

Rittal – Case Study



Redundant System Climatisation prevents down-falls

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The example of Hospital Kemperhof, based in Koblenz / Germany, shows how quickly an investment in the enhancement of the IT-



infrastructure can become necessary. During a regular testing of the emergency generators, the air condition of the datacenter failed due to excess voltage. Also the USP (uninterruptible power supply unit) which already had been working on its limit, got damaged. This made responsible of the IT-department aware that a new solution concerning climatisation and power supply was urgently needed. Today, in the datacenter, only the racks are being cooled, whereas in the past the whole room had been supplied with cool air. System vendor ALEX from Koblenz, working as IT-consultant for Kemperhof, recommended to

use Rittal products. To be precise: to employ RimatriX5, the datacenter infrastructure solution of Rittal.

“In the event of power loss, the diesel emergency generators need to be instantly ready to use. In case the generators are needed, voltage peaks can occur which can damage the sensitive electronic components.” Rafael Jankowski, Vice Director for IT infrastructure, explains. “In our case, voltage peaks damaged the control for the room air-conditioning system. Checking this, we realised that also our uninterruptible power supply had failed. Normally, the UPS should have prevented that the network-error would affect our servers. Whether this error occurred due to the excess load of the system or due to the climbing temperatures, we cannot tell.”

As a result of the voltage peaks, the server systems crashed. Since the air-condition could not be fixed on the same day, it was not possible to cool the restarted servers again. The servers had to be shut down until two mobile air conditioners could be installed.

To prevent this kind of disaster in the future, Jankowski was searching for a redundant solution. When the downfall happened, the hospital just planned to introduce modern communication systems like the so-called PACS – Picture Archiving and Communication System - which provides the data for the radiology information system. This system needs to be constantly available as, under certain conditions, patients lives can be at risk.

A decision was made to replace the ordinary air-conditioning system with the so-called LCP (Liquid Cooling Packages) by Rittal. The system is integrated into the server enclosures and guarantees chilled air directly at the hot spot. To re-cool the water, the LCPs are connected to Air-Water-Heat Exchangers which are integrated into the already existing redundant refrigerating circuit which every hospital has.

Different reasons supported the decision for the LCP-system of Rittal. Every server rack is connected to two LCPs which guarantees a redundant system, in case one of

the cooling units fails. "Moreover, it's the generated micro-climate in the rack, to cool the whole server-room is no longer necessary. Chilled air is coming from the site and is distributed equally to every server in the rack. Accordingly, climate conditions are the same, everywhere in the rack", Jankowski comments. "Scalability of the system is another advantage: Cooling modules can be added as the system grows and since racks and LCPs are separate constructions, there was no problem in transporting them through the narrow doors of the server room. Alternative solutions could not solve this problem neither could they provide a redundant cooling-system."

IT-responsible of the Kemperhof are very confident with the new solution. The LCPs are controlled and monitored through the monitoring system CMC-TC, which is also a product of Rittal. Information provided by the system comprise temperature of the cooling liquid, rack temperature, and fan control. At the moment, the parameters show that the system is still not fully working to capacity because fans pause as soon as

the optimal temperature in the rack is reached.



Another element of the datacenter, a new Online-UPS, was installed. The UPS is also a redundant system and guarantees an uninterrupted power supply for the servers and the fans of the LCPs. "Accordingly, we eliminated just another potential single point of failure. Now the only point where power is necessary for the cooling is also secured by an UPS", mentions Jankowski.

Just like the cooling solution, the UPS system is a modular concept. Redundancy and modularity are possible in the same rack, which minimises investment costs. At the same time, the UPS can be enhanced module-wise. The online-UPS installed in the hospital is one of Rittals latest versions of category IEC 62040-3 fulfilling classifi-

cation code VFI-SS-111 (Voltage and Frequency Independent) which protects reliably from power loss, voltage peaks, as well as from variations in frequency. The power supply of the loads goes through the UPS. A rectifier ensures, that supply voltage is permanently constant. This also keeps the batteries constantly fully loaded. A downstream inverter ensures a perfect sinusoidal output voltage.

Raphael Jankowski sums up: "Today at hospital Kemperhof we dispose of an optimal IT infrastructure. We are especially enthusiastic about the climatisation system made up by Rittals Liquid Cooling Packages. The modularity and, therefore, the possibility to pay as you grow, is just great. Further operating cost are pretty low because we connected the system to our refrigerating circuit. In total, we are just happy about the new solution and there are no more obstacles to overcome concerning the introduction of the PACS system as planned."