

“We have improved calculation times by 10 percent. The Fujitsu HPC solution also consumes 88 percent less electricity, which translates into big savings and a more environmentally friendly platform.”

Jaka Križanič  
Systems Administrator  
Kolektor Turboinštitut

Kolektor Turboinštitut installed a Fujitsu HPC cluster to perform CFD research. It is faster, uses fewer licenses, and consumes less energy, enabling quick ROI.

#### At a glance

Country: Slovenia  
Industry: Manufacturing  
Founded: 1948  
Website: [turboinstitut.com](http://turboinstitut.com)

#### Challenge

Kolektor Turboinštitut was using a slow and maintenance-intensive hardware platform that was nearly ten years old. It wanted to find a replacement that would reduce costs and energy consumption while boosting performance.

#### Solution

The company turned to local IT specialist, Our Space Appliances, to install and migrate to a Fujitsu HPC cluster consisting of multiple Fujitsu PRIMERGY servers running FUJITSU Software HPC Cluster Suite for ANSYS Fluid simulation.

#### Benefit

- Eighty-eight percent less energy consumption and lower licensing costs enable ROI within two years
- Improved performance by ten percent
- Takes up a fifth of the space and easy to scale
- Reliable performance reduces burden on IT team
- FUJITSU Software HPC Cluster Suite enables optimal usage of PRIMERGY hardware

## Customer

Kolektor is a trans-national company connecting almost 30 companies to strategic world markets. Kolektor Turboinštitut is an independent institute for hydraulic machinery, located in Ljubljana, Slovenia, which has an unrivalled knowledge of hydropower development, design, model testing, turbine refurbishment, pumps optimization, production and the use of small water turbines, pumps and ventilators, control and governor equipment, and small hydropower equipment engineering.

## Products and Services

- 3 x FUJITSU Server PRIMERGY CX400
- 9 x FUJITSU Server PRIMERGY CX2550
- 2 x FUJITSU Server PRIMERGY RX2540
- FUJITSU Software HPC Cluster Suite

## Replacing aging, core systems

Kolektor Turboinštitut was relying on aging hardware to support its business and enable the complex analysis and modelling required in the field of hydraulics. After nine years, it had become slow and expensive to maintain. The company wanted to find a high-performing, cost-effective alternative.

“The price-performance ratio was terrible, it took up lots of space and used lots of energy, making the old system simply no longer fit for purpose,” explains Jaka Križanič, Systems Administrator, Kolektor Turboinštitut. “We looked at a number of options and talked to numerous partners, exploring whether cloud or on-premise would be best. Given the system is in use 24/7, we didn't feel that moving to the cloud offered many benefits.”

Local IT specialist, Our Space Appliances, suggested implementing a Fujitsu cluster to serve as the new high-performance computing (HPC) platform. While Fujitsu technology is used in other parts of the Kolektor Group, the Turboinštitut had no direct experience of Fujitsu. Nevertheless, it was impressed by the experience and technical capability on display.

“Our Space Appliances put the most effort into its proposal and it was backed up with clear support from Fujitsu, which gave us peace of mind. For example, the team supplied fluid simulation tests from Fujitsu's HPC center in Zurich, which convinced us we were on the right track,” adds Križanič. “One of the other criteria was having expert software support. Our old system was based on open source software that had seen its ongoing development slow – we wanted to avoid that happening again.”

## Building a robust HPC platform

The Fujitsu HPC platform consists of three FUJITSU Server PRIMERGY CX400 chassis with nine FUJITSU Server PRIMERGY CX2550 server nodes, which together provide 252 processor cores and over 18TB of RAM. There are also two FUJITSU Server PRIMERGY RX2540 management servers. All the machines run Red Hat OS and use FUJITSU Software HPC Cluster Suite software (HCS) for ANSYS Fluid simulation, jobs queuing and scheduling.

Fujitsu HCS is a purpose built HPC software stack which has been designed to eliminate the complexity of deploying, managing, and using a HPC cluster.



The HCS includes a set of fully validated HPC software components incorporating the best-of-breed HPC Open Source Software components, combined with a set of proprietary software products and tools that ensure optimal usage of the Fujitsu PRIMERGY hardware platforms.

“Fujitsu designed and built the new HPC cluster, while Our Space Appliances was responsible for the installation and migration,” continues Križanič. “We ran it in parallel with the old system while we completed all open projects, which took just a month.”

The new HPC cluster supports ANSYS Computational Fluid Dynamics and OpenFOAM, a C++ toolbox for the development of customized numerical solvers. Between three and five users run up to ten projects concurrently for both commercial and research purposes.

## Better performance at lower costs

Kolektor Turboinštitut was instantly impressed with the performance, not least because it runs on around one tenth of the number of cores, compared to the old system. This, in turn, reduces licensing costs and energy consumption, meaning the company expects to see a full return on investment within two years.

“The old system was a monster with ten times as many cores, yet even so we have improved calculation times by 10 percent,” says Križanič. “It also consumes just over 10 percent of the electricity, which translates into big savings and a more environmentally friendly platform.”

With far fewer cores, it is no surprise that the Fujitsu HPC cluster takes up a fifth of the space, freeing room for other parts of the business. It is also built on a stable system environment, so the IT team isn't plagued by constant maintenance demands.

“Beforehand, there were problems all the time but now it simply gets on with the job, which means our users can concentrate on their work, not on communicating with the IT team,” comments Križanič. “Moreover, we can easily scale up the new HPC cluster by stacking a few more servers in the rack, giving it capacity for future expansion.”

Kolektor Turboinštitut now has a robust, reliable HPC cluster wrapped in industry-leading software that provides a platform for critical research today and in the future.

“It works wonderfully well; we are glad we made the right decision and are satisfied with how it has evolved,” concludes Križanič. “Fujitsu and Our Space Appliances have proven to be the ideal HPC partners.”

## FUJITSU

Email: [info.si@ts.fujitsu.com](mailto:info.si@ts.fujitsu.com)

Tel: +386 1 401 24 23

## IN COLLABORATION WITH

