Energy Management with SIMATIC
From data acquisition to company-wide energy management
Utilized energy potentials, increased competitiveness

Energy is a particularly valuable resource. When striving for its efficient handling, reduced energy costs as well as increased competitiveness, systematic energy management is essential for production. Siemens offers a comprehensive product and solution portfolio for ensuring maximum transparency of energy flows – from the management to the field level.

Challenges of our time
Climate-sensitive energy supplies and energy efficiency are increasingly important in industry. At the same time, we see rapidly rising energy costs across the globe. Yet, surveys show that the application of suitable technologies allows for energy reductions by approximately 20 percent. As a result, for example, German production companies would be able to realize total savings of roughly five billion Euro per year.
Energy efficiency is a strategically important corporate subject for organizations of all sizes. The key to optimized energy procurement, considerable energy consumption reduction and significant competitive advantages lies in the implementation of efficient energy management across all production levels.

SIMATIC – our seal of quality in production technology
Energy-efficient production does not represent a stationary state, but a continuous challenge. When and where is energy consumed, where do load peaks occur, which plant parts can be disconnected and where can deteriorated energy characteristics be located?
Whether on the management or the field level: Our comprehensive portfolio supports you with the identification and maximization of your savings. From the SIMATIC B.Data energy management system down to consumption visualization on the machine’s operator panel – SIMATIC represents our seal of quality in production technology.
On the company level:

Smart decisions – significant savings

In order to take the right decisions at the right point of time, you require constant control of your company’s entire energy consumption. Our efficient energy management and reporting system in accordance with ISO 50001 help you to ensure maximum transparency and decision making: for all technology areas and energy processes – for single and multi-site applications.

All energy data in a single system: SIMATIC B.Data

The SIMATIC B.Data energy management system supports you with efficient energy monitoring and forecasting, takes over routine tasks such as reporting and provides a solid decision basis for planning and energy procurement. Individually configurable, specific key performance indicators (KPI), which are provided in the form of online charts, load curves, comprehensive reports or dashboards, serve as the basis for comprehensive energy controlling. Interfaces facilitate data exchange with higher-level ERP systems as well as the integration of production parameters or measured values from other production systems.

Managing your energy – with SIMATIC B.Data

SIMATIC B.Data is not only suitable for the rapid and easy generation of standard reports or dashboards. It also supports energy managers with the identification of saving potentials, the incorporation of specific algorithms and the preparation of individual, complex reports. It offers comprehensive reporting functions for this purpose. The energy costs to be expected can be easily calculated on the basis of available energy values and multiple tariff models.

This way, you can create a clear basis for assessment. Saving potentials, measure costs and efficiency results can be evaluated across sites, throughout the company and centrally. They serve as planning basis for sustainable energy management.

Energy Analytics – full utilization of hidden saving potentials

With Energy Analytics, your energy data are transferred to the Siemens Energy Service Center via a secure connection. Benefit from the knowledge of our energy experts and from conclusive energy reports which help you to fully utilize hidden saving potentials. Select the service package best suited for your requirements from our broad portfolio.

Whether you use SIMATIC B.Data on-site or make use of our Energy Analytics service – we offer:

- Reduced energy costs through certified energy management system
- Increased energy efficiency
- Optimized energy procurement
- Energy production process assessment
Better informed staff are able to take faster and more targeted decisions on-site, bringing more efficiency to energy management. For this reason, plant-level energy characteristics can be provided directly to production staff. This results in an energy-conscious organizational culture ensuring effective energy controlling across the board.

Close to production
Clear key performance indicators can be reviewed directly for increased efficiency of energy monitoring and control. We offer simple, standardized energy controlling on the machine and SCADA level. This way, you can interlink your production and energy data directly on the machine, for example, to determine energy unit costs (kWh/unit; kWh/shift). We support you with the machine-level provision and analysis of key performance indicators. Energy consumption data allow for up-to-date analysis of standby consumptions, increased wear and maintenance requirements and the quick identification of potential problems in operation. Our control technology allows instant responses to potential maintenance issues.

Reduction of power peaks
Our SCADA, SIMATIC WinCC and PCS 7 process control systems support the energy data’s online visualization, archiving and processing. The energy data acquired via SIMATIC S7 for all media are transferred to the control level in a standardized manner. Like all production information, the data can be archived on this level and visualized via operator stations. Of course, also all plant intelligence functions are provided.
Load peaks are avoided with the help of a forecast in 15-minute intervals and the short-term shedding of loads based on a pre-configured priority.

Benefit from:
- Reduced load peaks and resulting costs
- Increased plant efficiency
- Prioritized load shedding during non-productive periods
PROFIenergy – minimized energy consumption during break times

Utilize the standardized PROFIenergy interface for the systematic and planned disconnection of loads during break times, for a reduction of standby consumptions by up to 80% and for the devices’ safe restart. Our comprehensive portfolio supports you with the implementation of PROFI-energy in your plants to allow for significant energy savings.

Transparency on the machine
Machine-specific key performance indicators such as energy consumption per unit can be provided to the machine operator. This allows for an assessment of the machine’s current efficiency. Visualization is realized via SIMATIC standard panels with standard applications. This ensures the staff’s increased energy awareness as well as more efficient machine operation.

Joint efforts for increased efficiency
The assurance of energy efficiency is not just the task of individual staff members, but involves the entire company. Therefore, our solutions facilitate easy energy data visualization also on the machine level. Energy flows and potentials are made transparent directly on the machine, thanks to which they can be analyzed as well as optimized. This allows for the early detection and faster rectification of deviations.

On the machine level:

Increased efficiency

Efficiency starts with the individual machine. For continuous monitoring, all energy data such as current and power consumption are directly detected and visualized on the machine.

Your advantages
- Increased energy awareness
- Immediate responding options directly on the machine
- Cost savings through targeted disconnection during break times
On the field level:

Energy management starts with data acquisition

The monitoring of a company’s energy consumptions represents the basis for energy management. In order to ensure safe data acquisition, we offer powerful measuring technology for all media as well as standardized energy data detection.

Cost savings through standardized detection
Standards implemented in software and hardware such as energy measuring devices, circuit breakers, etc., facilitate a significant reduction of engineering expenditures. The application of SIMATIC S7 devices additionally facilitates increased availability and reduced costs. The SIMATIC product and engineering know-how is provided worldwide – by Siemens as well as a multitude of Solution Partners.

The automation technology already implemented in existing plants can also be utilized for energy management. Energy and process data are simply interlinked. Moreover, you will benefit from consistency in terms of data acquisition and processing thanks to Totally Integrated Automation (TIA) and the manufacturer-independent PROFINET and PROFIBUS standards. Of course, we also support many further interfaces for your existing infrastructure’s connection.

Energy detection for all media:
- SIMATIC ET 200SP AI energy meters
- SIMATIC ET 200 AI/DI modules, e.g. for water meters and temperature measuring
- SENTRON PAC 7KM, 3VA circuit breakers, SIRIUS devices (e.g. motor starters)
- SITRANS devices, e.g. for flowrate, temperature, pressure and filling levels

Your benefits include:
- Minimum investment risk through standard products
- Rugged and reliable plant technology
- Global basis of experts
- Utilization of the existing automation infrastructure for your energy management
Reduced energy costs

We offer everything required for successful energy management: Automated reports and analyses help energy managers and officials with their routine tasks. Moreover, we support sustainable energy management in accordance with ISO 50001. At the same time, our energy dashboard provides the management with a consistent overview of current events on the basis of important energy-relevant key performance indicators characteristics. This allows for fast corrective action by production staff. As energy efficiency starts on the machine, we provide energy values both on the field as well as on the plant level for full plant information transparency.

Intelligent energy data utilization – with Totally Integrated Automation

Efficient operational energy management necessitates the precise analysis of energy flows on machine, plant or company level by means of comparison values. This is the only way to identify specific saving potentials – and define targeted measures for utilizing these potentials.

This plant-wide transparency facilitates industrial data management. As a result, all important data acquired during productive operation are available in real time – wherever they are required. This in turn ensures highest decision reliability and paves the path for plant operation with maximum efficiency.

Totally Integrated Automation

Efficient interaction of all automation components

Totally Integrated Automation (TIA) creates the prerequisite for this. The open system architecture covers the entire production process and stands for the efficient interaction of all automation components. This is ensured by consistent data management, global standards and uniform hardware and software interfaces.
Highlights:

- Reduced energy costs through ISO 50001 certified energy management system
- Increased plant efficiency
- Cost savings through targeted disconnection during break times
- Minimum investment risk through standard products

SIMATIC energy management – take a look!