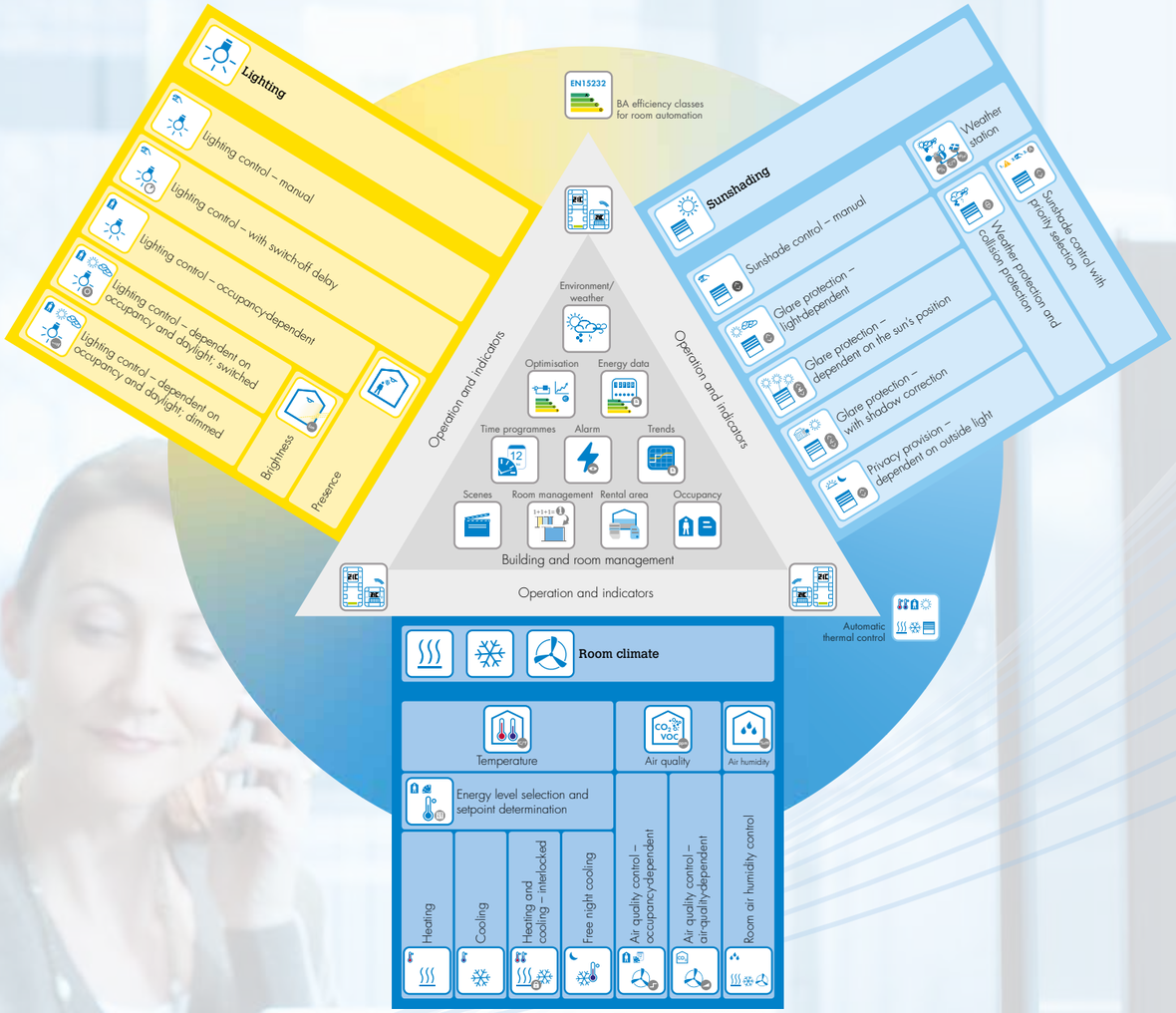
Integrated room automation – intelligent room management.

Sustainable rooms: So many tasks, with one simple solution.



Room climate heating/cooling/ventilation

For the **heating** or **cooling**, the controller is installed on the room level. For energy-optimised controlling of the room temperature, the room controllers must be in communication with the building management system. Occupancy-dependent, demand-led controlling increases the efficiency. A controller with a time programme enables intermittent operation for fixed occupancy patterns, flexible switching or demand-led usage (Comfort, Precomfort, Economy, Protection).

Heating and cooling never occur simultaneously in the room, therefore this is automatically **interlocked**. Complete interlocking also guarantees the highest level of energy efficiency.

During periods in which the room is unoccupied, the cool outside air is used for **free night-time cooling**, e.g. via automatically opening windows. Mechanical cooling uses the cooling energy of the outside air during the entire period.

Occupancy-dependent air quality control enables optimised room conditioning for occupied and used rooms. Occupancy switches, presence detectors and/or time programmes can define the occupancy.

Air-quality-dependent room control optimises the room conditioning according to the actual measured room air quality (CO_2, VOC…) and supplies fresh air via continuously controlled room fans.

The **humidity control** in the room is performed via humidifying and dehumidifying devices (or by reheating the supply air). For optimum room conditioning, regulation is structured within a comfort zone (temperature, humidity → enthalpy).

With **energy level selection** or a time programme for occupancy, the demand- or occupancy-based controlling determines the suitable setpoints for the integrated room automation (Comfort, Precomfort, Economy, Precomfort; start optimisation).

Lighting

Manual lighting control is based on manual switching on/off. The switching off can also occur automatically, e.g. using a timer.

Lighting control with switch-off delay is switched on and off manually by means of a switch. In addition, the light is switched off automatically at least once a day.

Occupancy-dependent lighting control can be performed in different ways and to meet different requirements (automatic/manual switching on/off and dimming).

Occupancy- and daylight-dependent lighting control automatically switches the lights on or off depending on the proportion of daylight, which is recorded with an occupancy and light sensor in the room.

Occupancy- and daylight-dependent lighting control dims the lights automatically depending on the proportion of daylight.

Sunshading

Manual controlling of the sunshade equipment can prevent overheating or avoid glare.

Light-dependent glare protection – that is, automatically controlled reduction of the incoming light – also reduces the cooling energy in the summer, aside from protecting from glare.

Glare protection dependent on the sun's position ensures optimal slat adjustment depending on the date/time and the current position of the sun, and on the location and alignment of the window blinds.

The function **glare protection with shadow correction** ensures that windows shaded by surrounding objects do not receive any positioning commands from the automatic function during this period, but remain in a defined home position.

The **privacy provision function dependent on the outdoor brightness** – also the automatic twilight control – closes the device depending on the outdoor brightness to reduce the cooling down and the light emissions.

Weather protection and collision protection prevent the sunshade equipment from being damaged. A weather station can detect wind, for example, and move the sunshade equipment into the suitable position using the priority control.

Sunshade control with priority selection calculates different positioning commands with a prioritised sequence (protection against damage to the sunshade equipment, manual user intervention, automatic control).

Sensors – measuring devices

Air temperature measurement is the basis for room temperature control for heating and cooling. In addition, the supply, return and outside air temperatures are used for air-assisted heating and cooling systems.

Optional room climate control requires **air quality measurement** based on measuring the CO_2 concentration or a mixture of volatile organic compounds (VOC), so that the system can supply fresh air to the room.

Air humidity measurement is used for the highest room climate standards and controls a corresponding humidification/dehumidification system. Dew point monitoring is essential when using cooling elements in order to prevent condensation.

Occupancy detection is the automatic recognition of persons in the room, so that room occupancy statuses (Comfort, Precomfort) can be optimally controlled.

Optimum lighting regulation in the room requires **brightness measurement.** This ensures ideal illuminance, making maximum use of daylight, without dazzling the occupants.

Weather conditions affect the regulation and control of integrated room automation, in particular the positioning of the sunshade equipment. A **central weather station** on the building performs this weather protection control.

Integrated room automation, operation and indicators

The functions of the integrated room automation are defined by **BA efficiency classes** and are selected in such a way that the most energy-efficient building automation possible can be achieved.

Automatic thermal control uses the sunshading to support the heating and cooling processes in unoccupied rooms. In winter when the sunshading is open, the incoming solar radiation lessens the heating required, and in summer when it is closed it prevents overheating.

Shared **room operating unit** as push-button sensor for all functions such as light, sunshading, fan speeds and entering temperature setpoints; selecting the room usage type; detecting occupancy; integrated sensors measure temperature, CO_2, VOC, lux, etc.

With **local scene control**, special rooms can be equipped with a room operating unit that specifies certain room usage types (scenes such as darkening during a lecture, automatic window ventilation during a break, etc.).

Central room management tasks

The weather affects the regulating and controlling of integrated room automation. For inert heating/cooling reservoirs (TABS: thermoactive building systems), **weather forecast data** can also be used to predictively influence the room automation.

The technical building management and the communicative controllers enable continuous, central monitoring and **optimisation** of the setpoints and the controlling for cost-optimised building operation in the specified BA efficiency class.

The central recording of energy consumption data, separately for every room, and the displaying and saving of this **energy data**, can contribute to better, more energy-efficient operation of the building.

The building management system centrally manages the **time programmes** and (operating) calendars for the overall operation of the room and building automation.

The functions for **alarms,** i.e. the alarm and event monitoring and forwarding, but also the alarm confirmation by the user and the alarm logs, are integrated into the intelligent building management system.

This **trend and event data recording** is performed using databases and, optimised visually, supports the data monitoring, both for current values (live data) and for long-term historical values (data archiving).

With **central scene control**, various rooms can be stored with different types of scenes and can be activated centrally as required (time programme, calendar, occupancy).

The **room management** can be used to optimally adjust flexible room divisions in an office building to the needs of the users. This can be performed automatically with a partition contact or manually with the building management system (flexible room division, smart wall).

With additional **rental area functions** – such as energy billing, rental contract management, rights of use, responsibilities – buildings can be used and let optimally by the investors and owners.

With a system for **room occupancy**, the room climate can be prepared and operated optimally for the user. This is achieved through central specification of the room occupancy and local occupancy evaluation (card switch, occupancy sensor).

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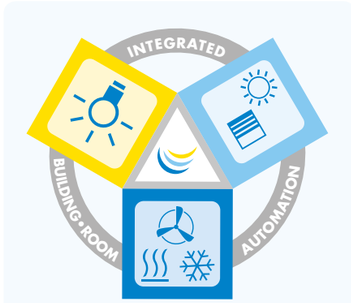
SAUTER functional triangle of integrated building and room automation.

With the functional triangle, we visualise all the room automation functions in an overview, divided into room climate, lighting and sunshading. It also shows the close interplay of the fundamental room climate factors:

- temperature and air quality
- light conditions and lighting
- sunshading/glare protection with window blinds and roller shutters

as well as the local operation and automatic control facility. This intelligent interplay is known as integrated room automation (according to EN 15232 and VDI 3813).

SAUTER combines all the functions of building and integrated room automation with the higher-level energy management system and, in this way, comprehensively guarantees optimised, flexible and energy-efficient operation of your buildings and rooms.



The superlative quality of SAUTER room automation.

With the SAUTER EY-modulo system, we provide you with all the functions that are needed for energy-efficient, intelligent building automation. The high quality and energy efficiency of the products of the EY-modulo range of systems have received many awards:

- BACnet Testing Laboratories (BTL/listing) according to EN ISO 16484-5/-6
- eu.bac Cert energy efficiency label

The SAUTER modu525 automation station for the HVAC controlling for energy provision and the ecos500 and ecos502 room automation stations have passed the complete BACnet conformity test and are included in the BTL listing. This certification guarantees you product quality in line with the latest requirements, as well as interoperability with devices and equipment systems according to the standardised BACnet Building Controller (B-BC) device profile.

The SAUTER ecos500 and ecos502 room automation stations carry the eu.bac Cert energy efficiency label in the highest energy efficiency class AA. The label from eu.bac Cert – the European certification and classification system for energy efficiency in the building automation sector – is proof of the high control accuracy and the particularly energy-efficient operation with high-quality applications.

SAUTER expertise in room automation.

Independently of the technology – whether BACnet, LonWorks, EnOcean, DALI, KNX or others – with the SAUTER EY-modulo family of systems we can fulfil all of your requirements for integrated room automation.

The SAUTER ecos room automation system (ecos = economic cost-optimized system) – like the complete SAUTER EY-modulo system – consists of modular components which, depending on the needs, make up a complete, intelligent building management system.

The descriptions of room and building automation functions from EN 15232 and VDI 3813 enable the planner of a building and room automation system to select the correct functions to ensure the energy-efficient operation of the building. The overall functionality during operation is rounded off with a building and energy management system that performs the monitoring for these intelligent buildings. The SAUTER range encompasses the entire spectrum of products, solutions and know-how for Smart Buildings, Green Buildings and Intelligent Buildings.

The SAUTER **functional triangle** of room automation

SAUTER
Creating Sustainable Environments.

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