

Moffitt Partners with Rand Simulation for Computational Fluid Dynamics Consulting

Rand Simulation Augments Industrial Ventilation Firm's Ability to Compete by Offering Complex CFD Simulation Insight

The Organization

For more than fifty years Moffitt Corporation has been providing ventilation and heating systems for industrial manufacturing processes that generate high heat loads. Headquartered in Jacksonville Beach, Florida, the company's solutions are sought after by heavy manufacturing industry leaders across North and Central America, as well as internationally. The company designs and manufactures complete ventilation systems using natural ventilation techniques. The Moffitt engineering design team works with contractors, building owners and engineers to meet and exceed the most stringent ventilation requirements in the most energy efficient way possible.

The Challenge

Moffitt was working on a ventilation system design and fabrication project for a steel galvanizing plant in Mexico. It was a high profile project involving key individuals from the plant's international corporate headquarters. Moffitt needed to quickly build the prospect's confidence by visually showing them the differences between a fan-based system and their "natural" gravity-based system. The Moffitt team needed to perform a computational fluid dynamics (CFD) analysis that would identify the best fit based on plant specifications.

"We were up against a couple of things on this proposal," said Jerry Rivkin, VP Engineering at Moffitt. "The first thing was time. We needed to complete a complex CFD analysis within two weeks. The second thing was computing power and expertise. If we had the computing horsepower and the software expertise, we might have run the models internally, but I was at an impasse. We knew Rand Simulation offered CFD consulting as one of their core competencies, but equally important, their approach was one of genuinely caring about our business success."

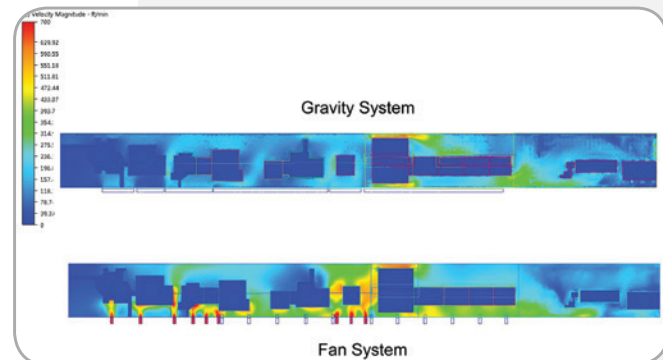
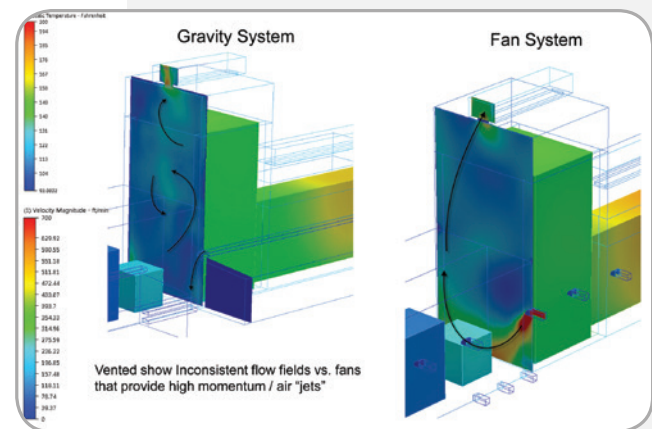
The Solution

Moffitt sent over the galvanizing plant specifications and Rand Simulation's dedicated CFD simulation specialists immediately started inputting the data and developing a baseline analysis model focused on solving their specific business challenge. "The next day, as we began to gather and interpret the simulation results, we had a review meeting with Moffitt to share our preliminary findings," said Jason Pfeiffer, Director of CFD Consulting with Rand Simulation.

"Though we have our own CFD capabilities in-house, one of the great things about working with Rand Simulation is that they really have an unbeatable combination of seasoned engineering expertise and software systems knowledge necessary for analyzing complex designs," said Rivkin, "As well, they have the computing infrastructure and power to run much faster

"With Rand Simulation as a consulting partner, we have enhanced our capability to more accurately predict the results of our complex ventilation system designs because they support our efforts with the engineering and software expertise we need. It's a great combination because we know what is feasible from a manufacturing and cost point of view. Rand Simulation helps us show just how effective our systems are."

Jerry Rivkin
VP Engineering
Moffitt Corporation



through all Navier-Stokes computations necessary to produce a solid analysis. What might have taken our systems two days to churn through, Rand Simulation produced in a couple hours. Not to mention their ability to properly interpret CFD results in a large-scale, complex ventilation environment so that appropriate design decisions can be made with confidence.”

Working collaboratively with Rand Simulation over the next two weeks, Rivkin was able to provide a complete CFD analysis to the plant designers and owners in Mexico. To help sell the natural system, Rand Simulation detailed the differences between a gravity-based ventilation system and a fan-based system. Using online desktop sharing tools, Rand Simulation collaborated with the Moffitt design team allowing them to confidently design an effective and efficient ventilation system—the proven best option based on a complete CFD analysis.

Because CFD is a non-intrusive, virtual modeling technique with powerful visualization capabilities, engineers can confidently evaluate the performance of a wide range of configurations on the computer without the time, expense, and disruption required to make actual changes onsite. All Moffitt installations meet ASHRAE regulations and now they can show clearly before any steel is cut how well the equipment will meet or surpass those requirements.

Benefits and Results

Competitive advantage

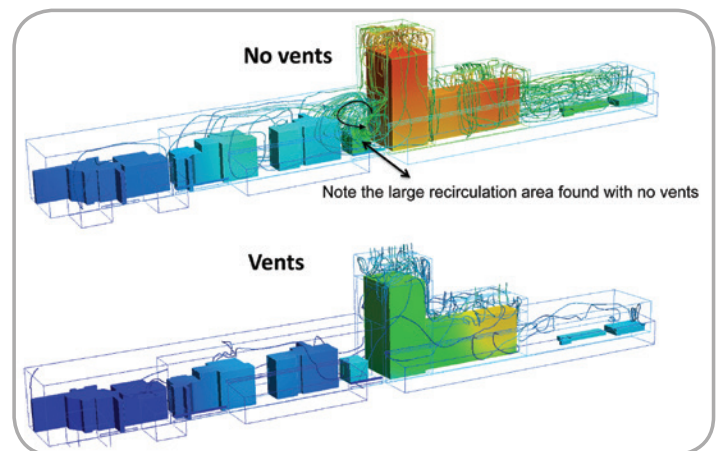
“Our ability to offer a complete CFD analysis for a complex installation gives us a competitive advantage. Not many of our competitors are providing this level of engineering detail to back-up their designs,” said Rivkin. “The compelling evidence that CFD analysis provides with regard to our ventilation system efficiencies is difficult to dispute. Because our systems are often lower in cost over the lifespan of the equipment, once customers see the results of the CFD model, they become convinced our natural ventilation systems are a great way to go.”

Improved communications with engineers and owners

The visual output from CFD analytics resulting from Rand Simulation’s investigative and collaborative consulting process allows the entire team including builders and owners to quickly and confidently make critical design decisions. The visual heat maps and velocity vector diagrams that accompany the detailed analysis are easy to interpret. Engineers, builders and owners can all clearly see where hot spots or turbulence impede efficiency—all before a structure has even been built. “Because we can provide these visual interpretations of the math behind fluid dynamics, we can more effectively collaborate with the design team—providing a higher level of input to the plant design in new or retrofit construction projects,” said Rivkin.

Improved ventilation designs without extra cost

“Being able to view CFD analysis data allows us to more accurately design our systems. In-depth analysis from Rand Simulation consultants has on more than one occasion resulted in design modifications to make the entire system more efficient by reducing hot spots and flow restrictions. We learn a lot about our designs with Rand Simulation’s deep CFD expertise. As a dedicated partner, they play a key role in our ability to generate effective systems in complex plants,” said Rivkin. “There are very few companies that can do what Rand Simulation can.”



About Rand Simulation

Rand Simulation is focused on helping organizations bring their product vision to reality through incorporating engineering simulation technology into the product development process. Rand Simulation caters to product development organizations looking to compress the design process, maximize innovation, strengthen competitive differentiation and grow bottom-line profitability. Rand Simulation serves as both a North American reseller of Ansys engineering simulation software and as a trusted design consultant offering insights gained on over 3,000 design projects using engineering analysis software to balance design performance with size, cost, DFM and aesthetics.