Elpro

Automation Software and Hardware

Start-up and support from a single source

EOS

ENERGY MANAGEMENT

The system for balancing, analysis and forecasting

Our company specializes in automation technology and software solutions for industrial plants and has decades of experience in the development and start-up of custom-tailored operating control systems. When it comes to balancing process data, analyzing efficiency and forecasting plant behavior, you have come to the right place!

Features

- Competent planning and implementation
- Installation and support by our specialists
- Comprehensible operating concept
- Versatile visualization and reporting options
- Highest data consistency
- ISO 50001 compliance
- Open software architecture
- Minimal system requirements and short response times

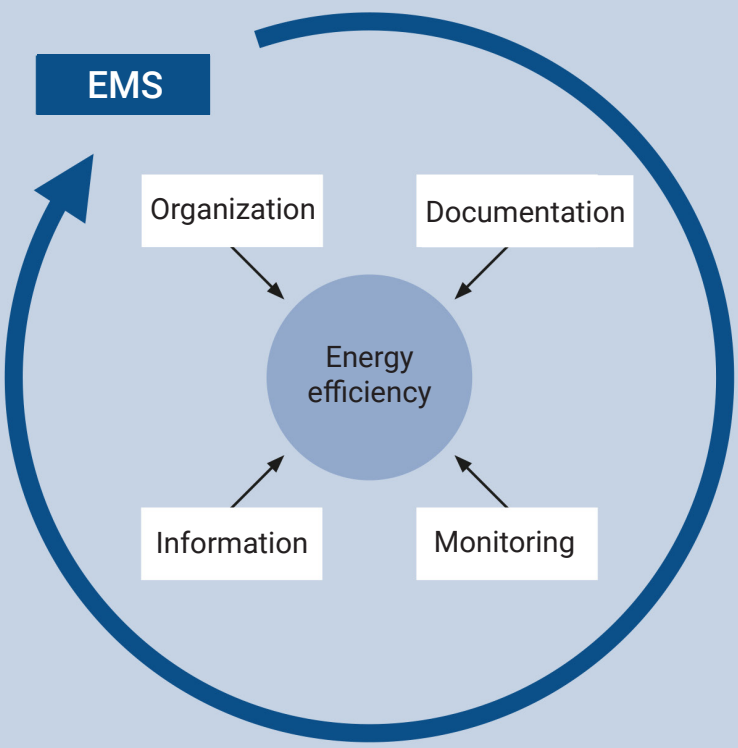
Technological audit and transparency

Increase your market position by systematically improving technological efficiency. With our system, you can determine, analyze and compare the productivity of different plant components. Through continuous recording, you will learn:

- in which order you most efficiently start-up the units and switch them off again
- whether there are hidden connections between plant parts or components.
- when maintenance and repairs must be carried out in good time
- if and where it is worth investing and how quickly you will get your money back.

With our system, you really get to know your plant!

THE MOST IMPORTANT ASPECTS OF AN ENERGY MANAGEMENT SYSTEM (EMS)



EOS® combines all necessary functions for process optimization. **EOS**® is classified by BAFA as eligible software according to ISO 50001. **EOS**® provides you with a tool that allows you to systematically improve your energy efficiency and reliably demonstrate this improvement to certification bodies. In this way, you will receive tax benefits and increase your profit.

Your profit and competitiveness secured in just a few steps

1 Process analysis

We analyze your process and develop a realization and integration plan.

2 Installation

Our software is installed in your plant as a self-sufficient system. The control system and measuring devices are connected via numerous interfaces. We supply and install any missing measuring equipment if needed.

3 Integration

The tools and analyses you have already developed are seamlessly integrated into the system.

4 Training and consulting

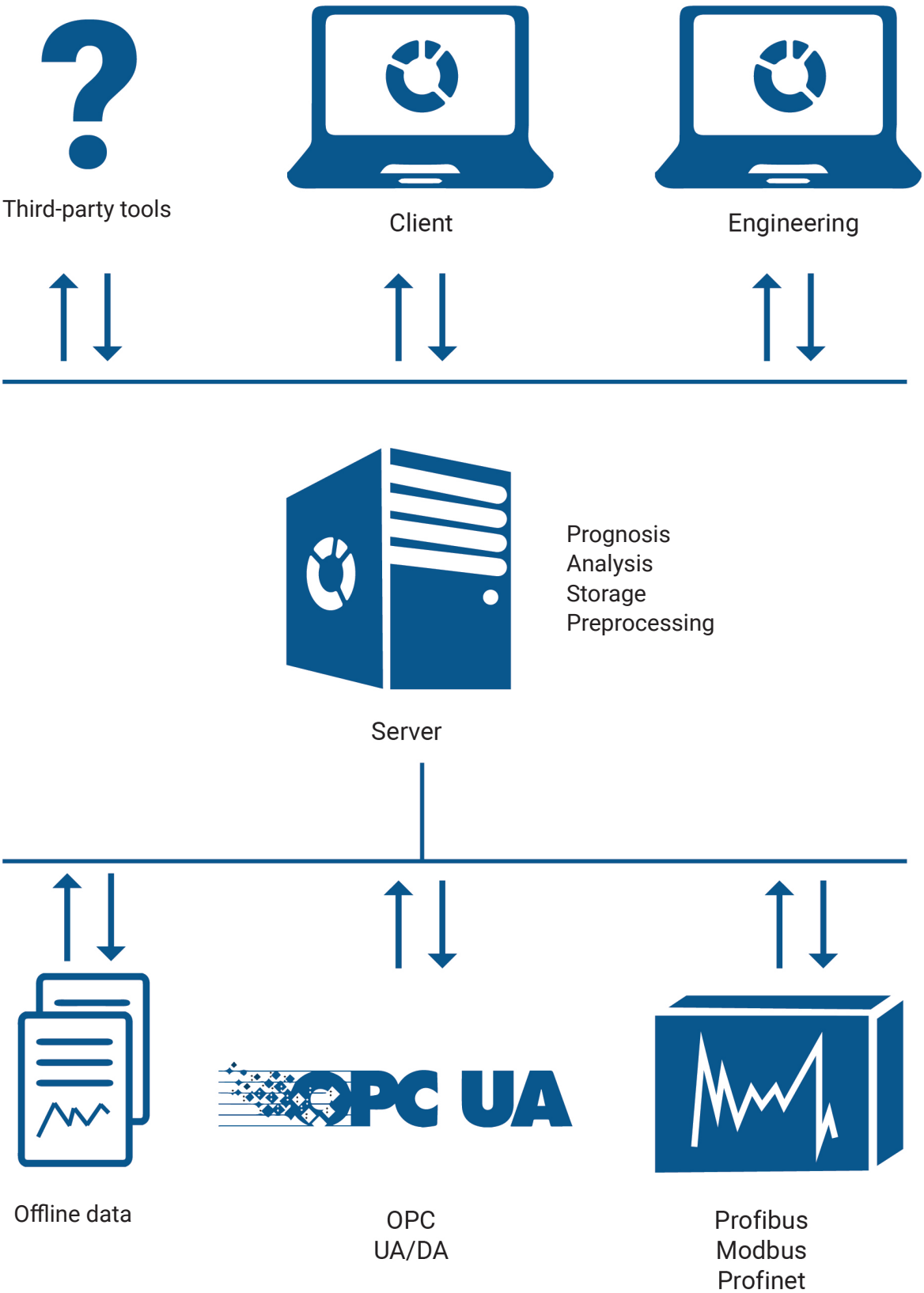
We are there to help the whole way – from training your staff to analyzing the data obtained.

5 Optimization

Our process engineers will support you in your search for hidden optimization potentials and develop new EnPIs (Energy Performance Indicators).

6 Support and updates

Basic software and supplied modules are always kept up to date via automatic update mechanisms. Our support team is always at your disposal via telephone.


Third-party tools
Client
Engineering
Prognosis
Analysis
Storage
Preprocessing
Server
Offline data
OPC UA
OPC
UA/DA
Profibus
Modbus
Profinet

Wide range of coupling options

OPC DA/UA with and without HDA

- Profibus,Modbus, Profinet
- SQL, csv, txt
- Further interfaces can be retrofitted via plug-in

Extensive data acquisition

- Support of redundant data sources
- Automated retrospective import of missing data due to maintenance tasks or network malfunctions
- Real-time archive in ring buffer
- Long-term archive of unlimited duration
- Sampling rate and archiving grid freely adjustable from 1 ms up to 1 hour.
- Tamper-proof process values in the archive.

Physically correct data preprocessing

- A large number of physical quantities and units of measurement are supplied and can be extended at runtime.
- Conversions between units of a physical quantity are possible at any time.

Data validation

- Manual entries for missing or incorrect data in any grid
- Automatic interpolation of manual input values
- Plausibility check (fixed value range or depending on other variables)
- Substitute values for implausible values

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Data processing

- Powerful formula interpreter – calculation of derived quantities
- Graphical visualization of the calculation trees
- Mathematical functions, from simple arithmetic functions to counting, integral, differential and smoothing over time.
- Arbitrary EnPIs (Energy Performance Indicators).

Virtual time periods

- Operating days
- Accounting milestones
- Accounting periods

Scheduler and events

- Task scheduler allows you to perform tasks such as database backup and exporting logs at regular intervals. Plant-specific tasks can be retrofitted via plug-in
- Event manager allows you to perform user-specific actions, such as alerting or emailing of user-defined events

User management

- User administration with access rights control
- User-specific display options

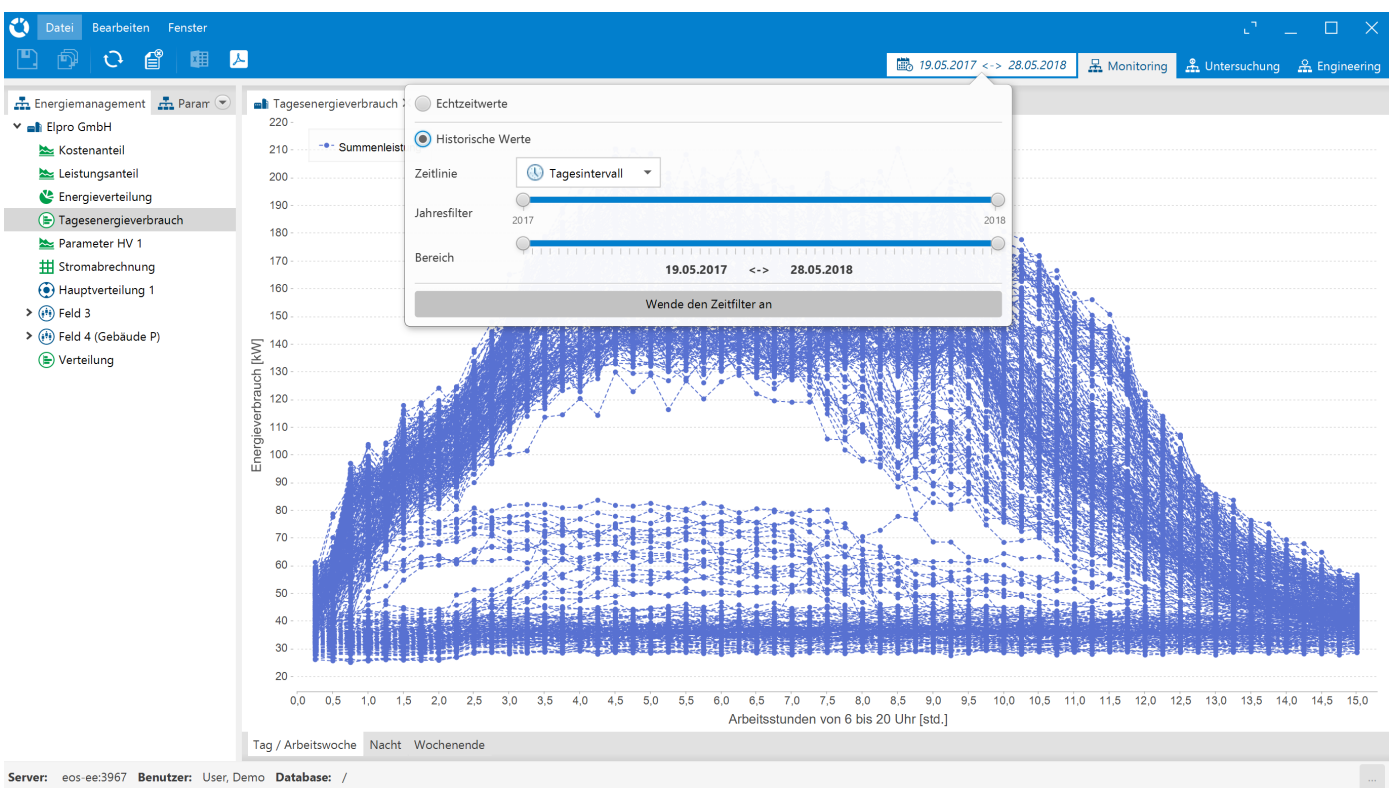
Visualization - Key Features

Clear layout

- Minimalistic design
- Consistent operating concept
- Central time control

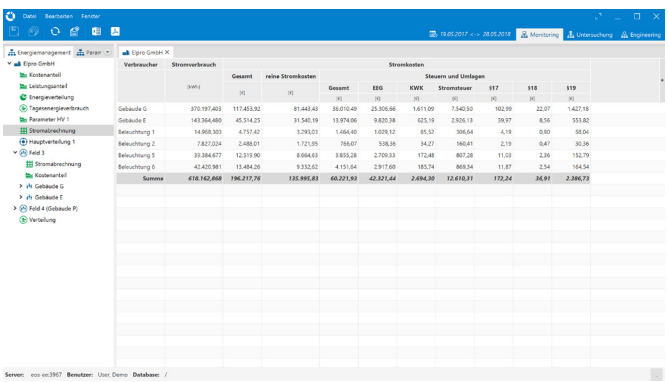
Goal-oriented distribution of tasks

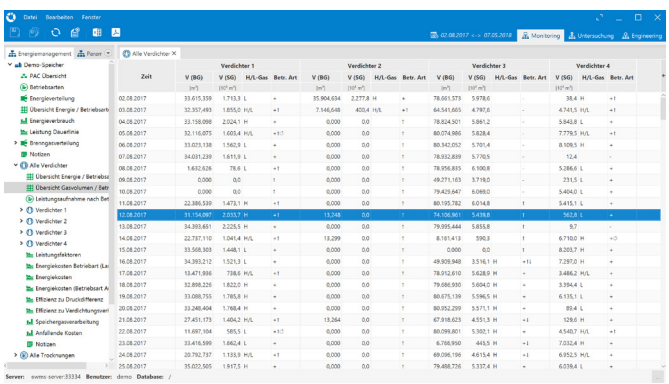
- The Monitoring module allows you to monitor proven indicators
- Get to the bottom of irregularities in the Analysis module
- In the Operations Management module, you will develop efficient controlling measures in order to operate the plant cost-efficiently and maintain it in good condition



Tables

- Overview of values over time
- Overview of values over a list of infrastructure objects
- Editable values
- Arbitrary grid
- Generic export to Excel or PDF



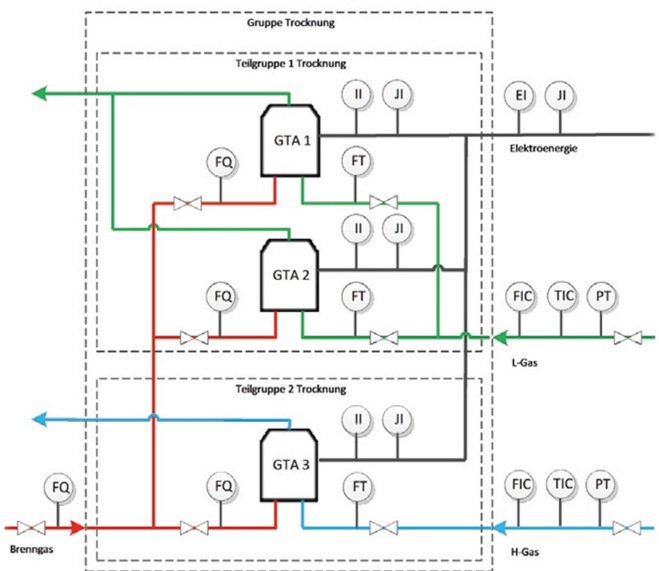


Schematic representation of the plant

- Current values or aggregated values are displayed schematically over time for the asset components.
- Plant-specific representations can be retrofitted using plug-in mechanisms

Reporting

- Templates
- Tables and graphics can be exported without engineering, via mouse click or time-controlled.
- Plant-specific reports of any complexity can be retrofitted via plug-in



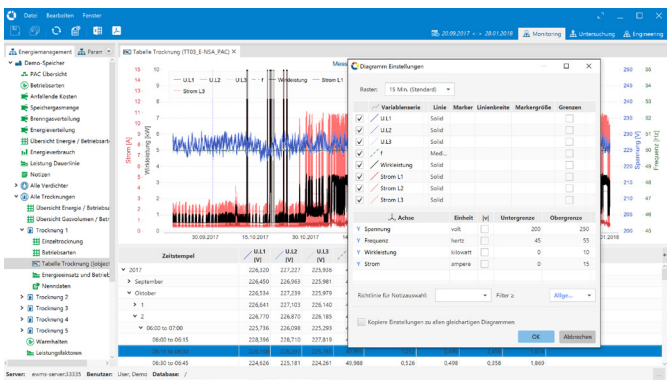
Visualization - Key Features

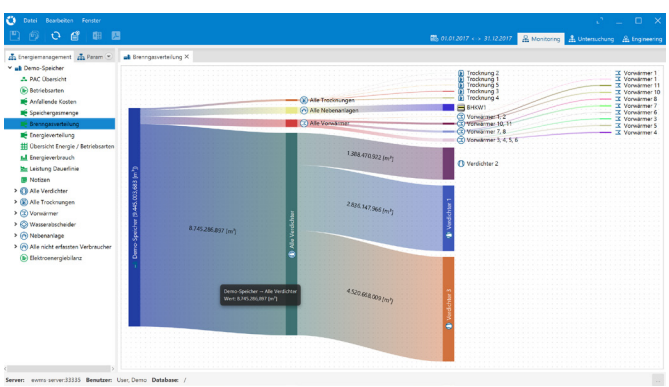
Multilingualism

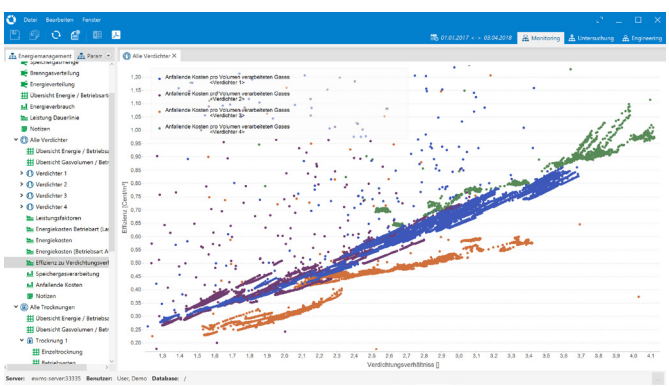
- The system conforms to the i18n standard and is available in German, English, Russian, Ukrainian, and Polish.
- Other languages are available on request at any time.
- The names of the plant components, outputs, messages and formats can be created specifically according to language, dialect and region
- The user can switch between the enabled languages at any time.

Graphs

- Sankey, line, bar, pie, load curve, plane diagrams.
- Over time or XY diagram
- Arbitrary curve composition
- Display, units and grid configurable by the user
- Storage of user-specific settings
- Export to PDF, PNG, SVG
- Important events and limit values can be displayed in a graph.



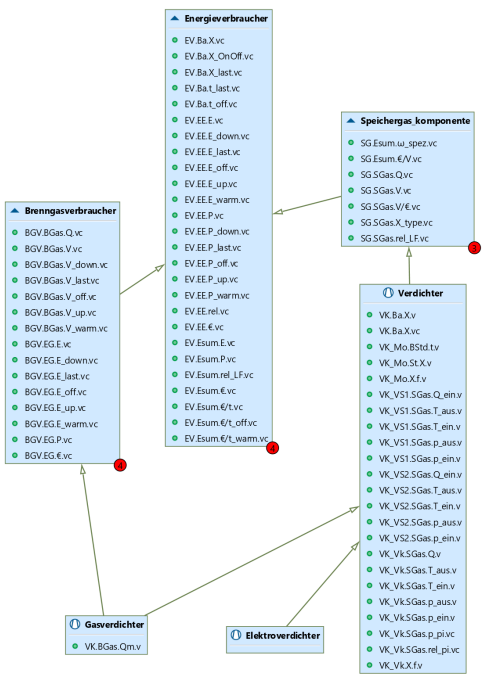


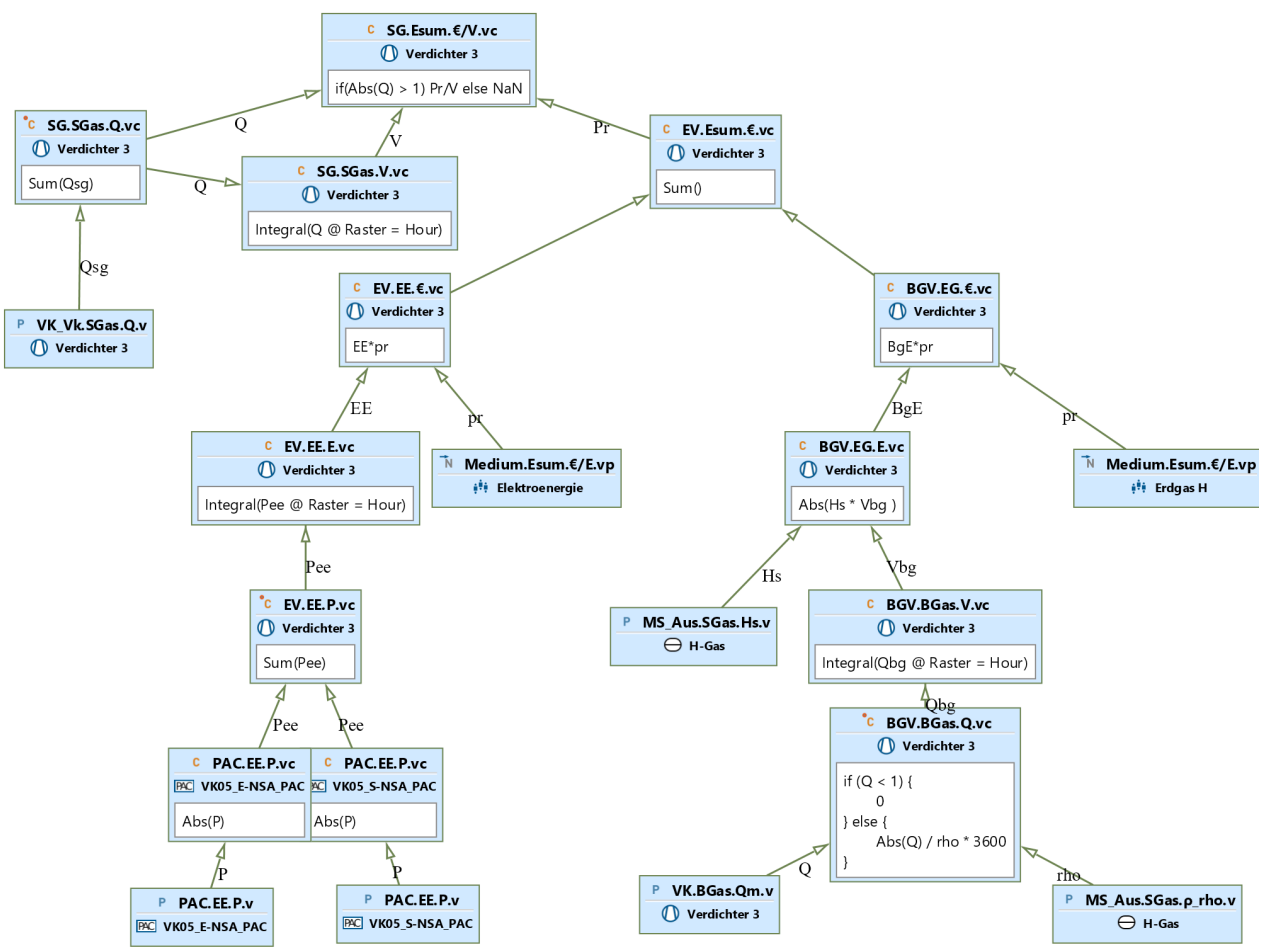


ENERGY MANAGEMENT

Typical-based engineering

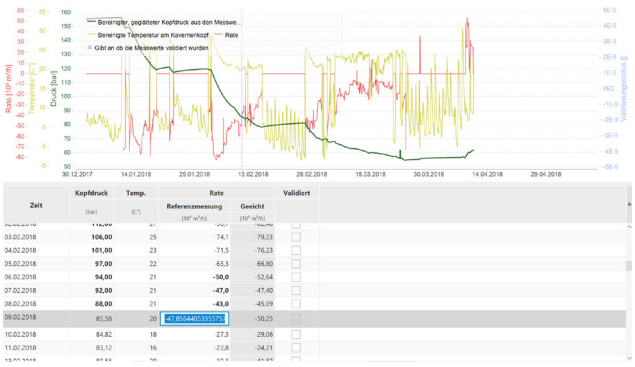
With our system, you'll first describe your plant abstractly. By adding plant components of a type defined by you, time-consuming actions such as "Update dependencies in calculation formulas", "Update navigation tree" or "Create tables and graphs" are carried out fully automatically. This saves you time and money during the start-up phase, keeps you on top of things even with very complex correlations and calculation formulas, and relieves your employees of the burden of data maintenance.





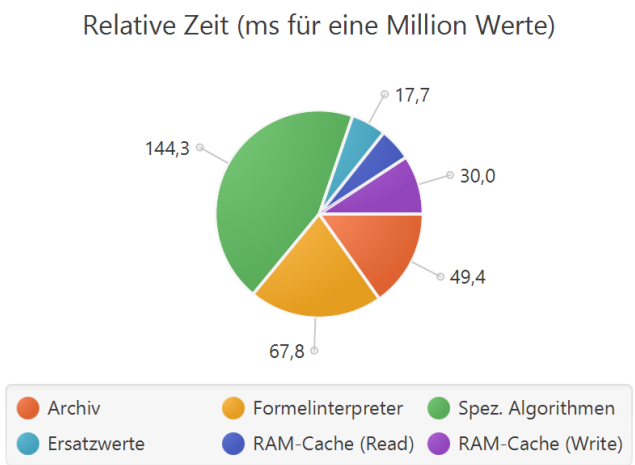
Consistency

Historical, current and forecast data - no matter whether you enter new manual values, update time-limited parameters or change the system configuration, the system knows all variable dependencies and updates the data pool fully automatically and efficiently.



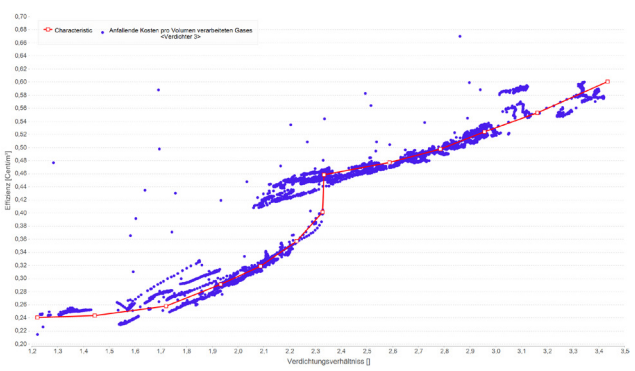
Performance

The system has been developed continuously with a focus on performance. Even very complex and branched calculations, such as those of EnPIs and balancing coefficients, are carried out on standard computers in a very short time.



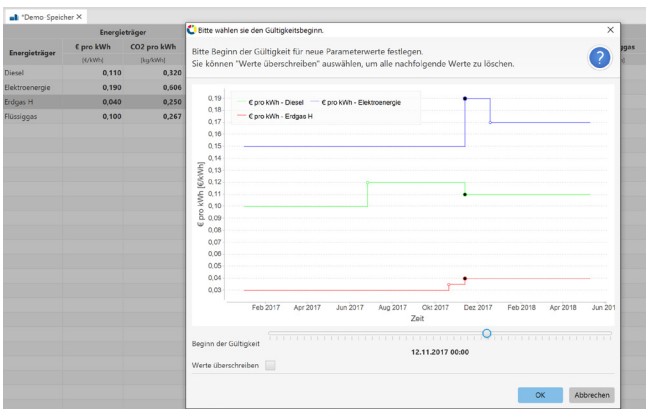
Characteristic curves

With characteristic curves, you are able to describe the nominal behavior of a system component with just a few mouse clicks. This enables you not only to monitor your current performance and trigger alarms in the event of deviations, but also to predict and better plan your behavior in the future.
Through the automatic monitoring of performance and operating hours, you will be informed in good time about upcoming maintenance work.



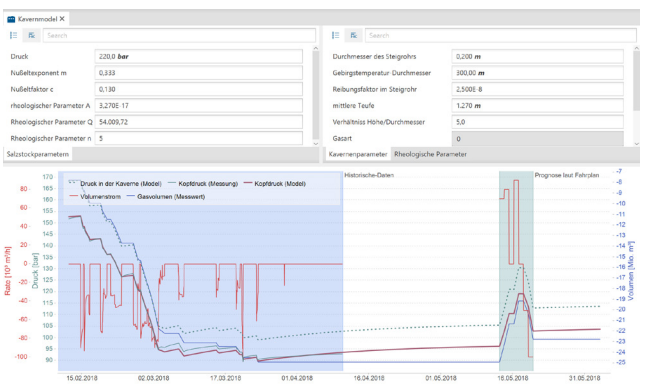
Parameter values

Parameter values in **EOS**® are a particular form of manual input values. They are valid until a new value is entered. This enables you to map time-varying characteristic values or energy source prices in the system.



Mathematical modelling and prognosis

Integrating mathematical models into your accounting system has never been easier. **EOS**® provides you with an easy-to-understand interface for this purpose. You define how a status of a unit or a component changes with a certain input in a time grid tick and the system takes over the calculation of historical values for you, as well as extrapolates the development into the future. The temporal development is automatically recalculated when the input variables change.



Controlling intervention in the process

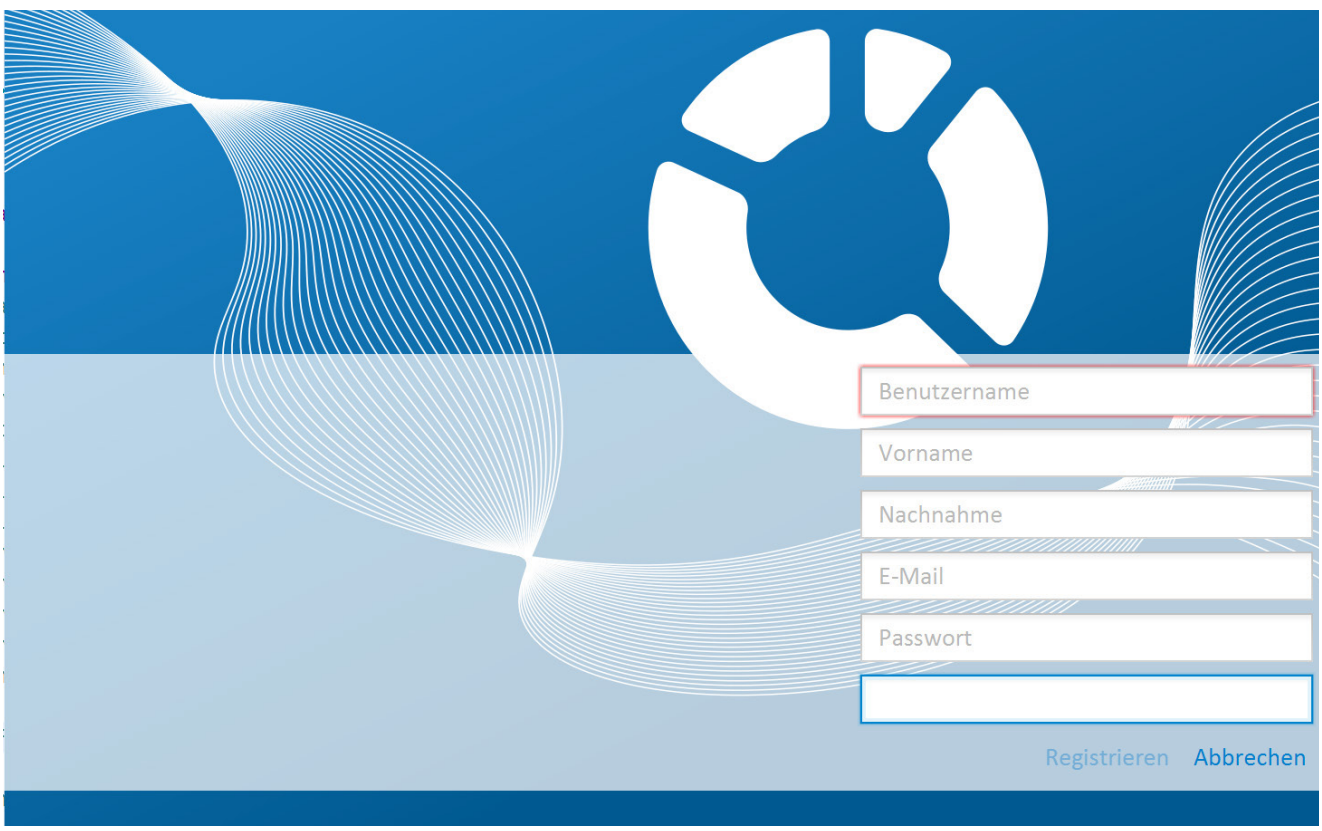
Thanks to the characteristic curves and mathematical models stored in the system, you can work out the optimum timetable for your plant and transfer it to the control system for execution with a mouse click.

Technical specifications

Architecture	Modern software design based on 100% open source libraries
	Consistent concept without rudiments from legacy systems
	Platform independent (Linux, Windows, OS X)
	Highest extensibility through Eclipse RCP framework
Communication	Server-client communication via REST API in JSON format. Individual clients can be implemented and connected
	Highest security via asymmetric TLS v1.2 encryption
HDD	MB / year=^{N}process × (^{N}values / day) × 0.0025 MB
RAM	MB / year= (^{N}calculated + ^{N}process) × (^{N}values / day) × 0.001 MB
CPU	The performance of a standard laptop is sufficient for a medium-sized system*. * 1000 process values, 1000 parameter values, 5000 calculated values. Long-term grid - 15 min, real-time grid - 1 sec.
Response times	All browse actions in less than 1 sec.
Throughput	10^{6} values / sec* *without limitation by network throughput

Simple licensing model

- One price for standard version with the engineering module without limitation in the number of users, process variables.
- One price for a developer version
- Support and update contract as an annual subscription
- Security updates are always free of charge



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