Success Story: Royal Institute of Technology (KTH)

Markets served
Government

Uninterrupted research and unprecedented energy saving at KTH

Location:

Stockholm, Sweden

Segment:
Government

Problem:
The university needed a reliable, energy-saving backup solution for its computer centre.

Solution:

Eaton 9395 2x1100 kVA with ESS technology

Results:
Dramatically reduced energy costs for KTH.

Contact Information
To learn more about Eaton, please visit www.eaton.eu/powerquality

Background

Kungliga Tekniska högskolan (KTH), in Stockholm is the largest, oldest and most international technical university in Sweden. KTH accounts for a third of Sweden's capacity for technological research and engineer training at tertiary level. Training and research cover a broad area – from natural sciences to all branches of technology, plus architecture, industrial economics, social planning, industrial work science and environmental technology.

At KTH you can study to become an architect, civil engineer, Bachelor of Science in Engineering, Bachelor, Master, Licentiate or Doctor. KTH also offers foundation technological training and further training. In total, KTH has just over 13,300 full-time students at foundation and advanced level, over 1500 active research students and 4300 employees.

Challenge

KTH's Center for High Performance Computing, PDC, has one of northern Europe's most powerful supercomputers, a Cray-based computer with a capacity of over 305 teraflops. KTH's investment in the most powerful computers makes it possible to keep up with the rest of the world in e-science research, i.e. science which demands large computation resources.

Hundreds of researchers who carry out calculations as part of turbulence research, brain research and other types of academic research rely on being able to perform calculations without interruption over long periods, sometimes over several weeks. The computer centre also has web servers and storage servers which need to operate twenty-four hours a day.

The energy costs of operating the computer centre at PDC amount to some SEK 10 million per year, and when it came to the purchase of a UPS system, it was important to find a low-energy solution.

Solution

Eaton's 9395 UPS was the solution to KTH's problem. "We chose Eaton's 9395 because it satisfied our need for reduced electricity and cooling costs with no-compromise operational reliability at the best price," says Gert Svensson, Deputy Director of the Center for High Performance Computing (PDC).

Scalability was also important for KTH, and the initial purchase of a 9395 1100 kVA in 2008 has been followed by further modules during the last three years. Today there are two 1100 kVA which provide a reliable supply of electricity to the centre.

In 2010 Eaton launched the Energy Saver System (ESS), and KTH was the first company in Sweden to upgrade its existing UPSs to the new technology.

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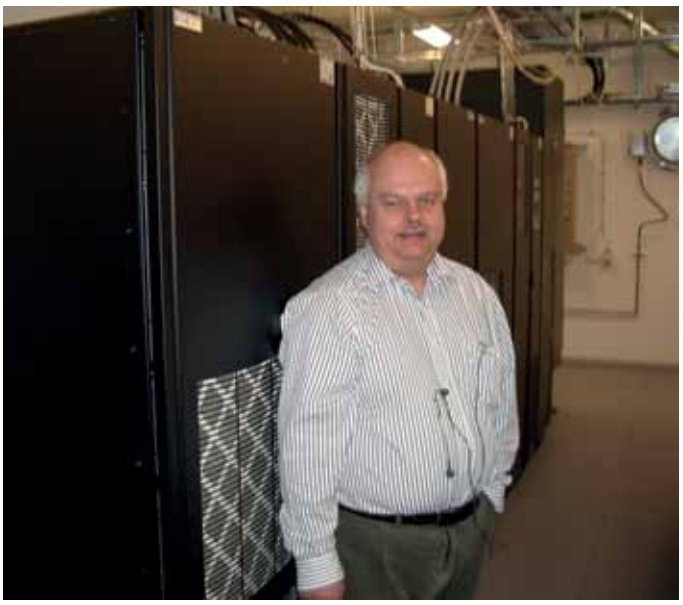
ESS makes it possible to dramatically improve the efficiency of UPS units without compromising the load protection. With 85% lower energy losses from UPSs, ESS technology means a considerable reduction is made in energy consumption, environmental impact and electricity costs. These unprecedented energy savings make it possible to recoup the entire cost of UPS units in three to five years.

Using ESS, the UPS unit supplies the load with mains voltage when the input voltage is within acceptable voltage and frequency intervals. First-class detection and control algorithms enable the UPS unit to activate the voltage transformer in less than two milliseconds when mains voltage goes outside the pre-defined voltage and frequency limits, and always ensure a secure supply for the critical load with maximum efficiency.

"Thanks to the installation of ESS in our UPSs, we expect an energy saving of around SEK 400,000 per year," says Gert Svensson.

Results

The cooperation between Eaton and KTH over the years has been extremely successful. The unprecedented cost savings achieved thanks to 9395 and ESS will enable KTH to add further UPS systems in the future.



Gert Svensson and one of KTH's Eaton 9395s

KTH's Cray-based supercomputer

KTH in a nutshell

- Founded in 1827
- 13,300 full-time students
- 1500 active research students
- 4300 employees
- Sweden's largest institute of technology
- SEK 3674 million total turnover
- 231,000 m^2

www.kth.se

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