

# Case Study

## BLOCK Transformatoren-Elektronik GmbH

»For us, the PRIMEFLEX for HPC solution from Fujitsu with Ready-to-Go-Plus implementation is the easiest possible way to enter the high performance computing world and explore the simulation opportunities associated with it. Our expenditure for the installation was practically zero and the performance is fantastic.«

Dr. Dennis Kampen, Area Manager, Development Fundamentals, BLOCK Transformatoren-Elektronik GmbH



### The customer

BLOCK Transformatoren-Elektronik GmbH is a leading manufacturer of transformers, power supplies and electrical filters and has been a strong partner to industry and small trade businesses in the winding materials sector for many decades. Since the introduction of the company's blue circuit board transformers, the entire electronics segment has valued its reliability and security of supply. And to ensure it stays that way, BLOCK consistently focuses on controllable, fast, reliable production on-site. As well as the large range of off-the-shelf products, BLOCK also offers fast product individualization and development for its customers. This means that BLOCK can produce certified, custom-made products at its production sites in Verden (near Bremen, Germany) in just three weeks. Over 700 employees in Germany, Belgium, Denmark, Great Britain and the USA develop, produce, test and sell standard products as well as tailored solutions for the international market.

### The customer

Country: Germany/worldwide  
 Industry: Electrical engineering  
 Founded: 1939  
 Employees: 700  
 Website: [www.block.eu](http://www.block.eu)



### The challenge

The north German mechanical engineering company was looking for an easy to install high performance computing solution to enable it to carry out detailed simulations in-house. This was essential for the company to be able to bring more innovative products to the market.

### The solution

A PRIMEFLEX for HPC solution from Fujitsu with Ready-to-Go-Plus (RTG+) implementation optimized for COMSOL Multiphysics® with licensed simulation software and ICR (Intel Cluster Ready) certification, based on Fujitsu PRIMERGY servers.

### The challenge

BLOCK combines development, research and production under a single roof. From winding materials to electronic switching power supplies, software development to cast resin optimization. In Verden, plastic components are sprayed, metal sheets are punched and nibbled, circuit boards are produced and large transformers are wound, tested and checked. The company was looking for a high performance simulation solution to strengthen its development center. "Until now, we had only been able to carry out switching simulations in-house that were simple enough to run on normal PCs or laptops," explains Dr. Dennis Kampen, Area Manager, Development Fundamentals at BLOCK Transformatoren-Elektronik GmbH. "Detailed simulation calculations had to be outsourced."

### The solution

The company selected a pre-configured PRIMEFLEX for HPC solution from Fujitsu with Ready-to-Go-Plus (RTG+) implementation. The HPC cluster was delivered with pre-installed Fujitsu x86 servers, including the Fujitsu Software HPC Cluster Suite (HCS) and the HPC Gateway as well as the COMSOL Multiphysics® software solution. Fujitsu HCS and the integrated user environment HPC Gateway make it easier to work with HPC clusters by automating the development process and greatly simplifying the simulation calls.

### The benefit

- High user productivity and faster calculations
- High-quality system and reliable platform that can be managed and individually expanded at any time by the development department itself
- Specially designed for the operational requirements and needs of the developers and users

### The benefit

Whether for regenerative energy, mechanical engineering, drive, construction or lighting technology, the applications for transformers, control centers and surge protection systems today are almost unlimited. So it is not too hard to see why BLOCK's customer base is international and has so many different needs. "We constantly receive special customer requests where standard transformers are not sufficient," says Dr. Dennis Kampen. "Either the current shape is very unusual or it's the magnetic fields around the components that are the problem. In cases like this, we need to provide development services based on HPC simulations."

The pre-installed and pre-configured server-based PRIMEFLEX for HPC cluster solution was particularly suitable in this case as BLOCK Transformatoren-Elektronik GmbH wanted to create a simulation department from the ground up. The three-person team required both simulation software that could process the complex tasks, as well as a reliable HPC solution that was tailored for the software and ready to implement immediately.

For detailed simulation calculations, BLOCK now has two 4-core PRIMERGY RX200 S8 servers with Intel Xeon E5-2637 processors connected as a cluster. A somewhat larger PRIMERGY RX300 S8 system serves as the head node. COMSOL Multiphysics® software was installed as part of the project, which is used for research and development in technically oriented companies and institutes to optimize existing projects and develop new designs or processes in a targeted way.

### Products and services

- HPC system: PRIMEFLEX for HPC 1+2 cluster from Fujitsu with Ready-to-Go-Plus implementation optimized for COMSOL Multiphysics® with the appropriate COMSOL Multiphysics® software package, provided by Fujitsu subsidiary ict GmbH, produced and completely installed in the Fujitsu factory in Augsburg
- Servers: 1x FUJITSU Server PRIMERGY RX300 S8 management head node with Intel Xeon E5-2620v2 processor, 2x FUJITSU Server PRIMERGY RX200 S8 compute nodes with Intel Xeon E5-2637v2 processors
- FUJITSU Software HPC Cluster Suite (HCS) including HPC Gateway
- Operating system: Red Hat Enterprise Linux
- Services: 3 years on-site Maintenance&Support

This was where the long-established company needed support, as until this point BLOCK had relied on CAD programs. To be able to process the higher and increasingly detailed requirements of its customers promptly, precisely and without increasing costs substantially, BLOCK needed an effective development service for new products. "With COMSOL Multiphysics®, we have an integrated interface for all of the physical domains, so that we only need a single simulation software solution," explains Dr. Kampen. "That really simplifies the procedure."

### Conclusion

The introduction of the PRIMEFLEX for HPC solution from Fujitsu and COMSOL means that BLOCK no longer has to spend time and financial resources on external simulation services. It has also triggered a real development boom as it now has a powerful system available whenever it is needed. Dr. Dennis Kampen is very satisfied with the investment in the new development service:

"Thanks to the new HPC solution, we can continue to work on products tailored for our customers, and therefore exploit new markets. We want to make our magnetic components even smaller, and more powerful, which is only possible with detailed simulations - and now we can do this ourselves."

Dr. Dennis Kampen, Area Manager, Development Fundamentals,  
BLOCK Transformatoren-Elektronik GmbH

In collaboration with



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