

Water cooling system for small rooms

The Obwaldner Kantonalbank installs a new modular data centre



August 2005 left a trail of destruction in some areas of Switzerland. Many cellars in Sarnen and the local data centre of the Obwaldner Kantonalbank (OKB) were flooded when Lake Sarnen burst its banks. The bank's IT infrastructure had to be restored quickly to enable operations to continue. The OKB is now using a modular and scalable system of rack-mounted climate control for the newly installed data centre to replace the company's previous air-conditioning system.

When the water from Lake Sarnen flooded through Sarnen on 22-23 August 2005, IT managers at OKB's head office knew that the data centre installed in the cellar was beyond rescue. The drives were all that could be saved before the server and the storage devices were immersed in water. It was now a question of acting quickly. First of all, the key applications and functions were relocated to the data centre of the Nidwaldner Kantonalbank (NKB) in Stans, which uses the same platform. This made it possible for the OKB to resume its regular operations after only four hours. However, all aspects of the company's correspondence, its e-mail system, intranet, Internet and Voice-over-IP telephony system were run from its own data centre. A major part of the bank's core competences therefore depends on its own IT department, which OKB had no wish to outsource.

Need for a new data centre and infrastructure

"We had to get all our IT operations up and running as quickly as possible," says Armin Sigrist, Head of Information and Security at OKB. "We were helped by the fact that we had negotiated a new physical IT infrastructure with Lescom AG Ueberstorf four months previously and they had come up with a comprehensive deal. It was now a question of procuring the new computer hardware as quickly as possible while building a secure IT infrastructure."

One major challenge involved in the installation was climate control. The low ceiling meant it was not possible to install an air conditioning system by raising the floor. Rittal's premium partner Lescom AG already favoured the rack-mounted infrastructure solution RimatriX5 with the LCP climate components from Rittal and had submitted a detailed offer. This removed all doubts and saw the data centre installed in a small, secure room. In addition to climate control, great emphasis was placed on fire protection.

Rack-mounted climate control – efficient and scalable

As the water was being pumped out of the old data centre, the bank was provided with four temporary Rittal racks for the new computer hardware and the systems were temporarily cooled using enclosure climate control units. Meanwhile, work started on constructing the new data centre. OKB opted for the solution from Rittal in order to ensure that the room, which spanned only 49 m², was able to house the new IT installation securely. Lescom AG adapted this version to the new spatial conditions. The computer, storage and telecommunications hardware are now accommodated in 800 mm-wide racks. A special feature of the new system is the innovative cooling solution Rittal Liquid Cooling Package (LCP). One LCP is mounted between every two racks. It houses air/water heat exchangers, fan modules and the Rittal monitoring system CMC-TC. Each LCP can hold up to three cooling modules, which means that the cooling power can be scaled and upgraded in accordance with IT requirements during active operation – to ensure temperature-neutral results. The LCP provides cooling air that is circulated horizontally in the enclosed racks and blown in front of the 482.6 mm (19") mounting angles. This provides a safe means of preventing the generation of hot spot and avoids the need to provide cooling capacity for the entire room.

"We were impressed by the LCP technology even before the flood damage because it not only allows us to run our IT operations more securely, but also saves a huge amount of energy," explains Armin Sigrist. "It didn't take long to install the appropriate cold water system. Here in Switzerland we also enjoy a moderate climate for a long period – from autumn to spring – and this enables re-cooling in the form of "free cooling", which is also legally required in Switzerland. This makes us much more efficient than if we were to use conventional compressor climate control solutions."

Integrated solution gets the thumbs up

As soon as the new server room had been adapted, the specialists from Lescom AG installed the racks and the climate-control solution. The commissioning procedure removed any last remaining doubts. "Within 15 minutes of the systems being installed and the cooling modules bled, the temperature inside the rack was only 20°C at full output."

Lescom installed a special feature alongside the Rittal components, namely the centralized, high-tech "Lescom Fire Protection System LFSS-OFS", which also benefits from LCP. Highly sensitive laser sensors in the smoke extraction system scan the air in the rack for smoke particles. The system uses the strong air flow generated by the LCPs inside the rack to blow the tiniest particles into the suction opening of the smoke sensors. The air is checked centrally and if need be an extinguishing process using the non-toxic extinguisher gas argon is triggered. The gas flows through a gas pipe located above the enclosures. This process does not damage the racks. This solution does not lead to the loss of height units in the rack and all racks are extinguished automatically. This is also a safe way of preventing potential fires from spreading beyond the closed rack.

Conclusion

Armin Sigrist is justifiably proud of the security provided by the new installation. "We were able to switch the temporary data centre to the new RimatriX5 data centre without any problems at all and the new solution provides more flexibility and modularity in every respect. The installed solution is scalable and can be used at any installation site. This means we can simply continue to run the existing, rack-mounted installation or expand it to fit growing requirements." The integration of secure and flexible racks with temperature-neutral climate control and the fully automatic rack extinguisher system (LFSS-OFS) led to a unique PlugPlay solution - the first of its kind in Switzerland.

Components: Rack, LCP, Free Cooling, CMC-TC