

Redundant cooling and energy efficiency deep underground

The data centre relies on innovative technologies and a unique underground location to ensure maximum data security. Renewable energies are also utilised. SBC technology ensures maximum efficiency and safety, including double protection of the cooling system.



Background

Data security is more important than ever these days – and nothing will change here. Companies are increasingly looking for innovative solutions to protect their sensitive data. A particularly unique solution was achieved with the construction of the Stollen data centre in Lucerne, Switzerland. Owing to its underground location, the data centre offers the best environment for maximum security – including biometric access controls and permanent video surveillance. On 1,700 square metres of usable IT space, there are six tunnels with 150 to 200 square metres each and ten private rooms measuring 50 to 100 square metres each. The tunnels with around 530 racks are redundantly supplied with power, cooling from lake water and fibre optics.

Challenges

The Stollen Lucerne data centre developed by DATASIGN GmbH was created from a former civil defence facility and is operated by ewl, the energy services company of the City of Lucerne. The special location required extensive changes to the construction plans and the building automation system. The mountainous landscape even made it necessary to blow up an air raid shelter to create enough space for the data centre. Temperature controls and stable ventilation are essential for the security of any data centre. Customised solutions had to be found for the unusual environment, from transporting the products into the tunnels to installing them underground, in order to be able to use the most efficient and safest technology in the end.



Given the complex challenges of the data centre, a reliable partner was needed. Thanks to our long-standing relationship with SBC, this decision was easy for us. The Saia PCD3 control system from SBC, including simple BACnet installation and double redundancy, ensures maximum safety.

David Tschümperlin, Head of the Building Automation Department at Schaltraum AG



Solution

A technical integrator who could meet the complex requirements was needed. The proximity to the customer and a relationship of trust between DATASIGN GmbH and Schaltraum AG that had developed over many years were decisive factors for choosing Saia Burgess Controls (SBC).

Implementing the SBC solution required careful planning and flexibility. SBC's HVAC (heating, ventilation and air conditioning) technologies in particular play a crucial role in the Stollen Lucerne data centre. SBC's technology ensures maximum security for the entire data centre: temperature fluctuations can quickly become dangerous and efficient cooling is essential. The data centre uses ewl's lake water for this in four different pumps. These are used alternately to prevent wear and tear and to always have a functioning pump in reserve in case

of problems. In an emergency, sewer water can also be channelled into the system, providing double protection.

The previous positive experience with the trouble-free BACnet installation by SBC also contributed to the decision in favour of the cooperation. A decision was made in favour of the PCD3 controller, which has a second central control unit (CPU). The resulting redundancy ensures double safety, as downtimes can be avoided. Switching between the controllers takes just milliseconds. The correct and precise programming of the controllers requires the highest level of technical expertise, which Schaltraum AG provides. Another major advantage of the PCD3 control system is that a large number of modules can be connected, which is ideal for the requirements of this project.

The Stollen Lucerne data centre has state-of-the-art security measures such as iris scanners and laser barriers as well as an artificial reduction of the oxygen content to prevent fires. It utilises the natural environment for maximum energy efficiency by connecting to ewl's lake energy network and using water from Lake Lucerne for cooling. The waste heat is used to heat the surrounding residential neighbourhoods, thereby achieving CO₂-neutral operation.



Alternately switched pumps for sustainable cooling with lake water



Fail-safe design thanks to redundant PLC



Headquarters underground

Conclusion

The Stollen Lucerne data centre is an excellent example of the successful implementation of SBC technology in a demanding, unconventional environment. SBC's technical expertise, experience and reliability played a decisive role when carrying out this innovative project.



The satisfied customer

Facts

Market segment

Data centre / cybersecurity

Contollers

Saia PCD3

Data points

2,000

Project duration

2 years, ongoing extensions

Special feature

Redundant cooling with lake water

We'd be happy to help!



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