



PROFlenergy
Energy cost savings,
easy and vendor-neutral



... guarantees sustainable business success.

Saves energy costs

PROFenergy enables the active and effective energy management of automation equipment on PROFINET networks. By intelligently switching off unneeded consumers over the network, energy demand and, thus, energy costs can be drastically reduced.

Guarantees device and vendor neutrality

PROFenergy uses existing PROFINET mechanisms, which ensures fast and simple implementation. PROFenergy commands can be transferred throughout the PROFINET network enabling individual field devices or whole production cells to participate in smart energy management strategies. Field devices both with and without PROFenergy functionality can be operated on a common PROFINET cable. So integration into existing systems is easy and troublefree.

Assures competitive advantage for all

PROFenergy sets the standard. Vendors can increase their competitive advantage through the integration of PROFenergy into their products. Users can satisfy their requirements for energy management in a targeted manner, with multi-vendor choice leading to lower costs and a better environmental balance.

Easy to use

An integrated switching function in field equipment enables energy savings not only during long pauses but also during short and extremely short pauses. Devices are remotely controlled by PROFenergy commands. For this reason, even complex dependencies regarding the switch-off and switch-on sequences of individual devices can be coordinated. PROFenergy guarantees absolute reliability of plant availability because all equipment is fully ready to operate at the end of the pause.

Saves wiring expense

PROFenergy begins where previous approaches fail. This is because manual shutdown of unneeded energy consumers is too cumbersome in most cases. Previous automated approaches required additional hardware and space in the control cabinet as well as discrete wiring, which meant additional expense that often was not worth it. PROFenergy integrates the switching function inside the devices and all commands are transmitted over the existing network.



PROFlenergy – the solution for energy efficiency ...



Standards and regulations are increasingly putting the focus on environmental protection and more effective energy management. Industry has the goal of saving energy and actively reducing CO₂ emissions. In production environments, it is also important to reduce costs through energy savings, thereby assuring a lasting competitive advantage. PROFlenergy contributes actively to environmental protection.

With PROFlenergy, PROFIBUS & PROFINET International (PI) is now making its own contribution to environmental protection through the careful management of automation resources. The specification was developed within a period of only nine months. This standardization of an energy saving profile for automation – the first to be accomplished anywhere in the world – involved field device manufacturers, machine builders, and plant operators as an integral unit, all of whom will benefit from its deployment.

Production plants exhibit high energy consumption nowadays even during pauses. This is exactly the focus of PROFlenergy. **Using PROFlenergy, it is possible to easily and reliably switch unneeded consumers into optimized energy saving modes during pauses – a potential that up to now has gone untapped.**

Based on the international communication standard PROFINET, PROFlenergy commands can be used to switch PROFINET field devices into energy saving modes in a coordinated manner – and do so across vendors independently of device types. At the conclusion of the pause, the field devices are again available and ready for operation on a reliable basis.

As a result of this approach, PROFlenergy also conserves primary resources such as oil, gas, and coal, because these do not have to be converted into electrical energy to start with.

... practice-oriented implementation ...

In order to achieve a high level of roadworthiness for PROFlenergy, several scenarios were defined jointly with users.

Switching off consumers during short pauses

Examples of short pauses are meal breaks. They range from several minutes up to one hour. Whenever power is not needed, energy should be saved, but without jeopardizing the plant availability. During short pauses, it is also possible to switch off only a portion of consumers. If full production power is required at the end of the pause, this is made available without delay.

Switching off consumers during long pauses

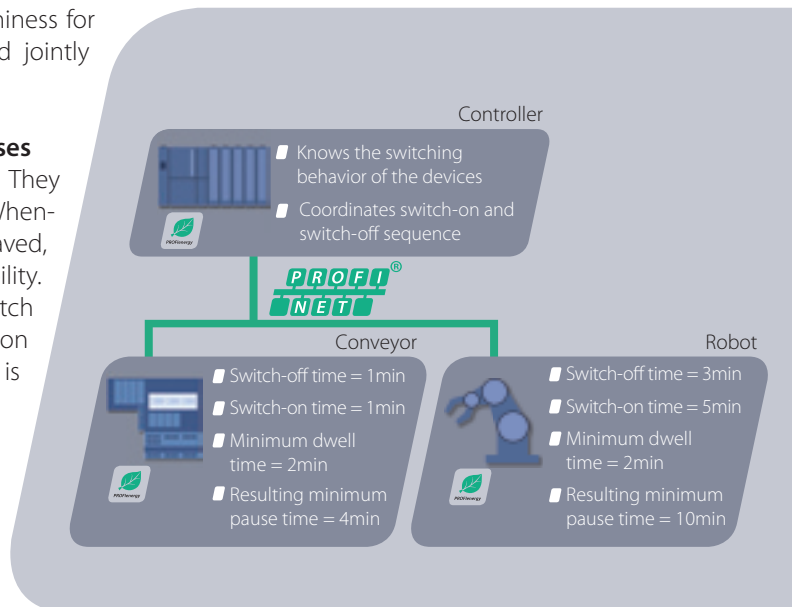
Typical pauses of this type are nights and weekends. Because this pause is significantly longer, additional consumers can be switched to energy saving mode. This allows even slow-acting processes, such as ovens, to be addressed. Because more time is available, a maximum of energy can be saved during these pauses. Accordingly, entire plant sections can also be placed in energy saving mode.

Switching off consumers during unplanned pauses

The characteristic of this scenario is that the pause is not planned. The timing and length of the interruption cannot be predicted. Nevertheless, energy should be saved in such cases as well. These interruptions occur, for example, when there is a stoppage in the material flow. Because even complex dependencies among plant units can be coordinated using PROFlenergy, energy can also be saved optimally in these cases.

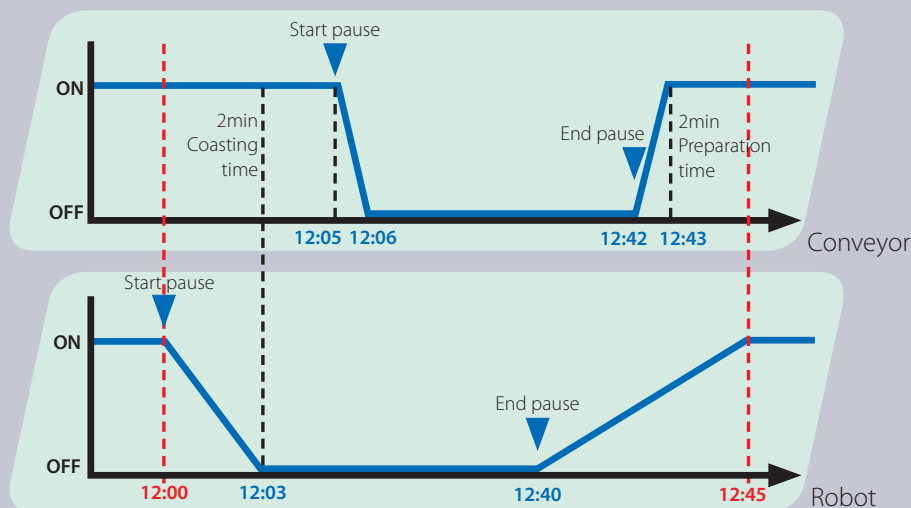
Measurement and visualization of energy demand

PROFlenergy also allows energy consumption data, such as electrical power, to be read out from the devices in a uniform format. During operation, this information can be recorded – and/or displayed on an HMI device, for example - in a uniform format for further processing. These functions of PROFlenergy provide the basis for further energy and cost savings through active load and energy management during operations.



... and easy to use.

PROFenergy in practice: Example scenario for coordinated switch-on and switch-off of a conveyor system



What does PROFenergy achieve?

PROFenergy allows the plant operator to switch unneeded consumers to an energy saving mode in a coordinated manner during pauses. The user programs the energy saving behavior using simple function blocks and his familiar engineering tool. It makes no difference whether a simple I/O station or a complex machine tool is involved. The plant operator does not have to concern himself with the particular technology.

The manufacturers of the devices or plant units define the PROFenergy behavior according to the specific device properties. This determines how the machine makes optimal use of the pause time. Thus, for example, a glue robot can be switched to energy saving mode for a short time. During long pauses, on the other hand, the glue must not harden. On this basis, the plant operator optimizes the interaction of devices and plant units.

PROFenergy in practice

The example system described above consists of a controller, a conveyor belt, and a robot. Based on the production process, the conveyor belt may only be switched off two minutes after the robot and must be ready to operate two minutes before the robot. PROFenergy is used to determine the time behavior of the conveyor and robot. The switch-on and switch-off times of the conveyor are one minute each. The device must be switched to energy saving mode at least two minutes before it may be switched on again: this establishes the pause scenario.

Get set for PROFlenergy!

Practice-oriented standard

A total of 14 companies and university institutes participated in a collaborative effort to produce the PROFlenergy specification in minimum time. To ensure immediate suitability for use end users were actively involved. Continuous dialog and close coordination with customers ensured that the specification is easily implemented and is compatible with existing program standards.

Reliable technology leadership

PROFINET is the first industrial network in the world to actively address energy management in a comprehensive and integrated way. Important user requirements have been gathered and implemented consistently for targeted results. In this way, PI has underscored its position as the leading technology driver in the field of industrial communication. Take advantage of the technological advancement that PROFINET offers and assure your own competitive advantage! Count on effective energy management and save energy and costs by means of PROFlenergy.

Support

PI supports you in this process in various ways. You can stay informed about PROFlenergy through trade fair presentations and through technical publications in relevant automation magazines. Additional details and possible practical applications in industrial environments are described in a white paper entitled „The PROFlenergy Profile“, which interested users can download free of charge from the PI website (www.profibus.com/downloads). In addition to providing an easy-to-understand overview of the profile, it presents a simple application example and summarizes the practical and economical benefits.

If you have questions about PROFlenergy, you are invited to contact our experts and the PI Support Center for guidance and assistance. You will find additional information online at www.profienergy.com.