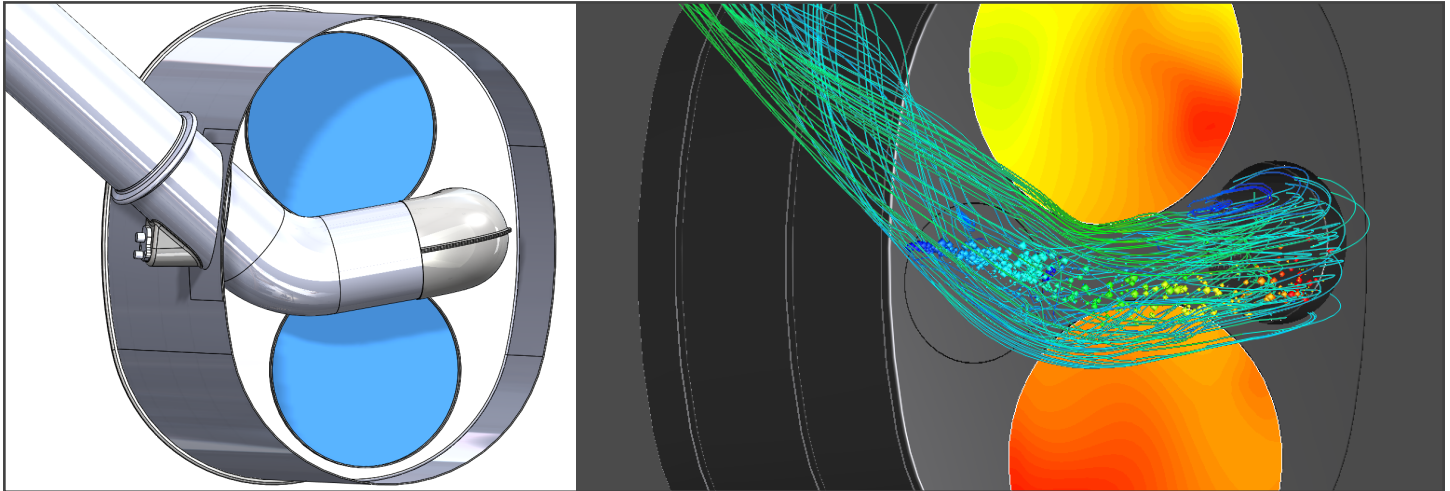


Dinex Reduces Time to Market of Exhaust Systems by 25%



Flow trajectories in the front pipe of the exhaust system showing Adblue droplet size and ammonia distribution on substrates

Background and Challenge

Dinex is a Danish designer and manufacturer of exhaust and emissions systems for trucks, buses, and off-road equipment with production and sales facilities in 16 countries across four continents. Their design process relies heavily on simulation of exhaust parts and subsystems, including CFD simulations of conjugate heat transfer from fluid to structure; FEA simulations of thermal stresses on thermal parts; and FEA simulations of structural static and dynamic forces. They run CFD on AVL FIRE and FEA on ANSYS Mechanical. At 4-5 million cells per model, these models are large and typically run for three weeks on their 32-core in-house server.

Dinex had a project for a Chinese truck manufacturer to design a new selective catalytic reduction (SCR) exhaust system that would allow the manufacturer's trucks to meet the China 5 emission standards.

The project required a very large model but also had a tight deadline. With only a few weeks to complete the project, Dinex turned to the cloud for big compute resources.

The Rescale Solution

Dinex considered both investing in a larger in-house server and using Microsoft Azure's cloud.

They decided against the in-house server because it would have taken too long to build, been too expensive, and may not have met their future requirements. Azure provided the flexibility of the cloud, but was too complicated to implement. In contrast, Rescale provided a turnkey solution for both on-demand hardware and pay-per-use software, plus had an easy-to-use workflow. All in all, Dinex chose Rescale's ScaleX platform for its ease-of-use and scalability.

For the project, Dinex ran six design optimizations of a multiphase urea spray simulation to improve ammonia uniformity and reduce risk of deposits using AVL FIRE. Each optimization included two simulations in parallel. At four to five million cells, the simulations ran on about 100 cores each. Using Rescale's cloud big compute platform to scale out horizontally, each optimization now takes about three days to run, down from three weeks on their on-premise cluster.

"Our higher productivity will enable us to handle more projects. The Rescale platform makes us more efficient and more attractive to our customers, which then brings us more business and more development projects."

Kasper Steen Andersen
CAE Manager, Dinex



Results and Benefits

Using Rescale's ScaleX platform, Dinex was able to reduce the turnaround time for each optimization from four weeks to one week, equivalent to a 75% reduction in turnaround time. (Each iteration includes making design changes, generating the mesh, setting up the model on ScaleX, running it, viewing results, and making decisions). In total, this reduced simulation time for the total project by 18 weeks.

Accelerated simulation had many material benefits to Dinex's business, including:

- 25% reduction in time-to-market for an exhaust treatment system. The Rescale platform reduced total project time from 18 months to 13.5 months. This allowed Dinex to meet a tight deadline and exceed client expectations.
- Higher project throughput and higher revenue, resulting from their ability to take on additional projects.
- More productive staffing. Simulation engineers began to work more efficiently and have greater output when the simulation bottleneck was removed. Dinex leadership plans to hire additional simulation engineers to keep up with higher simulation throughput.
- Increased marketability to customers. Their use of Rescale's cloud solution demonstrates that Dinex is at the forefront of simulation trends, using the industry's latest technologies to yield optimized designs in record time.

About Dinex A/S

Dinex was established in 1982. Today the company has 1,250 employees operating globally in more than 16 countries with headquarters in Denmark, 8 factories, and 7 sales and distribution companies. As a full system supplier, Dinex is the aftermarket equipment manufacturer (AEM) and original equipment manufacturer (OEM) market leader in Europe, with its own core aftertreatment technologies for all emission reduction requirements. The company has a long history focused on the global heavy duty market with a technology and global production platform.



About Rescale

Rescale™ is the global leader for enterprise big compute. Trusted by the Global Fortune 500, Rescale empowers the world's top executives, IT leaders, engineers and scientists to securely manage product innovation and perform groundbreaking research and development faster at a lower cost. Rescale's ScaleX platform solutions transform traditional fixed IT resources into flexible hybrid, private, and public cloud resources—built on the largest and most powerful high-performance computing infrastructure network in the world. Rescale offers hundreds of turnkey software applications on the platform which are instantly cloud-enabled for the enterprise. For more information on Rescale, visit www.rescale.com.



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