

Cloud-based simulation for vehicle engineering

Fortissimo Experiment Facts:

- Industry Sector: **Automotive**
- Country: **Sweden**
- Software Used: **iconCFD®**

THE COMPANIES

Koenigsegg Automotive AB is a Swedish SME whose core business is the development and production of highperformance, high-quality, limited-edition motor vehicles – so called hyper-cars. ICON Technology & Process Consulting Ltd is UK company which specialises in Computer Aided Engineering (CAE) services together with IT/web/multimedia capabilities to manage and present data.

THE CHALLENGE

Analysing how air flows around a vehicle is essential to making it faster and more efficient. Physical testing is expensive due to the costs of models and test facilities. Computer simulation removes the need for these, and enables the engineers to make changes to the design more easily. However, simulating airflow with the required degree of accuracy requires computing power beyond the reach of most designers, mainly due to the capital costs of the equipment.

THE SOLUTION

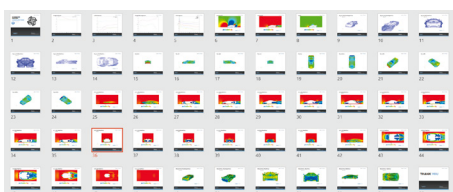
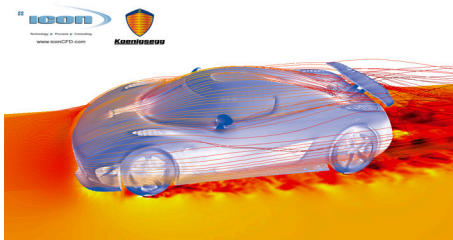
The solution developed by ICON is to provide cost-effective and easy-to-use access to high-performance computing. The ease of use is achieved by providing browser accessible 'apps' which provide the necessary features to set up and analyse simulations. The apps connect to HPC-systems which provide pay-per-use access; capital costs are avoided altogether, as is the need for experienced personnel to run the HPC systems. The result for the end-user is a feature-rich interface connected to computing resources capable of rapidly returning simulation results. The entry cost and operational costs are very attractive for small companies.

BUSINESS IMPACT

Obtaining an in-house capability for rotating wheel aerodynamic simulation requires an initial investment of €200,000 - €300,000 including hardware, and software licences allowing approximately 50 simulations per year. In addition, an annual maintenance and operational cost of approximately €100,000 including hardware warranties, electricity, software licences, etc. is required. This is a prohibitive cost for SMEs.

In comparison, a streamlined process accessed on-line and benefitting from on-demand HPC and ISV expertise could cost as low as €900 per simulation to the end user, therefore making high-end simulation affordable to SMEs. This can reduce or even eliminate the need for physical testing, saving further time and money on models and wind tunnels.

The experience of Koenigsegg is that around €100,000 can be saved annually on design costs by using this technology that was previously only affordable to large companies.

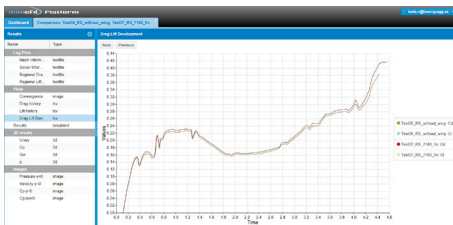
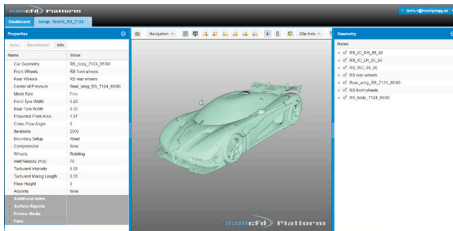


Fortissimo Experiment Partners:

- Koenigsegg (End User)
- EPCC (HPC Expert and Provider)
- ICON (ISV)

More Information:

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For ICON, the apps they have developed will allow them to offer their services to new clients in the automotive SME sector.

BENEFITS

- €100,000 annual saving on design costs – saving 30% over previous solutions.
- High-end simulations for as little as €900 per simulation.
- No need for SME to purchase expensive equipment.
- Significant time saving as there is no need for physical testing.

THE FORTISSIMO PROJECT

Fortissimo is a collaborative project that enables European SMEs to be more competitive globally through the use of simulation services running on a High Performance Computing cloud infrastructure. The project is coordinated by the University of Edinburgh and involves more than 100 partners including Manufacturing Companies, Application Developers, Domain Experts, IT Solution Providers and HPC Cloud Service Providers from 14 countries. These partners are engaged in over 90 experiments (case studies) where business relevant simulations of industrial processes are implemented and evaluated. The project is funded by the European Commission within the 7th Framework Programme and Horizon 2020 and is part of the I4MS Initiative.

I4MS Fortissimo is part of I4MS ICT Innovation for Manufacturing SMEs: www.i4ms.eu



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