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# Technical article on audit obligation

January 2020

### Up to 120,000 companies affected

A new law for partial implementation of the energy efficiency directive requires companies above a specified size to carry out regular energy audits at four-year intervals. The new verification is to be provided at the latest by the deadline of December 5, 2015. Accordingly, backlogs are already becoming apparent. The law, however, provides for an alternative to the elaborate audits: energy management according to ISO 50001. Power monitoring systems offer the technical basis for this. On March 6, 2015, Germany's Bundesrat, or Federal Council, approved draft legislation for partial implementation of the energy efficiency directive (2012/27/EU) written by the Federal Ministry of Economics and Energy (BMWi): the new version of the law on energy services and other energy efficiency measures (EDL-G), with concrete ramifications for companies..

### The amended legislation affects all companies that are not considered small to medium-sized enterprises (SMEs) as per the EU definition.

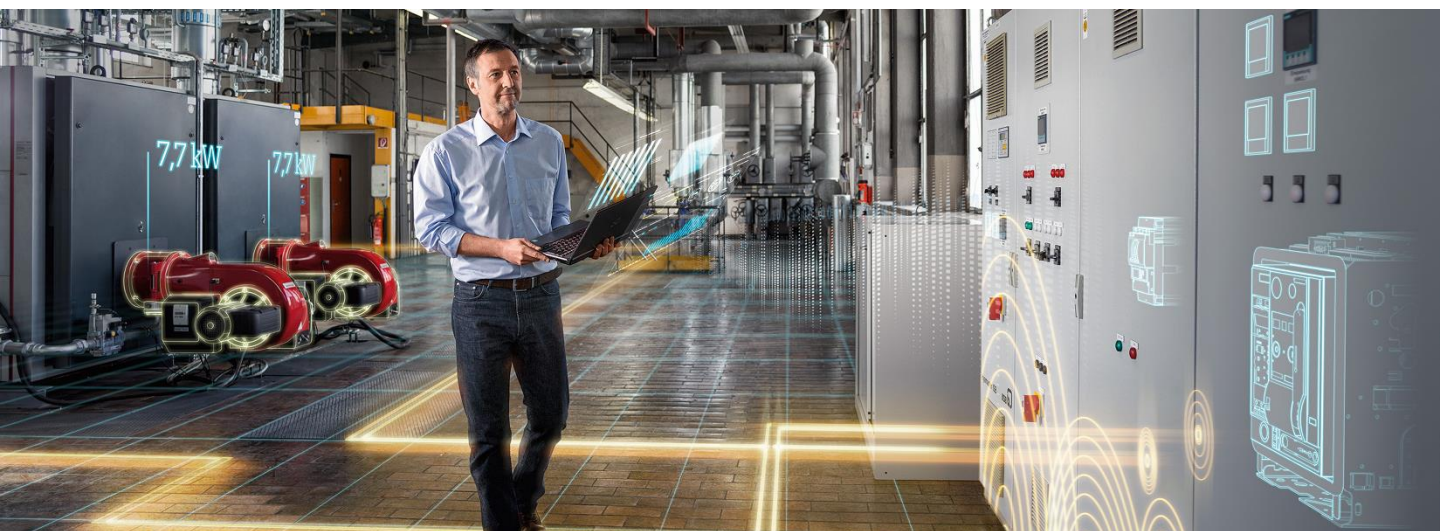
This is the case if at least one of the three following criteria apply:

1. The **company employs** at least 250 people.
2. **Annual revenue** is at least EUR 50 million or the annual balance sheet total is at least EUR 43 million.
3. **Financial participation** in other companies exceeds 25% in the case of partnerships or 50% in the case of affiliates.

According to the latest estimates, between 50,000 and 120,000 companies in Germany fulfill at least one of the three stated criteria. With the energy audits not required, they will be faced with new challenges, and not least, additional costs as well.

The audits are intended to provide the companies an instrument for analyzing their energy consumption and making conscious decisions concerning the implementation of efficiency measures. In this, the energy audit must meet the requirements arising from DIN 16247-1, which provides for an inventory of all power sources and energy consumers used, including on-site inspections at all locations. The audit can be carried out both by external advisers or service providers and by the company's own personnel.

The BMWi forecasts average costs of EUR 4,000 per audit with a range from roughly EUR 2,400 to 8,000. For companies with a vast number of locations, qualified auditing could become significantly more expensive. In the draft legislation, annual costs of roughly EUR 112 million are anticipated for German industry as a result of the audits. In addition, the federal government will incur approximately EUR 2.3 million. Moreover, backlogs in auditing are expected by the deadline of December 5, 2015.



# Exemption from the auditing obligation thanks to an energy management system

## The law provides for exceptions, however:

Companies with an energy management system in place according to DIN EN ISO 50001 or also an environmental management system according to EMAS (Eco-Management and Audit Scheme) are exempted from the duty to carry out energy audits. This pertains to power-intensive operations, for example, which have implemented such systems in order to take advantage of the special compensation rules of the German Renewable Energy Act (Erneuerbare-Energien-Gesetz – EEG) or the tax break available in the Energy and Electricity Tax Act, the so-called "Spitzenausgleich". This regulation is also attractive, however, for companies that have only just implemented relevant systems. They have time for implementation up until the beginning of 2017 and up to that time, they will not be subject to the auditing obligation even in the event that the measures have not yet been implemented.

The implementation of energy management according to DIN EN ISO 50001 is worthwhile for companies in any case. Several steps are required, however: from the development of a company energy policy, right down to subsequent certification.

In the process, the measures in the areas of energy procurement, supply, and utilization, have to be carefully coordinated to one another. That is why a holistic approach is necessary, and one that places demands above all on top management: The conscious and careful handling of energy must be second nature to all employees in the company.

The starting point for successful optimization is a continuous process that constantly monitors energy consumption, develops various efficiency measures and implements the optimal concept. In developing concepts, right down to implementation and operation of an efficient power supply, it needs to take all levels of the enterprise into account – from management right down to the field level. And finally, it needs to create transparency throughout the entire product life cycle, e.g. through constant data monitoring and visualization of all energy flows. In this manner, companies can identify areas of potential where energy costs can be sustainably lowered.

Additional costs without direct benefit



Little time for implementation



Advisory bottleneck due to small group of certified auditors



With a certified

## Energy Management System

according to DIN EN ISO 50001 these can be avoided



Costs pay for themselves through energy savings



Longer waiting period for implementation



More scope for advice and optimization

# Power Monitoring as Technological Basis

**The improvement of energy data transparency thus becomes a key task in the implementation of energy management.**

Only when power data is available in a sufficient volume and is recorded in meaningful places can the insights gained lead to concrete savings measures and to the optimization of energy efficiency. And only when the recorded data can be systematically analyzed and turned into data knowledge can savings opportunities be identified and successfully implemented measures subsequently verified.

Technical solutions such as detailed power monitoring are an important building block towards achieving greater energy efficiency.

To handle this task, Siemens offers a high-performance power monitoring system in the form of its powermanager software as well as measuring devices from the Sentron portfolio. The complete package with software, measuring devices and switches has been tested by TÜV Rhineland for conformity to support an energy management system according to ISO 50001. The electrical energy data, including voltages, currents, power, energy values, and frequencies are generally measured directly via 7KM PAC series measuring devices. Additional measured data can be integrated into the monitoring system via a generic MODBUS.

The monitoring of recorded energy flows is achieved with the powermanager software. It monitors and archives the electrical parameters collected by the devices, such as voltage, current, power, energy levels and frequencies. In this, it makes no difference whether the data originate from a measuring device, a communication-capable molded case circuit breaker

or an existing counter. In terms of hardware, powermanager only requires a Windows PC and a LAN network for Ethernet (MODBUS TCP).

The power averages of the characteristics monitored are displayed on the PC as load curves for comparison. This allows load profiles of different production lines or company sites to be compared with one another. Also indicated in the display are power distribution faults, permitting a fast response. Reports can be drawn up using pre-installed templates, for example to show cost center allocations, measured value comparisons, or duration curves.

The TÜV-certified Siemens

## Energy Monitoring System is the optimal technical basis

for an operational energy management in accordance with DIN EN ISO 50001

Record consumption data precisely with the measuring instruments

**7KT/7KM PAC**



Regular controlling of performance values with the software **powermanager**



# Bottom Line

With the new version of the law on energy services and other energy efficiency measures (EDL-G), new requirements are up ahead for up to 120,000 larger companies in Germany: They are required to undergo an energy audit by December 5, 2015 and afterwards every four years. This duty is not required in case energy management is implemented according to ISO 50001. Systematic power monitoring provides the technical prerequisite for this.

**You can find out more about our power monitoring system, along with an info graphic on the topic, at [siemens.com/powermonitoring](https://www.siemens.com/powermonitoring)**

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