EMS100, 200: Energy Management Solution

Areas of application

Transparency and visualisation of energy consumption and CO_2 emissions

SAUTER EMS, the professional solution for showing all types of energy consumption, reveals potential for saving energy and provides fundamental information for operating in a more energy-efficient manner and, therefore, more cost-effectively and competitively. Support is provided for the requirements of the ISO50001:2011 standard for energy management systems and their guidelines for implementing these requirements in companies. EMS also offers the option of effective display of low CO_2 emissions and energy consumption on external applications such as websites, displays in the entrance areas of companies and much more.

SAUTER EMS offers all the advantages of a state-of-the-art cloud solution. For example, energy management information can be called up at any time online, and reports can be automatically sent in a variety of formats. The entire IT infrastructure and the management of the system is already included in the hosting solution of SAUTER EMS. As an alternative, EMS is also available as a licence solution for implementation in existing IT infrastructure.

SAUTER EMS enables centralised monitoring of all the main energy data and the key figures of plants and buildings. This is an important component and requirement for a wide variety of 'green building' certifications according to standards such as LEED, BREEAM, DGNB, Minergie, HQE, GreenCalc and many more.

Measurement data is analysed and displayed in standardised reports and is available at any time online on portal sites accessible from a web browser. Such sites can be called up by a new generation of users from iPad or Android tablets as well as from standard PCs and notebooks.

Forwarding of alarms from SAUTER EMS to building management systems (BMS) and the tight linking of SAUTER EMS and BMS enable active, fully automatic energy management.

Features

- Centralised management of energy data for centralised and decentralised sites based on measurement data, key figures and reference variables
- Automatic data acquisition using one or more SDCs (software data connectors), manual entries over the internet, e-mails and database connections (SDC SQL)
- Direct, Sauter-independent data acquisition through one or more Energy Data Loggers (EDL hardware module)
- Standard reports for display of measurement data and analysis
- Data acquisition, validation and automatic aggregation to daily, weekly, monthly and yearly values.
- Time-dependent reference variables such as areas, operating and opening times
- Display of measured data, reference variables and key figures as time series in charts for any desired periods
- Web-based graphic display of energy consumption including the basis for generating the Energy Performance Certificate.
- Web-based graphic energy consumption comparisons with standardised benchmarks.
- Alarm management.
- Option for creating and sending data to automation stations (AS) and to monitoring systems (novaPro Open and novaPro)
- Optional creation of reports, using either the report module integrated in the SAUTER EMS server or other commercially available reporting tools
- Totally automated report generation.
- Automated sending of reports via e-mail.
- As an option, the SAUTER EMS server enables seamless integration into facility management systems.*
- Allocation of consumption and costs to internal cost centres and third-party tenants. Optional connection of maintenance, accounting and CAFM systems.*

Technical description

- Alarm management.
- Data point management.
- Management of measurement data.
- Aggregation of measurement data (compression).
- Manual and automatic correction of measurement data
- Presentation of measured values.
- Benchmarking.
- Standard reporting (daily/weekly/monthly/annual).
- Automatic generation and export of reports.
- User administration
- Data export.
- Configurable heating degree days.
- Software Data Connector (SDC), including SSL functionality for building management systems such as novaPro Open, novaPro, novaPro 32, novaPro Web and novaPro Enterprise for Energy Data Loggers (EDLs), and for e-mail, SNMP and SQL
- Display of portal elements in external applications, including websites, PowerPoint presentations…
- Logbook for documentation of measurements and entry of comments and notes

* A separate charge is payable for the development of this function.

Products

Type	Description
	EMS licence basic packages and user licences
EMS100F011	Basic system package including 10 data points, 1 simultaneous user and 1 SDC for novaPro Open
EMS100F012	Basic system package including 10 data points, 1 simultaneous user and 1 SDC for EDL
EMS100F013	Basic system package including 10 data points, 1 simultaneous user and 1 SDC for novaPro
EMS100F014	Basic system package including 10 data points, 1 simultaneous user and 1 SDC for novaPro 32
EMS100F015	Basic system package including 10 data points, 1 simultaneous user and 1 SDC for novaPro Web
EMS100F016	Basic system package including 10 data points, 1 simultaneous user and 1 SDC for novaPro Enterprise
EMS120F010	(Sys) one additional simultaneous user (local users on EMS server)
EMS100F001	Basic system package including 10 data points, 5 users (1 dedicated user for service) and 1 SDC for novaPro Open
EMS100F002	Basic system package including 10 data points, 5 users (1 dedicated user for service) and 1 SDC for EDL
EMS100F003	Basic system package including 10 data points, 5 users (1 dedicated user for service) and 1 SDC for novaPro
EMS100F004	Basic system package including 10 data points, 5 users (1 dedicated user for service) and 1 SDC for novaPro 32
EMS100F005	Basic system package including 10 data points, 5 users (1 dedicated user for service) and 1 SDC for novaPro Web
EMS100F006	Basic system package including 10 data points, 5 users (1 dedicated user for service) and 1 SDC for novaPro Enterprise
EMS120F001	(Sys) each with five additional users (local users on EMS server)
EMS110F001	(Sys) each with 10 EMS data points from 11 to 30 DP
EMS110F002	(Sys) each with 10 EMS data points from 31 to 100 DP
EMS110F003	(Sys) each with 10 EMS data points from 101 to 200 DP
EMS110F004	(Sys) each with 100 EMS data points from 201 to 1000 DP
EMS110F005	(Sys) each with 200 EMS data points from 1001 to 2000 DP
EMS110F006	(Sys) each with 500 EMS data points from 2001 to 6000 DP
EMS110F007	(Sys) each with 1000 EMS data points from 6001 to 10000 DP
EMS420F001	(Sys) software maintenance contract (18% p.a.)
EMS110F999	Current software on DVD

Options

Type	Description
	Software Data Connector (SDC) options for data acquisition for various BMS, e-mail, SQL and SNMP systems
EMS140F001	(Sys) SDC for novaPro Open
EMS140F002	(Sys) SDC for novaPro Web
EMS140F003	(Sys) SDC for novaPro 32
EMS140F004	(Sys) SDC for novaPro
EMS140F005	(Sys) SDC for novaPro Enterprise
EMS140F009	(Sys) SDC for EDL
EMS140F020	(Sys) SDC for generic SQL for 10 data points (DP)
EMS140F021	(Sys) SDC for SNMP for 10 data points
EMS140F022	(Sys) SDC for e-mail (CSV, MSCONS, LPEX) for 10 data points
EMS140F025	(Sys) update DP for SDC e-mail, each with 10 DP from 11 DP to 100 DP
EMS140F026	(Sys) update DP for SDC e-mail, each with 100 DP from 101 DP to 1000 DP
EMS140F027	(Sys) update DP for SDC e-mail, each with 1000 DP from 1001 DP to 5000 DP
EMS140F028	(Sys) update DP for SDC SNMP, each with 10 DP from 11 DP to 100 DP
EMS140F029	(Sys) update DP for SDC SNMP, each with 100 DP from 101 DP to 1000 DP
EMS140F030	(Sys) update DP for SDC SNMP, each with 1000 DP from 1001 DP to 5000 DP

Options (continued)

Type	Description
EMS140F031	(Sys) update DP for SDC SQL, each with 10 DP from 11 DP to 100 DP
EMS140F032	(Sys) update DP for SDC SQL, each with 100 DP from 101 DP to 1000 DP
EMS140F033	(Sys) update DP for SDC SQL, each with 1000 DP from 1001 DP to 5000 DP
EMS140F020	(Sys) SDC for generic SQL for 10 data points

Technical data/Hardware requirements

Hardware		Software	
Processor	Dual Core CPU 32/64bit, x86, x64 compatible	Operating system [1]	VMware ESX(i) Server 4.0 and higher (recommended), MS Windows 7, MS Windows Server 2003 (standard and higher), MS Windows Server 2008 (standard and higher)
Cycle frequency	> 2 GHz		
Operational memory	min. 4 GB RAM; 2 GB free for VMware		
Memory capacity	20 GB free HDD space for VM partition		

1) The SAUTER EMS server is supplied as a virtual machine (VMware).

Products

Type	Description
	EMS hosting basic packages and user licences
EMS200F001	Grundpaket Hosting inkl. 10 Datenpunkte, 1 User und 1 SDC für novaPro Open
EMS200F002	Grundpaket Hosting inkl. 10 Datenpunkte, 1 User und 1 SDC für EDL
EMS200F003	Grundpaket Hosting inkl. 10 Datenpunkte, 1 User und 1 SDC für novaPro
EMS200F004	Grundpaket Hosting inkl. 10 Datenpunkte, 1 User und 1 SDC für novaPro 32
EMS200F005	Grundpaket Hosting inkl. 10 Datenpunkte, 1 User und 1 SDC für noavPro Web
EMS200F006	Grundpaket Hosting inkl. 10 Datenpunkte (DP), 1 User und 1 SDC für noavPro Entreprise
EMS210F001	(Host) each with 10 EMS data points from 11 to 30 DP
EMS210F002	(Host) each with 10 EMS data points from 31 to 100 DP
EMS210F003	(Host) each with 10 EMS data points from 101 to 200 DP
EMS210F004	(Host) each with 100 EMS data points from 201 to 1000 DP
EMS210F005	(Host) each with 200 EMS data points from 1001 to 2000 DP
EMS210F006	(Host) each with 500 EMS data points from 2001 to 6000 DP
EMS210F007	(Host) each with 1000 EMS data points from 6001 to 50000 DP
EMS220F001	(Host) 1 additional simultaneous user (user access on host)

Options

Type	Description
	Software Data Connector (SDC) options for hosting for data acquisition for various BMS, e-mail, SQL and SNMP systems
EMS240F001	(Host) SDC for novaPro Open
EMS240F002	(Host) SDC for novaPro Web
EMS240F003	(Host) SDC for novaPro 32
EMS240F004	(Host) SDC for novaPro
EMS240F005	(Host) SDC for novaPro Enterprise
EMS240F009	(Host) SDC for EDL
EMS240F020	(Host) SDC for generic SQL for 10 data points (DP)
EMS240F021	(Host) SDC for SNMP for 10 data points
EMS240F022	(Host) SDC for e-mail (CSV, MSCONS, LPEX) for 10 data points
EMS240F025	(Host) update DP for SDC e-mail, each with 10 DP from 11 DP to 100 DP
EMS240F026	(Host) update DP for SDC e-mail, each with 100 DP from 101 DP to 1000 DP
EMS240F027	(Host) update DP for SDC e-mail, each with 1000 DP from 1001 DP to 5000 DP
EMS240F028	(Host) update DP for SDC SNMP, each with 10 DP from 11 DP to 100 DP
EMS240F029	(Host) update DP for SDC SNMP, each with 100 DP from 101 DP to 1000 DP

Options (continued)

Type	Description
EMS240F030	(Host) update DP for SDC SNMP, each with 1000 DP from 1001 DP to 5000 DP
EMS240F031	(Host) update DP for SDC SQL, each with 10 DP from 11 DP to 100 DP
EMS240F032	(Host) update DP for SDC SQL, each with 100 DP from 101 DP to 1000 DP
EMS240F033	(Host) update DP for SDC SQL, each with 1000 DP from 1001 DP to 5000 DP

Accessories

Type	Description
	Energy Data Logger (EDL) for direct and BMS-independent data acquisition
EDL1000F001	Energy Data Logger 1000 including 10 DP for data acquisition and drivers for BACnet/IP, M-Bus and Modbus (IP-RTU) KNX IP and DIN mounting kit
EDL1000F002	EDL1000 update, each with 10 DP from 11 DP to 100 DP
EDL1000F003	EDL1000 update, each with 100 DP from 100 DP to 1000 DP
EDL1000F004	EDL1000 update, each with 1000 DP from 1000 DP to 10000 DP

Alarm management

Within SAUTER EMS, alarms and faults (plausibility checks) for your objects can be shown via a central web page. In this way, the hotline or the specialist staff obtain a rapid overview of the status of technical systems in all objects.
Additional functions:

- Display of pending, terminated or unacknowledged alarms
- Display of alarm history
- Acknowledgement of alarms/malfunctions by authorised users
- Documentation of additional remarks and corrective measures
- Time-related alarm override

Data point management

Time-dependent reference variables such as areas, operating and opening times, uses etc. can be stored for each object. Key figures for the objects are calculated automatically from the measurement data and their reference variables.

- Assignment to freely-definable hierarchical data models.
- Automatic SDC data point upload with filtering criteria
- Display of current data point status
- Definition of manual input
- Assignment of a manually-entered value to a defined data point on a monitoring system (novaPro Open, novaPro)
- Definition of virtual data points (no license required) via formulae with basic mathematical operations
- Formation of cross-plant formulae
- Definition of aggregation algorithms
- Configurable heating degree days

Management of measurement data

The consumption meters are mapped in hierarchical structures for each medium. It is also possible to set up logical links. Consumption figures are calculated on the basis of predefined formulas. However, the measurement data model is designed not only to map meters and counters: any plant operating conditions (e.g. temperatures, pressure, switching operations) can be managed. The recorded measurement data are checked automatically on the basis of values for prior years and predefined rules. Any freak values can be corrected manually. A change protocol is kept and updated in case of corrections.

- Automatic adoption of measured values from the SDC or the EDL
- Manual input with predefined sequence
- Plausibility check of manual input via display and comparison with previous input
- Calculation of virtual data points
- Plausibility check for measurement series
- Input of measurement value corrections either individually or over a period of time

- Documentation of causes leading to corrections

Aggregation of measurement data (compression)

The measured values are automatically compressed into daily, weekly, monthly and yearly values. Various algorithms such as averages, minimum, maximum and integration etc. are available for compression purposes.

- Compression to daily values
- Compression to weekly values
- Compression to monthly values
- Compression to yearly values
- Starts automatic or manual compression

Presentation of measured values

- Tabular presentation of measurement values
- Direct comparison of measurement values
- Graphic presentation of measurement values
- Diagrams with multiple curves
- Simultaneous presentation of multiple diagrams
- Zooming within diagrams
- Interactive display of measurement values and times in a graphic
- Pre-defined or self-defined portal pages
- Special diagrams, such as carpet plot, load curve, traffic light view

User administration

Groups and users, with their access authorisations, are defined in the user administration. The access authorisations can be assigned to the individual modules and sub-functions in a very flexible manner. Authorisations can also be assigned to different locations. User management also includes the definition of minimum complexity for user passwords.

Data export

Data export to CSV, XLS or XML files is possible and is included in the basic package.
As options, interfaces with asset systems, CAFM and ERP systems are possible on request.

Extended/advanced reporting

As an option, additional evaluations can be generated with an integrated reporting tool. This allows representations of measured values and key figures in both graphic and table form. This tool can also be used to implement drill-down functions. Other report generation tools are also possible on an optional basis (Birt etc.). However, these tools have to be purchased separately.

- **Time series**
Measured data, reference variables and key figures can be shown as time series in charts for any desired periods. This makes it possible to display power consumption load profiles for individual or multiple buildings.

- **Energy Performance Certificate**
SAUTER EMS can be used to calculate the Energy Performance Certificate for the measured energy consumption automatically, and to display it in graphic form. The parameters required for this purpose, such as reference energy areas, primary energy factors and emission coefficients, are stored as time-dependent reference variables for a building or use. The SAUTER EMS server takes account of the various specified use categories in a building. The key energy figure and the greenhouse gas emissions (CO_2 emission) are calculated from the consumption measurements for each use and each building.

Automated sending of reports

The generated reports may be sent automatically via e-mail, using an SMTP server with or without authentication.

Benchmarking

The displayed values can be simultaneously shown and compared with official benchmark values in the graphic evaluations.