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Short paths with long-term effects

SCHÄFER IT-Systems equips existing and future data centres at RheinEnergie

Headquartered in German Cologne, RheinEnergie is a regional energy supplier for electricity, gas, water and heating, employing some 3,000 people. In 2015, the company decided to launch a re-design programme to guarantee an energy-efficient, high-performance and future-proof infrastructure for its productive IT operations. Tenders were invited to find a suitable partner to assist in modernising the data centres. The contract was won by SCHÄFER IT-Systems from Betzdorf, Germany, which then went on to equip the data centre with enclosures, racks and PDUs in a collaboration intended to continue well into the future.

RheinEnergie is responsible for supplying around 2.5 million people, as well as industry, trade and commerce, with energy and drinking water. The majority of the company is municipally owned and, along with its partner companies, it plays an active role in supporting the Rhineland region both directly and indirectly. It is also a service partner for industrial and business customers throughout Germany. Thanks to its connection to the “Stadtwerke Köln” group - one of the largest companies of its kind in Germany with around 10,000 employees - RheinEnergie is able to offer complete service packages for the development of housing projects, for instance, ranging from energy-efficient refurbishment and digitally controlled residential energy management right up to mobility hubs, digital data infrastructure and waste disposal.

The data centre was first put into operation in 1986. At that time, mainframe systems were state-of-the-art. In the mid 90s, the increasingly popular open systems also found their way into RheinEnergie. The company switched to 19-inch server cabinets and gradually covered the entire 480 m² data centre surface area with a total of 130 racks, up to six storage systems and a tape robot. Climate control for the IT systems and data centre was implemented by means of under-floor air distribution using circulating air cooling devices, which were operated in a separate technical zone. The electricity supply came from mains distributors. The individual outlets were connected to the separate IT systems, server cabinets and storage systems by power supply lines in the classical manner, while a UPS system guaranteed failsafe operation for all IT components. The raised floor in the server room made it possible to install these systems and the required infrastructure supply, as well as passive cabling in the lower section of raised floor.

Planning phase

To provide an energy-efficient, high-performance and future-proof infrastructure for RheinEnergie's productive IT operations, the decision was finally made in 2015 to carry out a complete re-design of infrastructure, electricity, climate control, cabling, racks and construction work. The aim was to create an energy-efficient, environmentally friendly data centre in keeping with the principles of GreenIT, which would meet today's requirements and be ready for whatever may come in the future. For this project, the work on climate control, electricity and building measures was planned, monitored and implemented by Facility Management, while the IT department took on the same responsibilities for work on server

cabinets and enclosures, passive cabling and the installation of new early fire detection systems. Therefore, the overall implementation of the re-design project required close interdepartmental cooperation within RheinEnergie. The individual tasks involved in the planned restructuring of the server room had to be carried out and coordinated during ongoing or productive IT operations and in various construction stages.

As part of this modernisation, RheinEnergie divided the data centre into eight separate IT areas, which are grouped together under the term “house”. In addition, there are so-called “Building Entry Points”, known as BEP, which, in a redundant design, guarantee a secure remote connection for the data centre. The whole purpose behind carrying out this modernisation was and is the continuity of failsafe productive IT operation.

RheinEnergie drew up the necessary specifications and issued an invitation to tender. The tender documents for server cabinets, enclosures and PDUs were sent to five manufacturers. All in all, the tender comprised 114 server cabinets, divided among 11 houses, 11 enclosure solutions and 228 PDU power strips. The underlying criteria included a load bearing capacity of at least 1,500 kg for each cabinet; cabinets had to be flexibly and individually extendable and pre-equipped according to the customer's specifications. Also required was the highest possible level of energy efficiency achieved by means of optimal cold aisle containment; high-performance and practical PDU systems; delivery and installation from a single source; a broad product portfolio; a high-quality, extensive range of accessories; short delivery routes; individually coordinated delivery dates as well as a direct contact at the partner company. At the same time, RheinEnergie also paid visits to various suppliers to gain an impression of their overall efficiency. The decisive factor, however, wasn't simply the fact that solutions like enclosures, cabling concepts and PDU systems could be adapted individually to the specific houses. The company also attached great importance to a future-oriented, strategic concept for the entire project.

The highly convincing products, a well-thought out concept and organisational flexibility resulted in SCHÄFER IT-Systems being awarded the contract. End-to-end planning, product quality and a great many seemingly minor but nonetheless important solutions also proved decisive. On top of this, were the countless individual cabling solutions and power supply systems. On the one hand, this guarantees a high cabling density inside the cabinets and enables the ideal utilization of space in the rack. On the other hand, fire safety solutions are also extremely important for meeting the requirements of the racks' smoke extraction systems. The early fire detection system is designed to monitor the air constantly. In the event of cables heating up too much, an alarm is set off by smoke aerosols being released, which leads to a controlled and automated power shut-down. An additional point in SCHÄFER IT-Systems' favour was their regional proximity, guaranteeing short distances between the two partners, and also the competent contacts provided by the company.

Implementation

During the first construction phase in 2016, houses 1 and 2, as well as BEP 1, were built and put into operation. RheinEnergie's productive IT systems were installed in these new buildings, freeing up space for the second construction phase. Houses 3 to 5, and with them construction phase 2, were completed in 2017. To relieve the burden on houses 1 and 2 and to spread the load more evenly, the IT systems were now distributed among all five completed houses. And finally, construction phase 3, which included house 6 and BEP 2,

could also be completed in 2018. Mirroring BEP 1, certain network systems were put into operation in BEP 2, thus providing a redundant IT environment with infrastructure supply in the newly constructed IT area.

A cable duct system for the new passive data cabling was installed underneath the raised floor. The power supply came from busbar systems (A + B) in the ceiling. Climate control is provided by Sidecoolers, formerly circulating air cooling devices. SCHÄFER IT-Systems delivered and installed a total of eight cold aisle enclosures with 78 racks and 156 PDUs. The first key figures confirm the improved data centre performance. The number of racks was successfully reduced, which led to an enormous increase in energy efficiency being achieved. The data centre area now offers even more potential space for building three new houses. And any additional extensions that may be required in the future could well involve SCHÄFER IT-Systems. The company is an important strategic partner whose solutions have enabled it to implement institutional requirements extremely successfully.