CONTABO

A Vertiv Case Study

ABOUT THE COMPANY

Contabo GmbH is a web hosting, virtual server and colocation provider based in Munich, Germany, operating data centres in Munich and Nuremberg with space for more than 10,000 servers. The service provider has around 40,000 customers, including private, international groups, and small and medium-sized businesses.

www.contabo.com

Case Summary

Location: Germany

Vertiv Solutions:

- Strategic consultation on optimising data centre infrastructure
- Liebert® HPC-M freecooling chillers
- Liebert Trinergy™ Cube UPS
- Fan upgrades from AC to EC
- Thermal Management Supersaver software

Critical Needs:

Energy efficiency and high availability for the hosting and colocation market, high-performance cooling with freecooling chillers, analysis of the new cooling and UPS systems during data centre operation.

Results:

- When completed, electricity costs will be reduced **by € 1 million**
- Power Usage Effectiveness (PUE) reduced **from 2.0 to 1.2**
- **Four times more energy efficiency** by retrofitting the climatic chambers with EC fans
- Energy use optimisation through efficient UPS systems and freecooling: **a total reduction in energy consumption of 70%**

Background

Contabo specialises in individual data centre services with an excellent price-performance ratio. The company, which has received several awards for top service and high availability, has a product portfolio which comprises of web hosting, dedicated servers, colocation, virtual servers, cluster systems, domains and individual hardware for private and corporate customers.
The company operates two of its own data centres - one in Munich and the other in Nuremburg - for dedicated servers and colocation services.
Both facilities have office and support rooms situated in the same building just one floor above the data centres, and are staffed 365 days a year.
The company also operates both data centres independently and invests continuously in their infrastructure to ensure that operations run with as much stability and energy efficiency as possible. With two data centres located several hundreds of kilometres apart and supplied by different electricity grid operators, Contabo can split customers' servers between two locations to ensure optimal availability and reliability.

Challenges: Energy Efficiency and High Availability

As a result of strong growth, Contabo took over their second data centre in Nuremberg in 2014, which covers an area of 2,400 square metres and has space for roughly 10,000 servers. At the time, unsatisfied with the PUE value of 2.0, and needing to guarantee high availability and energy efficiency of the infrastructure, Contabo commissioned Vertiv to design a modernisation concept for their state-of-the-art "Green Data Centre" in Munich - specially built by the company in 2009. Thorough analysis lead the Vertiv team to develop a project to install new, highly efficient freecooling and UPS systems, along with replacing the existing AC fans with energy-saving EC fans. The new high-performance UPS and cooling systems were thoroughly tested during operation, and the modernised infrastructure resulted in a significantly lower PUE value of **1.2 and a 70% reduction in energy consumption**.

The Targets: 60 Percent Less Electricity Costs and A PUE Value of 1.4 - 1.3

After taking over the Nuremberg site, Contabo decided to modernise the infrastructure primarily to make operations more energy efficient. The company started looking for a provider with optimal expertise in the areas of power supply and air conditioning. Contabo's main goal was to lower the PUE value from 2.0 to 1.4 - 1.3, and reduce the total amount of energy the infrastructure consumed by 60%. Another major challenge of the project was ensuring availability with no interruption to the customers' servers when installing the new infrastructure.

Energy Efficiency Using Freecooling, UPS and EC Fans

At Vertiv, an interdisciplinary team of engineers developed possible concepts which respected Contabo's request to keep the existing climatic chambers and pipes. Vertiv reccomended using the Liebert® HPC-M freecooling chiller combined with the Thermal Management Supersaver software, which would enable energy savings of 70%. In addition, replacing the existing AC fans in the climatic chambers with EC fans ensured a **four-fold improvement in energy efficiency**.

The Liebert HPC-M freecooling chiller offers higher energy efficiency, as freecooling begins when the outside temperature drops below 20°C. This means that the compressor only comes into play if the outside temperature surpasses this freecooling limit. In addition, seasonal energy performance values can be optimised using the Supersaver software for the cooling units. The software is based on the principle that when the thermal load decreases, the water temperature automatically increases, and the seasonal efficiency of the system goes up. In turn, the service life of the freecooling system is extended.
The precision air conditioning units and the freecooling unit communicate via a Local Area Network (LAN).

Liebert® HPC-M Freecooling Chillers

Modernisation Without Downtime: Savings Worth Millions

The project was implemented in 2016, along with all the suggested modernisation measures and energy efficiency improvements. Thanks to intensive planning and safety measures, the integration of the infrastructure devices was executed without any problems and without interruption to operations. The project further included the installation of three Liebert HPC-M chillers. The existing UPS system was replaced by three Trinergy™ Cube units, as well as a battery-powered 10-minute backup system. Roughly 20 EC fans were installed within the existing climatic chambers, with further updates also planned. To ensure thermal separation, the UPS batteries run in a separate room, which consequently boosts energy efficiency.

After installation was complete, Vertiv performed measurements at specific intervals throughout various times of the day in order to check the performance and energy efficiency of the devices as defined in the contract. After one year, the results of this project exceed requirements: **a PUE value drop from 2.0 to almost 1.2**. Furthermore, with a 70% reduction in energy consumption achieved, the infrastructure from Vertiv surpassed Contabo's expectations of a 60% reduction in energy consumption. When the project is completed, the annual electricity costs for the data centre will be reduced by **more than € 1 million**. Thanks to this increase in energy efficiency, an independent jury awarded the converted data centre the "German Data Centre Award" for 2017, winning first place in the "**Increase in Energy Efficiency Through Reconstruction of an Existing Data Centre**" category. Michael Bölke, Managing Director of Contabo, said:

"For us, this award represents a huge acknowledgement of the efforts we have carried out in the past years to make the operation of our data centres as energy-efficient, economical and reliable as possible, and at the same time even more attractive for our customers. The modernisation concept, the innovative technologies and the experienced Vertiv team were a tremendous help to us." Due to the project's positive result, the company has not ruled out modernising their second data centre in Munich in the same manner.

> *"Vertiv, formerly known as Emerson Network Power, had a reputation for being a reliable company with high standards of quality, even before we started working with them. During the course of our collaboration, we realised that the company lives up to this reputation fully in practice. From the very beginning, at the planning phase, all the work was carried out professionally and smoothly, and all systems were delivered and installed on time, without any problems. The latter was of particular concern to us because of the ongoing data centre operation. We would also like to include Vertiv in other projects in the future."*
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> **Michael Bölke, Managing Director, Contabo**