent costs and potential emissions fines for equipment owners.



Reagent is injected into the exhaust path at 9 nozzle locations. Injection trajectories are colored by residence time and depict particle locations as they enter the collection area.

Thaker CFD Solution: A CFD simulation of this process allows equipment designers to virtually simulate the entire process, tracking mixing and reagent-pollutant interactions at full scale. Interactions can be observed virtually, and information on reagent residence paths and heating can be extracted from the simulations. With this information, engineers and equipment designers can optimize mixing strategies. Investigations of multiple configurations can occur simultaneously, and the client is armed with information in a fraction of the time and cost required to set up physical models or via a trial-and-error approach.

Virtual Prototyping

Virtual prototyping enables the development of multiple prototypes in a fraction of the time and cost required to develop similar physical prototypes. Using this approach to gather more data in less time gives product, equipment, and process designers a competitive edge compared to those who are experimentally bound.

Virtual prototyping uses processes called CFD (Computational Fluid Dynamics) and FEA (Finite Element Analysis). These processes allow their users to simulate scenarios using computing power. Their results allow designers to take a look inside equipment and observe chemical and manufacturing processes as they occur virtually, which would never be possible in an experimental environment. CFD and FEA have a long history and are often used to ensure that product and equipment developers meet standard regulations in the chemical, power, nuclear, and many other industries.