STEAG Energy Services

IT Solutions for Plant Monitoring, Optimization, as well as Operation Management and Maintenance

www.steag-systemtechnologies.com

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Only that which
runs optimally is
really efficient.

From the point of view of physics, energy is not consumed but converted. Hereby a part of the energy is released to the environment untapped. With our expert systems for the planning, monitoring, and optimization of power plant units, with our IT-based operation management and related services we from STEAG Energy Services offer solutions for optimizing processes and thus minimizing the proportion of unused energy.

The low-emission operation of power plants of all kinds makes sense from an economic, sociopolitical, and ecological point of view. Therefore our specialists – process and IT engineers – arrange for a flawless procedure both in energy generation and in energy-intensive processes.

As a result of decades of experience with own power plants we know the requirements regarding output generation, load changes, availability, and operational lifetimes. Our IT-based tools for the planning, optimization, and support of operating procedures, for lifetime monitoring as well as for simulation and documentation are unique selling points that make us popular as partners in international energy markets. At the same time we are leaders in the optimizing closed-loop control of complex processes, which makes us attractive for other industries as well.

Our engineers cooperate closely with science and research in order to continuously increase the efficiency in energy generation by means of new methods and state-of-the-art technology, thus minimizing friction losses of all kinds.

The combination of experience, know-how, and scientific backing allows us to use the scarce energetic resources in an economical, efficient, and environmentally acceptable way to the greatest possible extent.

We from STEAG Energy Services have the solutions for optimizing energy generation processes. For only that which runs optimally is really efficient.

Analyzing:
Our numerous expert systems enable us to analyze complex systems in power plants and other installations to the most precise extent in order to locate and remedy possible controlling errors.

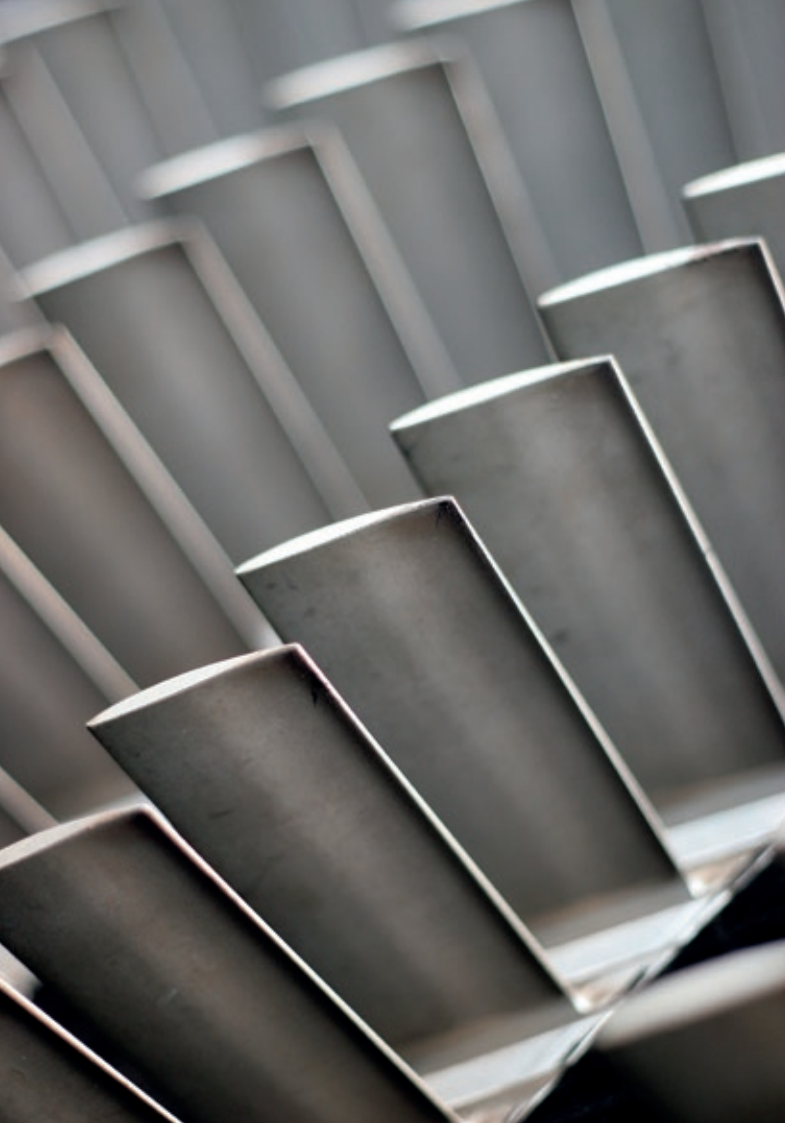
Detecting:
By means of our analysis data, our staff members – IT specialists and engineers – detect deviations from the expected process data and locate potentials for improvement.

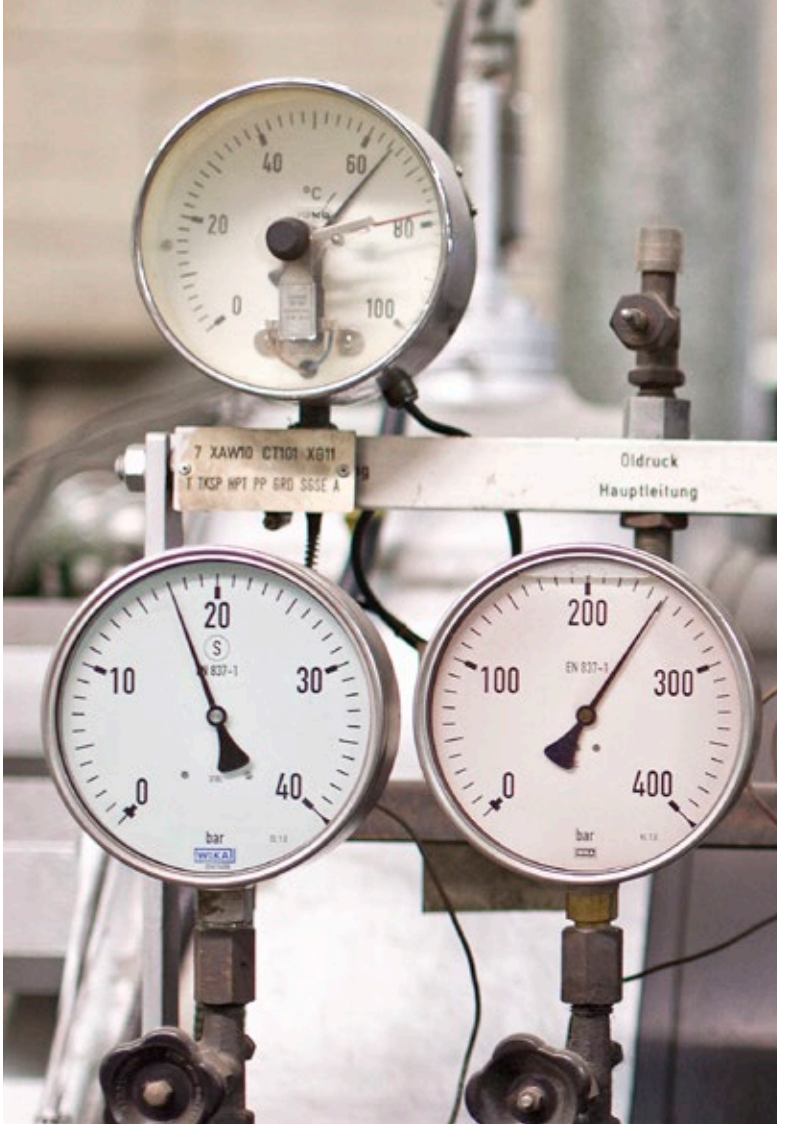
Optimizing:
We use a comprehensive portfolio of mainly IT-based tools for the optimization. Moreover, we incorporate decades of experience in handling complex systems through the know-how of our staff members worldwide.

Systems from Experts for Experts

When you operate a plant, the focus is on efficient operation management and an optimal utilization of the plant. The early detection of looming faults is crucial for a successful operation in the long term. Therefore we from STEAG Energy Services have compiled a tool kit aimed at the requirements of industrial businesses that provides support in the planning, control, and documentation of work processes.

All our products are supplied as turnkey solutions in the IT environment of our customers. Our specialists put them into operation, train the users, and integrate our solutions accurately into the customer's network.





Operation Management and Maintenance of Plants

Our flexible solutions allow us to model the entire range of technical operation management – in a user-friendly and modern design in combination with cost monitoring – as integrated, database-supported applications. What is more, our maintenance, planning and control system (computerized maintenance management system/ CMMS) SI®/PAM is industry-independent.

According to the motto “from practice for practice”, our systems create transparency and lastingly optimize workflow and safety. This way, operating procedures can be designed to be more efficient, and potentials can be exploited better. Here our operation management and maintenance system SI®/PAM is not limited to the central application but can be put to mobile use – on site, so to speak. We achieve this goal by means of RFID technology. This allows to store information about a maintenance or isolation procedure on an RFID chip directly at the switchgear or at the component. A recording of the data on site and the fully automatic synchronization with the operation management system enable a complete and efficient documentation of the activities. This way, the mobile procedure significantly contributes to increasing the operational safety.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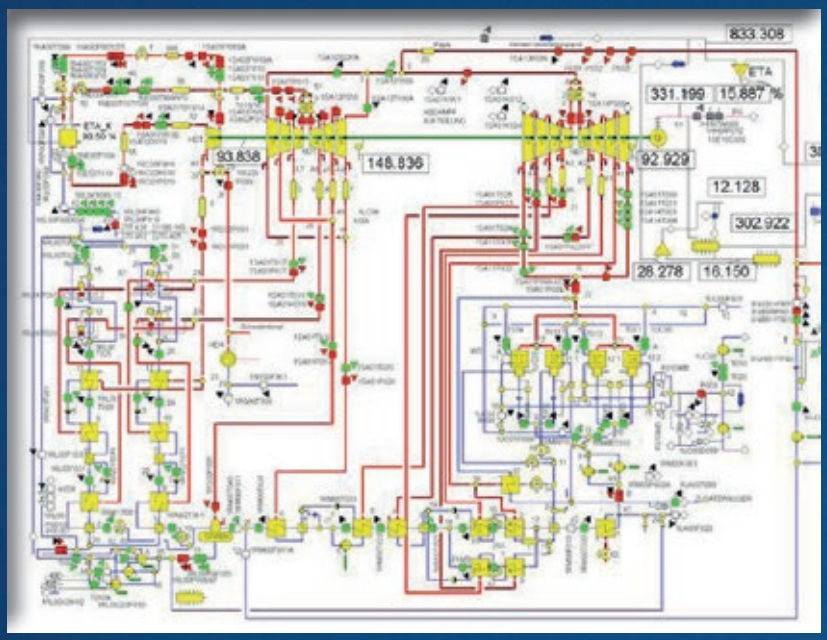
Monitoring and Optimization for an Efficient Plant Operation

We have developed a whole array of highly specialized software systems that can be applied for analyzing and optimizing the technical processes and thus for increasing the efficiency of all kinds of power plants. Our modules of the SR series are in use worldwide, among them a central data management system as well as solutions for process quality monitoring, for determining the lifetime consumption of highly stressed components, or for the statistical evaluation of performance values. Their intelligent early warning systems help on site to prevent plant failures and to enable a condition-based maintenance.

Design of Power Plant Processes

Our planning tool EBSILON®*Professional* allows us to simulate thermodynamic cycle processes. It is an indispensable tool for planning, designing, and optimizing plants. Owing to its flexible applicability, our customers can determine the benefit of repowering and retrofit measures and thus design a plant with an optimal performance according to its operating scenario and specific boundary conditions. A calculation of the effects of changed component efficiencies, various load cases, and changed environmental conditions can be simulated just as the integration of refurbished components into a cycle.



Intelligent Process Optimization

Terms like “artificial intelligence” or “neural networks” are not really common in the power industry. This does not apply to our subsidiary STEAG Powitec GmbH. Their core product, the PiT Navigator, proves itself in the model predictive control of complex processes in particular. The PiT Navigator uses advanced methods of artifical intelligence to optimize the technical process within the admissible operating range. If required, the self-learning system can consider signals from additional sensors like e.g. video or thermography cameras.

The PiT Navigator is applied successfully in various industries: in the cement industry e.g. for kiln control or mill optimization, in the power industry – among other things – for combustion optimization, and in thermal waste treatment (waste-to-energy) e.g. for combustion control or for high-efficiency SNCR.

Our Portfolio at

Operation Management and Maintenance of Plants

Integrated, database-supported applications for the operation management of plants.

RFID technology	RFID technology enables maintenance measures directly on site.
V-RFID technology	Visual V-RFID chips make the condition of a plant visible at any time, thus optimizing the maintenance on site.
SI®/PAM	The system SI®/PAM (plant asset management) combines profound know-how in the operation management of power plants with a modern GUI.

Monitoring and Optimization for an Efficient Plant Operation

Our solutions allow to monitor, check, and optimize the essential technical-economic coherences in the field of energy supply.

SR::x	SR::x is a powerful data management system that serves to process numerical data very easily and with high performance.
SR::xZentral	With the central system SR::xZentral, operating data and plant characteristics of connected power plant sites can be retrieved and processed in terms of superordinate questions.
SR::EPOS	The SR::EPOS system continuously analyzes and assesses the power plant process and thus reveals current economic losses, i.e. the potential for optimization.
SR::BCM	The system SR::BCM optimizes the required cleaning of steam generators by means of soot blowing.
SR::SPC	Early warning system for detecting changes of process and condition.
SR1	SR1 is a TÜV-certified solution for lifetime monitoring that continuously determines the creep damage and low cycle fatigue of highly stressed components (headers, ball-shaped parts, T-pieces, etc.).
SR::SPM	Early warning system for the lifetime monitoring of highly stressed pipes.

a Glance

Intelligent Process Optimization

STEAG Powitec is one of the leading suppliers in the field of optimizing closed-loop controls of complex processes and offers solutions (PiT Navigator) for:

Power plants: combustion optimization, mill optimization, SNCR control, optimal lime slurry metering (among other things)

Cement industry: kiln control, SNCR control, mill control (among other things)

Waste incineration plants: combustion control, high-efficiency SNCR control (among other things)

Design of Power Plant Processes

Simulation of thermodynamic cycle processes for the planning, design, and optimization of plants.

EBSILON®*Professional* EBSILON®*Professional* supports in the planning from the feasibility study right up to the detailed design of a plant. Owing to the high flexibility of the system, any cycle processes can be modeled at will. Additional modules (e.g. detailed boiler model, solar model, gas turbine library) expand the range of functions of EBSILON®*Professional* and support you in your planning task.

Service

We offer hotline support for all solutions and organize workshops as well as training seminars for customers. In addition, we welcome our customers to the regular user conferences. At our Analysis and Evaluation Center in Essen, Germany with access to the customer systems, our service team continuously analyzes the customer data, makes aware of changes in the plant behavior, and discusses these with the customer.

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