



Eaton provides BlueFjords data center with power that's efficient and expandable

Location:

Luster, Jostedal Valley, Norway

Challenge:

Providing a scalable power solution for a new data center that needed to combine outstanding energy efficiency with the highest possible levels of resilience.

Solution:

Power Xpert 9395P UPS featuring the Energy Saver System (ESS) for maximum energy efficiency and HotSync for easy expansion, supported by Eaton's low-voltage distribution switchgear using Eaton TABULA systems.

Results:

The Eaton UPS system and the associated low-voltage distribution switchgear proved easy to install and commission and the solution has now been operating for more than nine months. During this time the BlueFjords data center has performed flawlessly and exceeded all of its design targets, including 100 per cent availability.

"Our customers look for 100% availability, and this is assured thanks to the redundant UPS solutions provided by Eaton that are complemented by the comprehensive security provisions of the BlueFjords data center."

Edvin Brun, CEO, BlueFjords

Background

The new BlueFjords data center - owned and operated by BlueFjords - is located at the entrance to the Jostedal valley in the Luster province of Norway, close to the mighty Jostedal glacier. This means it has easy access to a plentiful supply of clean, renewable hydro-power via a local energy node fed from four separate power plants. The proximity of the glacier also means that the climate is stable and relatively cool, making this an ideal location for a data center. These natural benefits are, however, not enough to provide a guaranteed service for BlueFjords' clients; the data center also needs a totally dependable power supply system.

Challenge

The utility power to the BlueFjords data center can be expected to be reliable for the majority of the time thanks to its proximity to the power node. However, power protection is still vital to ensure that the operation of the data center is never disrupted by power problems such as transients, power surges and voltage perturbations.

To deliver the best possible protection, a solution based on double-conversion uninterruptible power systems (UPS) was essential, but BlueFjords wanted to avoid the relatively low efficiency traditionally associated with double-conversion UPSs. Another significant challenge was the need for the system to be readily and cost-effectively scalable to accommodate the planned future expansion of the data center.



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Solution

To develop and supply all of the technology solutions for its new data center, BlueFjords appointed Data Center Technology as, a leading expert in the field of data center design and implementation. Based on its experience of the UPS market, Data Center Technology proposed the use of Power Xpert 9395P UPSs for this application.

In order to provide the highest possible level of resilience, two UPSs, each rated at 275 kVA, were arranged in a redundant A+B configuration. This means that even if one of the UPSs is out of service – to allow maintenance, for example – the other is still capable of supplying all of the data center's protected loads.

There were several key factors that influenced the decision to use Power Xpert 9395P UPSs. These included the strong and well-proven reputation for reliability associated with these products and their double-conversion topology, providing comprehensive power protection. The features are augmented by the incorporation of two patented technologies: Eaton's Energy Saver System (ESS) and HotSync®.

ESS is an important advance over conventional double-conversion UPS designs. In standard double conversion mode, Power Xpert 9395P UPSs already deliver industry-leading efficiency of up to 96,3 per cent but, when the quality of the incoming mains power is good, ESS mode boosts this to 99 per cent.

Not only does this substantially reduce the energy required to power the UPS, it also means that it generates less heat. This reduces cooling requirements and costs while enhancing the reliability of the UPS and prolonging its working life.

HotSync technology is an advanced load-sharing system that guarantees safe and reliable operation by synchronizing parallel power modules and UPSs without the need for a communication link or synchronization signals. This means that the 'common point of failure' associated with UPSs operating in parallel, using conventional techniques, is eliminated, which greatly enhances resilience.

HotSync provides outstanding scalability for UPS installations as, to increase capacity, additional UPSs can be readily connected in parallel with the existing units, with perfect load sharing guaranteed.

In addition to the UPS systems, Data Center Technology also supplied Eaton's low-voltage distribution switchgear associated with the BlueFjords data center. The switchgear uses Eaton TABULA systems and technology throughout and, like the UPS installation, it has been designed to allow easy expansion. Special attention was paid when selecting the circuit breakers to achieve maximal availability and ensure minimal disruption to the system in a short circuit situation. To reduce the effect of neutral voltage displacement, a selection of 3-pole and 4-pole breakers was used in strategic positions.

Results

Since the commissioning of the BlueFjords data center, the power systems have operated exactly as planned. Their high efficiency is helping BlueFjords to minimize energy costs and the environmental impact of its operations. At the same time, their outstanding reliability and power protection performance are ensuring continuity of service and total data security for the company's customers.

"Not only is Eaton a leader in innovation, it also has top-notch competence and excellent products matched by an equally excellent reputation. And it's a great company to work with. These factors made Eaton an easy first choice for us at BlueFjords, and the performance of our new data center continues to confirm that it was definitely the right choice," said Edwin Brun, CEO of BlueFjords.



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