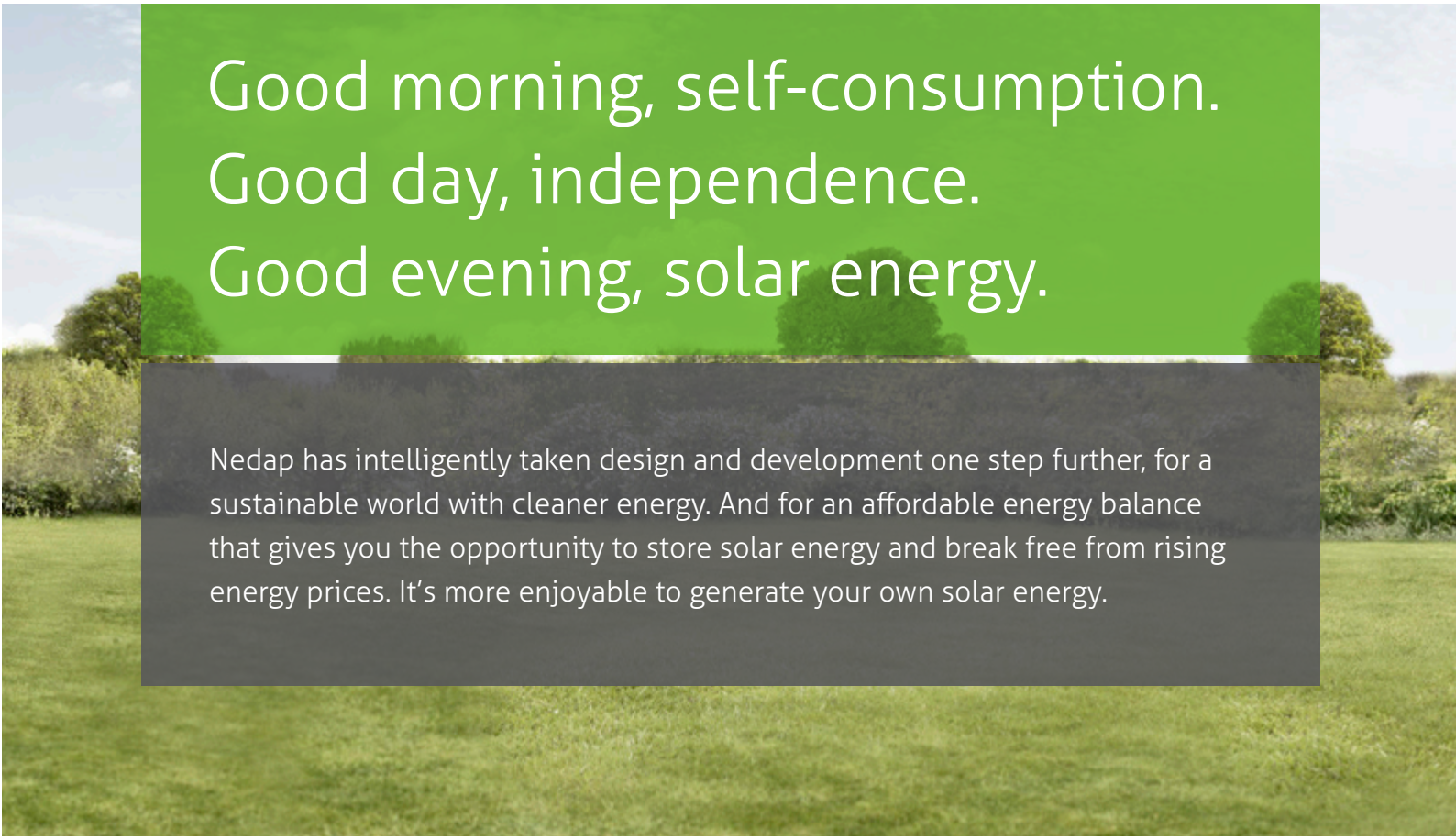
Do your own thing.

Be independent.

PowerRouter
love your energy

love your energy

Because solar energy can do much more.



Good morning, self-consumption.
Good day, independence.
Good evening, solar energy.

Nedap has intelligently taken design and development one step further, for a sustainable world with cleaner energy. And for an affordable energy balance that gives you the opportunity to store solar energy and break free from rising energy prices. It's more enjoyable to generate your own solar energy.

I make the most of my solar energy.

The sun will not send you a bill and is a virtually infinite source of energy. With a suitable solar system on the roof, you can easily capture this energy and convert it for use in your home. That's sustainable and lowers costs. But unfortunately, the sun only shines during the day. In the evening, at night and when it's cloudy, the electricity meter from your power supplier springs into action again.

Get more out of your solar energy.
Store your solar energy for use round the clock.
Get the PowerRouter from Nedap.

During the day, with a conventional solar system without storage, about 20% of generated solar energy is directly used for your consumption. The PowerRouter increases this figure many times over with connected battery storage: up to 70% for self-consumption

Store energy and increase your self-consumption up to 70%.

Self-consumption with a conventional inverter.

Self-consumption with a PowerRouter plus storage function.


automower
320 ACX

Love your energy. The PowerRouter principle

Opting for the principle of energy storage with the PowerRouter means showing your true colours. For green intelligence. And we promise you'll love it. The technology, the independence, the savings, the sustainability.

The big secret of the PowerRouter is self-consumption maximisation. The self-generated energy from the pv-array is used intelligently throughout the entire system: for electrical appliances, or to store in the batteries, for additional loads and appliances or to feed in the grid.

Last but not least, your energy storage system also acts as backup supply during power failures. And you can easily keep an eye on the entire system using the online monitoring function. The PowerRouter is an inverter and trend-setting battery manager all-in-one.

When the sun shines, the solar energy is converted to domestic power for use by appliances. Solar energy not consumed immediately is sent to the connected batteries to be stored for later use. If further energy is generated after the batteries are fully charged, it can be used to supply additional loads. Otherwise, the surplus energy is fed into the public grid.

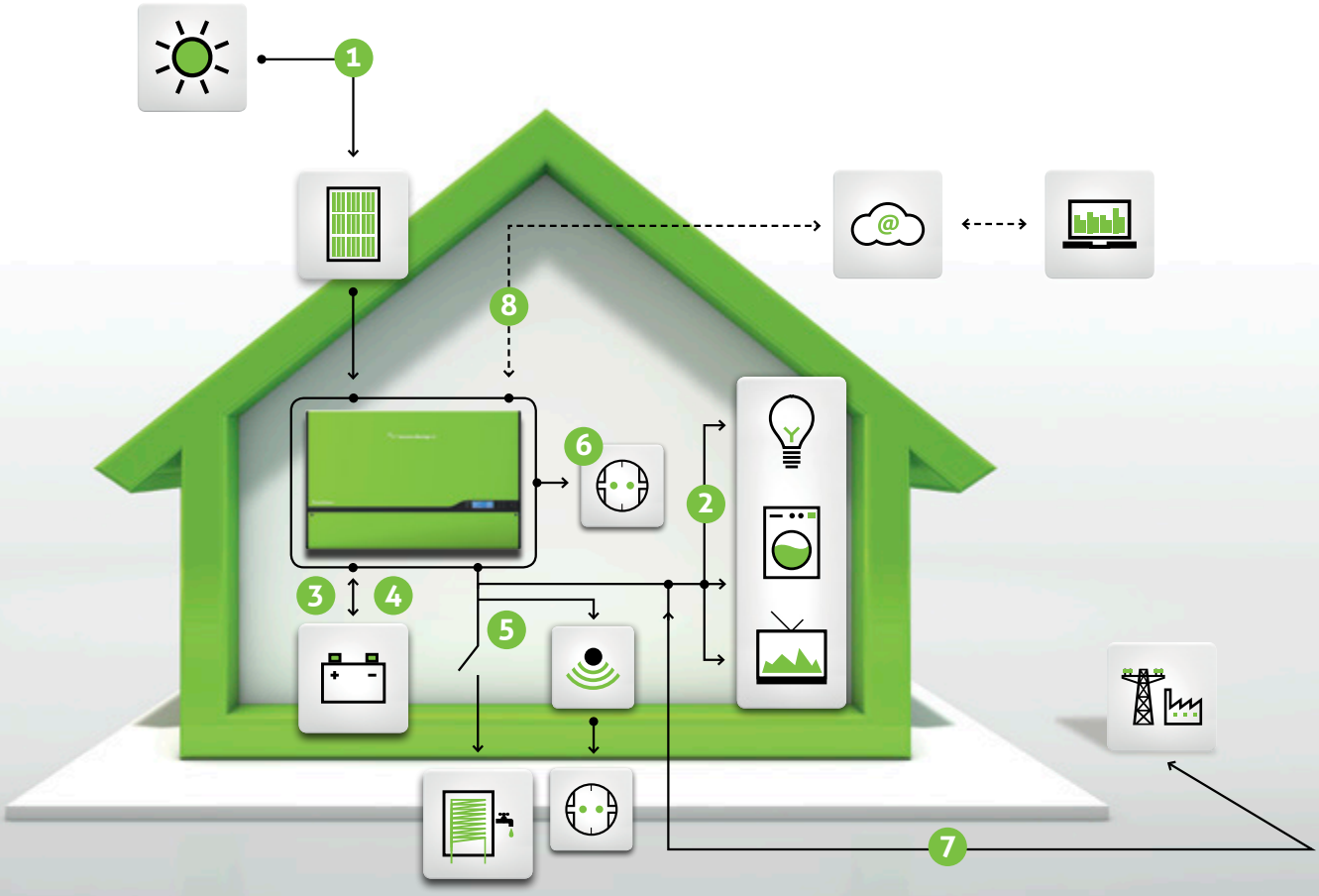
We also use the day's sunlight during the night.

After sunset, your domestic power is supplied from the solar energy stored in the batteries.

The PowerRouter principle: Brilliantly simple. Simply brilliant.

The PowerRouter is the heart of your self-consumption system.
It is a compact, all-in-one unit that manages your solar modules, batteries, electrical appliances and your connection to the grid just like a power plant.

Optimising self-consumption.
This is how the PowerRouter System works.



It is really easy!

1. Self-generated solar energy
2. Self-consumption
3. Storage in batteries
4. Self-consumption from batteries
5. Energy management
6. Backup power supply
7. Feed into the grid/ energy supply from the grid
8. Online monitoring

Lead-acid or lithium-ion? It's your choice.

You need batteries to store the generated solar energy. With the PowerRouter, you can decide between two different technologies: lead-acid or lithium-ion batteries.
(For explanation of differences, see pages 28/29.)

Be independent, save resources and money.

The choice for an energy storage system is a clever investment. It makes households increasingly independent from the grid, it saves fossil resources and it allows you to save on your energy bill at the same time.

Consider a typical household:
Father works fulltime, mother part-time and they have school-age children.
The family lives in their own home and consume about 4,500 kWh of energy per year..

The available roof area is enough to install a 5 kWp photovoltaic installation. The direct energy consumption is relatively small as the self-generated solar energy can only be used when it is produced. This results in about 20% direct self-consumption or about 28% independence from the grid (self-sufficiency). The excess energy (80%) is exported to the grid.
Here is a lot to be gained. If the surplus energy can be used in the home instead of being exported, it results in a direct save on your energy bill. And with the energy prices going up, your savings will only go up.

With feed-in tariffs going down and energy prices going up, self-consumption is financially more attractive than export to the grid.

Adding storage to your PV installation, allows you to store the energy during the day and use it at night. If the solar system includes a PowerRouter with a 2.4 kWh battery pack (usable capacity), self-consumption in this household increases to as much as 44% and a self-sufficiency of 38%. If the battery capacity would be 4.8 kWh, self-consumption can be up to 60% with a self-sufficiency of 55%. This can all be achieved without changing your daily energy profile. If the energy management function of the PowerRouter is used as well, a self-consumption level of up to 70% can be achieved.

Example: Daily energy consumption

1
If the battery is discharged before sunrise, energy is consumed from the grid

2
At sunrise, consumption turns into to self-generated solar energy.

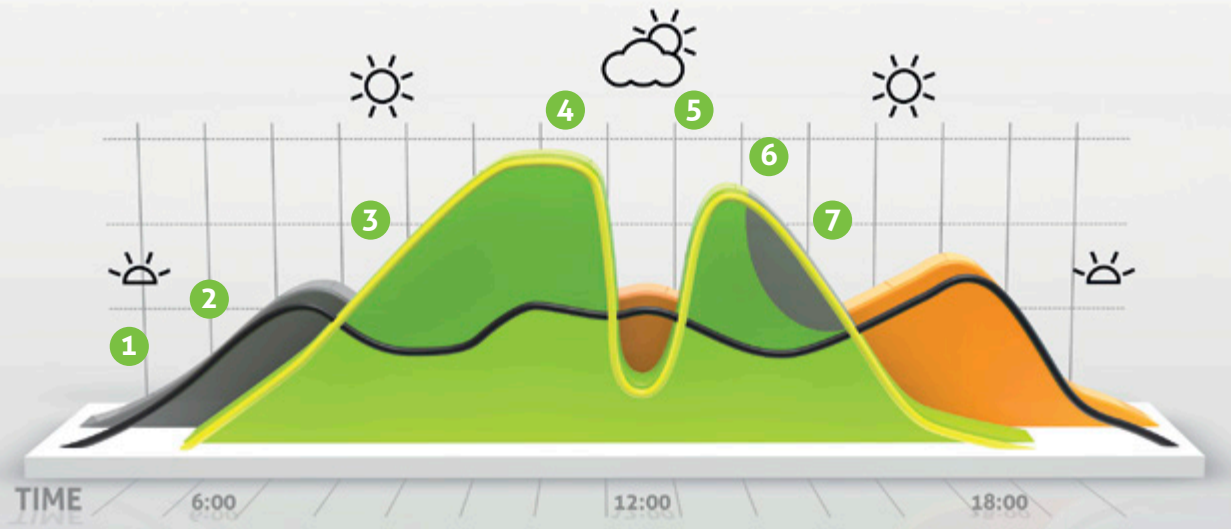
3
Once enough solar energy has been produced for domestic use, the PowerRouter starts charging the battery simultaneously.

4
If clouds block the sun and there is no longer enough solar energy for the consumers in the home, the PowerRouter immediately compensates with power from the battery.

5
When the sky clears, charging of the battery using the surplus solar energy will resume.

6
As soon as the battery is fully-charged, additional solar energy is fed into the grid

7
When the sun goes down, the PowerRouter supplies the consumers in the home with stored energy from the battery.



- Self-consumption from batteries
- Feed into the grid/ energy supply from the grid
- Charging the batteries
- Self-consumption from solar energy
- Energy demand
- Solar energy production

The technology behind your energy change

Proven by long-term experience.

Keen on technology?
www.PowerRouter.com
There you'll find a more detailed explanation on the intelligent way the PowerRouter works.

The flexible PowerRouter system is a technological milestone from Nedap. The technical components are matched perfectly to each other to optimise self-consumption of the self-generated energy. For more independence from your energy supplier.

Innovative 3-phase compensation: Keeps your electricity meter at zero.

In case of a 3-phase connection, there may be a possibility to compensate the consumption of all three phases on a single phase by adding an optional 3-phase current sensor. The system does not have to be modified. The generated energy is controlled intelligently so that the consumption meter does not record energy taken from the grid, thus increasing self-consumption of solar energy. Whether this option is applicable for you, depends on the type of meter and local regulations. Please check the possibilities before having a 3-phase current sensor installed.

Practical energy management: Maximize your self-consumption by switching on an additional load

During the day, when there is a lot of energy available, you may want to switch on an additional load only using the surplus energy that would otherwise be exported to the grid. Please check the possibilities to see if your load is suitable to be switched on when desired.

Guarantee: tested quality and safety.

All PowerRouter units are manufactured with the utmost care and are subjected to a strict quality assurance process. All customers receive a 5-year guarantee from the date of purchase, and this can be extended by a further 5 years if desired.

Dynamic feed-in limiter: Restricts the export to the grid.

In some situations it may be required or preferred to limit or even completely block the export to the grid. In these cases the PowerRouter offers the dynamic feed-in limiter, a feature that allows you to regulate the export of energy to the grid without affecting the availability of energy for your connected loads.

Flexible battery connection: your choice of lead-acid or lithium-ion technology.

Proven lead-acid batteries with 24 Vdc operating voltage or modern lithium-ion batteries with 48 Vdc operating voltage – with the flexible PowerRouter system, you have a free choice of battery technology and the amount of storage capacity.

Functional backup power supply: security during power failures.

The PowerRouter is equipped with an extra local output. If there is a power failure, the system is designed to separate completely from the grid and switch the load to "Local out". That way the power continues to be supplied from pv-array and from the batteries, as per local grid regulations.

It's a good feeling getting things right at home.

At home you are in control. There is no reason why this should not include your energy as well. The PowerRouter allows you to increase freedom from constantly rising energy prices.

In response to increasingly unattractive feed-in tariffs for solar energy you can answer with a simple "So what?". You have chosen a system that is sustainable and financially advantageous: optimising self-consumption.

The PowerRouter system also contributes to improved grid stability. Many locations are unprepared for feed-in from solar systems, which creates major challenges for grid operators.

Our environment says "thank you".

Good to know: the number of photovoltaic systems installed throughout the world limit emissions of CO_2 by many millions of tonnes each year. The PowerRouter clearly optimises the use of clean solar energy and helps us all protect the world for coming generations.

Simply go to the web and monitor your power plant.

Monitor, compare and maintain – myPowerRouter.com allows you to monitor your system data at any time and from anywhere.
It's that easy.

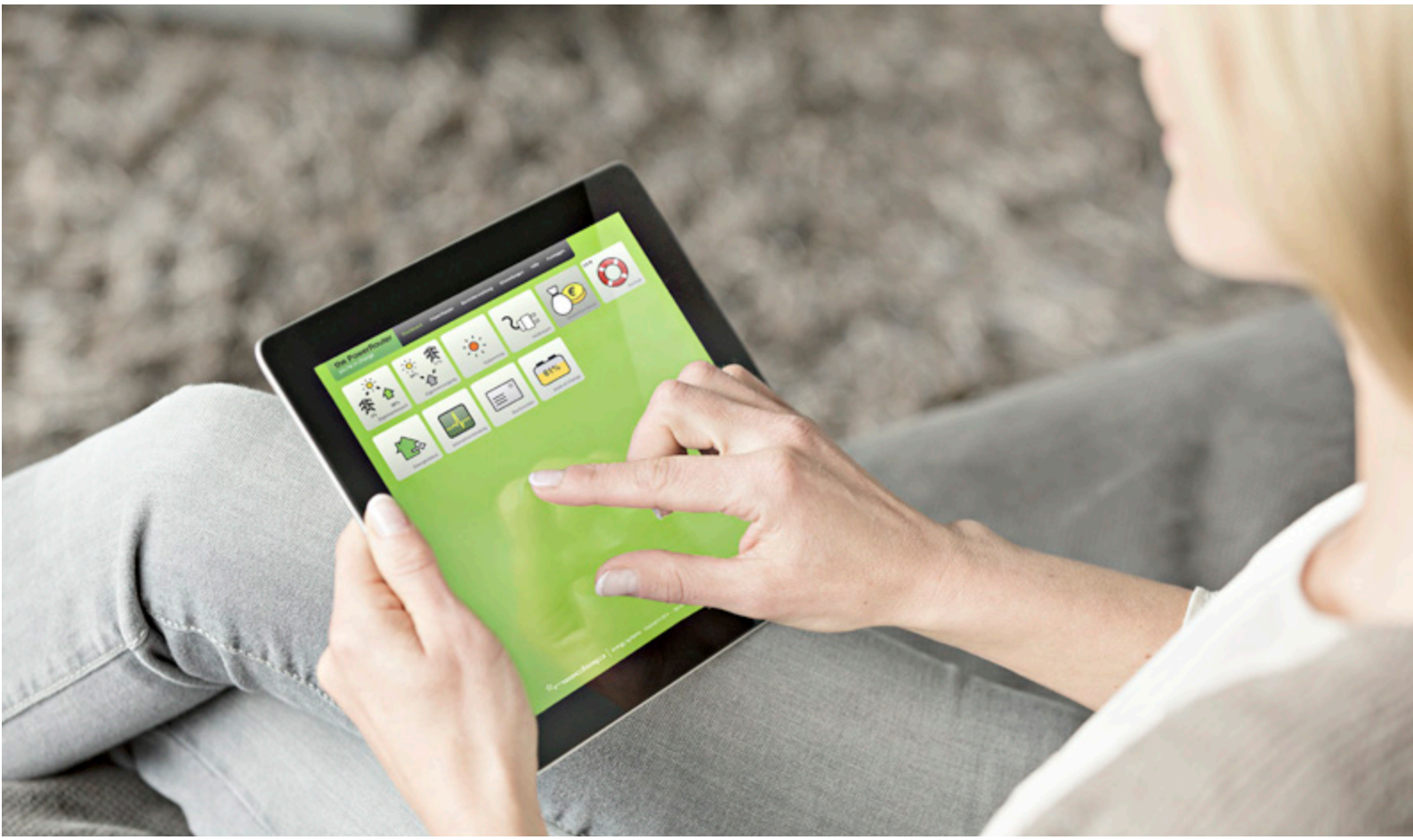
The PowerRouter has an integrated internet connection.
If the PowerRouter is connected to the internet and registered, various performance parameters of your system can be viewed, compared and monitored via the myPowerRouter.com web portal.

Plug & Play – online registration and monitoring of the PowerRouter is as easy as it gets and is user-friendly.

Everything at a glance: Performance of the solar system, battery storage levels, energy consumption in the home, grid feed-in figures – crystal clear and informatively displayed.

The web portal allows social-media fans to customise myPowerRouter.com and to twitter their daily or weekly energy yield.

The Twitter function allow you to send friends or other interested people your PowerRouter figures.



Try it yourself!

If you like the idea of monitoring your own small power plant, you can easily try it:

www.myPowerRouter.com

User name: client Password: client

One click is all it takes to view the data from your PowerRouter system.

Solar yield
Total generated energy per day, month or year.

Consumption
Amount of self-consumed energy.

Really smart!

The free myPowerRouter app allows you to monitor your small power station easily using your smartphone or tablet, from anywhere in the world, whether it's your office, garden or holiday destination.

The PowerRouter family provides indepency

Nedap has intelligently taken design and development one step further: for a sustainable world with cleaner energy for affordable energy bills for the intelligent option of now being able to store energy.

Independence for every household: the PowerRouter family from Nedap.

The PowerRouter is a flexible system. Future-proof. Sustainable. Intelligent. The PowerRouter family has the perfect solution for every household. You can get into solar energy production for a moderate amount of investment, with battery storage making you largely independent of your energy supplier. Or you can upgrade your existing solar installation to a full energy storage system. The system can easily be monitored using the online monitoring function.

PowerRouter Solar Battery

For maximum self-consumption

The PowerRouter Solar Battery is an innovative inverter as well as an intelligent battery manager.

PowerRouter Unifit

As a retrofit to your excisting system.

The PowerRouter Unifit is a revolutionary universal device for self-consumption. It can be connected to any common inverter from a photovoltaic, wind or co-generation system and upgrade your system to a full energy storage system.

PowerRouter Solar

Your first step into solar energy.

The PowerRouter Solar is an inverter for your photovoltaic system. It converts the solar energy into power for your home. It also has a possibility that allows you to upgrade your installation to a battery storage system at a later date.

PowerRouter Connect

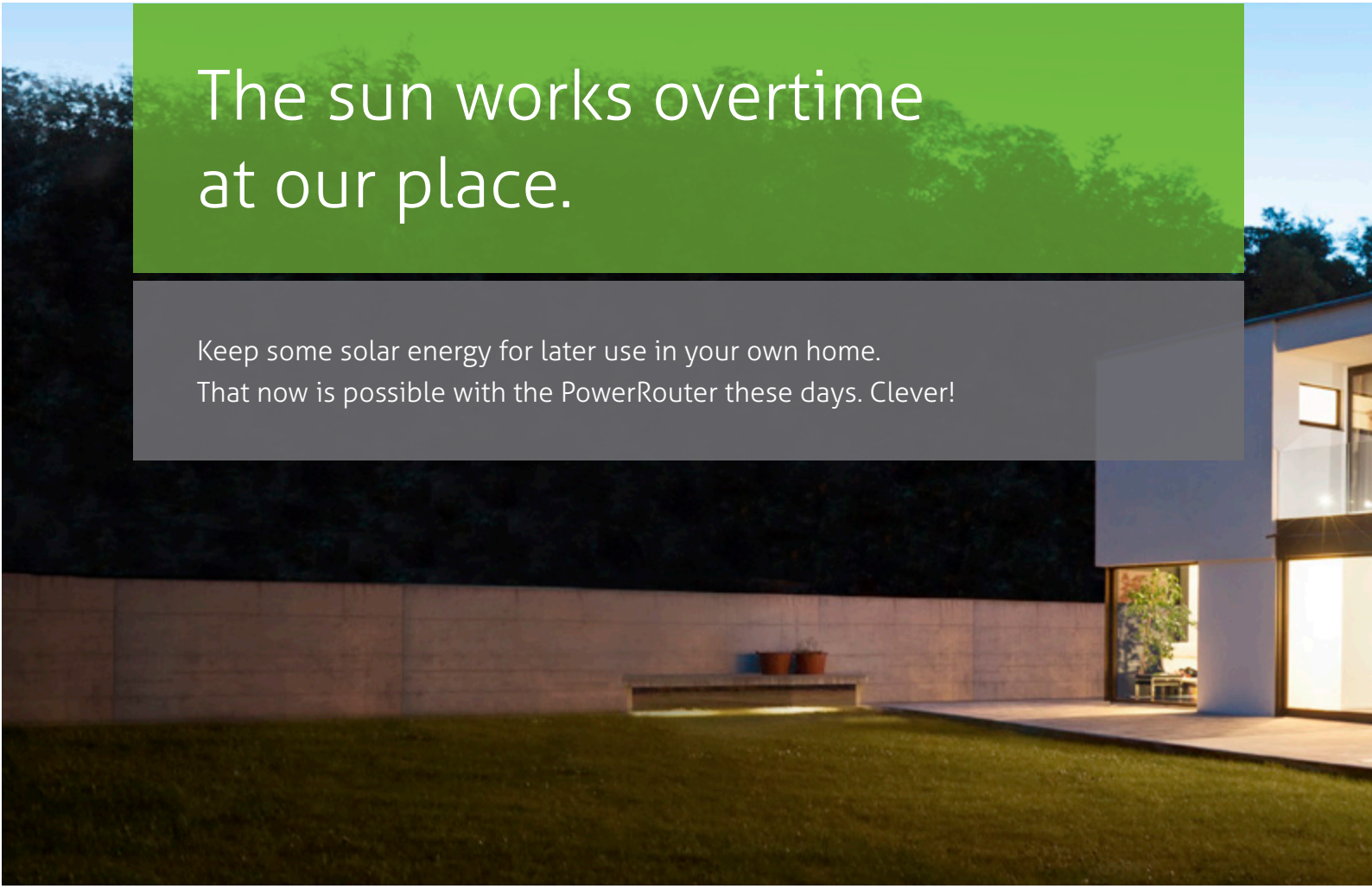
For later upgrade to an energy storage system.

The PowerRouter Connect is an expansion module for energy storage. Together with the PowerRouter Solar, it forms a complete storage system.

PowerRouter
Solar Battery

Features of the PowerRouter Solar Battery

- Inverter
- Battery Manager
- Energy management
- Dynamic feed-in limiter
- Online monitoring
- Backup power feature
- Can be connected to lead-acid (24V) or lithium-ion (48V) batteries
- Three output capacities: 3.0, 3.7 or 5.0 kW



Generate solar energy during the day, use directly when you need it, and save some for later during the evening and night.

The PowerRouter Solar Battery is the perfect solution for optimising your self-consumption. An innovative all-in-one solution, it consists of an inverter and integrated Battery Manager.

By connecting lead-acid or lithium-ion batteries, you can increase your level of self-consumption to 70% with the PowerRouter Solar Battery. That makes you more and more independent. And once you've used the power from the batteries, more is provided from the public grid.

PowerRouter Unifit

Features of the PowerRouter Unifit

- Universal retrofit unit
- Compatible with all inverters for solar, wind or co-generation systems.
- Battery Manager
- Energy management
- Dynamic feed-in limiter
- Online monitoring
- Backup power feature
- Connection of modern lithium-ion batteries
- Two output capacities: 3.7 or 5.0 kW

We are starting our very own energy revolution At home!

Those who have opted for generation of solar energy from their own system can now take another step forward with the retrofit upgrade to a complete energy storage system.

Retrofit your existing system to a complete energy storage system and optimise your self-consumption.

The PowerRouter Unifit is unique. A revolutionary retrofit unit; it upgrades already installed photovoltaic, wind or co-generation systems - regardless of the manufacturer - into an energy storage system. It is fully flexible and compatible. And it comes with all PowerRouter performance features, including practical online monitoring.

Now you can quite easily upgrade your existing system by adding the PowerRouter Unifit and lithium-ion batteries for energy storage. There's no need to modify your current system. The new PowerRouter Unifit guarantees you more independence: from your energy supplier and from rising energy prices. Increase your self-consumption up to 70%.

The PowerRouter Unifit Colour Edition:
in addition to the classic PowerRouter green, also available in red, blue, yellow, grey and white for a style match with the colour of the inverter.

The PowerRouter Unifit is an independent storage system without affecting the already installed system.

PowerRouter Solar

Features of the PowerRouter Solar

- Inverter
- Online monitoring
- Dynamic feed-in limiter
- Upgradable to an energy storage system
- Energy management
- Three output capacities: 3.0, 3.7 or 5.0 kW

Opting for solar energy is the right thing to do.

With a photovoltaic system on the roof, every household can make a contribution to protecting resources: both financial and environmental

Generate your own solar energy and reduce energy costs permanently.

Aside from the solar modules on the roof, the inverter represents the second basic component that every photovoltaic system needs. But the PowerRouter Solar is much more than just an inverter. It is a unique energy manager integrated into your solar system.

When the sun shines, your connected appliances are supplied with solar energy. Surplus energy is exported to the grid.

The energy-management feature of the PowerRouter Solar allows you to supply additional appliances with energy if plentiful solar energy is being generated.

Practical upgrade function: retrofitting the PowerRouter Connect allows you to upgrade the system easily into an energy storage system.

PowerRouter Connect

Upgrade cleverly and optimise your self-consumption amount..

The PowerRouter Connect and lithium-ion batteries complement your PowerRouter Solar to become a complete energy storage system. Easy thanks to plug & play.
Depending on the size and capacity of your solar system, you can increase your self-consumption of solar energy from 20 to 70%.

- » Upgrade module
- » Battery Manager
- » Backup feature

Energy storage is like leading an active life: charge your batteries and off you go!

Solar energy not used immediately can easily be stored with the PowerRouter.
Either lead-acid or lithium-ion batteries:
it's nice to have a choice.

The Battery Manager integrated in the PowerRouter ensures the charging and discharging of your batteries.

Store solar energy to supply your demands after sunset or when the sky is cloudy. With the PowerRouter, you can decide between two different battery technologies for storing your solar energy: lead-acid or lithium-ion batteries. Both technologies have their advantages. Lead-acid batteries are tried and tested, and relatively inexpensive; the new lithium-ion technology promises higher power and a longer service life.

Lead-acid Battery

Lead-acid batteries have been used for many years in a wide range of industries. Their long-proven technology and an operating voltage of 24 Vdc mean they are easy to use with the Battery Manager integrated into the PowerRouter. Maximum service life is guaranteed thanks to optimal charging and discharging of the batteries.

Lithium-ion Battery

The relatively new lithium-ion technology impresses with its high power output, greater efficiency and a long service life expectancy that stretches ahead many years. Compared to conventional batteries, lithium-ion batteries allow a greater depth of discharge (DOD). The stored solar energy is optimised for self-consumption to an absolute maximum.

Battery types compared

Lead-acid batteries.

- » proven technology
- » easier to acquire
- » 24 Vdc operating voltage

Lithium-ion batteries.

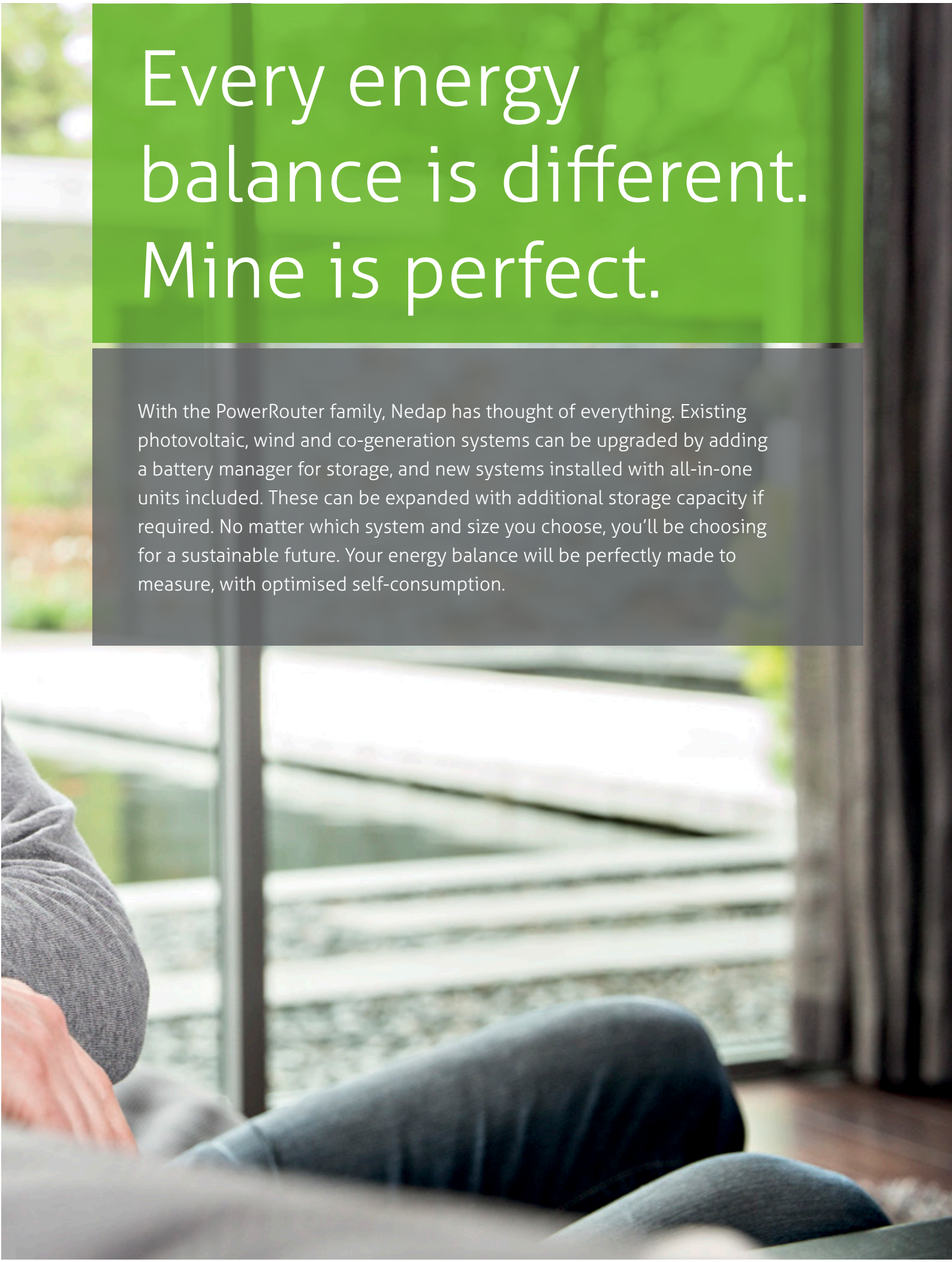
- » new technology
- » high energy density
- » lightweight
- » allow deeper and longer discharge process
- » 48 Vdc operating voltage

You can find a summary of the lithium-ion batteries compatible with the Nedap PowerRouter on our Internet site at **www.PowerRouter.com**

Modern lithium-ion technology is used these days in many products where high energy efficiency, long service life and minimal weight are required.

Every energy balance is different. Mine is perfect.

With the PowerRouter family, Nedap has thought of everything. Existing photovoltaic, wind and co-generation systems can be upgraded by adding a battery manager for storage, and new systems installed with all-in-one units included. These can be expanded with additional storage capacity if required. No matter which system and size you choose, you'll be choosing for a sustainable future. Your energy balance will be perfectly made to measure, with optimised self-consumption.



My energy balance is in good hands.

PowerRouter Service is like a good friend of the family. It's there when needed and is totally reliable.

Choosing a PowerRouter system means opting for top quality and the best service. And that starts the first time you call on PowerRouter for advice. Our PowerRouter installers are there to provide help and assistance. They're familiar with the high-performance PowerRouter technology and can help you decide which PowerRouter is right for you, and answer all your questions on the intelligent way to optimise self-consumption.

Once your PowerRouter has been installed, your installer or service technician will give you direct online access to the system via myPowerRouter.com. Important detailed information can be tracked and monitored permanently, and case-by-case customer service provided if necessary.

In case of a breakdown, your installer can use the innovative online monitoring function to solve the problem remotely.

More independence – guaranteed.

Your new PowerRouter meets the highest quality standards and of course comes with a comprehensive manufacturer's 5-year, on-site warranty. You can ask your PowerRouter installer to extend this by a further 5 years if desired.

Your way to the PowerRouter.

Nedap has an extensive dealer, sales and service network throughout the world. If you would like personal advice or other information from one of our PowerRouter installers, you can find a contact person directly and quickly via the online search function at **www.PowerRouter.com**

Always up to date over the Internet.

The software for all PowerRouters connected to the internet can be updated remotely. That way, your PowerRouter is always state of the art. There's no need for an installer to visit.

Nedap – technology that matters*

At Nedap we follow a dream: to gradually make the world a better place with technology that matters.

Electricity is an integral part of everyday life. It's governed our lives for more than a century. And the worldwide demand for electricity has grown ever since its discovery. Year by year. Day by day.

Energy must clearly be generated more efficiently and more sustainably in order to meet this enormous need.

Nedap has focused on sustainable and clean energy generation and developed the intelligent PowerRouter family – for the permanent optimisation of self-consumption of renewable energy.

Nedap has more than 700 employees following this goal worldwide.

Nedap is a manufacturer of intelligent, technical solutions for important issues and areas of life that affect the entire planet. Sufficient food for the steadily growing world population, clean drinking water for the entire planet and sustainable energy are some of the issues on our list.

Facts and figures

- Nedap was founded in 1929 as the Nederlandsche Apparatenfabriek.
- HQ in Groenlo/ The Netherlands
- Listed on the stock exchange since 1947
- More than 700 employees
- Active worldwide

Visitor address:
Parallelweg 2
7141 DC Groenlo
The Netherlands

Tel.:
+31 544 471 888
E-mail:
info@PowerRouter.com

Postal address:
P.O. Box 101
7140 AC Groenlo
The Netherlands

Partners/dealers:

PowerRouter

love your energy

www.PowerRouter.com