N° 35

SAUTER FACTS

The magazine for SAUTER customers

Innovation

SAUTER highlights

SAUTER
Creating Sustainable Environments.

Dear Customers and Business Partners,
Dear Readers,

It is my pleasure to welcome you to the latest issue of the SAUTER customer magazine. Once again it offers interesting news in relation to the energy consumption of buildings and the avenues available for optimisation.

The world is becoming increasingly digital. In the building industry, Building Information Modelling (BIM) provides those involved in planning, construction and operation with new opportunities to work together and increase quality and planning security. Consequently, SAUTER has made many of its products available to download in the common Revit and IFC4 format since March 2017 (p. 10).

We present you with the latest on our SAUTER Vision Center visualisation software on page 4. The new SAUTER ecos311 BACnet single-room controller simplifies the building automation and refurbishment of HVAC installations (p. 6). You can also read how the new SAUTER ASV 215 VAV compact controller safely manages the environment in the strictly regulated field of life sciences on page 8.

Alongside climate and light, integrated room automation also manages the sunshading. SAUTER ecos504/505 room automation stations now feature digital blind control using SMI, thereby staking their claim as true modular all-rounders (p. 7).

In this issue of SAUTER Facts, we have again showcased many exciting projects from the world of building and room automation. They demonstrate just how versatile the technology can be, for exemple ensuring the ideal climate for art treasures and visitors alike at a museum in Madrid (p. 14).

Even in surroundings where the requirements are high, SAUTER building and room automation solutions secure trouble-free operation. We have more on this topic in the articles covering the SwissFEL research X-ray laser in Switzerland (p. 18) and the Novartis Institute of BioMedical Research in Shanghai (p. 16).

In a large event hall such as the Grand Hall Zollverein (p. 20), visitor safety plays a very important part. In the event of fire, state-of-the-art smoke extraction technology ensures sufficient time to evacuate the building. An intelligent automation solution also connects multiple systems – from the heating and lighting to the sprinkler system and lifts – at Société Générale, in the bank's new Serbian head office (p. 22).

In addition to safety, energy efficiency is also key. In the articles on page 12, 24 and 28, you can read how, through sustainable resource use, the new LIDL logistics centre in Slovakia was awarded the BREEAM certification of Outstanding; the solution with which the Schmuttertal-Gymnasium school in Germany won the 2016 Bavarian Energy Prize; and how, with the SAUTER EMS energy management solution, a luxury French brand achieved the French Green Building HQE certificate for its refurbished boutiques. The article on the "ice Q" design restaurant in Austria makes for great reading in many respects; the restaurant is built on permafrost and has already featured as the backdrop in the James Bond film "Spectre".

Wishing you happy reading!

Yours, Werner Karlen, CEO

SAUTER Vision Center with many new features added

SAUTER Vision Center is a powerful building management and visualisation solution for easy and highly efficient operation of installations. The latest version also supports large projects, is BACnet certified and has integrated modules for energy management and preventive maintenance.

Sustainable optimisation requires accurate monitoring, and trouble-free operation is essential for increasing value. So whether a new build or refurbishment, office or hospital, single building or major project, SAUTER Vision Center can continuously improve a building's performance. SAUTER Vision Center is independent of operating systems and supplies users with key figures and simple tools – either on the go or at the workplace.

Open and mobile

The solution has been awarded the B-AWS BACnet certificate, highlighting its outstanding openness. The software is now compatible with Windows 10. It features the global HTML5 standard for display in all modern browsers and no additional apps or plug-ins are needed.

This is particularly useful for mobile devices such as tablets and smartphones. Touch gestures enable even greater intuitive interaction with the system visualisation. Operation is identical, whether on a desktop computer, tablet or mobile. In addition, of course, it is possible to select and adjust installation values directly.

Simple management of scenarios

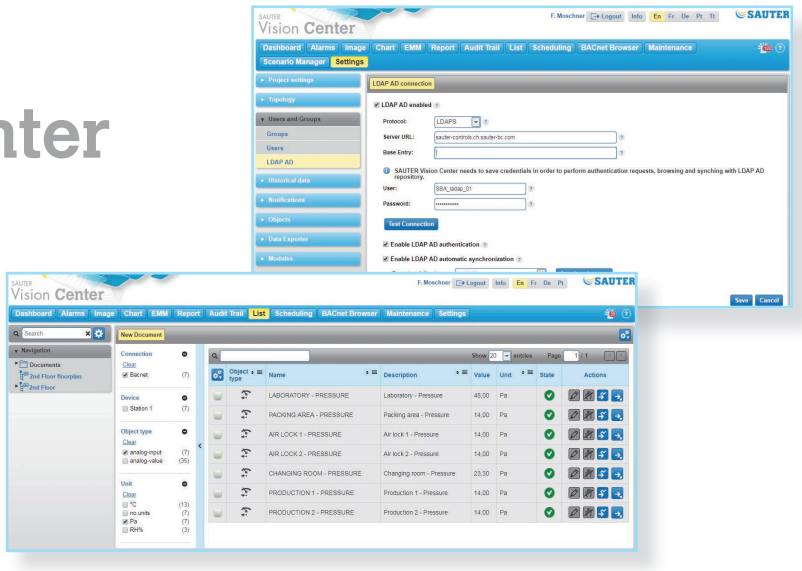
The scenario manager, a new module for SAUTER Vision Center, allows complex scenarios to be planned and launched with ease. For example, events in certain rooms can be linked via the calendar to specific settings, ensuring that the temperature, lighting and sunshading are accurate.

Each scenario may consist of numerous processes and switching commands, performed in sequence before, during and after the event. Equipment can be switched on and off automatically with a calendar entry or manually with a click.

Downtimes avoided through maintenance module

With the optional maintenance module, SAUTER Vision Center provides the information necessary for ease of service planning, service deployment and predictive maintenance. Technicians can record equipment and its properties, define servicing intervals and criteria and plan and document maintenance work.

SAUTER
Vision Center



Facilitating preventive service deployments means that the solution helps detect sources of errors at an early stage. This reduces the risk of malfunction. The data recorded also generates valuable information, enabling maintenance schedules to tie in with actual operation. This keeps service deployments and the cost involved to a minimum.

Major projects now supported

SAUTER Vision Center is suitable not only for large individual buildings but also property parks and premises spread over wide areas. Adding buildings is easy. Further energy management and maintenance modules can be installed to improve energy efficiency and optimise system operation. The new engineering application, SAUTER Vision Center Studio, allows visualisation of a system to be adjusted and expanded online immediately.

Interoperability between SAUTER Vision Center and existing building automation systems – installations with SAUTER novaNet for example – permits the native integration of equipment already used. This means that older installations also benefit from modern building management features. The OPC UA client in SAUTER Vision Center is linked to various OPC servers through the integrated OPC UA client, ensuring future-proof connectivity with numerous protocols.

Dashboards can be customised for quick navigation through information and management functions. The user interface on SAUTER Vision Center is also flexible to match the duties and preferences of the operator.

Security, traceability and compliance

SAUTER Vision Center fulfils security requirements for user authentication and authorisation. LDAP integration means that system registration can be based on existing Enterprise user administrations. Enhanced security is guaranteed through audit trails, mandatory comment functions and validation reports. SAUTER Vision Center therefore ticks all the boxes, even for use with FDA- and GMP-compliant installations.

Impressively simple BACnet single-room controller

HVAC control in individual rooms is incredibly easy with the slim SAUTER ecos311 room controller. BACnet communication provides demand-controlled optimisation of energy use whilst maintaining maximum comfort.

When small and medium-sized installations require cost-effective solutions or subtle refurbishments, compact, easy-to-install room controllers offer many benefits. In the new SAUTER ecos311, planners now have a BACnet MS/TP controller that is freely programmable.

Economical HVAC compact controller

The SAUTER ecos311 single-room controller is perfect for automating heating, ventilation and cooling systems, ensuring comfort in offices as well as hotel and hospital rooms. It has all the interfaces needed, including one for adding two SAUTER ecoLink I/O modules allowing also light and blind control. And with a master-slave function, multiple room controllers can be combined to create individual room segments and zones.

Efficient all-round package

Featuring a presence function, window contact monitoring, demand-based fan speed switching and time-dependent set points, SAUTER ecos311 ensures energy consumption remains at a minimum. Up to six control circuits can be mapped as BACnet loop objects for heating and cooling sequences. The integrated real-time clock means that local BACnet time programmes and calendars continue to function even in the event of a power failure. SAUTER ecos311 supports transmission type COV (Change of Value) enabling optimum integration of visualisation software – SAUTER Vision Center and moduWeb Vision, for example – which in turn reduces the data communication load on BACnet MS/TP.

Freely programmable applications

Flexible programmability of SAUTER ecos311 means that numerous applications can be implemented – fan coil units, chilled and heated ceilings, radiators, easy room ventilation and volume flow and CO_2 control. Familiar SAUTER CASE Suite software loads all the function modules required for programming. Commissioning is simple – thanks to tried and tested applications and libraries.

Easy upgrading

SAUTER ecos311 is ideal for migrating room control from SAUTER ecos20* – or other proprietary standards – to BACnet MS/TP. This is because the component has the same compact size and terminals as its predecessor ecos201 in the SAUTER ecos 2 family.

State-of-the-art room operation

SAUTER ecos311 also provides ease of use and openness when combined with high-performance SAUTER EY-modulo 5 room units. Cutting-edge equipment, such as SAUTER ecoUnit 3 or SAUTER ecoUnit 1 with EnOcean wireless technology, means that users can create their ideal room settings with minimal effort.

Precise sunshading with SAUTER ecos504/505 and SMI

Fully integrated room automation not only regulates the climate and lighting but also the sunshading. Tried and tested SAUTER ecos504/505 room automation stations now feature digital blind control using SMI. This makes them powerful modular all-rounders.

In sophisticated non-residential buildings with modern construction materials, sunshading plays a unique role in continually optimising energy efficiency. Large window surfaces mean that very precise blind control is necessary. This enables blinds to track the sun's position, creating an optimal shadow edge and slat angle. The ideal amount of natural light can then enter the building. A comfortable environment for room users is maintained and the resources used for heating, ventilation and cooling are minimised. Exact positioning of the window blinds means that the whole building exterior has a tidy, uniform appearance. This is especially important for prestigious commercial buildings.

Digital two-way communication

The Standard Motor Interface (SMI) has established itself as the manufacturer-independent interface and is used for electric actuators in window blind and sunshading equipment. The technology has a key advantage. With SMIs, room controllers such as SAUTER ecos504/505 not only control intelligent actuators, they can also receive their feedback. The controllers monitor and process the exact blind positions, for example, as well as any information about motor faults. SMI interfaces of the SAUTER ecos504/505 room automation stations are suitable for both 230V actuators (SMI) and 24V DC motors (LoVo SMI) – often used indoors for instance. With its two independent SMI interfaces, the SAUTER ecos505 model therefore operates internal blinds with one SMI module (LoVo SMI) while controlling external blinds with the other (SMI).

Intelligent and energy saving

The automatic sun and thermal controls of the SAUTER ecos504/505 SMI adjust blind slats according to the sun's position and the weather. This prevents room occupants from being dazzled by the sun but also keeps energy consumption by the air conditioning to a minimum. Taking calculated annual shading as the basis, the controller can adapt the positions of those slats that are in the sun. Blinds in the shadow of neighbouring buildings are, in turn, opened to their full extent.

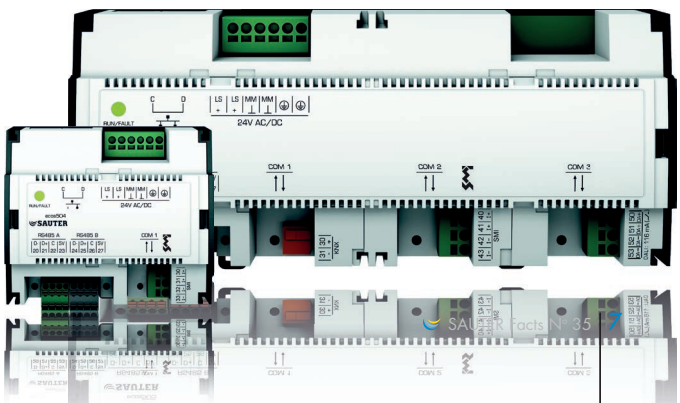
Easy installation and commissioning

Installing SAUTER ecos504/505 with SMIs is remarkably simple. This is performed with the powerful SAUTER CASE Suite programming environment and function libraries for climate, lighting and sunshading. This allows the parameters to be set and the room automation stations to be commissioned very quickly. When commissioning the SMI actuators, the SAUTER ecos504/505 room automation stations are connected via a COM IP tunnel to the familiar SMI easyMonitor tool. Additional devices, such as SMI gateways, are not required.

A versatile family of controllers

The trusty SAUTER ecos504/505 is a modular, freely programmable BACnet Building Controller (B-BC). It is able to automate the room climate, lighting, sunshading and other facilities in up to eight rooms or flexible room segments. KNX and DALI interfaces already allow SAUTER ecos504/505 room automation stations to be dovetailed with operating devices, actuators, electronic ballasts and sensors for integrated control and regulation of lighting.

With the SMI interface for SMI actuators now supported, SAUTER is rounding off this established room automation range and offering a flexible overall solution for fully integrated room automation.



A new compact controller for critical environments

In the strictly monitored field of life sciences, ever higher technical demands are being placed on regulating components. The new SAUTER ASV 215 VAV compact controller has been specifically developed for use in laboratories, clean rooms and operating theatres. It sets new standards in functional integration, as well as increased actuator speed.

The laws governing life sciences applications have become so stringent that conventional regulating components are reaching their limits. Ever more control loops and equipment are necessary to ensure all functions meet the stipulated reliability. This results in greater space requirements and higher labour and running costs. Furthermore, these systems are often very complex and thus more difficult to optimise and service.

A true all-rounder

The new SAUTER ASV 215 VAV compact controller has all the features necessary for the pharmaceutical, chemical, healthcare and food & beverage industries. With all critical regulating functions combined in one device, optimum operation is guaranteed. It is the perfect addition to the SAUTER range and can be used either as a stand-alone controller or in a comprehensive automation solution.

Fast and ready to go

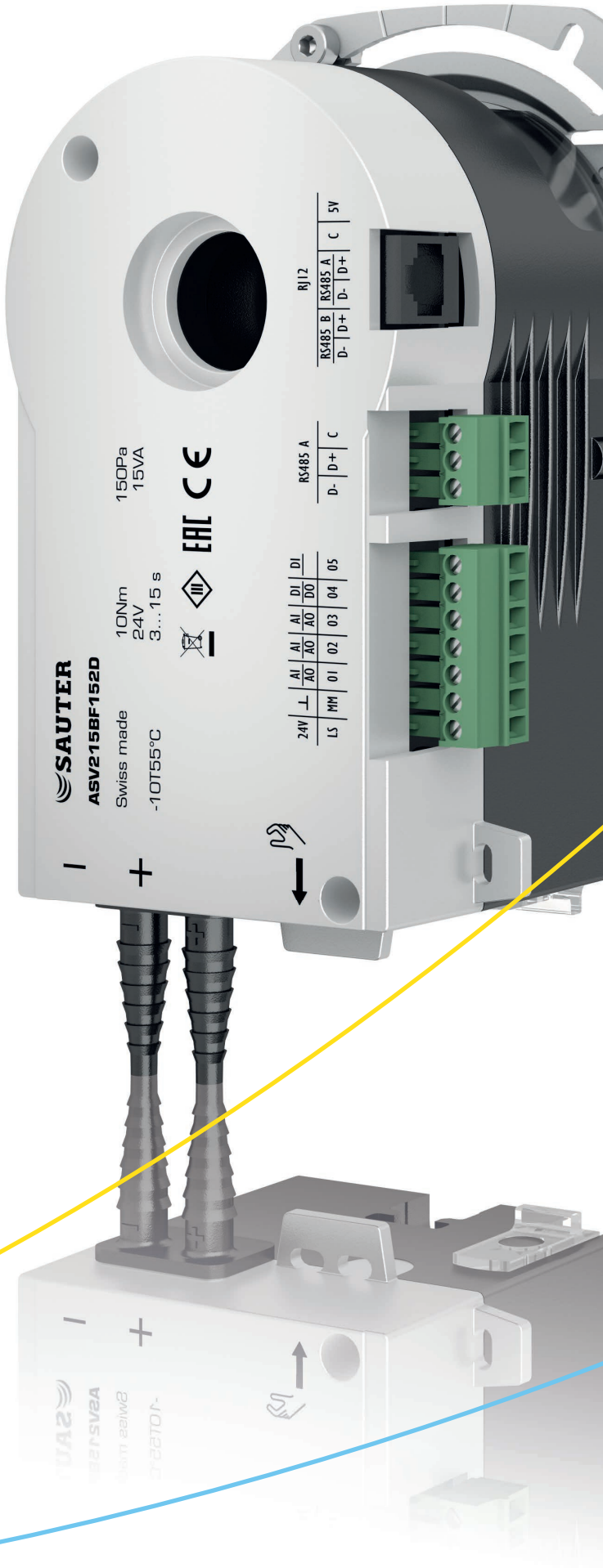
As well as controlling volume flow, the SAUTER ASV 215 creates needs-based room conditions such as room pressure and room temperature, achieving this with minimum energy consumption. The running time of the actuator motor is a remarkable three seconds, making the SAUTER ASV 215 the world's only compact VAV controller operating at this speed. It is therefore suitable for any critical environment – from fume cupboards and laboratories to clean rooms and operating theatres.

The SAUTER ASV 215 is also raising the bar in terms of installation and commissioning. With plug-in terminals, connecting the device is a snap. The SAUTER ASV 215 is especially compact and space-saving. And with the software embedded, no programming is required which means that the controller is up and running immediately.

Display and operation with the SAUTER FCCP 200
Additional equipment can be added to the SAUTER VAV compact controller – the SAUTER FCCP 200 for example. This new display and operating unit monitors conditions in fume cupboards and other regulated areas. If thresholds are exceeded this is signalled visually and audibly. Traffic light colours – green, yellow and red – also give an instant indication of the status of the monitored areas.

Validated complete solutions from SAUTER
BACnet allows the SAUTER ASV 215 controller and SAUTER FCCP 200 unit to be neatly integrated in a building automation system. They can, for example, be combined with the trusted ecos504 – another SAUTER controller for rooms and fume cupboards.

Simpler commissioning, storing, planning and servicing shortens project lead times and significantly reduces cost. With numerous functions built into the ASV 215 and the option of integration into a SAUTER complete solution, a system can be created for critical applications which is highly functional and will remain in operation for many years.



Digital building planning with BIM products

The world is becoming an increasingly digital place. In the building industry, Building Information Modelling (BIM) allows planning, construction and operation to be better coordinated. This improves quality and enhances planning security. Digital BIM data for SAUTER products can be found at bim.sauter-controls.com.

It is no secret that building projects can spring many surprises. The later they emerge during construction, the bigger the consequence on deadlines and cost. Planning of different equipment systems is often poorly connected – from a technical aspect and across the whole life cycle. BIM improves cooperation between technical planners, with a significant impact on quality, productivity, timescales and cost. In some EU countries, BIM is therefore already compulsory for publicly-funded building projects.

A model for the whole life cycle

Planners, architects and building contractors are increasingly seeing the advantages of digital BIM methods. Buildings can be developed and operated with digital data accessible to each specialist involved. All building data is recorded over its entire life cycle. The first step is creating a model for testing the new building project. The guiding principle: "measure twice, cut once".

BIM

SAUTER
Building
Information
Modeling

BIM ensures greater planning reliability and improves construction productivity sustainably. It forms a sound basis for maintenance, expansion, refurbishment, dismantling and disposal of a building. This has been proven by the international research project "eeEmbedded". Here SAUTER, along with 14 research institutes and companies from eight different countries, has tested holistic models for simulating and planning energy-efficient buildings.

BIM with SAUTER – clear and simple

The SAUTER BIM library has been available to planners since March. It contains all SAUTER product data, allowing components to be placed directly into a model. This simplifies the production of plans and also increases their accuracy.

SAUTER BIM models can be accessed by the product navigation on the SAUTER website. With the BIM library at bim.sauter-controls.com, the process is even easier. Product data can be downloaded from the library. The properties and specifications of products can be extensively searched and compared with this powerful modelling tool.

Open BIM data format

SAUTER generates BIM models as Revit files – compatible with Autodesk planning products – or in the manufacturer-neutral IFC4 standard. Although Revit leads the market, providing data in IFC4 format is important to SAUTER. It is a universal standard and offers all users maximum flexibility.

Sustainable logistics for LIDL in Slovakia

In February 2016, LIDL celebrated the opening of its third national logistics centre for Slovakia in the town of Sered'. The building, with its grey shell and sustainable core, received BREEAM certification with the highest possible appraisal rating. This makes it the first logistics centre in the country – and the fourteenth worldwide – to achieve this award.

Pleasantly cool air greets staff and visitors as they enter the new LIDL logistics centre in Sered's industrial zone. Covering around 128,000m² and with 200 staff, the facility stores fruit, fish, frozen food and many more goods for daily dispatch to the supermarket discounter's outlets across Slovakia.

LIDL's main aim at the new handling terminal was not only to ensure the quality of its goods by having the best possible indoor climate. It was equally keen to minimise the carbon footprint that it leaves behind. SAUTER solutions in another LIDL logistics centre, as well as SAUTER's servicing performance, had already been a great success and so the discounter opted again to work with the building automation specialist in Sered'.

A flexible solution for maximum shelf life

When apples are stored alongside bread and household products, room temperature plays a major role. When temperatures are correct, food stays fresher for longer and cold-sensitive products are less likely to deteriorate. At the same time, employees benefit from a workplace that is pleasantly climatised.

To meet these many requirements, LIDL commissioned a system offering demand-based control of all room climate parameters. In the eight months leading up to the opening, SAUTER technicians fitted the 50 million-plus logistics centre with cutting-edge automation technology. Future-proof SAUTER EY-modulo 5 equipment provides optimum storage conditions. SAUTER modu525 and SAUTER ecos500 automation and room automation stations guarantee automatic cooling and a fresh air supply to all areas.

Eco-friendly operation

LIDL wanted a logistics centre that uses resources sparingly. Integral automation of the systems allows the facility to achieve maximum energy efficiency. The SAUTER solution includes DALI-integrated lamps for controlling lighting which results in low power consumption.

Aspiring to create one of the most modern and resource-friendly logistics centres in Europe, LIDL has decided on other measures here, besides an advanced building automation system. The cooling system is run on renewable energy and waste heat is recovered to heat the premises. Rainwater is collected and used in the toilets as grey water.

Operators gather data on consumption with the seamlessly integrated energy management system. LIDL has thus clearly shown that it is possible to achieve energy efficiency and temperature-controlled handling, even when storing a diverse range of goods. The BREEAM experts who awarded the LIDL Logistické centrum Sered' the maximum number of points – the first Slovakian logistics centre and only the fourteenth worldwide to achieve this – were indeed also impressed by its sustainable resource use.

LIDL in Slovakia

LIDL has been operating on the Slovakian market since 2004. Today, around 4,000 people work for the discount chain across the country. Three logistics centres supply the country's 127 outlets daily.

A modern era palace for Spain's royal treasures

The new Royal Collections Museum in Madrid is destined to house the most exquisite artefacts from two regal dynasties. Opulent exhibits should, however, not come at the cost of excessive energy consumption. To keep an exceedingly modest resource footprint, the building relies on state-of-the-art automation expertise from SAUTER.

While the Royal Collections Museum is a modern marvel, its origins date back as far as the 1930s. The government's long-standing plans to create a Museum of Arms and Carriages remained, however, paralysed for many decades. In the end, it would take almost exactly 70 years for construction to finally begin in 2006.

Over this time, the initiators' ideas for the royal exhibition space took further shape. The collection's scope was extended to also include exhibits such as the royal jewels, accessories and precious tapestries of the Houses of Habsburg and Bourbon. Fittingly, the museum should be situated in close proximity to the Royal Palace and Almudena Cathedral in Campo del Moro Park near old Madrid's western boundary.

Preserve historic places

The Royal Collections Museum's winning design by the renowned Spanish architects Emilio Tuñón and Luis Moreno Mansilla honours this illustrious neighbourhood. It treats the building as a new, but fitting element of the surrounding landscape, which is characterized by an elegant combination of artificial and natural accents.

The structure preserves La Almudena Square, the open forum connecting Palace and Cathedral, and does not encroach on this major tourist attraction. Following the linear traces of existing structures, the new building artfully extends the base wall and the Royal Palace's features on three levels.

Create modern spaces

Each of the three exhibition floors is conceived as a pavilion of just over 100 by 16 metres with ceiling heights of up to 8 metres. In total, the museum occupies 14 levels above and below ground, including public foyers, art storage facilities and delivery bays, offices and engineering spaces. Roughly 20,000 of its gross floor area of 50,000 square metres are dedicated to exhibition spaces.

The building's recognizable façade was crafted from great blocks of Gris Quintana granite, which were hollowed out to be used as cover for the museum's reinforced concrete structure. However, not only modern masonry, but also historic stonework posed great challenges for the project. The discovery of archaeological remains during excavation work meant that plans had to be partially redrawn after construction began. The most respectful solution was to integrate a substantial section of ancient city wall into the building.

High-tech for efficient operation

Patrimonio Nacional is the public body responsible for the historical-artistic heritage of Spain and the Spanish Monarchy. It is dedicated to the care of all so-called Royal Sites, such as palaces, gardens and even monasteries. The Royal Collections Museum will finally provide it with the long sought-after facilities to showcase the artistic and historical wealth of the many treasures under its auspices. In addition to this core mission of preserving the past, Patrimonio Nacional was also committed to building a site that would conserve as much energy as technologically possible. For this reason, the building had to satisfy the high demands of the Spanish energy class B, the highest qualification for a building of its kind.

The efficient technologies of SAUTER, the company's experience with museum buildings, its outstanding regional references, and – not least – favourable cost convinced the general contractor to award SAUTER with the complete building automation solution for the Royal Collections Museum.

Reliable room automation

Besides sustainability, reliability is an absolute must for any museum. Room conditions have to help preserve artefacts and create a comfortable environment for a highly variable number of visitors. Inefficiencies can become very expensive, very quickly.

The BACnet/IP solution based on the EY-modulo 5 building automation system ensures that all components run in concert to ensure the required room conditions. It provides facility management with the means to closely monitor and precisely control the state and operation of all attached equipment. For this purpose, the system integrates over 3,100 data points.

The SAUTER solution for the Royal Collections Museum at a glance:

- SAUTER novaPro Open building management suite
- SAUTER modu525 modular automation stations
- SAUTER ecos500 room automation stations
- SAUTER ecos3 room operating units

An evergreen campus for Novartis in Shanghai

The China Novartis Institute of BioMedical Research (CNIBR) in Shanghai is part of Novartis' global drug discovery network. The facilities of the campus support R&D activities and business operations.

In its plans for the overall design of the campus in Shanghai, Novartis put emphasis on sustainability and energy efficiency. In order to build a low-energy-consumption campus, multiple options for heat recovery, underground energy storage and other sustainable resources were exhausted. SAUTER supported CNIBR by installing its SAUTER Energy Management System (EMS) and providing a solution for fully automated blind control.

The automation system delivered by SAUTER contains over 45,000 BACnet objects in the major facilities of the campus. It also supports over 5,000 data points of integration with a total of over 60 systems such as grey water, cable TV, and utility meters. The entire automation solution is strictly BACnet/IP compliant to ensure that the facility's HVAC equipment, room automation and lab control are handled in a most efficient manner.

SAUTER highlights

A high-precision climate for the Swiss electron accelerator

The SwissFEL research X-ray laser uses concentrated energy and groundbreaking technology to make extremely short-lived processes visible, the creation of new molecules, for example. Only minute temperature variations are permitted which is why a highly accurate SAUTER automation solution will regulate the climate in the building over 700 metres long.

In October 2017, the Paul Scherrer Institute (PSI) will open its SwissFEL X-ray free-electron laser facility in the canton of Aargau. Some 30 km outside of Zurich, this is only the second facility of its kind worldwide. Here, researchers will accelerate electrons to extreme speeds and use the X-ray light generated to gain insights into the physical processes within molecules.

With temperatures in the subterranean beam channel requiring exceptionally high precision regulation, the Swiss research institute commissioned an innovative and reliable solution. Having successfully run the pilot project, SAUTER demonstrated that it had the requisite expertise and technical skills to provide the appropriate automation solution. A thorough risk analysis preceded installation. This allowed redundancies to be pinpointed that would keep downtimes of the facility to an absolute minimum.

Precision regulation in the beam channel

The large-scale research facility consumes a large amount of energy, hurtling the highly accelerated electrons through the 630-metre-long beam channel. Around 5 megawatts are needed to force the electrons with magnets onto the correct trajectory. The same amount of energy has to be discharged again using cooling systems. In keeping with the focus of the research, "Energy and Environment", the system takes waste heat from the facility and uses it to heat the buildings.

Despite the occurrence of peak loads, it is critical that the interior climate and cooling water remain stable. To function properly, the research facility temperatures must never fluctuate by more than ±0.1 K. PSI uses intelligent chillers to maintain a constant interior climate during operation and prevent the facility from overheating. The SAUTER temperature sensors installed have a measuring accuracy of up to 0.03 K, ensuring the temperature fluctuations in the beam channel are minimal.

On the trail of atoms and molecules

The Swiss-based Paul Scherrer Institute (PSI) is dedicated to researching phenomena in natural sciences and engineering. It specialises in matter and material, energy and environment and humans and health.

The largest research institute in Switzerland has built and operates several large research facilities. 2,500 scientists from around the world perform experiments at the PSI facilities every year.

Redundant systems for backup

An integrated, fail-safe automation solution from SAUTER keeps temperatures at the optimum level and ventilation consistent in the beam channel. Independent switch cabinets, for example, control redundant cooling and heating systems to provide added safety. Even if a supply or return air fan malfunctions, backup systems immediately take over to maintain sufficient ventilation. This is crucial because air flow through the beam channel must always be at least 3,000 m^3/h.

The higher-level management system comprises 114 modular automation stations (SAUTER EY-modulo 5 type) and over 600 temperature, pressure and humidity sensors. A network of 9,000 data points integrated through BACnet/IP, Modbus RTU and M-Bus means that heating, cooling and ventilation systems in the channel are precisely controlled. The overall system is operated from control terminals, mobile units and touchscreen panels in the building automation cabinets.

Conserving resources

One goal of the researchers is to use SwissFEL to achieve a better understanding of chemical reactions. Industrial processes can thus be designed more efficiently and therefore in a more cost-effective and resource-saving way. To fulfil these objectives, they are turning to modern and intelligent systems – for both the beam channel as well as the building automation facility.

Energy-efficient venue at a former coal mine

The old compressor hall at the Zeche Zollverein – a decommissioned coal mine in Essen – has gained a new lease of life. It is now a multifunctional event location. Thanks to innovative technology from SAUTER, guests at the Grand Hall ZOLLVEREIN® can celebrate while limiting their environmental impact.

Up until 1986, hundreds of workers mined coal on the site of the Zeche Zollverein. Covering about 100 hectares, it is now an architectural and industrial monument. Around 1.5 million guests visit the location annually. Besides its extraordinary architecture, the building hosts events and exhibitions and even has a park. In 2001, the entire colliery area and adjacent coking plant were named as a UNESCO World Heritage Site.

The Grand Hall ZOLLVEREIN® was the brainchild of a group of investors. In 2016, they converted one of the disused compressor halls into a multifunctional event hall. An intelligent and user-friendly SAUTER solution controls the equipment in the building. This helps to minimise energy demand and maintain a low environmental footprint.

A modular design for every taste

Great care was taken when refurbishing the compressor hall, with a focus very much on modularity. The listed Grand Hall ZOLLVEREIN® accommodates parties large and small. There is a 4,000 m² floor area for bigger events. Numerous spaces and room segments can be combined, producing a highly flexible venue.

Creating variable zones and protecting a historical structure: these were key challenges for efficient building and room automation. Hence modular solution was chosen. Adapting the heating and ventilation is therefore simple, no matter how the different hall areas are used.

For this task, the SAUTER EY-modulo 5 product family was perfect. It supports open communication with BACnet/IP. All equipment systems are integrated using four cabinets, providing the optimum overall solution.

The ideal climate for events

SAUTER moduWeb Vision, the Web-based building management system, was incorporated. It is a central solution allowing facility managers to monitor and efficiently control the heating, ventilation and cooling. It also ensures access to other installations, such as the smoke extraction system.

Staff can monitor – even remotely – all areas of the hall and see immediately where improvements are needed. If a room being used for a family celebration is too cold, the temperature can be increased using a tablet. And if the air is becoming warm and unpleasant in another room, more fresh air can be supplied in an instant. SAUTER moduWeb Vision enables operators to keep in check climate parameters throughout the building.

At a large venue such as the Grand Hall ZOLLVEREIN®, visitor safety plays a crucial role. In the event of a fire, state-of-the-art smoke extraction technology ensures that there is enough time for evacuation. Also integrated seamlessly using BACnet, the system activates the smoke extractors if there is an emergency.

Sustainability instead of coal mining

Today, converted industrial areas are enjoying ever-growing popularity. With a user-friendly and intelligent automation solution from SAUTER, operators of the Grand Hall ZOLLVEREIN® in Essen have achieved their goal: running a highly energy-efficient, multifunctional event location. Where once everything revolved around coal, the focus is now on conserving resources.

A very worthwhile investment

The new Serbian head office of the Société Générale bank is located in one of Belgrade's most elegant districts. An intelligent SAUTER automation solution connects several equipment systems in a single user-friendly and economical system – from the heating and lighting to the solar panels and lifts. Efficiency has been achieved through extensive integration.

Société Générale is a well-established company and one of the largest banks in the world. In Serbia, the company employs some 1,200 staff in more than 100 branches. For its new, bright national head office in Belgrade, the bank commissioned an overall automation solution. Alongside room climate and lighting systems, numerous facilities such as an electric car-charging station, data centre cooling and photovoltaic panels were incorporated. The entire building is also regulated on an ongoing basis to ensure energy-efficient operation.

Central and comprehensive automation solution

All system information is channelled to the building management software, SAUTER novaPro Open. Facility managers therefore know what is happening with all the installations. The system uses seven different protocols no less to communicate with the connected building systems. SAUTER's intelligent solution records all data in detail. It guarantees reliable and resource-saving operation and offers extensive features for facility operation.

Because so many protocols are used, the SAUTER ecos 5 automation stations (BACnet/IP-compatible) are excellent for ensuring that the interior climate is continuously monitored and controlled. Remote I/O modules (SAUTER ecoLink) mean that further reaches of the building also remain in communication.

Moving walls overnight

Alongside meeting rooms and offices, the stylish head office has numerous open spaces and bank counters. The different floor plans and varying ceiling heights of rooms place special demands on the air conditioning and lighting. The challenge is increased still further with many rooms having adjustable walls. Over just one weekend, the workplaces on the six 1,000 m^2 floors can be altered to meet different operational requirements.

Comfort and sustainability

Société Générale wanted a building that was comfortable for customers and staff. Energy efficiency, however, had a vital role to play too. Heat, cold, electricity and water meters were connected to the SAUTER building management system. All measurement data is collected to generate key reports for the facility management and other departments. Energy resources can therefore be tightly controlled at the bank's new Serbian head office.

Many other equipment makes are directly integrated in the system. This means that operating values and key figures can be monitored centrally in real time. Numerous systems can be precisely controlled with the building management software too. Technicians receive an alert if a system at all malfunctions. Because many problems can even be dealt with straight from their desk, more effective use can be made of the staff.

Flagship architecture with energy efficiency at heart

Société Générale's national head office in Belgrade is considered a flagship building in architecture. SAUTER's comprehensive building automation system not only provides a modern ambiance and pleasant interior climate for employees and customers. The company can also rest assured that the intelligent building management solution will keep energy consumption to a minimum.

Studying on the campus of the future

The new Schmuttertal-Gymnasium secondary school in Bavaria has four passive-plus wooden buildings whose open design encourages both group learning and relaxation among fellow students. The state-of-the-art technology bestows the best atmosphere in which teaching staff and students can concentrate, as well as winning awards for the school with its outstanding energy efficiency.

© Frank Schwindling

Due to rapid population growth in the western district of Augsburg, the decision was made in 2011 to build an additional secondary school in the town of Diedorf. To speed up the construction process, the district of Augsburg and the German Federal Environmental Foundation (DBU) initiated a research project.

Wanting to combine a pleasant learning atmosphere with a sustainable and environmentally-conscious design, the district sought a solution that employed renewable energy and modern technology. They selected wood as the renewable resource and a building automation system for energy efficiency.

A short time frame for completion

The groundbreaking project, costing 41,2 million, began construction in 2013. The four buildings, each with a highly-insulated and airtight passive shell, and their own roof-mounted photovoltaic systems, rose rapidly within just two years. In addition to the three sports halls and the assembly building with cafeteria, library and administration office, the school campus has two teaching buildings with open-plan learning landscapes. In each building, several classrooms frame a "marketplace" approximately 100 m² in size. Here students can exchange ideas and work independently.

Construction of the school was already well under way when SAUTER received the contract. It automated the heating, cooling and ventilation systems to maximise energy efficiency. After just seven months, the building automation solution was ready to go.

A modular solution for modular designs

Each building, and the spaces within, have very diverse uses which consequently places high demands on the room automation. A modular, easily scalable solution from the trusted SAUTER EY-modulo 5 system family was chosen to satisfy the varying requirements. Seven central and three decentralised mechanical equipment rooms, and 26 room automation distributors, connect around 3,400 data points in total.

The building management solution – SAUTER Vision Center – is also modular and enables easy monitoring and operation by facility managers of the buildings' installations. The open design and hence future-oriented system is excellently suited for linking the wooden buildings and visualising and operating the entire system – both on site and remotely. Numerous third-party systems have been integrated using open interfaces. The two pellet boilers, for example, that heat the school building complex are connected to SAUTER moduCom with Modbus RTU. On hot days, room temperatures remain comfortable thanks to the chiller connected by BACnet/IP. Motorised fire protection dampers – 355 in total – are controlled and monitored by the decentralised quadruple LON modules, safeguarding the students in the event of a fire.

Adjustment of the facilities and systems is improved on an ongoing basis: SAUTER transmits, for detailed analysis, around 1,600 data points per minute to the Bavarian Center for Applied Energy Research (ZAE Bayern).

Automation simplifying the control process

The integrated SAUTER room automation solution automatically regulates the heating and cooling facilities in the four buildings. The system also selects the correct operating mode – winter, spring, summer or autumn – according to the time of year.

Technicians fitted nine SAUTER modu525 automation stations and 38 SAUTER ecos500 room controllers with remote modules for single-room and zone regulation. The system can therefore respond flexibly to shifting room climate requirements. Around 350 different room sensors actuate no fewer than 272 volume-flow controllers, ensuring there is always sufficient fresh air in the school buildings.

Comfortable climate with low energy consumption

The highly insulated passive-house building shell and efficient operation of each system mean that minimum energy is consumed. Combined with the roof-mounted photovoltaic installations, Schmuttertal-Gymnasium generates even more energy than it consumes. Not only is it the perfect model school for its optimal learning environment, it can also lay claim to being extremely energyefficient. It is thus a trail-blazing example for more construction projects of this kind in Germany.

A wooden building with top marks

Since the SAUTER system went into operation, Schmuttertal-Gymnasium has received numerous awards. These include the Sustainable Building Award 2016 from the German Sustainable Building Council (DGNB), the Bavarian Energy Prize 2016, an invitation to make a school presentation at Environmental Week 2016 in Berlin, the German Award for Timber Construction 2017 and the German Prize for Architecture 2017.

“Licence to save energy” at over 3,000 metres

The ice Q design restaurant sits on the peak of Gaislachkogl, in the Austrian ski resort of Sölden. It is famous for being the starting point of spectacular chase scenes in the James Bond film “Spectre”. The building, constructed on permafrost and offering a 360-degree panoramic view, features an automation solution from SAUTER to achieve outstanding energy efficiency.

© Rudi Wyhlidal

Skiers have left their tracks in the snow-covered mountain slopes of Sölden in Austria for more than 100 years. During this time, the former mountain village has grown into a beloved winter sports destination in the Alps with exclusive accommodation and state-of-the-art lift systems.

In the 1960s, engineers started developing the area on the 3.056-metre-high Gaislachkogl peak. Some 50 years later, to meet increasing tourism demands and impress with something unique, Sölden upgraded the cable car and replaced the outdated summit restaurant.

An ice block par excellence

Within just six months, the destination’s spectacular new building – the evocatively named “ice Q” – quickly rose on the rocky site at a cost of approximately 4.5 million. The building, visually reminiscent of a stack of ice blocks, includes a restaurant for over 200 diners and a panoramic sun terrace. Thanks to the huge glass façade, guests can also enjoy the breathtaking 360-degree panorama of the Ötztal alpine landscape from the comfort of the building’s interior.

Challenged with unusual and extreme temperature conditions, this development required sound technical expertise throughout the construction. At this altitude, the subsurface is frozen all year round. Flexible foundations prevent subsidence and stop the building from shifting in the icy ground. The unusually short deadline also meant that SAUTER had to pull out all the stops. The team therefore sometimes worked in shifts.

Cooling in winter

The special construction of ice Q results in more cooling energy being required than heat – even during wintertime. This, for example, prevents the ground thawing out. To ensure the rock structure remains frozen all year round, a subterranean channel, 500 metres long,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with rear ventilation was installed. SAUTER was tasked with regulating the entire system using a modern building automation system. This means that ice Q is cosy inside while the temperature of the restaurant's extract air never exceeds 5°C.

The visualisation software, SAUTER moduWeb Vision, allows operators to monitor all equipment around the clock. The BACnet/IP-compatible software consolidates data from all heating, cooling and ventilation components and ensures smooth operation – even with extremely changeable ambient temperatures. A sophisticated heat recovery system, buffering and using the installation's own heat and controlled by the SAUTER automation solution, also increases the restaurant's energy efficiency sustainably.

007 at ice Q

The futuristic architecture of the glass building, visible from afar, is today unquestionably the highlight of the local skiing region. It's no surprise then that star director Sam Mendes and his team selected the building as an impressive location for the James Bond film "Spectre". Converted into the clinic of Bond adversary Ernst Stavro Blofeld (Christoph Waltz), ice Q was the starting place for action-packed chase scenes through snowy fields and the nearby glacier tunnel.

Economical luxury boutiques in the centre of Paris

Consumption is high on the agenda in Paris's 1st arrondissement. When a French luxury fashion brand extensively refurbished two of its boutiques, maximum resource efficiency was a key demand. The brand consequently received a Green Building award – not least because of the intelligent SAUTER EMS energy management solution.

Historical buildings line the winding alleys and streets of the 1st arrondissement in Paris. They are home to many shops, offering customers their selections of clothing, shoes and other exclusive items. Two years ago, a world-famous French luxury brand decided to modernise both of its commercial buildings on the Rue Duphot at the heart of the district. An energy management and automation solution from SAUTER was thus commissioned.

The client required a flexible system for the two locations, enabling easy interior climate monitoring as well as energy-efficient operation. SAUTER was tasked with providing the overall solution.

Completely versatile systems

After stepping through the doors of the first premises on Rue Duphot you are plunged into a luxurious shopping paradise. An area of around 350 m^2 over several floors has everything to delight the discerning fashion shopper. Just a few doors down the street is the second building, accommodating the other shop, presentation spaces and employee offices over three storeys.

The areas in the buildings have different uses, creating huge challenges for conventional building and room automation. This however is not a problem for the intelligent building management software – SAUTER novaPro Open – which operates at both locations. Building technicians can operate, monitor and maintain all installations. A few clicks are all that is needed to adjust the heating, ventilation and cooling – on site or remotely.

Energy regulated to a tee

In addition to the SAUTER building management system, one of the buildings is fitted with SAUTER EMS. This energy management solution ensures more energy-efficient operation. Operating staff monitor all consumption in the building from one central point. They can analyse it accurately and intervene quickly if necessary. Displays and analysis of the measurement data are accessible any time via a laptop.

Energy consumption is minimised in the elegant rooms of this French luxury fashion brand. Meters are seamlessly integrated using Modbus RTU into the SAUTER overall solution. The prestigious fashion brand always has a complete picture of the energy used for electricity and hot and cold water.

Fingertip control

SAUTER modular automation stations (modu525) fitted in both buildings control the lighting and ambient temperature, enabling staff to work comfortably. If, for instance, there are only a few people in an office or showroom, the SAUTER solution automatically adjusts the lighting, heating and cooling accordingly.

In an exclusive fashion boutique, sales staff give centre stage to customers' individual tastes when providing a consultation. SAUTER ecoUnit176 room operating units – featuring bidirectional EnOcean wireless technology – are close at hand in the shops. Sales consultants can therefore create the perfect ambience for their clientele. Items on display also benefit from the best possible lighting.

Historical green buildings

Old buildings are often considered energy guzzlers. The renovated premises of the French luxury fashion brand prove, however, that advanced age does not always mean excessive energy demand. With the progressive energy and automation concept from SAUTER, the client has also impressed Alliance HQE. The address on Rue Duphot with its integrated SAUTER EMS received the HQE. It was awarded this distinguished French Green Building certificate for its high energy efficiency – even before the project was completed.

Energy-efficient overall solution from SAUTER

- SAUTER EMS energy management solution
- SAUTER novaPro Open building management system
- SAUTER modu525 automation stations
- SAUTER ecos504 room automation stations
- SAUTER ecoUnit176 room operating units with EnOcean wireless technology
- SAUTER ecoLink515 remote I/O modules
- SAUTER ecoMod580 wireless interfaces

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