Revolutionizing Sweden's Data Landscape: Inside Conapto's Cutting-Edge Data Centre Evolution With Vertiv's Dynamic Grid Support

A Vertiv Case Study

Background

Conapto is a data centre provider offering colocation, connectivity, and cloud services in Stockholm, Sweden. With a proven sustainability track record, most recently deploying heat reuse to district heating on all sites to contribute to the heating of thousands of households in Stockholm, Conapto is committed to support both Swedish, EU and UN targets for a greener future.

Divided into northern and southern campuses housing multiple facilities with a total of 15,000 square meters and 30 megawatts (MW) of capacity, Conapto is focused on responsibly meeting customer needs and expanding its market presence. Presently operating three facilities, a fourth under construction and a fifth in planning, the company is committed to continual growth and innovation.

Challenge

The main challenge posed by Conapto was how to maximise the potential of the entire capacity of the uninterruptible power supply (UPS) system, underlining that data centres are not only consumers of energy but can also actively contribute to power generation, grid balancing, and the circular economy.

As intermittent renewables continue to challenge conventional electric systems and the power demand increases, new energy services are required to balance the grid. Using UPS and lithium-ion batteries during times of grid instability offers data centres an opportunity to contribute to decarbonisation and transition to more renewable energy sources, helping to meet sustainability goals as well as utilizing the full potential of the infrastructure already installed for a more circular economy.

Vertiv, Coromatic and Fever took on this challenge by updating the existing installation and ensuring Conapto qualified for the FFR (Fast Frequency Reserve) program which helps stabilize the national grid, demonstrating the UPS system's capabilities in compliance to the electricity market.

CONAPTO
COLOCATION MADE IN SWEDEN

Company Profile

Conapto offers scalable, secure, and fossil-free data centre colocation as well as the cloud connectivity needed for companies and managed service providers to produce and deliver digital services in a hybrid IT environment.

Industry

Data centre colocation

Region

Stockholm, Sweden

Solution

Vertiv introduced an innovative feature called Dynamic Grid Support for its Vertiv™ Liebert® EXL S1 UPS, which represents an integrated solution for critical power protection and grid balancing capabilities.

The Dynamic Grid Support feature provides static and dynamic frequency regulation by controlling the input power and the batteries' charge or discharge based on frequency activation thresholds. Its reaction is rapid, as the total response time between the frequency variation detection and when the UPS reaches the specified power set point is approximately 500 milliseconds. The feature also supports demand management as an alternative approach to matching electricity supply and demand by reducing demand in times of scarcity or high energy costs.

To support energy efficiency needs like Conapto's, Liebert® EXL S1's new generation technology is designed to reduce energy consumption, consequently minimizing the power demand and optimising the design of cooling systems. The combination of these factors can reduce carbon dioxide (CO2) emissions from energy use when coupled with a double-conversion efficiency of up to 97% (further improved by up to 99% when operating in the Dynamic Online mode).

The solution is based on high power density lithium-ion batteries which allow Conapto to maximise the number of racks and servers housed in its data centre.

Lithium-ion batteries are the ideal option in terms of footprint and performance due to the high number of cycles, quick charge and discharge capabilities, and the possibility to be monitored and controlled through a battery monitoring system by exchanging information with the UPS.

Based on this technology, Vertiv deployed a solution to meet Conapto's specific needs by integrating a grid controller provided by Fever, which is able to detect grid frequency variations and inform the UPS by sending commands to adjust input power. Furthermore, Fever played an instrumental part in the project, from handling the bidding process to the delivery and deployment of the solutions, monetising Conapto's asset participation in the energy market.

Additionally, in the event of an outage, or when the operating conditions are out of specification, the primary UPS function is to protect the critical load and ensure its runtime will always be taken as the highest priority, leading the control system to exit/pause the Dynamic Grid Support mode.

This innovative feature ensures organisations can protect their critical applications with stable power and helps grid operators stabilise variations in system frequency.

Outcome

The solution contributed to ensuring Conapto is a step closer to meeting the industry's environmental and efficiency compliance standards, as the UPS system shows enhanced performances for maximum energy saving and CO2 emission reduction, maximum system flexibility for all installations, and reduced Total Cost of Ownership (TCO).

Dynamic Grid Support offers data centres an opportunity to monetise backup capacity which would otherwise be left idle, while supporting utilities and TCOs in balancing the grid through FFR. For many data centres, this is nowadays an additional million-dollar revenue stream. Consequently, FFR is a suitable product for UPSs due to its foresight and ability to plan ahead.

As digitalisation continues to grow across the world, Vertiv is set to support customers with solutions that not only enable business-critical applications, but also advance environmental and economic sustainability goals.

"In line with Conapto's commitment to sustainability and societal contribution, we believe that data centres should play an active role in supporting the community with solutions like heat reuse and grid support. By introducing Dynamic Grid Support, we can help reduce CO2 emissions by enabling more renewables to be added to the energy mix. We can also generate new capacity for our customers and deploy it much faster. Our partnership with Vertiv and Fever is testament to this ethos as we work toward creating a more resilient and sustainable digital infrastructure for Sweden and beyond."

- Stefan Nilsson, Conapto Chief Commercial Officer

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