Success Story: Flensburg

Markets Served
Data Centre

Securing power reliability for utility services

Location:
Germany

Segment:
Data Centre

Problem:
Delivering a complete electrical supply system for a new energy-efficient data centre meant to host the servers for the company´s own application, but also to allow data centre space to be leased out.

Solution:
The electrical supply system includes low-voltage main distribution board, secondary distribution boards, two Eaton 9395 UPS, ePDU and a backup generator for outdoor installation.

Results:
Eaton delivered the entire project, from facility planning to delivering the products and commissioning the system.

Contact Information

To learn more about Eaton data centre solution, please visit www.eaton.eu/datacentres

Background

With around 1,000 employees, Stadtwerke Flensburg ("Flensburg municipal utilities") supplies electricity, district heating, water and industrial gas to its customers in the northern German city of Flensburg and neighbouring regions.

Challenge

This environmentally aware utility company is constantly developing new areas of activity. When constructing a new administration building in 2010, they also set up a modern, energy-efficient data centre large enough to not only host the servers for the company's own applications, but also to allow data centre space to be leased out.

Solution

Stadtwerke Flensburg collaborated with German planning office Enterprise-Networkers to plan the new data centre. Following this, requests for tender were issued for products and services for the centre, which has an area of approximately 200 square metres and room for 32 19-inch server cabinets, of which 18 are earmarked for leasing. Eaton was awarded the contract for the electrical supply system.

"We were fortunate to have the opportunity to support the entire project, from facility planning to delivering the products and commissioning the equipment," says Ingo Müller, project manager at Eaton and contact person for the project.

The backbone of the new building's supply infrastructure is the electrical supply system Eaton delivered, consisting of a low-voltage main distribution board, secondary distribution boards, two Eaton 9395 UPS systems, rack-based power distribution units (ePDUs), Intelligent Power Manager software for monitoring and managing UPSs and ePDUs, and a backup generator for outdoor installation. The utility company itself looked after the cabling for the low-voltage network.

"Electrical distribution from the low-voltage main distribution board is implemented as an A/B system," Müller explains. "Having two independent low-voltage power distribution strands means that if one of the two strands is affected by maintenance work or a malfunction, the other one can take over its supply function."

The UPS units are implemented as redundant systems and assigned to the strands of the A/B system. Eaton's Monitored ePDUs provide electrical distribution at the individual load centres; they monitor the individual outputs and collect data on aspects such as the power consumption of the individual loads. As the ePDUs constantly supply this data to the central monitoring software, data centre monitoring is simplified.

Servers, switches and other IT loads are especially sensitive to voltage variations and other disturbances. To combat this, two Eaton UPS units provide a constant supply of clean sinusoidal

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output power. When the data centre is eventually expanded, the installed 9395 UPS system can be extended with an additional UPS to provide up to 450 kVA of redundant power.

Besides cleaning up the input power, the UPS units can bridge short power outages—the connected batteries can maintain the full supply power for up to 20 minutes. Closed-cell batteries, which have already proven their worth with the utility company, are used for this purpose.

"Gel-cell batteries, which are often used, have a lifetime of approximately ten years. By contrast, we use closed-cell batteries with liquid electrolyte, which have a lifetime of up to twenty years and a distinctly lower overall cost," explains Erhard Jahn, a member of the networks, telecommunication & facility management department at Stadtwerke Flensburg.

In the event of an extended power outage, the data centre is supplied with electricity from an outdoor backup generator.

Results

Eaton commissioned all of the delivered systems on site and discussed the necessary preparations in detail with Stadtwerke Flensburg's project team.

"Our contacts at Eaton handled all of our queries competently and reliably. The delivery and commissioning of the components in the various project stages also went very well; it was a very pleasant collaboration," Jahn concludes.

As proof of the project's success, the electrical supply system has already handled its first power outage admirably.

Eaton 9395 225 kVA UPS

Stadtwerke Flensburg in brief

- Supplies electricity, district heating, water and industrial gas in the Flensburg region in northern Germany; turnover of nearly EUR 250 million; approx. 1,000 employees
- One of the largest district heating providers in Germany; uses combined heat and power units
- Eaton-supplied electrical supply system for the company's new data centre comprises:
  - xEnergy switchgear with NZM4 circuit breakers
  - 4 secondary distribution boards for computer rooms
  - 2 Eaton 9395 225 kVA UPS units in redundant configuration
  - 24 Eaton ePDU (monitored) power distribution units
  - IPM monitoring software
  - 630 kVA outdoor backup generator

xEnergy switchgear with NZM4 circuit breakers

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