

Nominee: Data Hub Biel and Schneider Electric

Nomination title: Schneider Electric Delivers High-Density, Ultra-Efficient Data Centre to meet Data Hub's Standards of Swiss Excellence

Data Hub Biel is a new Tier 3, High-Density Data Centre located in Biel Switzerland, which provides ultra-reliable, resilient and high-performance data services to local Swiss customers including Cloud services providers, banking and finance organisations and precision manufacturers. The high-density 4.5MW facility contains 3000m² of data centre white space, with an average power density of 5kW/rack, which is unique in the region.

Like many other global locations, Swiss companies have comprehensive standards for data security, data sovereignty and a reputation for excellence. As such Data Hub Biel had to embrace similar high standards in terms of the equipment and services it provides.

What was the driving force behind the project – what business or technology challenge needed to be addressed?

The Bozingenfeld area in the east of Biel, Switzerland is an important economic development site in the countries capital city region.

All of the industries in the area, ranging from sectors in which the Swiss have traditionally excelled such as banking and precision watch making, to modern service businesses, require reliable, high-performance connectivity to global data networks. Consequently, there is a large requirement for state-of-the-art collocation data centres.

In addition to high-speed connectivity and ultra reliability, the new Data Hub data centre had a number of key requirements, which included: high-density operations, given the cost of real estate in the region; efficiency of operation to keep costs to a minimum; and adherence to the highest possible environmental standards.

Data Hub Biel needed to be designed so that it had the highest possible power rating per rack, to maximise the available footprint of computer-room space, and included features with space-saving as a premium. In addition it needed to incorporate cooling solutions that would ensure the data centre guaranteed maximum energy efficiency.

The facility was designed to provide an average power density of 5kW/rack with higher densities up to 15 or 20kW possible as an option. This contrasts with a typical power density of 2kW/rack, which is provided by competing data centres in the region.

Space saving, or a smaller physical footprint of the infrastructure was another consideration when choosing the UPS (Uninterruptible Power Supply) architecture. The facility is the first data centre in Switzerland to make use of Lithium-Ion battery technology through deployment of Schneider Electric's Galaxy VX UPS systems. Not only do they take up less floor space, but performance is far more efficient due to the UPS's 99.9% EConversion mode. The facility employs full 2N redundancy to ensure that risk of any downtime due to power issues is virtually eliminated.

The cooling system was designed to be efficient and resilient with 2N redundancy on air-conditioning units and extra large units to access free-cooling potential. It uses high-density racks, Hot-Aisle containment and In-Row Cooling which have the advantage of permitting high space utilisation in contrast with other competing data centres using the Cold Aisle approach.

Finally, both its design and infrastructure are based on standardised modules, an approach which allows data centre equipment to be integrated easily and efficiently whilst guaranteeing reliability and uptime for customers.

How did the solution address the challenges and were there any particularly innovative aspects that made it stand out?

The high-density operation of Data Hub Biel is unrivalled in Switzerland. The average level of 5kW/rack has been achieved through a focus on standardised modular design that utilises high-quality data centre infrastructure solutions from Schneider Electric.

The data centre comprises 30 racks with eight In-Row coolers and Hot Aisle Containment, which meets the requirements of high-end customers and allows for efficient and manageable close-coupled cooling. As a result, high inlet temperatures, up to 20C, are possible, which increase the free-cooling potential and enable high efficiency.

From an infrastructure perspective, Schneider Electric's Okken switchgear is typically specified by high-priority customers. Their Galaxy VX UPS systems contain ultra-efficient Lithium-Ion batteries, which provide the advantage of space saving along with greater ease of management. The software control elements of Galaxy VX provide operators with a very accurate view of the state



of the battery and its charge, making it easy to future-proof against malfunction and ensure that failing batteries can be replaced quickly to avoid any downtime.

The combination of tightly controlled In-Row cooling, Hot Aisle containment and continuous monitoring provide an exceptionally low PUE rating of between 1.15 and 1.17.

This is extremely beneficial from an economic point of view, ensuring efficient use of electricity, but is also essential for market acceptance in Switzerland where concern for the environment and maintenance of high standards of efficiency are important popular issues.

Security is also ensured by full video surveillance of the rack-mounted systems round the clock. For security reasons, only one person—verified by biometric identification—can enter the rack area at any one time.

What tangible benefits has the organisation seen as a result of the project's implementation?

Data Hub Biel uses Schneider Electric's StruxureWare for Data Centers™, Data Center Operations (DCO) for Colocation; A comprehensive Data Centre Infrastructure Management (DCIM) software system that allows detailed monitoring and management of all aspects of the facilities power and cooling infrastructure

Not only does this enable Data Hub to provide clients with detailed information and accurate reporting, but it also ensures efficient operation of power and cooling solutions.

The ability to react immediately to changes in ambient temperature, or to an increased server load is essential for ensuring optimal operations while keeping the cooling effort to a minimum. Without a comprehensive monitoring and management tool such as StruxureWare, the extremely low PUE ratings of between 1.15 and 1.17 would not be possible.

StruxureWare DCO ensures that opportunities for free cooling are utilised and allows the high inlet temperature of 20C to be maintained. This reduces the load on both chillers and air conditioning units, improving cooling efficiency, reducing electricity costs and minimises harmful effects on the surrounding environment.

Data Hub has the highest power density per rack (5kW/rack average; 20kW/rack peak) currently available in the country. It is the first to use Lithium Ion batteries in its UPS systems. It is also the first to use In Row coolers and Hot Aisle containment, the combination of which allows tight control of the cooling systems and helps greatly to contribute to the exceptionally efficient PUE ratings.

It is committed to ensuring efficient and secure operations with the potential for continuous improvement, such as is expected by the internationally renowned companies that will avail of its services.

With its pioneering deployments of space-saving and energy-efficient technologies, Data Hub Biel is demonstrating how high-quality data-centre services can be provided locally at relatively low cost. As such it can provide local Swiss companies with cost-effective access to data centre



services while ensuring compliance with stringent local regulations concerning data privacy, integrity and sovereignty.

Why nominee should win

- 1. The high-density operation of Data Hub Biel is unrivalled in Switzerland, the average power density of 5kW/rack is unique in the region.**
- 2. The facility boasts excellent energy efficiency metrics with ultra-low PUE ratings of 1.15 -1.17**
- 3. It is considered a pioneer and is the first facility to use Lithium-Ion UPS systems, In Row cooling and Hot Aisle containment to deliver exceptional PUE ratings.**
- 4. This is extremely beneficial from an economic point of view but is essential for market acceptance where concern for the environment is an important issue.**
- 5. With pioneering energy-efficient technologies, Data Hub Biel is demonstrating how high-quality data-centre services can be provided locally at low cost.**