



Why energy management?



**01** Why energy management?

- **02** Why energy management?
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup
- **08** More information

# Why energy management?

# **Energy costs**

Electricity prices 2000–2018
Germany, industry

Annual increase in electricity price (Avg. '00–'18)



... Energy costs are a significant cost factor in production

# Laws and climate protection

**UN climate summit 2018,** Katowice, Poland

**Limiting** the temperature rise **worldwide** to



... to reach the goals, legal measures are taken

# **Image**

CO<sub>2</sub>-neutral business operations by 2030

Since the start of the program, reduction of global CO<sub>2</sub> emissions by



... Energy-efficient production is an important marketing instrument

→ Source: Statista Portal

→ Source: COP24 2018

→ Source: Siemens AG







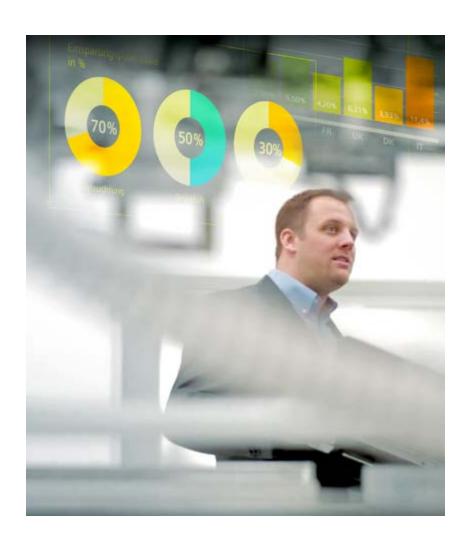
Why energy management?

- Why energy management?
- Portfolio overview
- Production-level energy monitoring
- Proactive load management
- Company-wide energy analysis
- Functions, system requirements and setup
- More information

# Good for the economy, people, and the climate

To achieve a sustainable reduction in  $CO_2$  emissions, we must make better use of resources – above all in industry. The goal: lower  $CO_2$  emissions, higher productivity.

Energy management is more than just lowering energy costs!







Advantages with SIMATIC



**01** Why energy management

**02** Advantages with SIMATIC

- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup
- **08** More information

# Advantages with SIMATIC

- Energy management as a component of sustainable production: Energy management is a holistic issue that concerns more than just building management systems and infrastructure. The linking of production data and energy data alone provides great potential to increase productivity and efficiency.
- It is important that companies use energy effectively and efficiently and to do so they require transparency regarding how much energy is being used when and for what purpose.
- Energy transparency is a prerequisite for energy efficiency and helps in the successful implementation of measures as well as in verifying the results and in ensuring their sustainability.
- Siemens have therefore developed a special solution within their TIA Portal framework for energy management, which can be seamlessly integrated into the automation environment.

- SIMATIC Energy Management supports you with a comprehensive and scalable portfolio of ISO 50001 certified products and solutions – ranging from energy data collection and visualization at the field level to company-wide energy data analysis and reporting at the management level.
- Benefit from SIMATIC Energy Manager PRO for companywide energy management, SIMATIC Energy Suite for production-level energy monitoring, and the SIMATIC S7 Energy Efficiency Monitor for the standardized efficiency assessment of machines.
- Active load management with SIMATIC Energy Suite helps you monitor agreed demand limits for electrical power and avoid penalty payments – automatically and without affecting production.
  - → Reference video
    RITTER SPORT SIMATIC Energy Manager
- → Reference video Pikolin SIMATIC Energy Management/SCADA systems





# 03.

Portfolio overview



- **01** Why energy management
- **02** Advantages with SIMATIC
- 03 Portfolio overview

- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup
- **08** More information

# Portfolio overview

Scalable software solutions from individual machines to plantwide solutions – SIMATIC allows you to achieve integrated and expandable energy management that is scalable to your needs as they grow.

- Integrated energy measurement: Our energy measuring systems integrate perfectly into your automation environment and can also be retrofitted individually, depending on the application.
- Production-level energy monitoring: SIMATIC Energy
  Management provides you with a simple way to equip your
  machinery and plants with a comprehensive solution for
  energy monitoring. From the recording of individual loads
  to detailed evaluation of the efficiency of entire machines,
  SIMATIC Energy Suite and the S7 Energy Efficiency Monitor
  bring energy transparency to your automation system. The
  engineering integrated into TIA Portal supports you with
  simple implementation of your production-level energy
  monitoring from consumption measurement to detailed
  efficiency analysis based on the condition of the machine
  or plant.
- Company-wide energy analysis: With our solutions for company-wide energy analysis, we support you with planning, implementation, and evaluation of efficiency measures; cost allocation to source; and compliance with the requirements of ISO 50001 – in a scalable and futureproof manner.

- Load management helps to monitor the power limit for electrical energy and to avoid penalty payments – automatically and with no effect on production.
- Increased transparency and efficiency for production lines: Monitor and optimize the performance and energy consumption of your production lines on a global scale in real time. SIMATIC MindApps prepare data managed by our IoT operating system, MindSphere, to bring you closer to your machines, plants, and automation processes. As a machine manufacturer, you can also offer your customers improved services and higher availability.





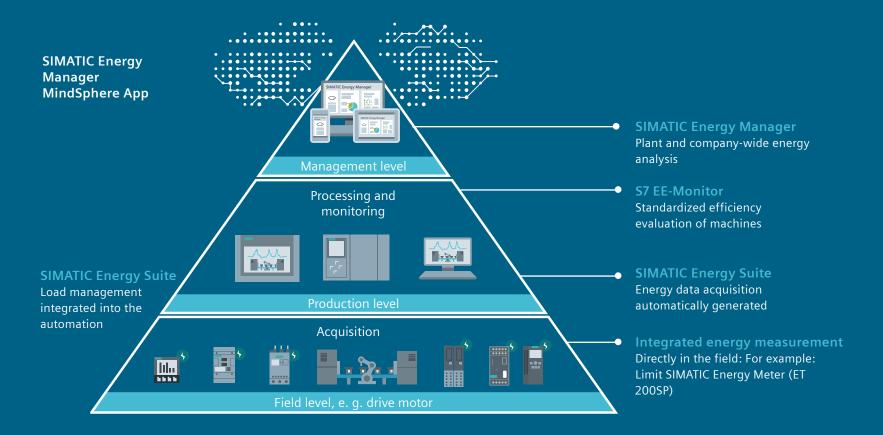




- Why energy management?
- Advantages with SIMATIC
- 03 Portfolio overview

- Production-level energy monitoring
- Proactive load management
- Company-wide energy analysis
- Functions, system requirements and setup
- More information

# SIMATIC Energy Management – Transparency and efficiency from the machine to the company as a whole





Production-level energy monitoring

- **01** Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring

- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup
- **08** More information

# Production-level energy monitoring



### Intelligent energy management in production

Operators of industrial plants must manage their energy consumption efficiently to maintain their competitiveness in the market. Manufacturers of machinery and plants have to demonstrate the energy efficiency of their solutions in detail. You can do so by using an energy management solution integrated into the automation system: With S7 Energy Efficiency Monitor and SIMATIC Energy Suite.

You can only take targeted measures to save energy and subsequently costs in your production if you know how much energy is consumed as well as where and when it is consumed.

# SIMATIC Energy Suite: Energy data acquisition generated automatically

SIMATIC Energy Suite as an option for the TIA Portal efficiently links energy management with automation, thus creating energy transparency in the production system. It allows different energy data to be grouped, buffered and visualized in a standard way. The considerably simplified configuration and automatic generation of the energy management program significantly reduce configuration costs. Due to the integrated interface to SIMATIC Energy Manager, the recorded energy data can be seamlessly expanded into a cross-site energy management system certified according to ISO 50001.





- **01** Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring

- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup
- **08** More information

# S7 energy efficiency monitor: Standardized efficiency evaluation of machines

With the S7 Energy Efficiency Monitor, machine manufacturers can simply document the energy efficiency of your machines based on six defined machine conditions and thus comply with the requirements of the VDMA Measurement Instruction 34179. The S7 Energy Efficiency Monitor is part of TIA Portal\* and enables integration of condition-based analysis of energy data into machines without great effort. The energy and media demand can automatically appear as an acceptance form on the SIMATIC operator panel and in Excel. Plant operators also benefit: The efficiency data are part of the automation and can be called up on the operator panel at any time and can optionally be transferred to the SIMATIC Energy Manager via the integrated interface and used for long-term evaluation across multiple machines. In this way, the operator can see the energy consumption over the plant life cycle at a glance, pick up any inefficient operating behavior and take suitable measures to correct it.

\*TIA Portal V15 or higher







Proactive load management

- **01** Why energy
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- 05 Proactive load management

- **06** Company-wide energy analysis
- **07** Functions, and setup
- **08** More information

# Proactive load management



## SIMATIC Energy Suite load management: avoid load peaks and spread loads evenly

Energy suppliers typically offer reduced tariffs for constant, predicted demand quantities. Power demand limits that are contractually agreed with the energy supplier are thus an instrument for limiting energy costs. However, if you cannot adhere to these power demand limits, you may face significantly higher prices or even penalty payments. Active load management in SIMATIC Energy Suite helps lower energy costs by avoiding load peaks - automatically and without affecting production.

# Proactive load management as an element of plant automation

The SIMATIC Energy Suite Load Management is an option of the TIA Portal (from V16) and efficiently links energy management with automation. It enables comprehensive load management for your production from the supply and brings load management directly into production. It is PLCbased load management and is therefore particularly reliable and flexible.



Company-wide energy analysis

- **01** Why energy
- **02** Advantages with SIMATIC
- Portfolio overview
- **04** Production-level
- **05** Proactive load
- 06 Company-wide energy analysis

- **07** Functions.
- **08** More information

# Company-wide energy analysis

## SIMATIC Energy Manager is the energy management system for industry, certified according to ISO 50001.

With SIMATIC Energy Manager, you can visualize energy flows and consumption values in your processes in detail, assign them to the relevant consumer or cost center and see why changes have occurred. Evaluate implemented efficiency measures, optimize your energy procurement and compare your energy efficiency across plants and locations - in a scalable, transparent and future-proof way.

## Lower operating costs, optimize energy procurement and comply with legal requirements

SIMATIC Energy Manager not only helps you to save energy costs but also supports you with improving the productivity and efficiency of your processes overall.

With SIMATIC Energy Manager, you can do so much more than just saving energy costs. Our powerful, scalable energy management system links energy and production data, thus helping you to calculate the productivity of energy consumption: How much energy does it cost to produce a certain product? What line can most efficiently be used for this? Why do two comparable lines consume different amounts of energy? SIMATIC Energy Manager helps you to find the answer to these questions – with clear, user-specific dashboards, meaningful energy indicators and versatile interfaces for measuring energy data.



Our powerful energy management system is available in two versions for applications of varying complexity: Basic and PRO. That way, you benefit from tailored functionality and an optimum price-performance ratio.

The scalable, TÜV-certified SIMATIC Energy Manager energy management solution facilitates compliance with the statutory requirements according to ISO 50001/50003/50006 and an energy-efficient and cost-effective operation of your systems.

- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- O6 Company-wide energy analysis

- **07** Functions, system requirements and setup
- **08** More information

# Company-wide energy analysis

### **SIMATIC Energy Manager Basic**

The SIMATIC Energy Manager Basic provides a simple way of getting started with energy management. It can be simply configured for the application in question by Web engineering – both in interaction with the automation system and for manual data acquisition. Predefined templates for reports and configurable dashboards support reporting. SIMATIC Energy Manager Basic can be upgraded simply at any time with a license key to SIMATIC Energy Manager PRO.

## **SIMATIC Energy Manager PRO**

SIMATIC Energy Manager PRO provides additional functions for comprehensive, ISO-compliant energy management. The software supports the user with extensive reporting for acquisition and visualizing key data and consumption data, as well as with tools for ascertaining indicators for more complex correlations. In addition, Energy Manager PRO allows a batch-related or material-related consumption analysis and projections for energy consumption. Various systems on the automation level can be integrated via numerous interfaces.

→ Brochure SIMATIC Energy Manager PRO

## **SIMATIC Energy Manager App**

The SIMATIC Energy Manager App for IOS and Android rounds off the portfolio with a simple and intuitive solution for mobile acquisition of consumption data of measuring instruments that are not or cannot be networked with the energy management system. The employee can identify the energy meter simply using the QR code or barcode and enter the relevant numeric value. Company-wide energy analysis

→ Find out more about SIMATIC to go

## SIMATIC Energy Manager MindSphere App

The Simatic Energy Manager MindSphere application helps companies to monitor and analyze the energy consumption of machines and plants distributed around the world.

This cloud-based application enables the user to call up, analyze, and compare energy data via MindSphere.

→ SIMATIC MindSphere Apps











- **01** Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- O6 Company-wide energy analysis

- **07** Functions, system requirements and setup
- **08** More information

# Efficient lightweight construction – less energy for die casting

GF Automotive provides the automotive industry and automotive supply industry with high-quality die-cast products all over the world. The production of such molded parts requires considerable amounts of energy. A comprehensive energy management system was installed in the Altenmarkt factory in Austria.

The actuality of now being able to record, display and assess energy flows in a detailed manner reflects the basis for further increasing energy efficiency.

Assurance of the EN ISO 50001 standard – certified energy management process

Verification of energy efficiency potential for the plants

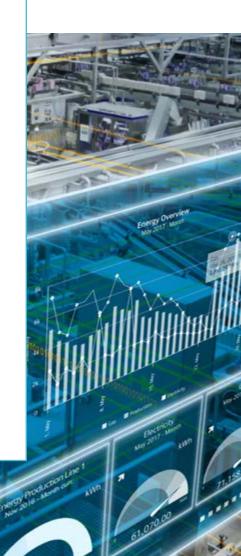
Savings attained with SIMATIC Energy Management:

4,500m<sup>3</sup>

Compressed air/weekend

10%

CO<sub>2</sub> emissions







Functions, system requirements and setup



- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- 07 Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Suite*

## **SIMATIC Energy Suite**

- Simple configuration direct in the TIA Portal
  - Option package for STEP 7 and WinCC (TIA Portal)
- Automatic program generation
  - Automatic generation of the S7 energy program
  - Recording and editing of the energy values and actuators (consumers and producers)
- Energy data recording and preprocessing in the automation system, close to the consumers
  - Energy data are collected, assigned with a timestamp and provided for archiving in a standardized way in the specified archiving period
- Choice of archive location
  - on SIMATIC memory card
  - in WinCC Professional archive with buffered communication
- Export tool for simple acquisition of energy data
  - Manual or fully-automatic export as an Excel file, including with individual export templates
- Display and monitoring of the energy data
  - Centralized and uniform data provision in the S7-CPU with standardized data structures
  - Uniform visualization of energy data and energy indicators on HMI and SCADA screens
- Active load management as an option in TIA Portal (from V16)
  - Efficient linkage of energy management with automation

 This is a PLC-based solution that has greater flexibility and reliability compared to a pc-only solution.

# SIMATIC Energy Suite consists of the following components:

#### **Engineering components (TIA Portal)**

- Adds new, integrated editors for configuration of the energy measurement points to the TIA Portal
- Includes S7 program generator for the automatic generation of the complete S7 program

# WinCC Runtime components (toolbox for WinCC Professional)

- Export tool: Export of the archived periodic energy data to Excel
- Transfer tool: Buffered communication of the energy values relevant to billing from S7-1500 CPU directly to the tag archive of WinCC Professional

# S7 driver block library (Energy Support Library - EnSL)

- Includes S7 blocks for easier communication with Siemens measuring products of the SIMATIC, SENTRON, SINAMICS, SIRIUS and SIMOCODE product families. With the Energy Support Library (EnSL), the devices can be detected and easily configured by the Energy Suite.
- → You can find details about currently supported devices here



- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Suite*

## **Technical data**

	SIMATIC Energy Suite V16
PC hardware requirements	<ul> <li>According to the requirement of the TIA Portal components:</li> <li>SIMATIC STEP 7 (TIA Portal)</li> <li>SIMATIC WinCC Professional</li> </ul>
Operating system requirements	<ul> <li>According to the requirement of the TIA Portal components:</li> <li>SIMATIC STEP 7 (TIA Portal)</li> <li>SIMATIC WinCC Professional</li> </ul>
Supported STEP 7 version	• SIMATIC STEP 7 V16
Supported WinCC versions	SIMATIC WinCC V16 Professional
Supported SIMATIC CPUs	<ul> <li>Runs on all S7-1500 CPUs (except S7-1500S) and ET 200SP CPU; with FW V2.0 and higher</li> </ul>





- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Suite*

## Ordering overview:

SIMATIC Energy Suite	Article No.: Download	On DVD
SIMATIC Energy Suite V16 Engineering including 10 Energy Objects (2x5 EnO)	6AV2108-0AA06-0AH5	6AV2108-0AA06-0AA5
SIMATIC Energy Suite V16 Engineering Trial	Download in Customer Support Portal	6AV2108-0AA06-0AA7
SIMATIC Energy Suite Engineering, Upgrade V14V15 -> V16	6AV2108-3AA06-0AK5	6AV2108-3AA06-0AE5
SIMATIC Energy Suite Engineering, SUS	6AV2108-0AA00-0AY0	6AV2108-0AA00-0AL0

PLC Runtime Licenses	Article No.: Download	On DVD	Footnotes
SIMATIC Energy Suite S7-1500, 5 energy objects (1x5 EnO)	6AV2108-0CF00-0BH0	6AV2108-0CF00-0BB0	2. 3.
SIMATIC Energy Suite S7-1500, 10 energy objects (1x10 EnO)	6AV2108-0CH00-0BH0	6AV2108-0CH00-0BB0	2.3.
SIMATIC Energy Suite S7-1500, 10 energy objects (2x5 EnO)	6AV2108-0DF00-0BH0	6AV2108-0DF00-0BB0	2. 3.
SIMATIC Energy Suite S7-1500, 50 energy objects (5x10 EnO)	6AV2108-0FH00-0BH0	6AV2108-0FH00-0BB0	2.3.
SIMATIC Energy Suite S7-1500, 100 energy objects (10x10 EnO)	6AV2108-0HH00-0BH0	6AV2108-0HH00-0BB0	2.3.
S7 EE-Monitor for Machines S7-1500/1200	6AV2108-1CF00-0BH0	6AV2108-1CF00-0BB0	1. 4.

<sup>&</sup>lt;sup>1</sup> Scope of delivery: Certificate of License (CoL) only. Function is included in STEP 7 / WinCC V16 or higher.

23



Scope of delivery: Certificate of License (CoL) only. Software is provided as part of the stand-alone Energy Suite V16 Engineering Package.

<sup>&</sup>lt;sup>3</sup> Independent of TIA Portal Version / S7-1500 FW V2.0 or higher

<sup>&</sup>lt;sup>4</sup>Independent of TIA Portal Version / S7-1500 FW V2.1 or higher/ S7-1200 FW V4.2 or higher



- Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *S7* energy efficiency monitor

### **S7** Energy Efficiency Monitor for machines

The S7 Energy Efficiency Monitor enables you to measure the efficiency of your machines consistently and visualize the data on the HMI.

The two S7 instructions Ens\_EEm\_Calc" and "Ens\_EEm\_ Report" are available for this purpose in TIA Portal V15 and above.

Based on the energy data of the machine and the piece counter, these modules calculate the media requirements of your machine for each machine mode in an energy performance index (EnPI).

The new function "S7 EE monitor for machines" is specifically targeted at machine manufacturers. It enables equipping machines with energy transparency functions and thus rounds out the functionality of the Energy Suite on the machine as well.

The functions can be integrated into every SIMATIC S7-1200 as well as S7-1500 controller from firmware version V4.2 and V2.1, respectively. This provides the plant operator oversight of energy consumption during the procurement stage as well as throughout the lifecycle of the plant.

# The S7 Energy Efficiency Monitor offers the following functions:

- Calculation of the energy performance indicators of your machine (in accordance with the VDMA 34179 measuring specification)
- Visualization of the data sets on an HMI device (SIMATIC TP900 Comfort)
- Creation of an energy efficiency log in Excel (in accordance with ISO 50001)
- Connection to higher-level systems, such as WinCC or Energy Manager PRO
- Visualization of the availability of your machine

For testing and commissioning purposes, the S7 -EE Monitor can be used for four hours without a license.

→ Application example S7 EE monitor



- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

*S7* energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *S7 energy efficiency monitor*

#### Technical data

	SIMATIC Energy Suite V16
PC hardware requirements	<ul> <li>According to the requirement of the TIA Portal components:</li> <li>SIMATIC STEP 7 (TIA Portal)</li> <li>SIMATIC WinCC Professional, Advanced, Comfort, Basic</li> </ul>
Operating system requirements	<ul> <li>According to the requirement of the TIA Portal components:</li> <li>SIMATIC STEP 7 (TIA Portal)</li> <li>SIMATIC WinCC Professional, Advanced, Comfort, Basic</li> </ul>
Supported STEP 7 version	• SIMATIC STEP 7 V16
Supported WinCC versions	<ul> <li>SIMATIC WinCC V16 Professional, Advanced, Comfort, Basic</li> </ul>
Supported SIMATIC CPUs	<ul> <li>Runs on all S7-1200 CPUs: with FW V2.1</li> </ul>
	• Runs on all S7-1200 CPUs; with FW V4.2

# **Ordering overview**

Runtime license	Article No.: Download	On DVD
S7 EE-Monitor for Machines S7-1500/1200	6AV2108-1CF00-0BH0	6AV2108-1CF00-0BB0



- **01** Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- 07 Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Manager*

# **SIMATIC Energy Manager energy management system**

SIMATIC Energy Manager provides users with a scalable, non-sector-specific energy data management system. SIMATIC Energy Manager forms the basis for cost-effective energy management aimed at increasing energy efficiency and thus reducing energy expenditures.

## The system offers the following specific benefits:

- Appropriate energy efficiency measures can be devised based on performance indicators and display options. When these measures are implemented successfully, cost savings are achieved.
- Power monitoring offers the basis for a secure power supply.
- Transparency at the cost-center level raises employee awareness and forms the basis for specifying clear, easy-to-understand targets, as well as for monitoring their achievement.
- Production processes can easily be connected and allow for energy performance evaluation.

- Transparency combined with forecasting functions increases planning reliability and opens up new opportunities in energy procurement.
- Energy controlling, with flexible reporting and analysis functions, helps ensure that efficient systems remain efficient.
- Free definition of performance indicators to facilitate verification of increases in the efficiency of power generation systems and machines.
- Openness is a top priority. With the OPC UA (HA) server, data can be made available to additional applications.
- The system fulfills the legal obligations for monitoring and reporting on greenhouse gas emissions (CO<sub>2</sub> emissions).



- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Manager*

### Functions at a glance

SIMATIC Energy Manager forms the basis for cost-effective energy management aimed at reducing energy expenditures and increasing energy efficiency.

# Acquisition and preprocessing of energy and operating data

- Preprocessing of energy data as specified via formula editor
- Energy Manager app for iOS and Android for mobile meter data acquisition
- Automatic plausibility check and generation of substitute values, long-term archive
- Matrix and measured value editor

#### Monitoring

- Display of current and projected operating values in one chart
- Energy management dashboards
   Reporting on quantities produced, consumption, and costs

#### Controlling

- Freely parameterizable balancing of the energy flows of various media
- Determination of performance indicators with direct reference to production
- Evaluation of the energy purchasing calculation
- Target/actual performance analysis of energy consumption and costs

- Determination and display of statistical parameters
- Benchmarking of various plants or sites
- Machine-status-related energy analyses

#### • Cost-center-oriented accounting

- Flexible modeling of hierarchical accounting structures
- Tariff allocation of quantities and flexible price assessment with tariff and price time series
- Transfer of consumption figures/costs to the ERP system

#### • Baseline management

 Model creation with historical data for calculating theoretical energy consumption (baseline) as a default value for energy monitoring or controlling

## • Energy forecast

- Generation of demand forecasts based on productiondependent factors (production planning) and basic load profiles (typical days)
- Modeling with multivariable regression analysis

## Management of energy efficiency measures

- Central recording of all energy efficiency measures
- Automatic cost-effectiveness calculation
- Predefined status for implementation progress



- **01** Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Manager*

#### Power monitoring

- Simple visualization of measured values
- Precise time analyses for identifying the cause of fault

#### • Energy Reporting

- Freely parameterizable report generator
- Fully automated reporting, e-mail dispatch, and document management
- Web client for company-wide access
- KPI message system

## • Support for the S7 Energy Efficiency Monitor

- Data transfer from the S7 Energy Efficiency Monitor via a communication module
- Uniform display of efficiency indicators of machines lines / cost centers
- Energy consumption and costs displayed at the machine level and cost center level, per workpiece or shift
- Benchmarking of same machines/workpieces from different manufacturers



- **01** Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- 07 Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Manager*

## **Easy start with SIMATIC Energy Manager Basic**

Energy Manager Basic can be configured entirely via the web and provides you with a simple introduction to energy data management. You can upgrade from the Basic edition to the PRO edition at any time with the appropriate license key.

- Easy configuration of dashboards, charts, and reports
- Analysis of detailed data made possible by power monitoring
- Configuration of data points and the OPC UA, OPC DA, OPC HDA, Energy Suite, WinCC/PCS 7, Modbus/ TCP, Desigo CC, and ASCII interfaces, as well as manual data acquisition
- Definition of derived data points in order to save performance indicators as a time series for data export, for example
- Simple authorization concept
- Multiple languages (EN, DE, IT, FR, ES, and CN) available for web client
- Configuration of performance indicator data with a formula editor
- Configuration of parameters to display prices or factors

- Tabular overview and options for structuring data sources, data points, performance indicators, and parameters
- Configuration of key settings, for example, e-mail settings, backup, units, regional settings, account settings
- OPC UA (HA) server for making data available to other applications



- Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Manager*

#### **Technical data**

	SIMATIC Energy Manager PRO V7.2
Operating system	<ul> <li>Windows Server 2012 R2 (English/German)</li> </ul>
	<ul> <li>Windows Server 2016 (English/German)</li> </ul>
	<ul> <li>Windows Server 2019 (English/German)</li> </ul>
	<ul> <li>Windows 8.1 Pro/Enterprise 64-bit (English/German)</li> </ul>
	Windows 10 Pro/Enterprise 64-bit (English/German)
Connection	Interface to SIMATIC Energy Suite
	<ul> <li>Latest interface standards such as WinCC, PCS 7, Desigo CC, OPC UA (DA, HA), OPC DA, OPC HDA, Modbus TCP, ODBC, ASCII, or XML, S7 Energy Efficiency Monitor machine drivers</li> </ul>
WinCC versions <sup>1</sup>	• SIMATIC WinCC V7.4, V7.5
	• SIMATIC WinCC RT Professional V14, V15, V15.1
PCS 7 versions <sup>2</sup>	• SIMATIC PCS 7 V8.2, V9

30



<sup>&</sup>lt;sup>1.</sup> When installing a recording computer on a WinCC system, the relevant requirements stated must be complied with.

<sup>&</sup>lt;sup>2</sup>-For a connection to PCS 7, the SIMATIC Energy Manager PRO system must always be installed on a separate PC



- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Manager*

## **Ordering overview**

SIMATIC Energy Manager V7.2	Article No.: Package	Article No.: Download
SIMATIC Energy Manager Basic incl. 50 Tags	6AV6372-1DF07-2AX0	6AV6372-1DF07-2AH0
SIMATIC Energy Manager PRO incl. 50 Tags	6AV6372-2DF07-2AX0	6AV6372-2DF07-2AH0
SIMATIC Energy Manager PRO Powerpack Basic -> PRO	6AV6372-2DF07-2AX3	6AV6372-2DF07-2AH3
SIMATIC Energy Manager Basic/PRO Tag Package 50 <sup>1</sup>	6AV6372-2DF07-0CX0	6AV6372-2DF07-0CH0
SIMATIC Energy Manager Basic/PRO Tag Package 100 <sup>1</sup>	6AV6372-2DF07-0DX0	6AV6372-2DF07-0DH0
SIMATIC Energy Manager Basic/PRO Tag Package 250 <sup>1</sup>	6AV6372-2DF07-0EX0	6AV6372-2DF07-0EH0
SIMATIC Energy Manager Basic/PRO Tag Package 500 <sup>1</sup>	6AV6372-2DF07-0FX0	6AV6372-2DF07-0FH0
SIMATIC Energy Manager Basic/PRO Tag Package 1000 <sup>1</sup>	6AV6372-2DF07-0GX0	6AV6372-2DF07-0GH0
SIMATIC Energy Manager Basic/PRO Tag Package 5000 <sup>1</sup>	6AV6372-2DF07-0HX0	6AV6372-2DF07-0HH0
SIMATIC Energy Manager Basic/PRO Tag Package 30000 <sup>1</sup>	6AV6372-2DF07-0JX0	6AV6372-2DF07-0JH0
SIMATIC Energy Manager Extensions	Article No.: Package	Article No.: Download
SIMATIC Energy Manager, 3 Web Clients <sup>4</sup>	6AV6372-2DF27-0AX0	6AV6372-2DF27-0AH0
SIMATIC Energy Manager, 20 Web Clients <sup>4</sup>	6AV6372-2DF27-0BX0	6AV6372-2DF27-0BH0
SIMATIC Energy Manager, 60 Web Clients <sup>4</sup>	6AV6372-2DF27-0CX0	6AV6372-2DF27-0CH0
SIMATIC Energy Manager PRO Client <sup>3</sup>	6AV6372-2DF37-0AX0	6AV6372-2DF37-0AH0
SIMATIC Energy Manager PRO Planning & Forecast	6AV6372-2DF47-0AX0	6AV6372-2DF47-0AH0

6AV6372-2DF57-0AX0

6AV6372-2DF57-0AH0

**SIMATIC Energy Manager PRO Acquisition** 



- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Manager*

## **Ordering overview**

Article No.: Package	Article No.: Download
6AV6372-2DF00-0CL0	6AV6372-2DF00-0CY0
6AV6372-2DF00-0DL0	6AV6372-2DF00-0DY0
6AV6372-2DF00-0FL0	6AV6372-2DF00-0FY0
6AV6372-2DF00-0HL0	6AV6372-2DF00-0HY0
6AV6372-2DF70-0XL0	6AV6372-2DF70-0XY0
	6AV6372-2DF00-0CL0 6AV6372-2DF00-0DL0 6AV6372-2DF00-0FL0 6AV6372-2DF00-0HL0

SIMATIC Energy Manager PRO 7.1 to Energy Manager PRO 7.2 Upgrades	Article No.: Package	Article No.: Download
Upgrade from systems with up to 50 tags and 1 consumer package <sup>5</sup>	6AV6372-2DF07-2CX4	6AV6372-2DF07-2CH4
Upgrade from systems with up to 100 tags and 5 consumer packages ⁵	6AV6372-2DF07-2DX4	6AV6372-2DF07-2DH4
Upgrade from systems with up to 500 tags and 25 consumers <sup>5</sup>	6AV6372-2DF07-2FX4	6AV6372-2DF07-2FH4
Upgrade from systems with up to 5000 tags and 100 consumers <sup>5</sup>	6AV6372-2DF07-2HX4	6AV6372-2DF07-2HH4
Upgrade from systems with > 5000 tags and > 100 consumers ⁵	6AV6372-2DF77-2XX4	6AV6372-2DF77-2XH4



- **01** Why energy management?
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and setup

Energy Suite

S7 energy efficiency monitor

Energy Manager

**08** More information

# Functions, system requirements and setup – *Energy Manager*

## **Ordering overview**

SIMATIC Energy Manager PRO Consumer	Article No.: Package	Article No.: Download
Consumer Package 1 incl. S7 EE-Monitor <sup>3</sup>	6AV6372-2DF67-1AX0	6AV6372-2DF67-1AH0
Consumer Package 5 incl. S7 EE-Monitor <sup>3</sup>	6AV6372-2DF67-1BX0	6AV6372-2DF67-1BH0
Consumer Package 25 incl. S7 EE-Monitor <sup>3</sup>	6AV6372-2DF67-1CX0	6AV6372-2DF67-1CH0
Consumer Package 1 excl. S7 EE-Monitor	6AV6372-2DF77-1AX0	6AV6372-2DF77-1AH0
Consumer Package 5 excl. S7 EE-Monitor	6AV6372-2DF77-1BX0	6AV6372-2DF77-1BH0
Consumer Package 25 excl. S7 EE-Monitor	6AV6372-2DF77-1CX0	6AV6372-2DF77-1CH0
SIMATIC Energy Manager TRIAL	Article No.: Package	Article No.: Download
SIMATIC Energy Manager Basic/PRO TRIAL	6AV6372-2DF17-2AX0	Download from Customer Support

Portal 109771158 33

<sup>&</sup>lt;sup>5</sup> The tag and consumer count are additional tags or consumers to the basic package. The 50 tags or the 1 consumer from the basic package will not be counted.



<sup>1</sup>The number of tags can be dynamically expanded with tag packages. The total number of tags is increased by the value of the respective tag package.

<sup>&</sup>lt;sup>2</sup> The SUS contract runs for 1 year. The contract is automatically extended by a further year unless canceled 3 months prior to expiration.

<sup>&</sup>lt;sup>3</sup> With the COL of the license package the S7 EE-Monitor can be activated.

<sup>&</sup>lt;sup>4</sup> For the Client license as well as the Web Client license the concurrent access is considered. E.g. 5 users are working with the Web Client of Energy Manager but only 3 are working at the same time. In this case 3 Web Clients are necessary. Same is valid for the desktop client.

# 

More information



- **01** Why energy management
- **02** Advantages with SIMATIC
- **03** Portfolio overview
- **04** Production-level energy monitoring
- **05** Proactive load management
- **06** Company-wide energy analysis
- **07** Functions, system requirements and
- 08 More information

# Find out more: siemens.com/simatic-energy-management

# SIMATIC Energy Management – integrated and transparent

- Integrated energy management
- Reducing energy costs
- Fulfilling statutory requirements
- An overview of energy consumption for your entire company at all times



Follow us on: twitter.com/siemensindustry youtube.com/siemens

#### Published by Siemens AG 2019

Digital Industries Factory Automation P.O. Box 48 48 90026 Nuremberg Germany

Article No. DIFA-I10050-00-7600

SIMATIC Energy Management

Changes and errors excepted. The information provided in this document contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

35

Further information under: siemens.com/simatic-energy-management

