Energy monitoring

Simply see more.

Intelligent energy monitoring
For functional and commercial buildings

:hager


DANGER
CAUTION
OFF
ON
hager

One system. All-encompassing effect.

Since DIN VDE 0100-801 entered force in October 2015, increasing focus has been placed on energy efficiency in functional and commercial buildings, too. This is due not least to the targets set at the UN World Climate Conference (Kyoto 2020). Much of the efforts made in this area involve utilising electrical energy in the best-possible and most efficient manner. And this is exactly where our energy monitoring system comes in. It displays and clarifies. It provides information. It helps to interpret this data. And it helps you make better decisions when it comes to the planning, installation and day-to-day operation of low-voltage installations.

Read on to find out how simple the system is to use and what benefits it offers. Also visit **hager.de/agardio**

DIN VDE 0100 is the “Bible” when it comes to installing low-voltage installations.
The new group 800 currently contains only part 801 and explicitly describes for the first time the energy efficiency requirements applicable during the planning of such systems.

DIN VDE 0100 – Erection of low-voltage installations						
Group 100	**Group 200**	**Group 400**	**Group 500**	**Group 600**	**Group 700**	**Group 800**
Application areas and fundamentals	Terms	Protective measures	Choosing and installing electrical equipment	Tests	Requirements for industrial premises, rooms and special systems	**Energy efficiency**

Small, intelligent – and always up to date with the current activity of up to 31 Modbus devices: our new energy monitoring server **agardio.manager.**

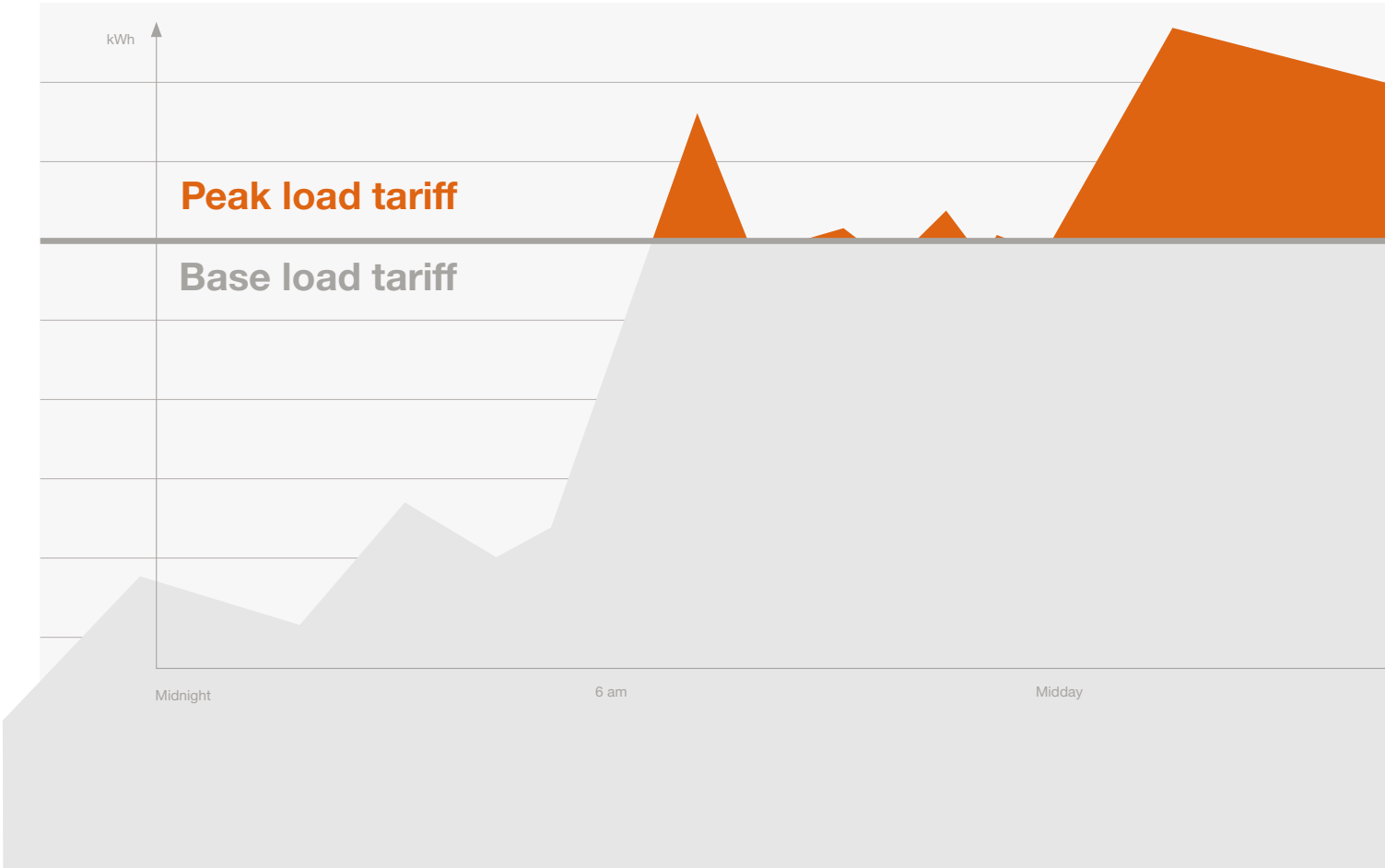
The difference between guesswork and knowledge.

The real heart of the system – the **agardio.manager** – is rather unassuming. This tiny piece of highly intelligent technology is just six modules wide. But it packs a real punch: it records and queries the current activities of up to 31 Modbus-connected devices – and tells you precisely where there is potential for optimisation. And you? You can see instantly where efficiency gains are possible.

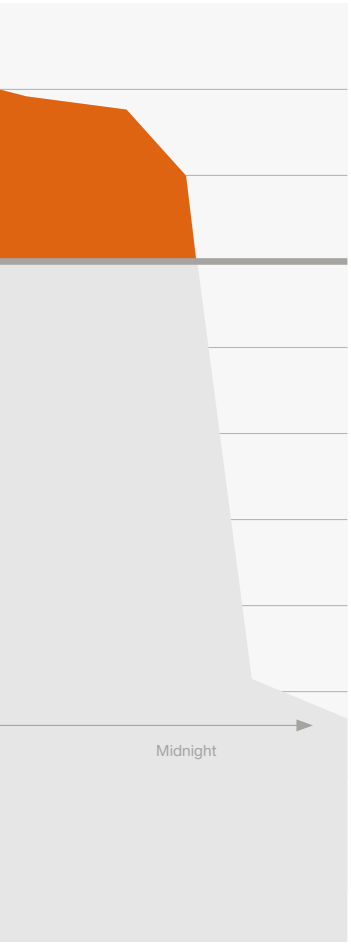
Stay standards-compliant, work efficiently, cut operating costs – replace guesswork with knowledge.

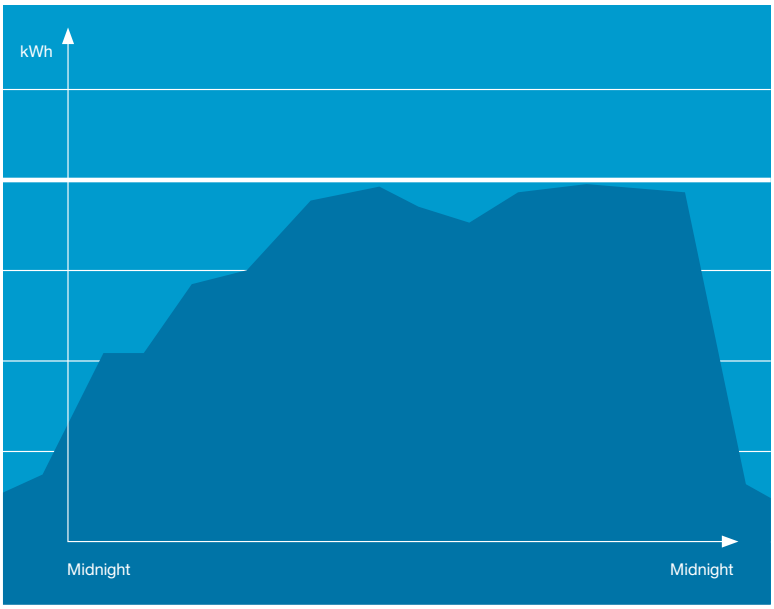
Expanding intelligence.

Hidden money-wasters, limits being exceeded without your knowledge, sub-optimal operating conditions – in functional buildings, it's worth taking a closer look. We show you where potential problems lie by measuring current and output in order to localise expensive consumption peaks. Or by showing the power factor cos φ in order to introduce targeted reactive power compensation measures. And what about the network quality? A detailed look at the voltage and frequency provides valuable information – permanently.



We ensure energy transparency and safeguard network quality by supplying relevant data from up to 31 connected Modbus devices.





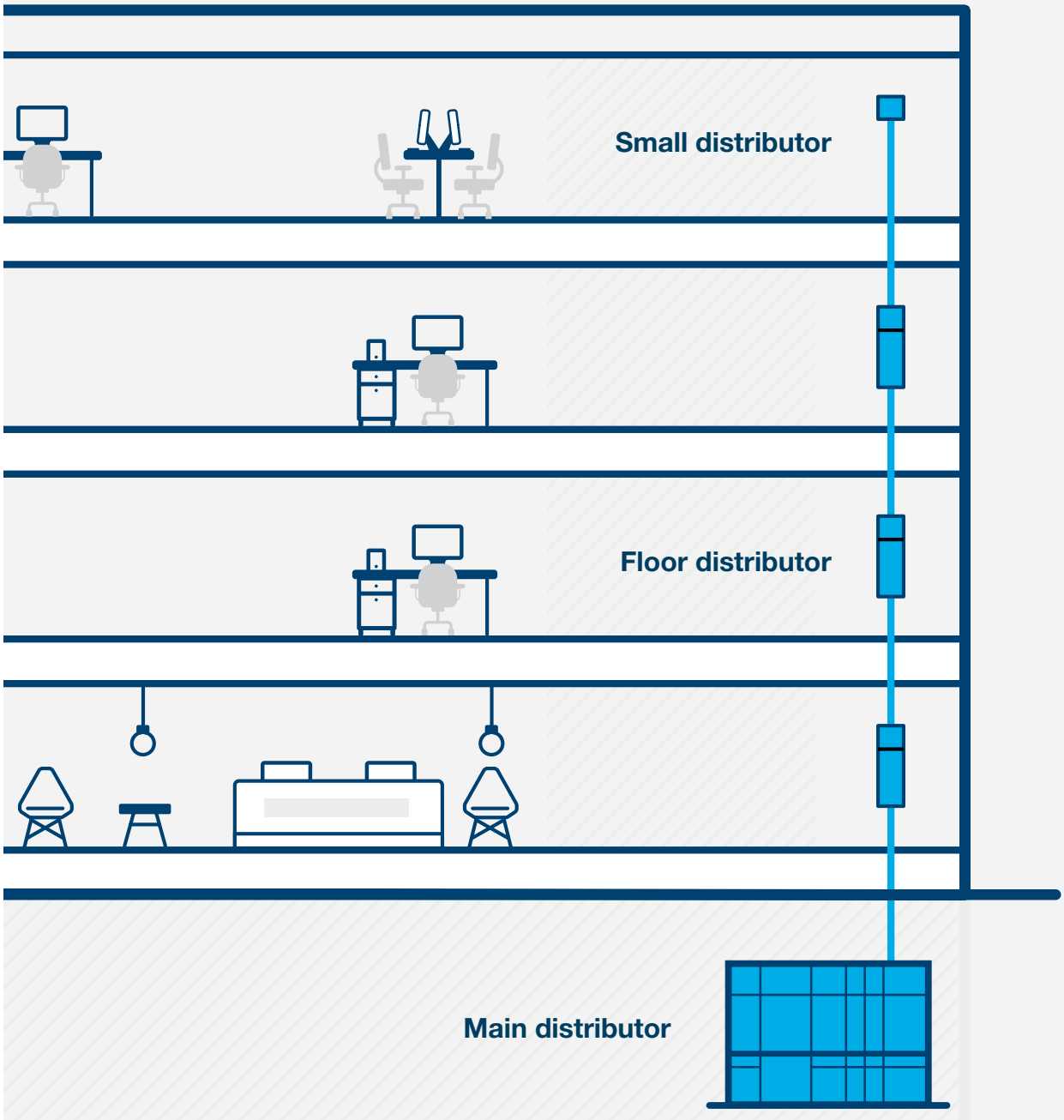
Clearly presented consumption diagrams reveal expensive consumption peaks. You can see at a glance how you can save money by simply changing your usage habits without reducing overall energy consumption.

Measuring where it's worth it.

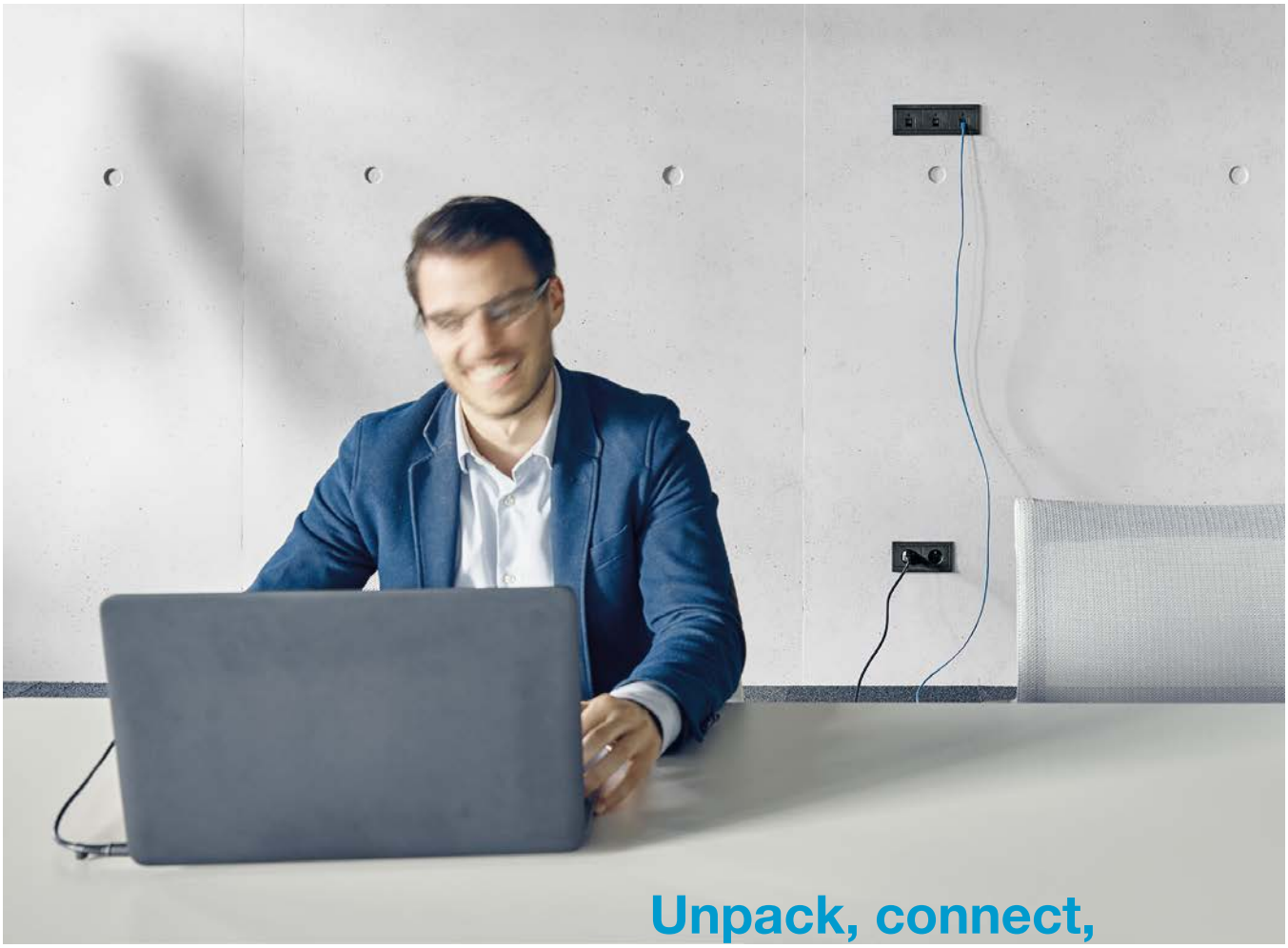
Our energy monitoring system keeps a close eye on the status of all the connected devices: in the main distributors, the floor distributors and the small distributors. This means that you are always in a position to make informed decisions. And you can respond more quickly. For example, you can set the system to send you e-mail notifications when limits are exceeded. You have a range of options to help you when, for example, grouping applications according to energy efficiency classes (EIEC) as per DIN VDE 0100-801.

Simply "plug and play" to integrate the appropriate Hager measurement devices.

See where potential exists.
Or the sources of problems.

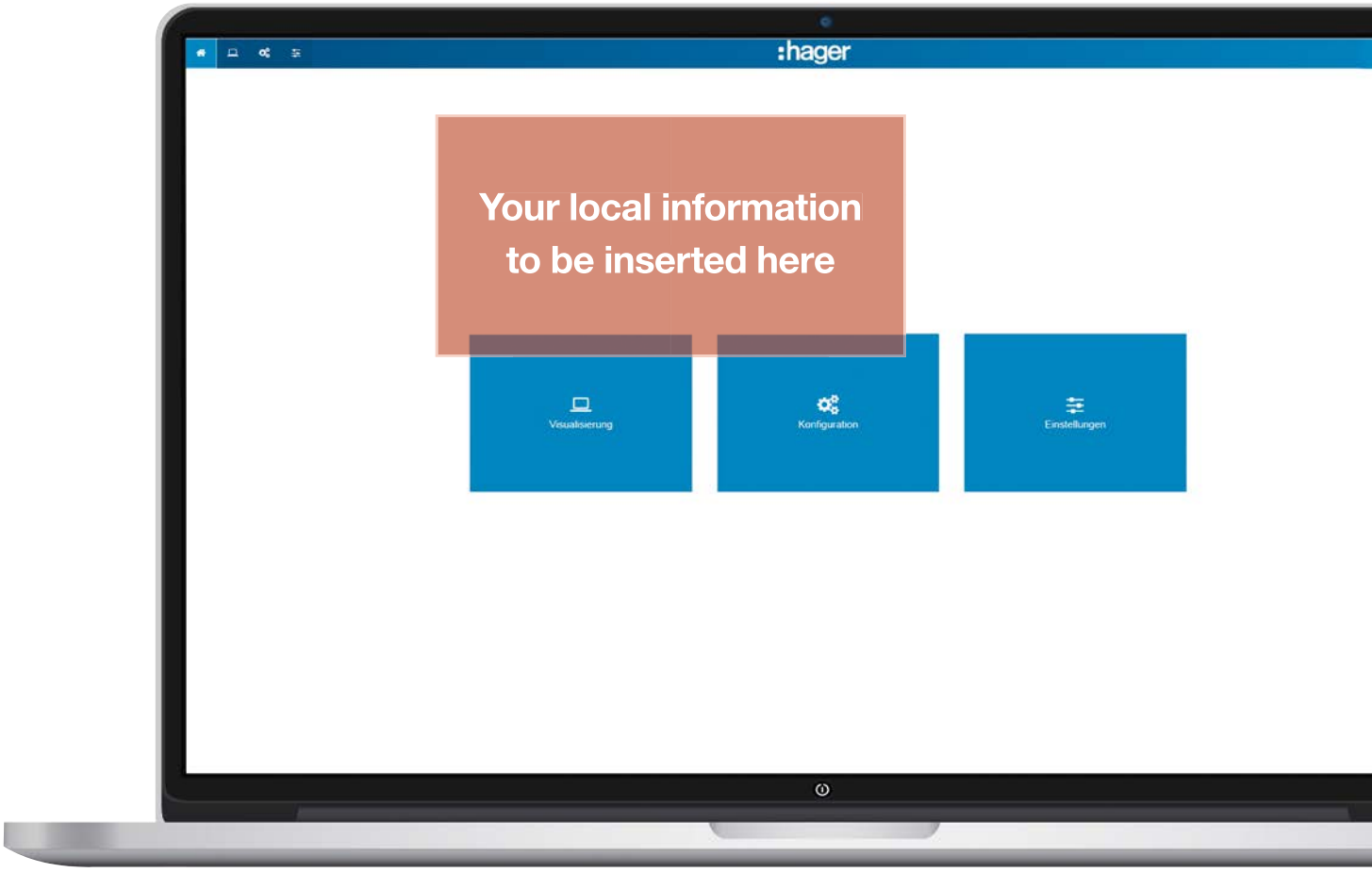


Click
and go.



**Unpack, connect,
start your browser, go.**

Energy monitoring is simple. Instead of spending entire days programming your system, you can carry out configuration on a laptop or tablet – directly in a web browser, without the need for extra software or Modbus mapping tables. In other words, you don't need any programming skills or expensive third-party providers. All compatible measurement devices can be found in the product catalogue of the energy monitoring server and can be easily added to the project. All you have to do is enter the Modbus address in the server, configure it in the measurement device – and you're ready to go!.



One, two, three – Hager delivers results faster than you can count.

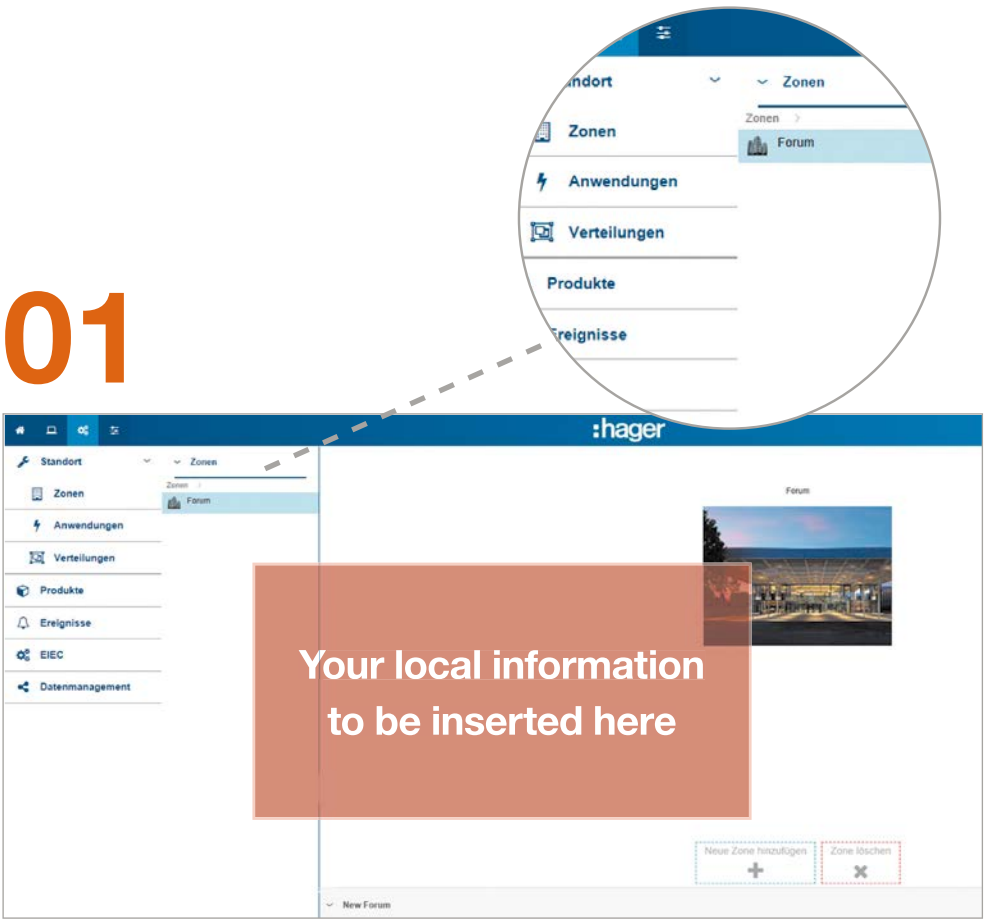
It’s all about making the right settings.

A few steps and your energy monitoring system is ready to go: first define your logical structure – building, floor, room and application. Group your applications. And you can manage all the connected measurement devices with just a few clicks.

01

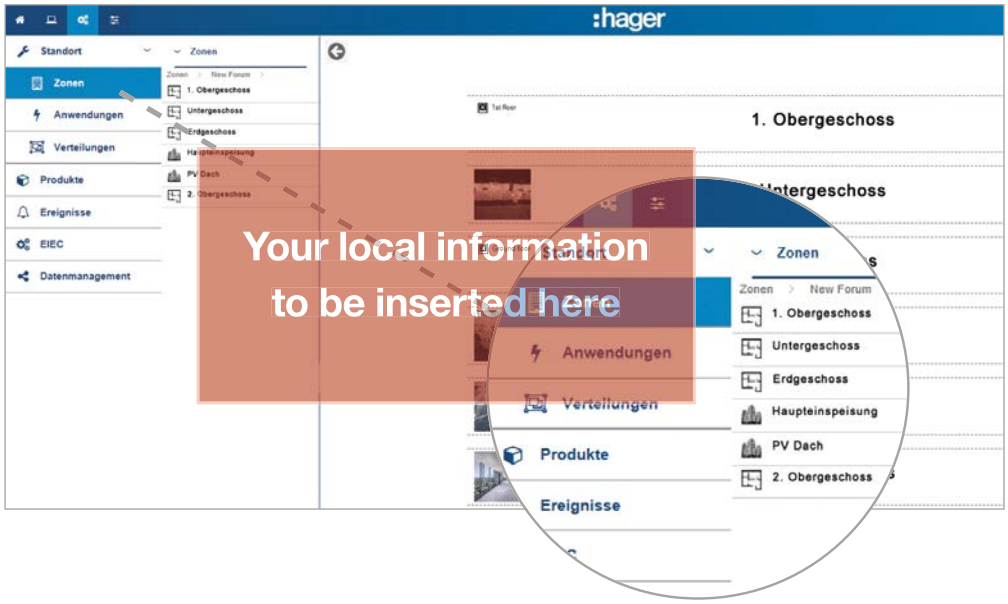
Create your project

Specify the required location/building details.



Select zones

02

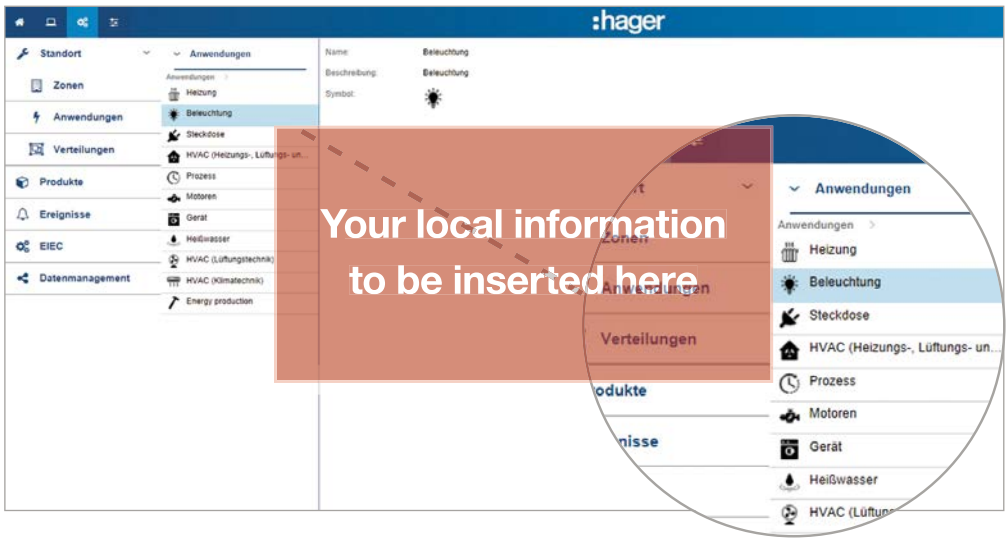


The building structure and its different areas can be represented in the form of zones.

Manage your applications

03

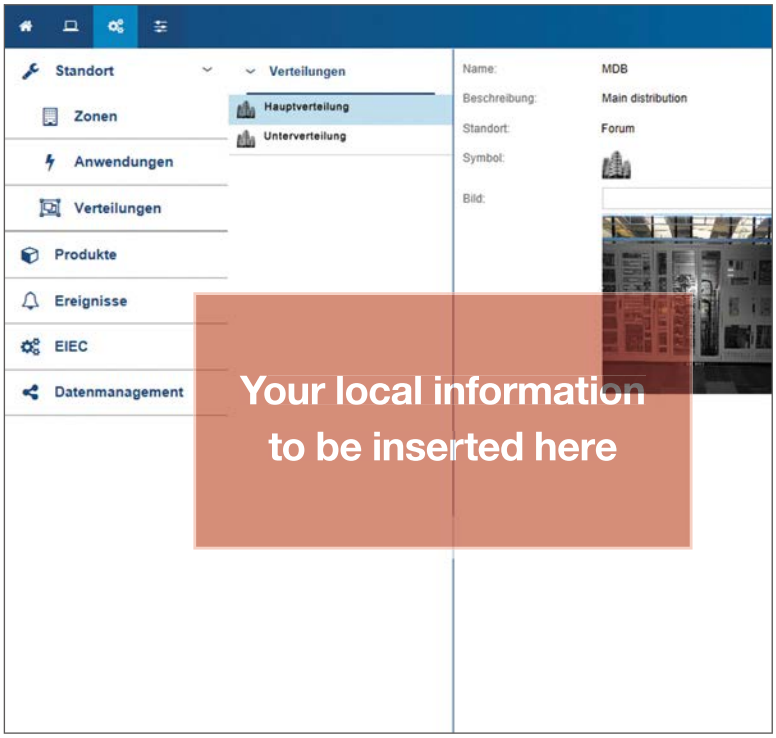
What do you want to measure? Whatever you set up here can be later assigned to the measurement device.



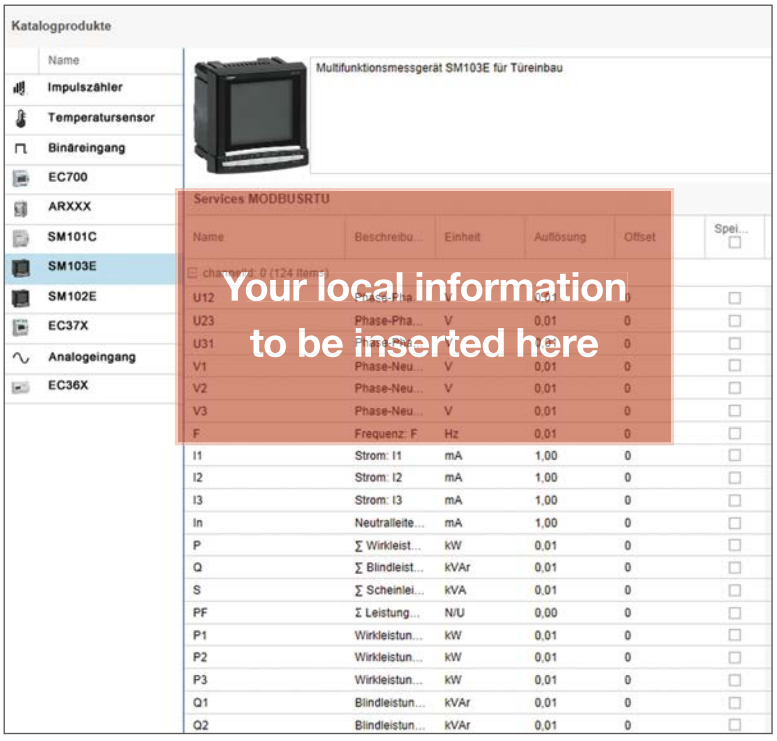
04

Manage your low-voltage distribution systems

Here you can create the different distribution systems and assign them to a zone.



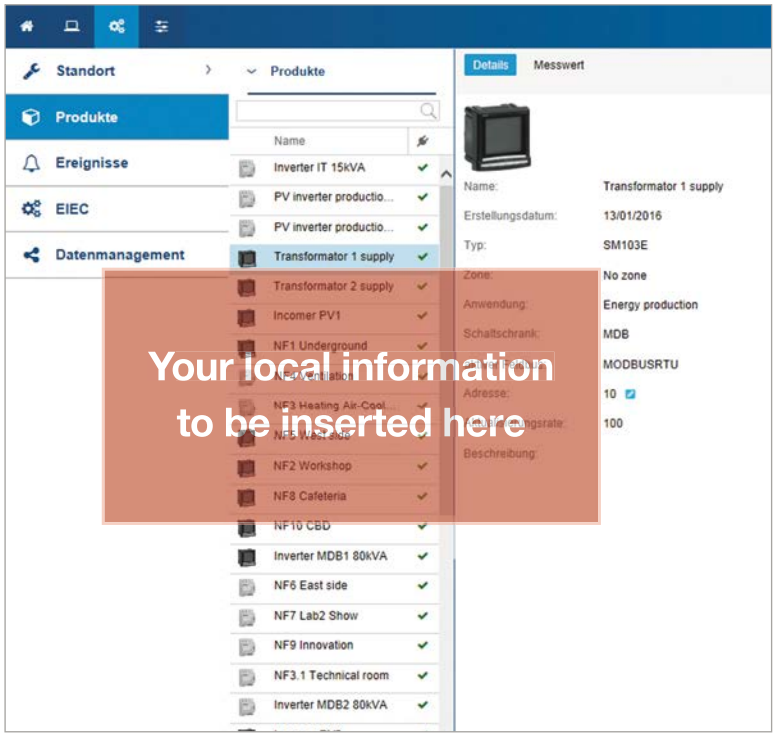
05



Add measurement devices to the project

Choose the devices from the integrated product catalogue. Zone management allows you to integrate every added measurement device into the building structure.

06



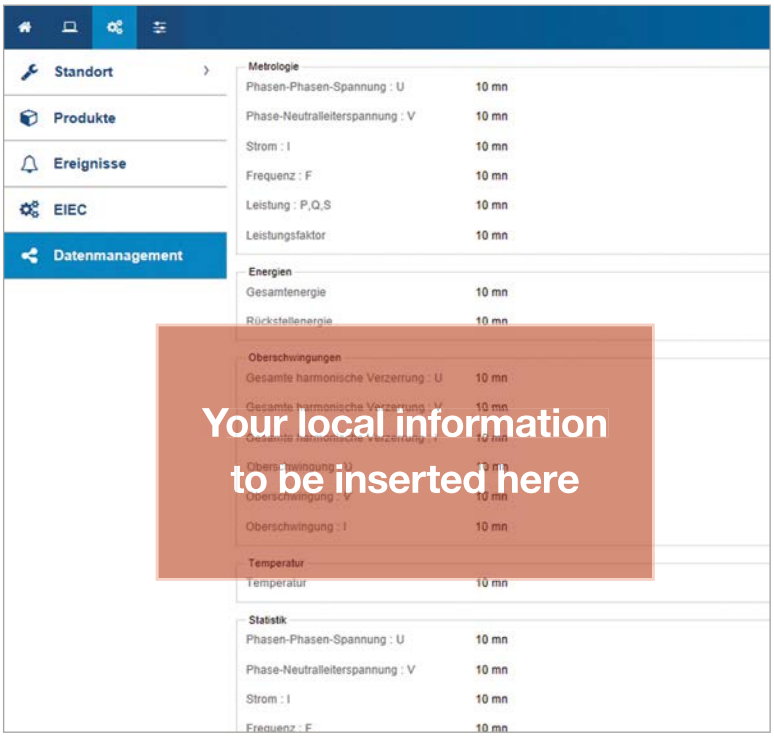
Carry out Modbus addressing

This just has to be set in the device.

07

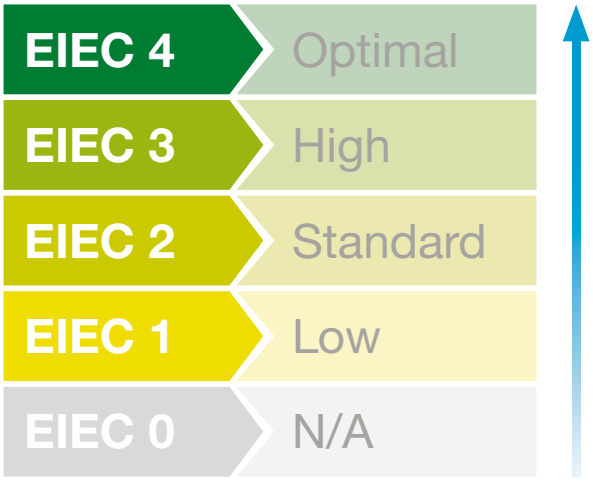
Start energy monitoring

Finally, define the measurement interval – and you're ready to go.



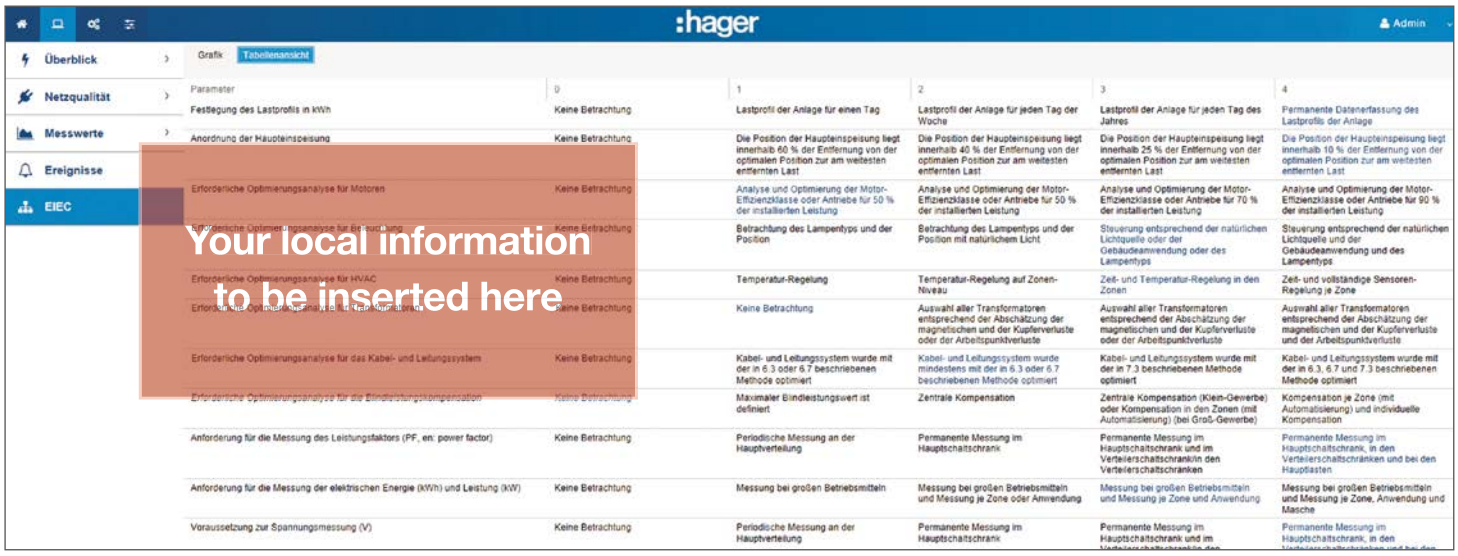
Shows you what counts.

How exactly is energy consumption distributed within the building? What are the current measured values? Where are there harmonics? When are the consumption peaks? What differences are there with respect to the measurements taken over the previous weeks? How does my building perform in terms of the selected energy efficiency class (EIEC)?



Since October 2015, the energy efficiency of electrical installations has to be evaluated according to the classification procedure laid down in DIN VDE 0100-801. This yields an energy efficiency class for the entire electrical installation – EIEC 0 to 4.

We'll show you what's important. Clear and understandable.



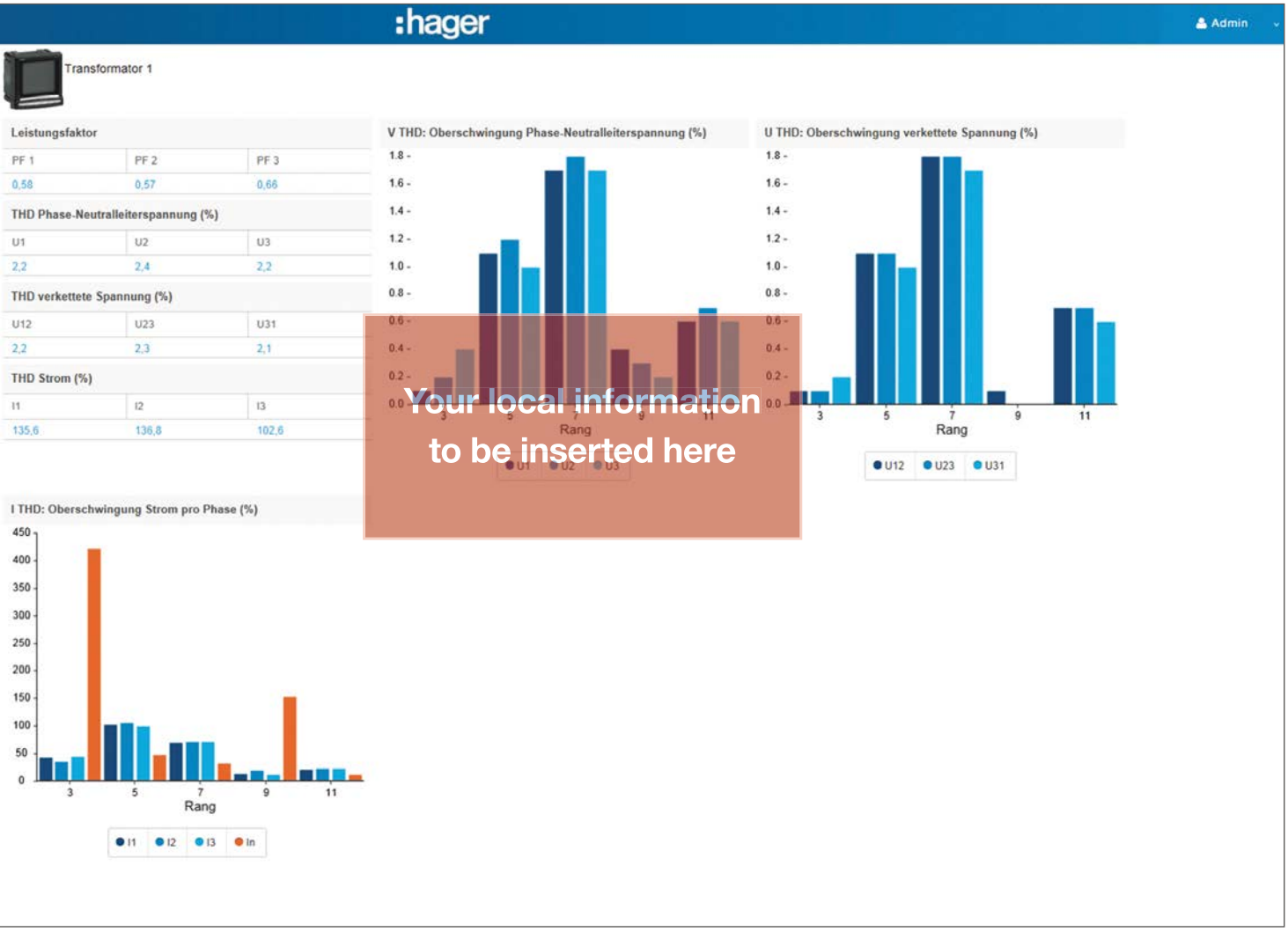
You can define and display this classification in agardio. manager, either in the form of spider web diagrams or in tables, like in DIN VDE 0100-801.

Score points: Hager helps you achieve the right efficiency class.

Seeing more leads to better decisions.

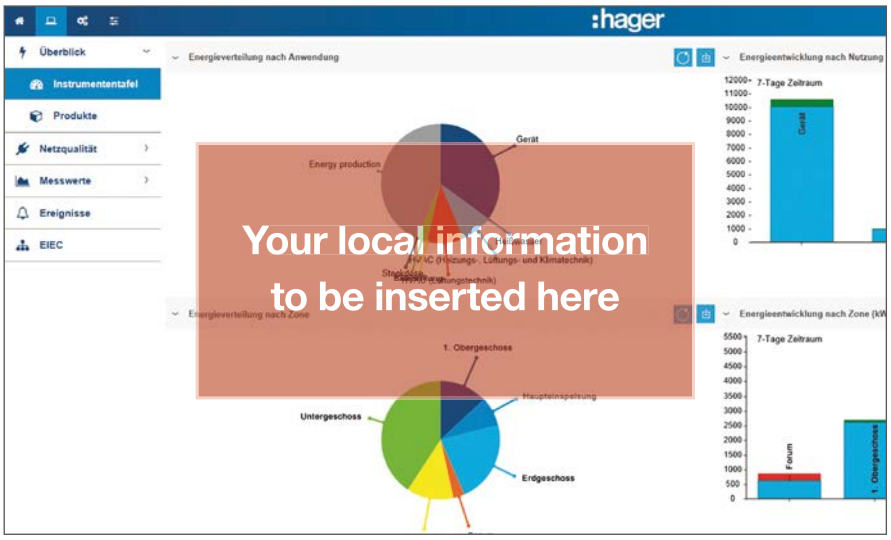
This is what it's like to be in the know: Visualisations by practitioners for practitioners. Clear, straightforward, informative. Regardless of where you are, you obtain valuable information about energy development and network quality. Compare current trends with your history – and only ever rely on data that is reliable and up to date. All values can be exported in CSV format for further processing in, for example, Microsoft Excel.

Now you'll always be in the picture: thanks to different visualisation methods for all the different applications.



What used to be hidden, is now visible: through analysis of the network quality, you can increase system security and availability. And you can localise the source of increased harmonic distortion quickly and easily.

Seeing more leads to better decisions.

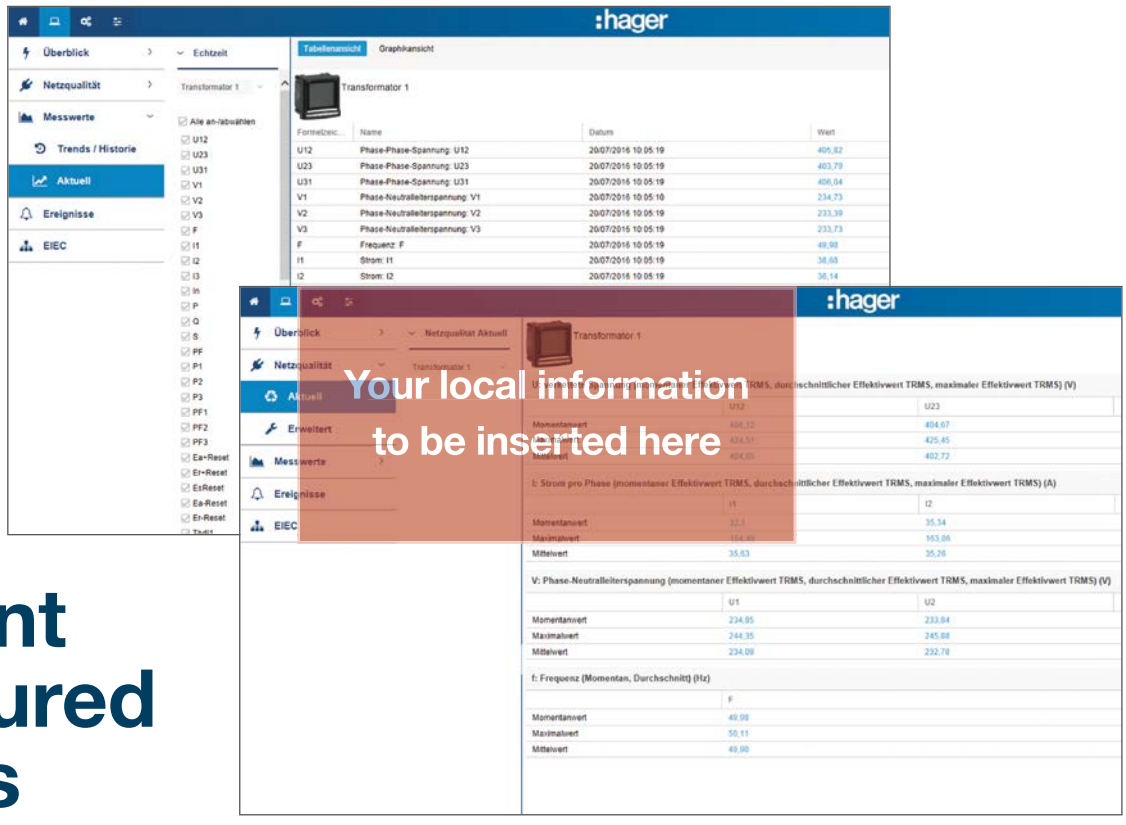


01

Overview

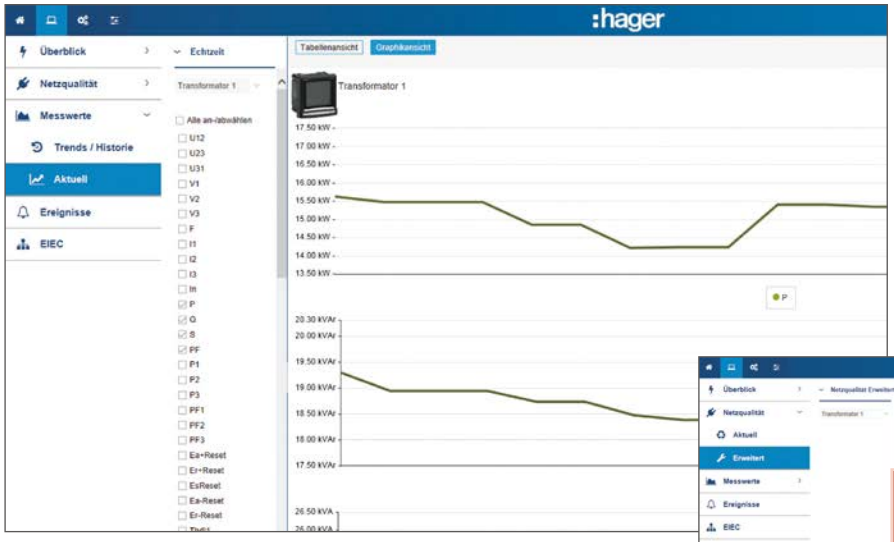
You can see at a glance how energy is being used within a building.

02

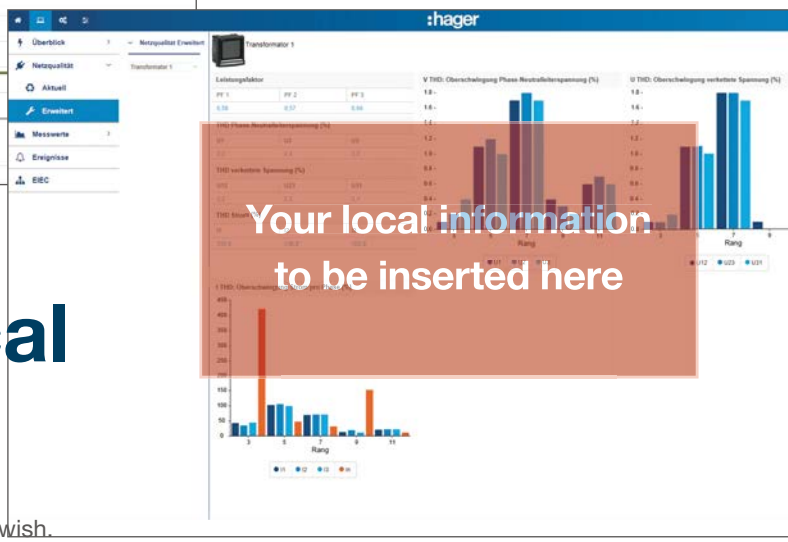


Current measured values

The network quality can be presented as an overview or in a table containing all the measured values.



03



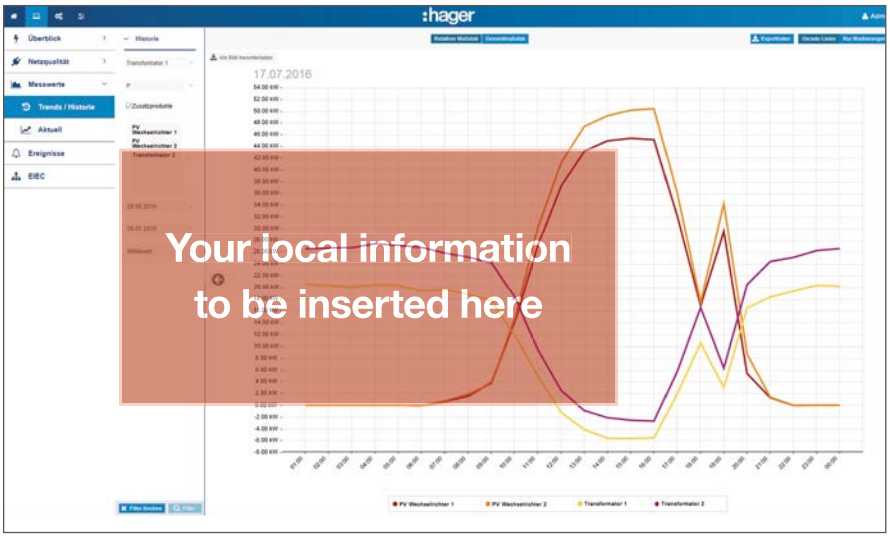
Advanced graphical overview

Measured values and harmonics can be displayed any way you wish.

04

Historic measured values

Visualisation of historic measured values.



Advantages everywhere.

- Plug-and-play installation

- Clear, detailed presentation of current and past measured values

- Highlighting of expensive consumption peaks

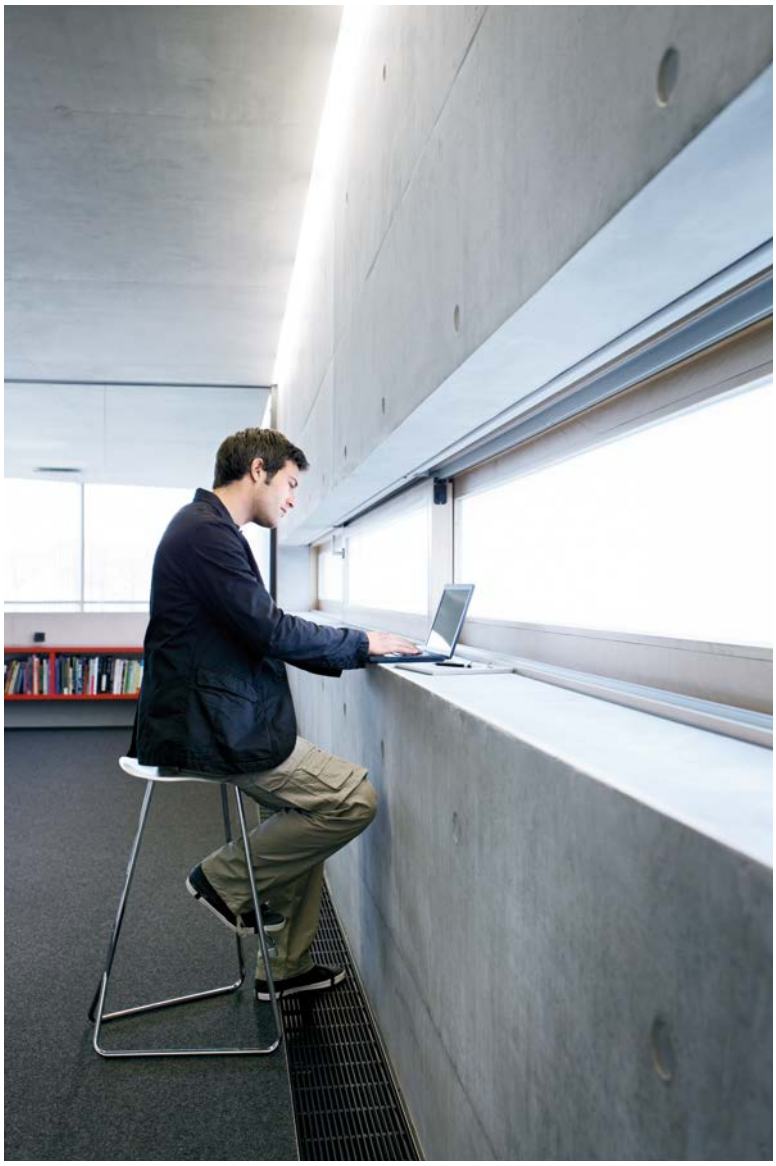
- Assistance with EIEC grouping

- Improved network quality

The difference between clear and unclear, guesswork and precision, waste and efficiency, somehow and precisely - they now have a name: **agardio.manager.** It displays facts that might once have remained undetected.

And anyone who works with functional building applications benefits from this: current standards can be fulfilled right from the outset, customers can be given more targeted ‘support – and buildings can be managed more cost-effectively.

More information, more efficiency, more building value: our energy monitoring solution bundles all the benefits into one system.



Systematic piece by piece

Energy meter

Multifunction measurement devices for the top hat rail

Multifunction measurement devices for door installation

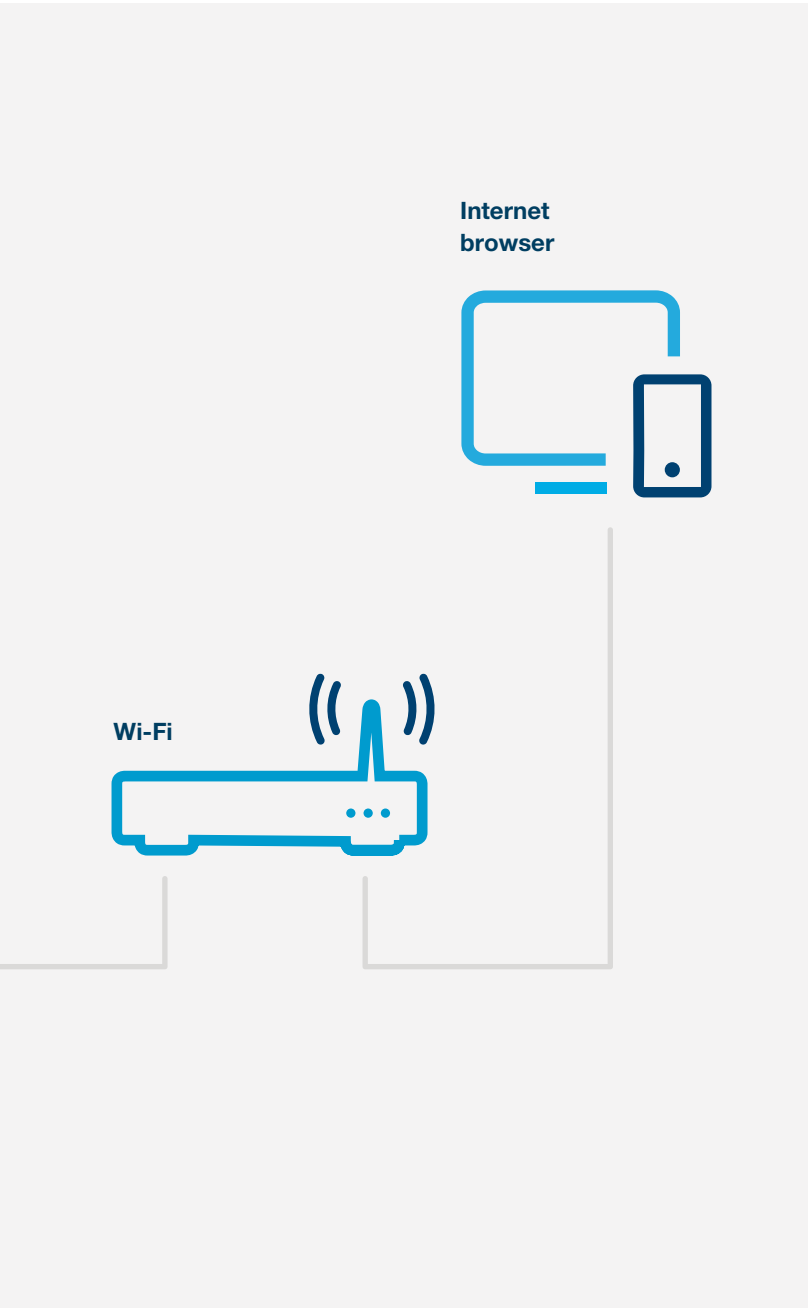
Open circuit breaker

24 V voltage supply

Energy monitoring server (Modbus master)

Modbus

Also compatible:
Controller for reactive power compensation and fault arc detection device



agardio.manager energy monitoring server

Ideal: for up to 31 Modbus devices from Hager – open circuit breakers, multifunction measurement devices, energy meters and more

Transparent: consumption recording over time or in real time, for displaying monthly curves or daily peaks when PV systems are used. Display of EIEC category. Visualisation directly in the browser.

Open: integration of third-party devices such as gas, water or energy meters thanks to two pulse inputs. E-mail alerts if limits are exceeded by floating contact.

Practical: data and system configuration are saved on an integrated micro SD card. Measured values can be easily exported in CSV format for further processing in, for example, Microsoft Excel

HTG411H

Energy monitoring server

Operating voltage:	24 V
Current type:	DC
Power consumption:	7 VA
Operating temperature:	-25/70°C
Storage/transportation temperature:	-55/85°C
Max. relative humidity during storage:	95% / 55°C
No. of USB interfaces:	2
USB connection type:	USB 2.0 type A socket

Features and characteristics:
- 2 digital inputs (for pulse counter)
- 2 analogue inputs 4–20 mA
- Connection for temperature sensor (PT100)
- 1 floating relay contact (warning contact)
- E-mail alert
- Analogue output 0–10 V

Designation	PLE	VPE	PrGr	Price	Order no.
Energy monitoring server + micro SD card	6	1	H41	€1,990.00/each	**HTG411H**

TGA200

Accessories for energy monitoring server

Designation	VPE	PrGr	Price	Order no.
Voltage supply 24 V DC 1A	1	H50	€146.92/each	**TGA200**
Temperature sensor PT100 with holder	1	H41	€51.50/each	**HTG445H**
Industrial MicroSD card, 4 GB	1	H41	€156.90/each	**HTG450H**
USB to ethernet interface adapter	1	H41	€109.50/each	**HTG457H**
USB Wi-Fi dongle with extension	1	H41	€79.00/each	**HTG460H**
Modbus cable, 3 m, with RJ45 connector	1	H41	€68.70/each	**HTG465H**
Modbus cable, 25 m	1	H41	€100.66/each	**HTG485H**

EC367M

Energy meter, calibrated, 3-phase, Modbus

Features and characteristics:
- Supply voltage: 230/400 V AC +/- 15%
- Frequency: 50/60 Hz +/- 2 Hz
- Overview of display: see the technical appendix to the catalogue
- Display of different measured values
- Accuracy class C of MID meter, as per EN50470-3
- Illuminated LCD display
- 7-character display 000000.0 kWh
- Wiring problems are displayed

Designation	PLE	VPE	PrGr	Price	Order no.
Energy meter, 3ph,100 A, direct, Modbus, MID	7	1	H41	€561.00/each	**EC367M**
Energy meter, 3ph, converter, Modbus, MID	4	1	H41	€489.60/each	**EC377M**

EC366

Energy meter, 3-phase, Modbus

Features and characteristics:
- Supply voltage: 230/400 V AC +/- 15%
- Frequency: 50/60 Hz +/- 2 Hz
- Overview of display: see the technical appendix to the catalogue
- Display of different measured values
- Illuminated LCD display
- 7-character display 000000.0 kWh
- Wiring problems are displayed

Designation	PLE	VPE	PrGr	Price	Order no.
Energy meter, 3ph, 100 A direct, Modbus	7	1	H41	€479.40/each	**EC366**
Energy meter, 3ph, converter, Modbus	4	1	H41	€408.00/each	**EC376**

Multifunction measurement devices for top hat rail

Features and characteristics:
- Multimeasurement of currents
- Current voltages
- Current outputs
- Metering of active/reactive power
- Operating hours counter
- Harmonics up to 51st order
- Configurable inputs/outputs
- Accuracy: 0.2% for voltages + currents; 0.5% for outputs

SM101C

Designation	PLE	VPE	PrGr	Price	Order no.
Multifunction measurement device, 3-phase, converter, RS485	4	1	H41	€617.90/each	**SM101C**

Multifunction measurement device SM102E for door installation

Features and characteristics:
- Multimeasurement of currents
- Current voltage, frequencies, outputs
- Metering of active energy, reactive energy, operating hours
- Analysis of harmonics (51st order)
- Extendable measurements: events, communication, inputs/outputs

SM102E

Designation	PLE	VPE	PrGr	Price	Order no.
Multifunction measurement device	5	1	H41	€383.20/each	**SM102E**
Module RS485 Jbus/Modbus for SM102E		1	H41	€175.90/each	**SM210**

Multifunction measurement device SM103E for door installation

Features and characteristics:
- Multimeasurement of currents
- Current voltage, frequencies, outputs
- Metering of active energy, reactive energy, apparent energy, operating hours
- Analysis of harmonics (63rd order)
- Extendable measurements: load curve, events, communication, inputs/outputs

SM103E

Designation	PLE	VPE	PrGr	Price	Order no.
Multifunction measurement device Komfort	5	1	H41	€603.90/each	**SM103E**
Module RS485 Jbus/Modbus for SM103E		1	H41	€198.40/each	**SM211**

Pulse input

Features and characteristics:
- 7 digital pulse inputs (logic or pulse)
- RS485 interface
- Backlit LCD display

EC700

Designation	PLE	VPE	PrGr	Price	Order no.
Pulse input, 7-way, Jbus/Modbus	4	1	H41	€816.50/each	**EC700**

SRA00505

Current converter for busbars

Features and characteristics:
- Large sec. terminal connections
- Protection against contact as per BGV A2
- Impact-proof plastic housing
- Class 1
- Secondary current 5 A
- Top hat rail adapter SRZH01 can be used for the current converters in the BG113 assembly.

Designation	VPE	PrGr	Price	Order no.
Converter BG 213 50/5 1.5 VA class 1	1	H41	€36.10/each	**SRA00505**
Converter BG 113 60/5 1VA class 1	1	H41	€36.10/each	**SRA00605**
Converter BG 113 75/5 1.5 VA class 1	1	H41	€38.40/each	**SRA00755**
Converter BG 113 100/5 2.5VA class 1	1	H41	€36.10/each	**SRA01005**
Converter BG 113 125/5 2.5VA class 1	1	H41	€38.40/each	**SRA01255**
Converter BG 113 150/5 2.5VA class 1	1	H41	€36.10/each	**SRA01505**
Converter BG 113 200/5 2.5VA class 1	1	H41	€36.10/each	**SRA02005**
Converter BG 113 250/5 2.5VA class 1	1	H41	€36.10/each	**SRA02505**
Converter BG 115 60/5 1.5VA class 1	1	H41	€36.10/each	**SRB00605**
Converter BG 115 75/5 2.5VA class 1	1	H41	€36.10/each	**SRB00755**
Converter BG 413 300/5 5VA class 1	1	H41	€36.10/each	**SRI03005**
Converter BG 113 400/5 5VA class 1	1	H41	€36.10/each	**SRC04005**
Converter BG 413 400/5 5VA class 1	1	H41	€36.10/each	**SRI04005**
Converter BG 113 600/5 5VA class 1	1	H41	€36.10/each	**SRC06005**
Converter BG 413 600/5 5VA class 1	1	H41	€36.10/each	**SRI06005**
Converter BG 513 600/5 5VA class 1	3	H41	€36.10/each	**SRJ06005**
Converter BG 613 800/5 5VA class 1	1	H41	€39.50/each	**SRD08005**
Converter BG 613 1000/5 5VA class 1	1	H41	€44.00/each	**SRD10005**
Converter BG 613 1500/5 5VA class 1	1	H41	€47.30/each	**SRD15005**
Converter BG 417.1 1000/5 5VA class 1	1	H41	€47.30/each	**SRE10005**
Converter BG 814 1250/5 15VA class 1	1	H41	€56.40/each	**SRE12505**
Converter BG 814 1600/5 15VA class 1	1	H41	€59.80/each	**SRE16005**
Converter BG 814 2000/5 15VA class 1	1	H41	€65.50/each	**SRE20005**
Converter BG 1034 1250/5 15VA class 1	1	H41	€81.20/each	**SRF12505**
Converter BG 1034 1600/5 30VA class 1	1	H41	€84.70/each	**SRF16005**
Converter BG 1034 2000/5 30VA class 1	1	H41	€85.70/each	**SRF20005**
Converter BG 1034 2500/5 30VA class 1	1	H41	€95.90/each	**SRF25005**
Converter BG 1254 3000/5 15VA class 1	1	H41	€118.40/each	**SRG30005**
Converter BG 1254 4000/5 15VA class 1	1	H41	€131.90/each	**SRG40005**
Converter BG 1274 3000/5 15VA class 1	1	H41	€135.30/each	**SRH30005**
Converter BG 1274 4000/5 15VA class 1	1	H41	€141.00/each	**SRH40005**

SRZH01

Top hat rail adapter for current converter

Features and characteristics:
- Top hat rail adapter SRZH01 can be used for the current converters in the BG113 assembly.

Designation	VPE	PrGr	Price	Order no.
Top hat rail attachment of converter	1	H41	€6.90/each	**SRZH01**

Company name
Street
City, Postal code
Country

Telephone
hager.xx