On-demand computing delivers the competitive edge

Images: Koenigsegg

Swedish SME Koenigsegg is a leading designer and manufacturer of high-performance sports cars. Its cars must meet the exceptional standards of performance and quality that this prestige market demands.

The challenge

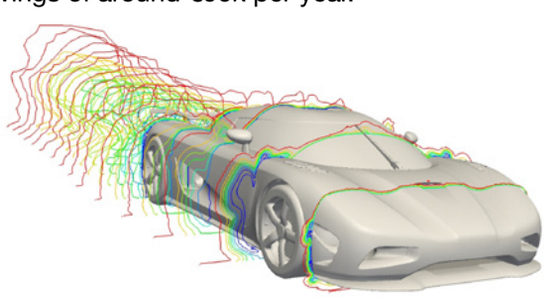
Improving the aerodynamic performance of a hypercar is essential to Koenigsegg's product development success. Understanding the airflow patterns around the complex structure however normally means utilising expensive wind-tunnel testing. An alternative to physical testing is to use advanced computer simulation. However models used to replicate real life cars with high accuracy can be very large and complex necessitating the use of expensive High Performance Computing (HPC) infrastructure. The challenge therefore was to provide Koenigsegg with a cost-effective HPC service capable of hosting Koenigsegg's advanced airflow simulations.

How we helped

The solution was to use EPCC's cost-effective HPC-on-demand service in conjunction with ICON's CFD software based on OpenFOAM. By using a cloud-like computing model, the full aerodynamic design of a hypercar can be conducted using complex and detailed CFD, with minimal physical wind-tunnel testing. Instead of having to buy and run an expensive HPC infrastructure, Koeniggsegg buys the simulation as a service on-demand, only paying for what it uses. This dramatically improves Koenigsegg's ability to cost-effectively design and develop highly aerodynamic super cars.

The benefits

Utilising advanced simulation and modelling on HPC allowed Koenigsegg to minimise expensive wind tunnel testing. This has resulted in both reduced development costs and the ability to bring new products to market quicker, with an estimated 30% reduction in time-to-market. Overall, Koenigsegg estimate development savings of around €90k per year.



EPCC: the UK's leading supercomputing centre

Supercomputing capability straight to your desktop

cirrus

Introducing Cirrus: our latest computational service for industry.

Cirrus is an SGI ICE XA supercomputer comprising more than 5,000 cores – the equivalent of hundreds of desktop computers.

This facilitates calculations that would be impossible, or much slower, when carried out on conventional desktop computing systems, delivering results in hours to days instead of weeks or months.

Our Accelerator service: supercomputing on demand

ACCELERATOR

Cirrus is just one part of our Accelerator service, which delivers high-performance computing capability at a fraction of the cost of buying and operating in-house HPC services.

Accelerator can be used as a:

- Transformative HPC resource accelerating development and discovery lifecycles
- Flexible HPC resource smoothing out demand peaks
- Contingency over internal HPC infrastructure failure

Accelerator provides access to:

- ARCHER and Blue Gene: our high-end compute systems for large-scale simulation and modelling challenges
- Cirrus: a midrange, industry-standard Linux cluster. An ideal platform for applying commercial software tools to solve a range of CFD and FEA simulation and modelling problems
- RDF: our large-scale data facility giving access to petabyte-scale data storage and archive facilities

With the security of our exceptional expertise

With over 80 highly-qualified permanant staff, we ensure you get the most from our systems.
We can help you with:

- General HPC support
- Training & consultancy
- Data management and analytics
- Software development
- Computational modelling & simulation

To discuss our services for business, contact George Graham at EPCC:

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