A Clear View of the Cosmos

The University of Utrecht with extreme demands on computer cooling solutions

The Institute of Astronomy at the University of Utrecht / Netherlands operates an observatory on La Palma using the "Dutch Open Telescope (DOT)". Detailed images are calculated from a daily volume of 1.8 terabytes of data on a high-performance cluster with 70 Xeon CPUs. The cooling requirement for the computers – 10 kW – was a special challenge. Rittal, together with partners, developed an unusual solution.

The Dutch Open Telescope acquires a total volume of about 1.8 terabytes of image data and sends it to a 3.6 TB storage system every day. The images are only "beautiful" to us and informative for the scientists after performing complex calculations on the data.

That is why there is a high-performance computer system below the observatory with 70 Intel Xeon processors in just two Rittal enclosures to perform calculations on digital image data. An unbelievable amount of heat totalling 10 kW is generated in the process. Due to space limitations and for reasons of higher efficiency, Rittal decided to use water cooling for the processors.

In addition to the processors, the hard disks and power supplies also generate heat that needs to be removed. To cool these systems as well using an air/water heat exchanger, an innovative two-cycle recooler system was installed that permits different temperature levels.

Since the computer centre is located a distance from the observatory, monitoring capabilities for the computer and climate control systems are especially important. In the CMC (Computer Monitoring Control) monitoring system from Rittal, sensor information from enclosure systems, climate control components, and the power supply is collected and can be processed on a central console.

Due to the flexibility of the available modules and, last but not least, the know-how of the Rittal employees involved in the project, the detailed project requirements were met using standard products from the Rittal portfolio.

Components: TS 8 server racks, CPU cooling, LCP, recooler, CMC

Would you like to find out more about this project?

RimatriX5 Solution Center:

Hotline: **+49 (0)2772 505-1800**
e-mail: **rimatriX5@rittal.de**

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