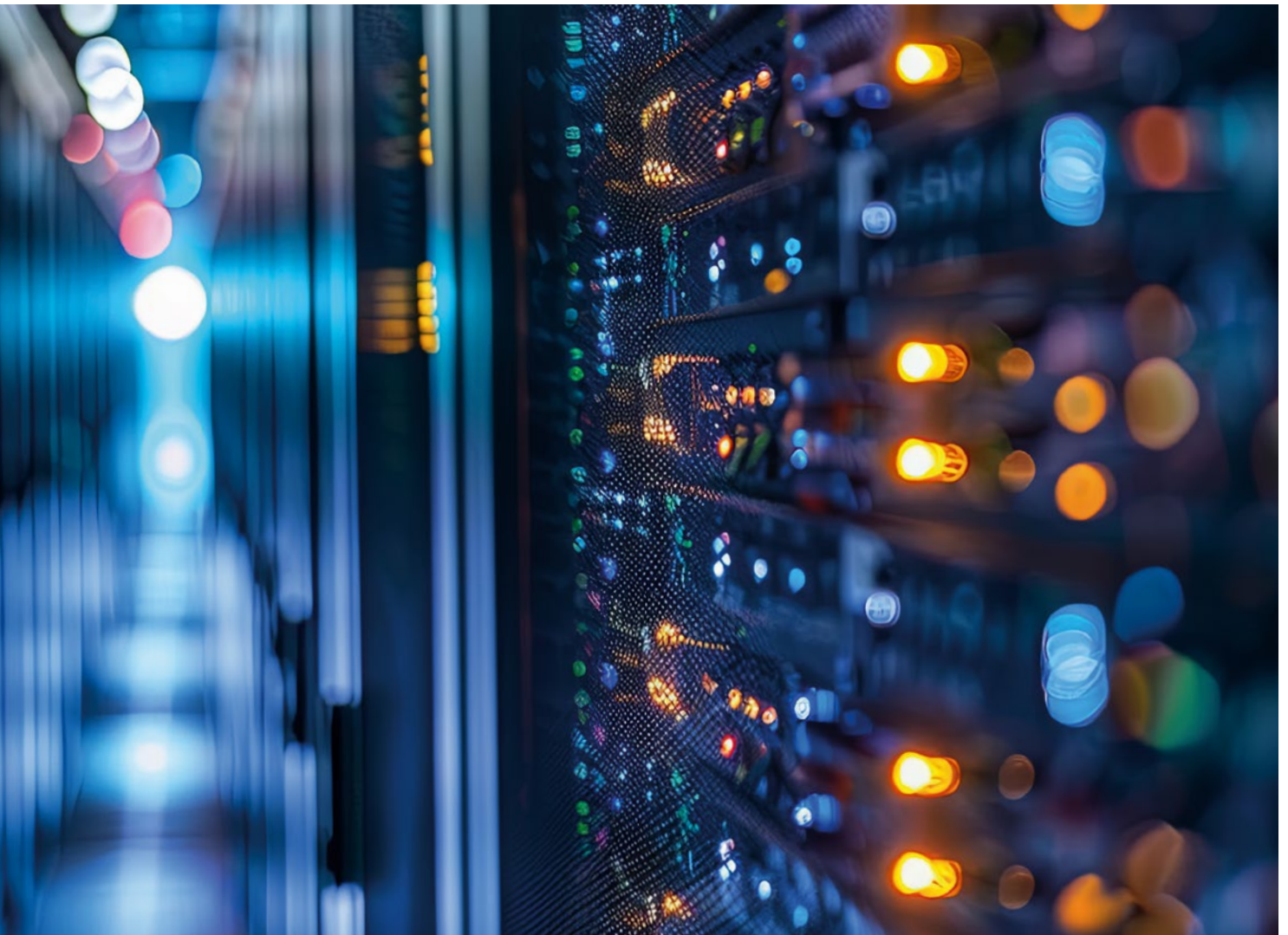


Redundant control systems

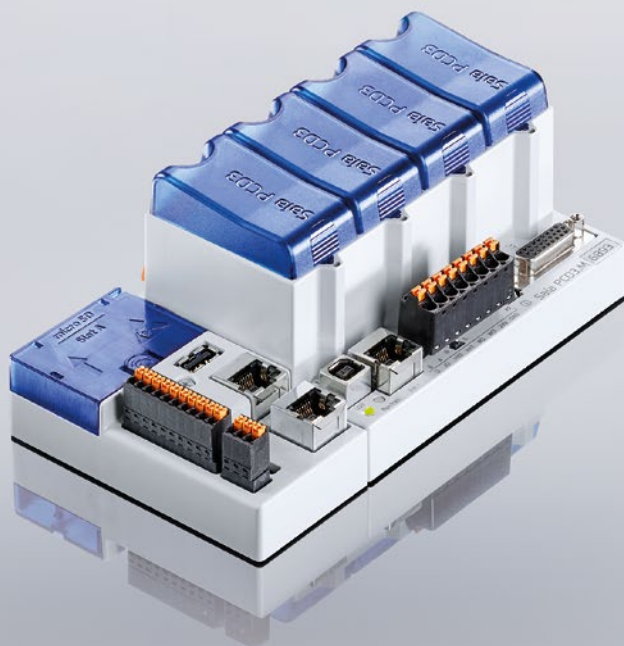
Ensuring reliability in critical infrastructures



Make your infrastructures fail-safe with SBC's redundant control systems

Despite increasing digitalisation, our virtual world is still dependent on a physical infrastructure – and therefore susceptible to device defects, power outages and much more. 40 percent of all companies surveyed by Bitkom Research in Germany in 2024 reported that their cloud solutions had been affected by outages in the past 12 months. So how can the uninterrupted operation of critical infrastructures be guaranteed in times of increasing digital networking?

Find out what you need to consider as a building operator and which pioneering technologies from SBC will support you in ensuring interruption-free operation.



Our virtual world is vulnerable ...

This was also the conclusion of a study published by Honeywell in 2021 entitled "Rethinking Data Centers as Resilient, Sustainable Facilities."

Honeywell surveyed 400 data centre facility managers in the US, Germany, China and Saudi Arabia. Almost all respondents had experienced a disruptive incident in the past 12 months. This shows that outages are the rule rather than the exception. The Uptime Institute's global Annual Outage Analysis paints a similar picture.



Uptime Intelligence: Annual Outage Analysis 2024

60 %

of the data centres surveyed have been affected by outages in the past three years

14 %

of these outages were categorised as serious

45 %

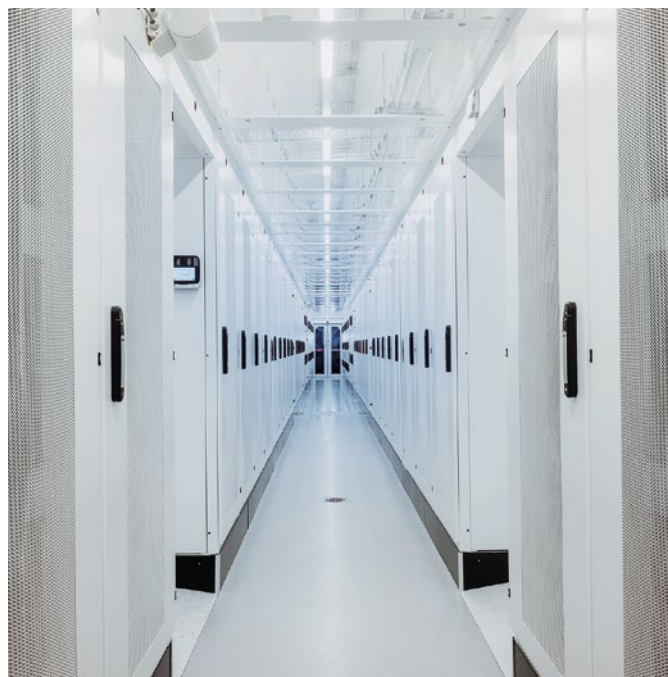
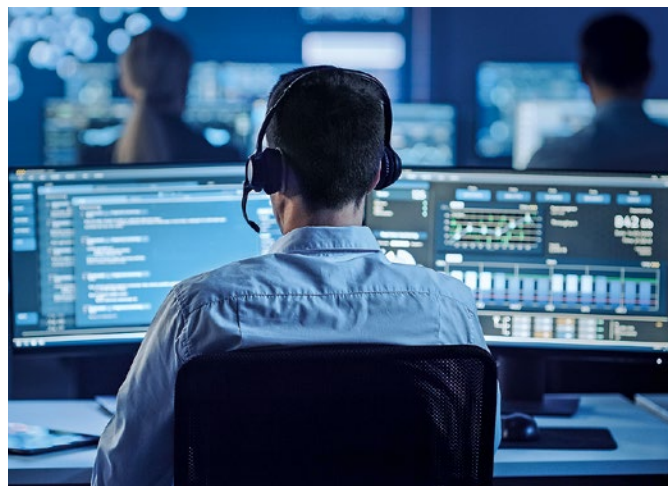
stated that their most recent outage cost them more than 1 million US dollars

Outages are not an option

Our need for connectivity is rising. Data centres in particular play an increasingly important role in supporting the economy, infrastructures and companies. Reliability and the rapid provision of applications and services are therefore becoming more and more important. Outages and interruptions are not an option. Operators of data centres and other critical infrastructures are therefore coming under greater pressure to ensure reliable and uninterrupted operation.



Reducing downtimes is a top priority for most facility managers and building operators. Many companies are increasingly looking for innovative solutions to ensure the reliability of their systems.



The challenge

As a building operator, you need to make your buildings and infrastructures fail-safe. The Stollen Lucerne data centre and the Bjorøy Tunnel in Norway are good examples of how reliability can be guaranteed through the successful implementation of SBC technology, even in demanding environments.



Stollen Lucerne data centre

The data centre of ewl, the energy services company of the city of Lucerne, was created from a former civil defence facility. The special location required extensive changes to the infrastructure and the building automation system. Temperature controls and stable ventilation are essential for security there. A technical solution to meet these complex requirements was needed. Two PCD3 controllers were used in a redundant arrangement so as to ensure double safety. Downtimes can be successfully avoided since switching between the controllers takes just milliseconds.



Bjorøy Tunnel in Norway

The redundant Saia PCD3 controllers not only ensure trouble-free operation of automation systems in data centres. Critical infrastructures also benefit from their use. One interesting example is the Bjorøy Tunnel, a subsea road tunnel of more than two kilometres in length connecting the Norwegian island of Bjorøy with Bergen on the mainland. In the course of renovation work, redundant QronoX IEC controllers were combined with a smart traffic control and monitoring system from the Norwegian company Trafsys to make tunnel operation safer and more reliable.

Redundant control systems for uninterrupted operation

SBC's leading redundant control systems for building automation guarantee openness, quality, durability and high availability, enabling sustainable and future-proof automation of infrastructures. The QronoX IEC controllers are also fully cyber-secure.

Cyber-secure PLCs for critical infrastructures

The QronoX IEC controller enables simple setup and ideal synchronisation in standard Ethernet networks with redundant automation solutions, with switching of the PLC from standby to active mode usually taking less than 100 ms without the outputs being changed.

Network security

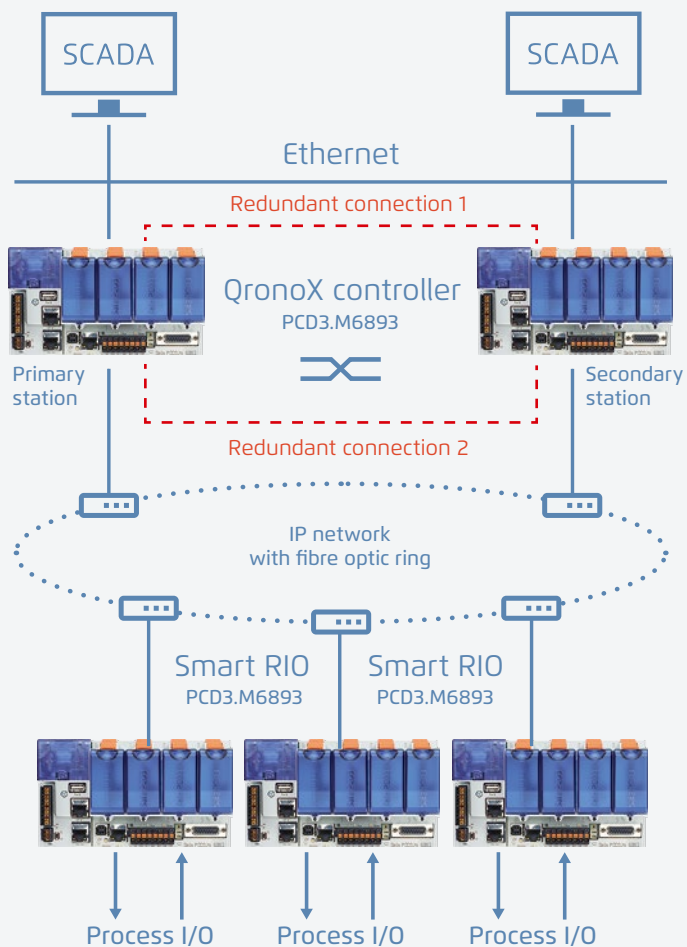
IEEE 802.1X

Process monitoring

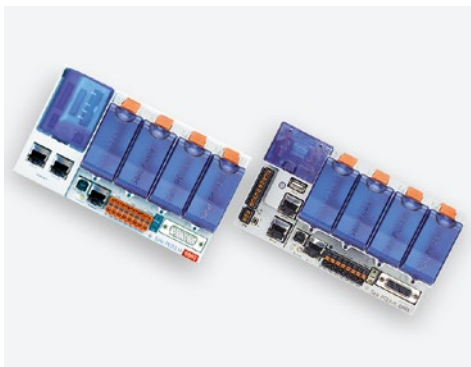
OPC UA MQTT

Integration of field devices

Modbus BACnet M-Bus
DALI KNX CAN S-Bus



Our solutions for greater reliability



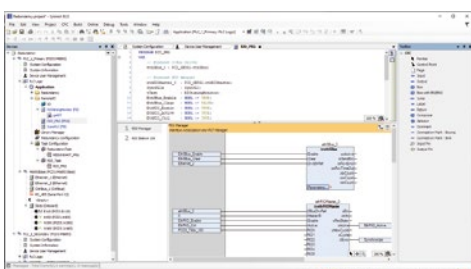
Redundant Saia PCD3 controller

- Hot-standby operation with interruption-free switchover
- Automatic task and data synchronisation
- Redundant and non-redundant (local I/O) application execution
- Supports single and path redundancy (2 networks)
- Fully cyber-secure in accordance with ANSI 62443-3-3 SL3
- Programming language in accordance with IEC61131-3



Remote I/Os

- Input / outputs are connected to the PCD3 standby controllers via PCD3.T668 Ethernet smart RIOs (up to 16 I/O modules per RIO) and controlled through them. The remote I/Os are for both controllers together and therefore do not require redundant I/Os and sensors / actuators
- The PCD3.M6893 can also be used as a smart RIO with additional serial interfaces, local programme execution and up to 64 I/O modules.



Effective and efficient engineering in accordance with IEC 61131-3

- All programming languages (LD, CFC, FBD, SFC, ST, IL) comply with the standard, including object-oriented methods
- Support for multiple applications and multitasking
- Web editor for graphical user interfaces (HTML5, HTTPS)

"The Saia PCD QronoX controller,
including simple OPC-UA
installation and redundancy,
ensures maximum safety."

Oliver Greune

Solutions Architect, Critical Applications

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