

The Siemens logo is displayed in a bold, teal, sans-serif font. It is positioned in the upper left corner of the page, set against a white rectangular background. The background of the entire page is a photograph of green reeds or grasses against a bright sky, with a teal gradient box overlaid on the right side containing the product name and description.

SIEMENS

Ingenuity for life

Sitras iEMS

Intelligent energy management system
for traction power supply and rail infrastructure

[siemens.com/rail-electrification](https://www.siemens.com/rail-electrification)

The intelligent energy management system Sitras® iEMS is our solution for optimizing energy supply and improving the overall energy efficiency within traction power and rail infrastructure system.

Benefits

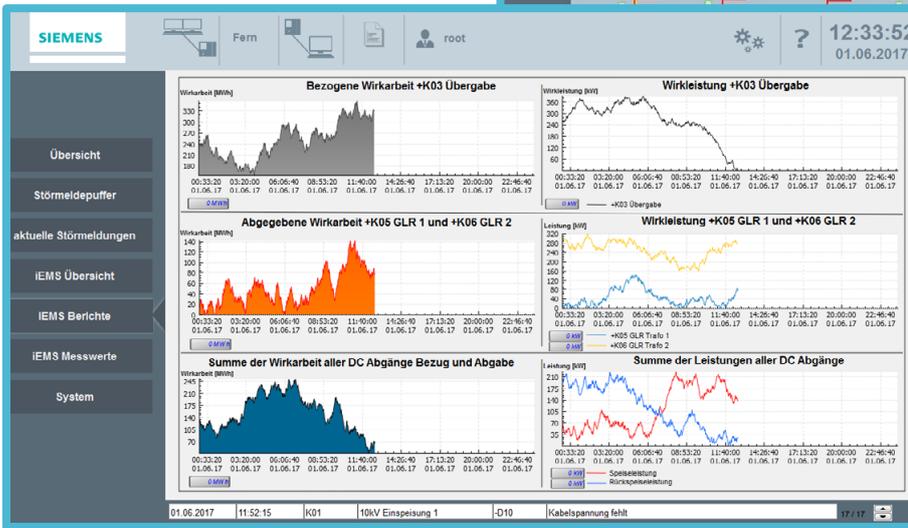
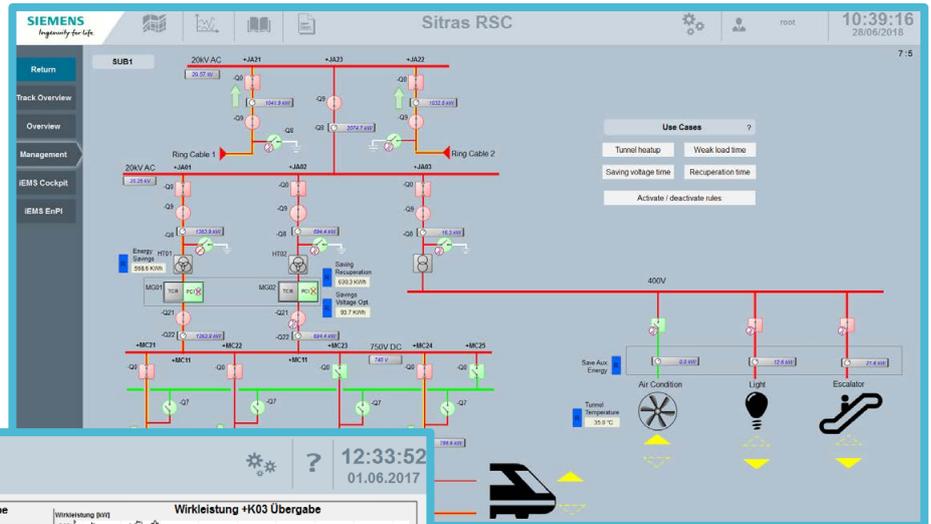
Full transparency of energy flow & consumption for:

- energy-conscious operation
- prevention of load peaks
- forecast and optimization
- realization of customer internal efficiency targets and requirements on sustainable installations & designs
- realization of governmental regulations e.g. for reduction of carbon dioxide emissions

Overview

Since Sitras iEMS is an integrated module of Sitras RSC, Rail SCADA system, it provides a unique solution for energy sensitive operations and load management.

The integration eases data collection, data storage and the collaboration of functionalities as well as corresponding actions to control devices.



Example of Sitras iEMS

Additionally, it allows rule-based actions which we can derive with our capabilities and knowledge from simulations and system design.

The use cases and applications are manifold. This is why we put high attention on the flexibility and capability for integration of our solution.

Typical reports within Sitras iEMS

Functionality

Monitoring of energy values and power quality

- Data acquisition / interfacing & calculations
- Visualization of values & trends
- Limit supervision & alarming

Load flow display and optimization

- Load flow visualization based on measured electrical current values
- Identification of overloaded network segments
- Trend forecast per defined time cycles

Reporting and information management

- Energy-cockpit with values, trends, bar diagrams...
- Standard and specific reports
- Time-/event-based documentation
- Energy accounting per defined area
- Data exchange with other IT-systems

Active load management

- Time-/event based load change per predefined actions
- Intelligent interventions and controls (e.g. network simulation based rules)
- Scenario Management e.g. for re-energizing of components / stations
- Situation based guidance & instruction of operator

Certification



Energy Management System following ISO 50001

Since April 2015 a change in the Energy Services act (EDL-G) requires European companies to conduct energy audits regularly which support the goal of the European Union to increase energy efficiency by 20 percent until 2020.

Exceptions are made if a company has an energy management system following DIN EN ISO 50001 or an environmental management system.

Sitras iEMS supports the set-up of an energy management system following the norm as certified by TÜV Rheinland.

Example for Load Management

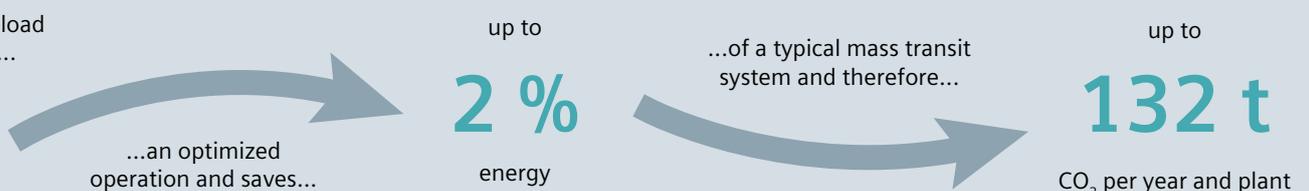
Electrical networks for traction power supply are often complex. Highly variable loads, due to different train types or operation schedules, complicate an energy optimized operation of the electric grid.

An important figure in the traction power supply is the no-load voltage of the individual network segments. The optimum of such no-load voltage is depending on the individual operation within the segments. Thus it would be ecologically worthwhile to adapt the no-load voltage to the operational conditions continuously.

Example calculations for real traction power supply networks show potential for energy savings of approximately 2% per substation. Considering the amount of substations worldwide, this means an enormous potential.

In combination with our simulation software Sitras Sidytrac and the energy management module Sitras iEMS, this potential could be leveraged.

Adjustment of no-load voltage allows...



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Sitras iEMS / Product information
No. A6Z00039886892 / Version 1.0.1

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