

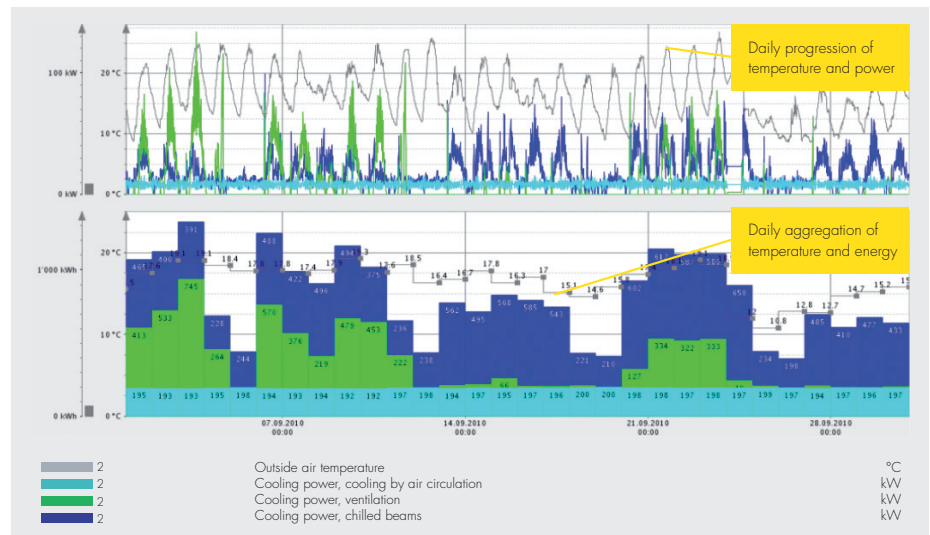
Use-Case

Sauter Energy Monitoring

Example ventilation plants

The economical and efficient use of energy and media makes a major contribution to the cost-effectiveness of building services systems. The basic and essential requirement for this purpose is a knowledge of the relevant energy consumption. The introduction of energy and efficiency monitoring opens up possibilities such as:

- Calculation of key energy figures in order to identify potential for optimisation
- Constant optimisation of costs
- Energy monitoring of systems and their levels of efficiency e.g. heat pumps, refrigeration units, heat recovery etc.)
- Tracking down malfunctions in plant technology that are caused by changes in usage conditions, so they are not detected by functional fault management
- Monitoring the results of energy savings measures that have already been introduced (visualise ► analyse ► optimise)
- Disclosure and standardised evaluation of energy data as a basis for marketing purposes and raising awareness of building operators
- Energy administration based on cost centres



SAUTER's EMS software makes it possible to bring together all the energy-related data (temperatures, mass flows, counter readings etc.) from any management system onto one central platform. EMS aggregates counter readings to provide daily, weekly, monthly or annual consumption figures. On charts with load trends, it is possible to identify fluctuations in the daily progressions; this, in turn, creates the possibility of triggering alarms via the building automation system when specified limit values are violated, thereby enabling active plant management. Automa-

ted correction of consumption values based on heating and cooling degree days offers the opportunity of comparisons over several years. Historical measurement series can be developed with the data import/export function. Integrated reporting allows individuals without direct access to EMS to be provided on a regular basis (e.g. each month) with information regarding energy consumption (energy billing interface).

SAUTER EMS – Practical application

The plant information that can be obtained with SAUTER's EMS is consistently put to further use for the purposes of SAUTER service. Astonishing savings can be achieved without additional investments, merely by improving the plant settings.

The example (Fig. 2) shows how the entire yearly operating progression for a simple ventilation plant can be recorded and assessed on one chart thanks to the SAUTER EMS visualisation feature. Instead of recording the positioning signals from the heat recovery facility, the air heater and the air cooler in the usual way on the basis of their progression over time, the valve settings are shown in relation to the respective outside air temperature, in keeping with considerations in the functional description. It is noticeable here that the control loop for the air heater (red) becomes unstable in case of a partial load (outside temperatures: 6...15°C), which then causes the valve to display unfavourable oscillation behaviour. On the one hand,

this has a detrimental effect on the life of the actuator and the valve; on the other hand, uncontrolled behaviour of this sort limits the efficiency of heat recovery.

The EMS charts (Fig. 1) use another example of a ventilation plant to illustrate the effects of a reduction in air volume on the power consumed by the fans. It can be seen that the change in the amount of electricity used is approximately cubically proportional to the adjustment in volume flow. Accordingly, if the air volume is 80%, the electrical drive energy will be halved.

EMS has an integrated formula editor that enables the energy saved in this way to be converted into the resultant saving on costs.

Thanks to this summated view, the savings can be shown from the time of the first optimisation intervention onwards. This makes it possible for operators to monitor the results directly.

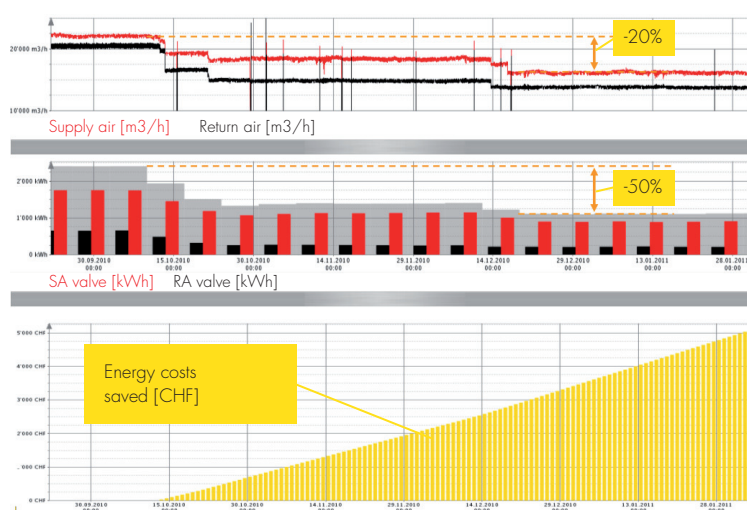
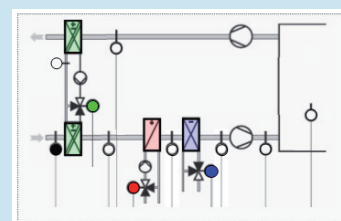


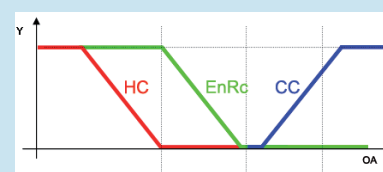
Fig. 1

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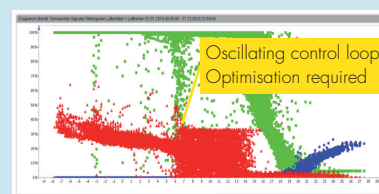
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Ventilation plant



Control sequence



EMS view

Fig. 2