/ Perfect Welding / Solar Energy / Perfect Charging

CREATING A GREEN FUTURE WE CAN LOOK FORWARD TO.

WE ARE REVOLUTIONISING THE ENERGY SUPPLY OF THE FUTURE.

25 YEARS
FRONIUS
SOLAR
ENERGY

/ Services and product programme 2017/18

24HRS SUN

24 HOURS OF SUN

WE ARE DRIVING THE TRANSITION TOWARDS 100% RENEWABLES.

/ We believe in a future in which mankind covers 100% of our global energy requirements using renewable energy sources. The world of 24 hours of sun. In this world, renewable energy will be intelligently and economically generated, stored, distributed and consumed with unprecedented efficiency. Realising this vision is what drives us on – day in, day out.

/ In order for 24 hours of sun to become a reality, we must all make a concerted effort to optimise the use of energy, utilise synergies and design our energy systems as efficiently as possible to ensure renewable energy cannot be ignored. There is huge potential to be found in combining the energy sectors of electricity, heat and mobility.

/ Until now, the energy revolution had primarily been a revolution in the electricity sector. The heat and mobility sectors are still dominated by fossil fuels such as oil, coal and gas.

/ Through the emergence of electric vehicles, oil is however rapidly being replaced by electricity. In the heat sector too, electricity generated from cheap solar power is also playing an ever-increasing role.

/ At Fronius, we consider this development to be the basis for the next big leap towards 100% renewables: the intelligent integration and control of the energy sectors electricity, mobility and heat, and the use of the accompanying synergies. It is our mission to provide the technologies needed; the solutions needed already exist.

/ Keep reading on and discover how the Fronius Ohmpilot transforms a hot water boiler into a low-priced energy storage unit, or how electric vehicles are fuelled intelligently using self-generated solar power, and much more.

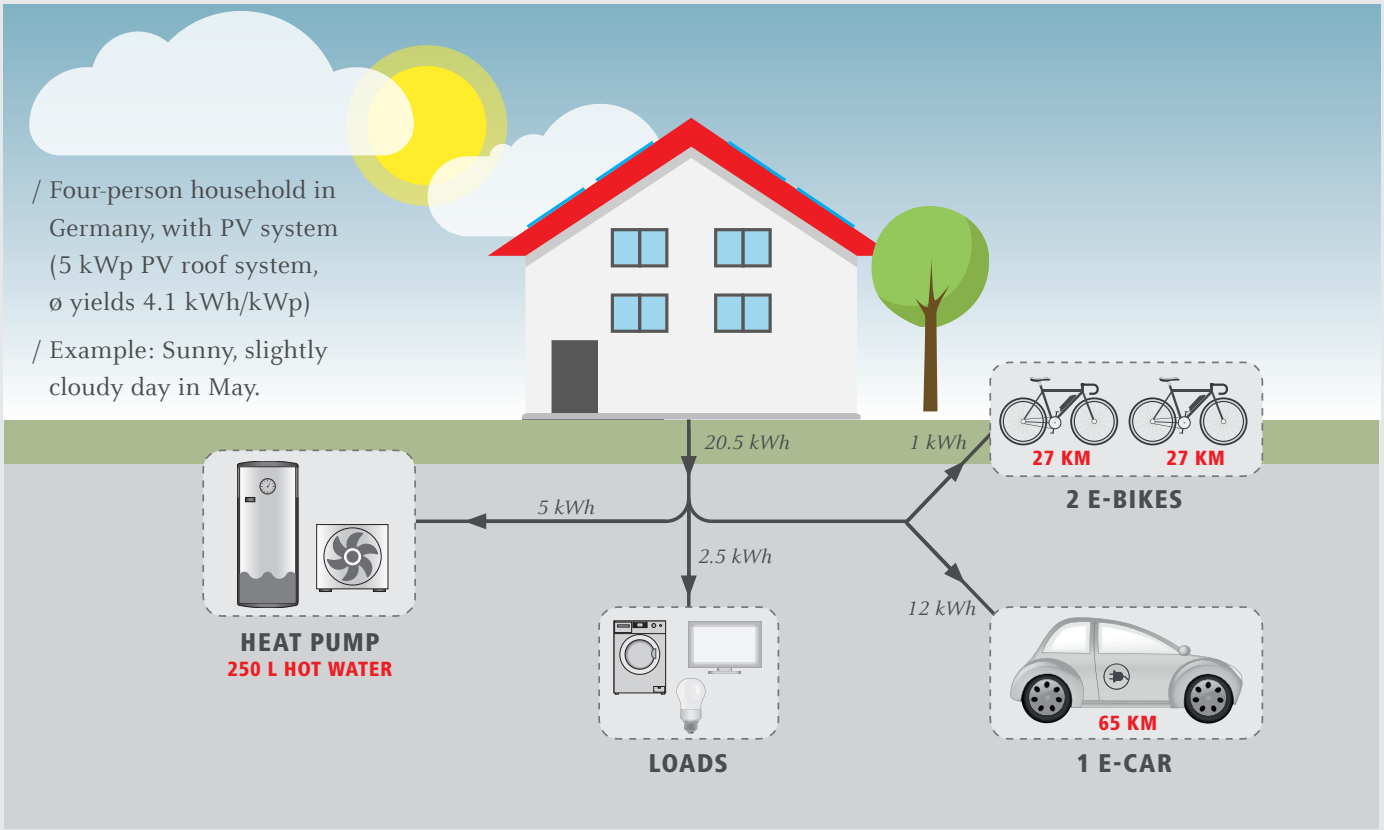
/ Join us on our journey and help us change the world.

Find out more at **www.24hoursofsun.com**

ENERGY SECTOR INTEGRATION IN YOUR HOME TODAY

/ Four-person household in Germany, with PV system (5 kWp PV roof system, ø yields 4.1 kWh/kWp)

/ Example: Sunny, slightly cloudy day in May.



/ This example of a four-person household in Central Europe speaks for itself: Energy Sector Integration at home is already possible today. With an average daily yield in May, for example, not only 250 liters of hot water can be produced, but also two e-bikes, one e-car and the electric loads in the household can be charged.

CONTENTS

OUR PHILOSOPHY: HIGH-QUALITY PRODUCTS & EXCEPTIONAL SERVICE

/ This year we, the Solar Energy division, are celebrating our 25-year anniversary. As a cutting-edge pioneer for solar power, we have been developing innovative products for photovoltaics and for the effective use of renewable energy since 1992. That is 25 years of experience and development of innovative products, exciting PV projects and valuable partnerships.

INNOVATION

/ At Fronius, we have been researching new technologies for converting energy since 1945. That is more than seventy years of experience, progress and continuous innovation.

SERVICE

/ Strong partnerships and a first-class service strategy are our number one priority. With our Fronius Service Partner programme we offer installers the fastest service on the market.

QUALITY

/ Decades of experience are also reflected in our high quality standards, from development to production through to the servicing of our products.

25

YEARS

FRONIUS SOLAR ENERGY

ALL-IN-ONE

/ We develop technologies to link electricity, heat and mobility (energy sector integration) and for Smart Grids (intelligent grids) in order to bring about our vision for 24 hours of sun by offering an all-in-one solution.

SUSTAINABILITY

/ We think long term and act responsibly. Using renewable energy and protecting resources are an important part of our sustainable corporate culture.

SECURITY

/ With its three divisions – Perfect Welding, Solar Energy and Perfect Charging – Fronius has a solid financial basis. Our customers and partners can be confident that Fronius will remain a safe and reliable business partner far beyond the next 25 years.

AS THE INTERNATIONAL QUALITY LEADER WE AIM TO MAKE YOU MORE SUCCESSFUL

/ Well before the quality of our products can be demonstrated under real conditions, they are subjected to an exhaustive programme of tests in our in-house research and development centre. Fronius quality tests far exceed the requirements of international standards. This ensures that the equipment always performs outstandingly even when subjected to the harshest environmental conditions such as water spray, dust, salt or extremes of temperature. Over 400 m² of test laboratories and several PV systems with a total output of over 1 megawatt are available for this purpose.

/ Durability test

/ Thermography test

/ Have you seen our video about the quality tests?
www.youtube.com/FroniusSolar

/ EMC test

Degree of protection test

/ Low temperature performance

/ Dust test

PERFECTION IS IN THE DETAIL:

A LOOK INSIDE OUR INVERTERS

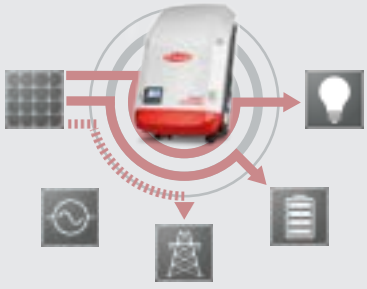
/ With our grid-connected inverters, we are among the leading suppliers worldwide. Our innovative technologies achieve maximum yields and our mounting system makes installation extremely easy.

MULTI FLOW TECHNOLOGY

/ The Multi Flow Technology is an intelligent controller in the Fronius Symo Hybrid inverter. On the one hand, the Multi Flow Technology can integrate other systems into the storage system, whereby all requirements can be realised in terms of system design:

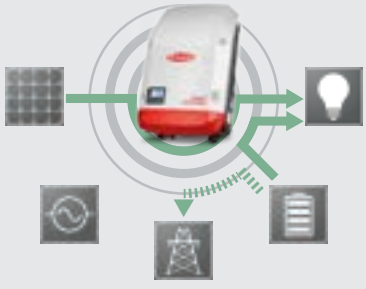
- / DC coupling: For direct DC charging of the battery by the PV generator connected to the inverter.
- / AC coupling: A battery storage device or additional AC sources, e.g. PV inverter or wind turbine, can be integrated into an existing PV system.
- / DC & AC coupling: To charge the battery directly from the PV generator (DC) and other AC sources.

/ On the other hand, the Multi Flow Technology maximises the use of the PV energy: various energy flows can be used in parallel and at the same time.



Energy from the PV generator:
/ Supplying consumers in the household
/ Charging the battery
/ If necessary, feed-in to the grid

Charging the battery:
/ Charging the battery from the PV generator (DC)
/ Charging the battery from an AC-connected energy source (inverter, wind turbine, etc.)
/ If necessary, charging from the grid



Supplying consumers in the household and grid:
/ Supplying from the PV generator
/ Supplying from the battery
/ If necessary, discharging the battery into the grid

SNAPINVERTER TECHNOLOGY

/ The SnapINverter generation of inverters features a simple, standardised mounting system, making installation and maintenance easier than ever. A special feature in the design of the device is that the connection area is separate from the power stage set compartment, with both being installed separately. The remarkably light connection area and all its cabling is fitted to the wall first, followed by the power stage set. The innovative hinged system makes installation and servicing extremely user-friendly. The inverter is simply placed in the mounting bracket and then secured. This means that it is not necessary to remove the entire inverter for servicing, just the power stage set. All the cabling remains in place.

INTEGRATED DATA COMMUNICATION

/ We are the first inverter manufacturer to offer a data communication package with fully integrated datalogging, WLAN, Ethernet, energy management, web server and a range of interfaces. The inverter is connected to the internet by network cable or WLAN – without additional cabling – and grants you the perfect overview of how the PV system is operating. Connection to third-party components is provided by means of interfaces such as Modbus TCP SunSpec, Modbus RTU SunSpec or Fronius Solar API (JSON). The open interfaces can also be operated in parallel to Fronius Solar.web.

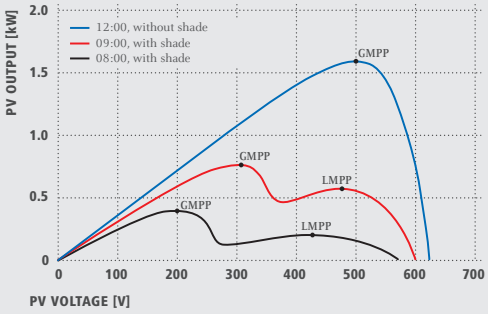
SUPERFLEX DESIGN

/ The Fronius SuperFlex Design is an ingenious combination of technical performance attributes that make designing your PV system not only extremely simple, but also incredibly flexible. The key performance factors of the SuperFlex Design are two MPP trackers, together with a high system voltage and wide DC input voltage range. Every DC input, and therefore every MPP tracker, is able to accommodate the entire nominal output of the inverter. Regardless of whether the inverter has to cope with different roof orientations, shading of one or two strings, or the use of residual modules: a Fronius inverter with integrated SuperFlex Design will satisfy every conceivable operational PV system planning scenario using just a single inverter model.

*/ **Flexibility is a matter of design.** Enjoy complete planning flexibility whatever the power category thanks to SuperFlex Design. See for yourself at www.fronius.com/superflex*

DYNAMIC PEAK MANAGER

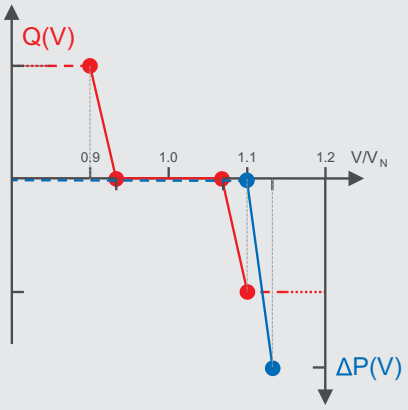
/ The Dynamic Peak Manager is a new MPP tracking algorithm that dynamically adapts its behaviour when searching for the optimal operating point. Its special feature is that the Dynamic Peak Manager automatically checks the entire characteristic curve on a regular basis and finds the global Maximum Power Point (GMPP), even in partial shade.



/ With conventional MPP trackers it is difficult to determine the global Maximum Power Point (GMPP). Often the GMPP is not detected because the tracker has wrongly identified the local Maximum Power Point (LMPP) as the maximum for the entire characteristic. The Dynamic Peak Manager always finds the global maximum because it regularly checks the entire characteristic.

SMART GRID READY

/ Fronius inverters are ready for the Smart Grid of tomorrow. The inverters are optimally equipped to meet the technical requirements of grids in the future. A series of smart functions, known as Advanced Grid Features, are built into the devices. These include a number of control functions for optimum feed-in of reactive power and effective power. These functions are designed to enable stable grid operation even when the PV system density is very high and to prevent unwanted interruptions to feed-in and associated yield losses if grid parameters exceed the thresholds. Fronius inverters therefore help to guarantee the yield of a PV system. Furthermore, where feed-in limits are imposed, Fronius inverters can provide dynamic feed-in control with self-consumption taken into account. Just connect the meter and set the feed-in limit!



/ The Advanced Grid Features regulate reactive power and effective power. This maximises the yield and stabilises the grid.

Q Reactive power
ΔP Change in effective power
U Voltage
U_N Nominal voltage

ZERO FEED-IN

/ Today, an increasing number of grid operators in various countries are stipulating a PV power feed-in limit as a precondition before a system is connected to the grid. With dynamic power reduction, Fronius is offering a solution for optimum feed-in management. The inverter supplies the household consumers with energy first and then reduces the system output to the maximum energy feed-in permitted by the grid operator. With Fronius inverters, zero feed-in is also a possibility thanks to this function, meaning that no PV power is fed into the grid. The relevant requirements of the grid operator can be fulfilled by simply enabling a setting on the inverter's web interface.

AUTOMATIC HF TRANSFORMER SWITCHOVER

/ Fronius transformer inverters use a high-frequency (HF) transformer. The automatic transformer switchover facility produces three efficiency peaks. The result is a consistently high level of efficiency across the entire input voltage range, which produces higher yields. Other advantages of HF transformer technology are the compact, lightweight design and safety as a result of the electrical isolation.

SOLUTIONS FOR THE HOME

/ Nowadays, owners of PV systems are wondering: How can you make the most of self-generated solar energy in your own home? A key step is to intelligently combine the use of synergies, in other words, the sectors electricity, heat and mobility. This is why we are constantly striving to develop holistic solutions to optimise the use of energy, for instance with solutions to provide hot water or store energy.

INTELLIGENT ENERGY MANAGEMENT

/ Intelligent energy management enables people to cover their energy consumption through self-generated electricity and hence cut their energy costs. The energy management functions, which are integrated as standard in every Fronius inverter, form the basis for this. Together with the Fronius Smart Meter, even better self-consumption rates can be achieved since consumption data and excess energy is also made available.

FLEXIBLE STORAGE SOLUTIONS

/ We believe that in a few years a storage system will be integrated in the majority of PV systems – both new and existing ones. Flexible technologies, which enable optimised storage solutions in a variety of application scenarios, are therefore required. Our answer to this is the Fronius Energy Package storage solution with integrated Multi Flow Technology.

PROFESSIONAL SYSTEM MONITORING

/ Why is professional system monitoring important? Firstly, because every PV system operator should have an effective system monitoring solution so that they can ensure that everything is working as it should be. Secondly, effective monitoring is one of the keys to future business success for you as an installer. The advantages of Fronius Solar.web at a glance:

/ Use the Remote Update function to update Fronius inverters with just one click of the mouse. This saves both time and money.
/ A clear overview of the user's power consumption and PV production in the home provides information about additional measures to be taken to reduce energy costs.
/ Several systems can be monitored simultaneously in the Fronius Solar.web online portal. The flexible view presents information in a tiled view with images, or if there are more systems, a clear list.
/ Clear display of the power consumption in the home using the Fronius Smart Meter.
/ Flexible, customised reporting which allows the data to be easily processed further or archived on the user's own computer.

FRONIUS STORAGE SOLUTIONS
USING ENERGY EFFICIENTLY AND FLEXIBLY

/ Storing energy is one of the keys to success in implementing our vision of 24 hours of sun. Owners of a storage unit can store the solar power and make best use of it at times when little or no power is generated, for instance in the evening or at night. The result is maximum self-consumption of the available power and maximum energy independence, which in turn increases the cost effectiveness of the investment. At the same time, more locally generated energy can thereby be used directly at source, which improves the utilisation levels of the public grids and permits a higher level of integration of renewable energy.

/ When it comes to our storage solutions, we have focused especially on longevity and flexibility in order to meet all requirements. Thanks to the integrated Multi Flow Technology, the Fronius Energy Package covers a broad range of applications, something that other storage systems have yet to achieve. For instance, integration into existing PV systems or coupling with other energy sources. The Multi Flow Technology also stands for the intelligent management of energy flows, in other words, the parallel and simultaneous control of different DC and AC energy flows. This results in a maximum self-consumption rate and optimum profitability.

/ "Cutting household bills was the ultimate driver behind investing in the PV system. We have also installed a storage unit so that, during the summer months, we can survive exclusively on the power we generate ourselves; we don't need to purchase anything from the grid."
Stefan Eichschmied, system owner

FRONIUS ENERGY PACKAGE

/ The personal storage solution for 24 hours of sun.

/ The Fronius Energy Package allows any unused energy produced by a photovoltaic system to be temporarily stored in a battery. The result: maximum self-consumption of the available power and maximum energy independence. Excess solar power can thus be used at times when generating conditions are poor or non-existent. With the optional emergency power function, the household can enjoy an electricity supply even during power outages. The Fronius Symo Hybrid inverter also enables DC or AC coupling of battery storage. In the case of AC coupling, it is also possible to retrofit an existing PV system with a storage unit without having to connect a PV generator to the Fronius Symo Hybrid inverter. The Fronius Energy Package is therefore suitable both for new installations and when retrofitting storage devices in existing PV systems.

A HIGH DEGREE OF SELF-CONSUMPTION THANKS TO MULTI FLOW TECHNOLOGY

/ A high degree of self-consumption means maximum profitability. The storage solution is characterised by its ability to handle different DC and AC energy flows in parallel and at the same time. Energy from the modules and from the battery can be made available at the same time. It is also possible for the energy from the modules to be simultaneously fed into the battery and the in-house network. The result is maximum self-consumption and a high level of self-sufficiency for the household.

EXTREMELY SIMPLE INSTALLATION & MAINTENANCE

/ The storage system impresses with its simple installation and low level of system complexity. The Fronius Symo Hybrid inverter can be installed in a matter of minutes thanks to the proven SnapINverter technology. The integrated Remote Update function saves you as an installer many unnecessary call outs should servicing be required and updates can be carried out remotely.

INTEGRATED DATA COMMUNICATION

/ Both WLAN and a dedicated web server are permanently built into the Fronius Symo Hybrid. As a result, the inverter can easily be connected to a smartphone, tablet or laptop, and the Setup wizard ensures that configuring the PV system is straightforward and intuitive.

The user-friendly graphical user interface on the integrated web server also makes system monitoring impressively simple. In short, whether you are using a Wireless Access Point, web interface, meter connection or interfaces to the electricity retailer, the Fronius Symo Hybrid offers all the communication functions you will need now and in the future.

MAXIMUM EFFICIENCY

/ The battery is connected on the DC side, making multiple conversion between DC and AC unnecessary. The result is maximum total efficiency, as conversion losses are extremely low. Low currents due to the high battery voltage also bring further advantages: lower losses on the DC side and the option of using standard solar cables with small cross-sections.

SAFE, THREE-PHASE EMERGENCY POWER FUNCTION

/ Even during a power outage, electrical devices can still be provided with an optional power supply. The transfer switch ensures the safe isolation from – and reconnection to – the grid. As power is provided on all three phases and asymmetrically, if there is a power outage then in most cases [1)] the entire household can be supplied with electricity.

1) Depending on the dimensions of the PV system, inverter, storage device and consumers connected.

FRONIUS SYMO HYBRID

/ The heart of the 24 hours of sun storage solution.

/ The Fronius Symo Hybrid is the heart of the 24 hours of sun storage solution – the Fronius Energy Package. This inverter combines a battery charging system, battery inverter, hybrid inverter, controller and system monitoring solution in one device. With AC power categories ranging from 3.0 to 5.0 kW, the inverter is able to process up to 8.0 kW in order to supply household consumers with energy and to temporarily store surplus energy from a photovoltaic system in the Fronius Solar Battery. Thanks to intelligent energy flow management, the built-in Multi Flow Technology supports simultaneous energy flows in all directions as well as AC-, DC- and AC- & DC coupling of the battery storage device. The result: maximum self-consumption and optimum system profitability.

THE ADVANTAGES AT A GLANCE

/ All-in-one product: battery charging system + battery inverter + hybrid inverter + controller + system monitoring

/ Processing of up to 8 kW DC input power

/ Maximum degree of self-consumption thanks to Multi Flow Technology: different DC and AC energy flows are possible in parallel and at the same time

/ Three-phase emergency power function

/ Emergency power function and battery can be retrofitted at any time

/ WLAN and Ethernet connections as standard for extremely easy integration of third-party components

/ Dynamic Peak Manager for continuous, intelligent yield optimisation

/ Easy installation and maintenance thanks to SnapINverter technology

/ SnapINverter technology

/ Integrated data communication

/ Dynamic Peak Manager

/ Smart Grid Ready

/ Zero feed-in

/ Multi Flow Technology

FRONIUS SYMO HYBRID
3.0-3-S / 4.0-3-S / 5.0-3-S

INPUT DATA	FRONIUS SYMO HYBRID
Number of MPP trackers	1
Max. DC input power	5.0 - 8.0 kW
Max. input current ($I_{dc\ max}$)	1 x 16 A
DC input voltage range ($U_{dc\ min}$ - $U_{dc\ max}$)	150 - 1000 V [1]
Number of DC connections (PV)	2

OUTPUT DATA	FRONIUS SYMO HYBRID
AC nominal output ($P_{ac,r}$)	3.0 - 5.0 kW
Max. output power	3.0 - 5.0 kVA
Grid connection (voltage range)	3~NPE 400 V / 230 V or 3~NPE 380 V / 220 V (+20% / -30%)
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)

GENERAL DATA	FRONIUS SYMO HYBRID
Dimensions (height x width x depth)	645 x 431 x 204 mm
Weight	19.9 kg
Degree of protection	IP 65
Inverter concept	Transformerless
Ambient temperature range	-25 - +60 °C
Emergency power compatible	Yes

EFFICIENCY	FRONIUS SYMO HYBRID
Max. efficiency (PV - grid)	97.7 / 97.9 / 97.9%
European efficiency (PV - grid)	95.2 / 95.7 / 96.0%

INTERFACES	FRONIUS SYMO HYBRID
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
Datalogger and web server	Integrated
Interface to battery and meter	Modbus RTU (RS485)

[1] May vary for future battery options.

FRONIUS SOLAR BATTERY

/ Powerful lithium technology for 24 hours of sun.

/ The Fronius Solar Battery is a perfect example of high-performance lithium-iron phosphate technology. A long service life, short charging times and high discharge power are therefore guaranteed.

THE ADVANTAGES AT A GLANCE

/ Long service life, short charging times, high discharge power

/ Maximum efficiency thanks to coupling on the DC side

/ Use of the safest lithium iron phosphate storage technology

/ Energy Saving Mode for intelligent energy savings

/ Prewired connection area for easy installation

FRONIUS SOLAR BATTERY
4.5 / 6.0 / 7.5 / 9.0 / 10.5 / 12.0

ELECTRICAL PARAMETERS	FRONIUS SOLAR BATTERY
Usable capacity	3.6 - 9.6 kWh
Cycle stability	8,000 [1]
Voltage range	120 - 460 V
Nominal charging power	2.4 - 6.4 kW
Nominal discharge power	2.4 - 6.4 kW
Max. charging current	16 A
Max. discharge current	16 A

GENERAL DATA	FRONIUS SOLAR BATTERY
Battery technology	LiFePO4
Dimensions (height x width x depth)	955 x 570 x 611 mm
Weight	91 - 176 kg
Degree of protection	IP 20
Protection class	1
Installation type	Indoor installation
Ambient temperature range	5 - 35 °C
Permitted humidity	0 - 95%
DC connection technology	Screw terminals 2.5 - 16 mm²
Calendar service life	> 20 years [1]
Certificates and compliance with standards	IEC/EN 62133; EN 61000-6-2:2005, EN 61000-6-3:2007 + A1:2011, EN 62311:2008, FCC Part 15 Subpart B:2012 ClassB, UN 38.3

INTERFACES	FRONIUS SOLAR BATTERY
Connection to inverter	Modbus RTU (RS485)

[1] At ambient temperature of 23 °C.

FRONIUS SMART METER

/ The bidirectional meter for recording power consumption in the home.

/ The Fronius Smart Meter is a bidirectional, digital meter with rapid communication via the Modbus RTU interface, which is used in addition to the electricity meter from the electricity retailer. With the Fronius Energy Package storage solution, the Fronius Smart Meter manages the various energy flows in a perfectly coordinated way, optimising the overall energy management.

THE ADVANTAGES AT A GLANCE

/ Clear overview of own power consumption in conjunction with Fronius Solar.web

/ Highly accurate measurements and rapid communication via the Modbus RTU interface

/ Perfectly coordinated control of the energy flows for optimised energy management

FRONIUS SMART METER 63A-3 / 50KA-3

TECHNICAL DATA	FRONIUS SMART METER 63A-3	FRONIUS SMART METER 50KA-3 [1]
Nominal voltage	400 - 415 V	
Maximum current	3 x 63 A	3 x 50,000 A
Connection cross section, current path	1 - 16 mm²	0.05 - 4 mm²
Connection cross section, communication & neutral conductor	0.05 - 4 mm²	
Self-consumption	1.5 W	2.5 W
Starting current	40 mA	
Accuracy class	1	
Accuracy Active energy	Class B (EN50470)	
Accuracy Reactive energy	Class 2 (EN/IEC 62053-23)	
Overload (short-term)	30 x I_{max} / 0.5 s	
Installation	Indoor installation (DIN rail)	
Housing	4 modules DIN 43880	
Degree of protection	IP 51 (front panel) / IP 20 (terminals)	
Operating range	-25 - +55 °C	
Dimensions	89.0 x 71.2 x 65.6 mm	
Interface to inverter	Modbus RTU (RS485)	
Display	8-digit LCD	

[1] Supplied without current converter. More information about how to select the appropriate current converter can be found at **www.fronius.com**.

FRONIUS SNAPINVERTER

THE INNOVATIVE INVERTER GENERATION FROM FRONIUS

/ The SnapINverter generation features a uniform, intelligent design and maximum flexibility. As an installer, enjoy the benefits of simple installation and commissioning along with quick and uncomplicated servicing. Thanks to the standardised product line ranging from 1.5 to 27.0 kW, you have the ideal inverter for any system size – from a family home to a large-scale system.

/ Fronius SnapINverters boast integrated energy management and system monitoring functions. Individual consumers can be actuated via the energy management relay in the inverter, which in turn optimises self-consumption, thereby shortening the amortisation period. Thanks to wireless system monitoring, the user receives a comprehensive overview of the production and consumption data of the PV system, and much more besides. Furthermore, the DC disconnector integrated in all SnapINverters guarantees the highest level of safety.

/ SnapINverters also impress during servicing. The proven PC board replacement process together with the SnapINverter technology guarantees rapid servicing directly at the system location. This guarantees maximum yield dependability with minimum expenditure of time and money.

/ *"We wanted a simple way to gain our independence from ever increasing energy costs,"* explains Franz Musil, owner of the 2.25 kWp roof-mounted system in Upper Austria. *"Solar power enables us to do just that – we generate roughly 40% of the electricity our home needs using our PV system, thus reducing our energy costs. The entire investment does of course need to be economically viable; the system will pay for itself in around nine years, at which point we will profit from the self-generated power."*


Fronius
FRONIUS GALVO

DATA COMMUNICATION AND ENERGY MANAGEMENT

/ With a Fronius SnapINverter, you get an all-in-one system monitoring package. Thanks to the integrated Fronius Datamanager, our inverters offer a communication package with fully integrated datalogging, WLAN, Ethernet, energy management, a web server and a range of interfaces as standard. For you, this means no additional components and no hidden extra costs; simply a complete solution.

ENERGY MANAGEMENT

/ The integrated energy management function helps to maximise self-consumption. If the inverter produces more than the predefined power level, the digital output switches and the generated power is supplied to the specified electrical consumers (e.g. heat pump, pool pump or wall box for electric cars). The interface to the Fronius Smart Meter allows self-consumption to be visualised on Fronius Solar.web and enables dynamic feed-in management.

STRAIGHTFORWARD START-UP THANKS TO THE INTEGRATED WEB SERVER

/ With the Fronius Datamanager, installation and commissioning of the system monitoring function is extremely easy thanks to the dedicated website on the integrated web server. The Setup wizard guides you through the configuration process up to and including registration on the Fronius Solar.web online portal.

OPEN INTERFACES

/ The integrated Modbus RTU SunSpec, Modbus TCP SunSpec, Fronius Push Service and Fronius Solar API (JSON) interfaces allow Fronius inverters to be seamlessly linked to third-party systems, e.g. home automation systems, and to run in parallel with Fronius Solar.web. A ripple control receiver can also be connected via the digital inputs and outputs so that the power and reactive power can be controlled remotely in accordance with electricity retailer requirements.

FEED-IN MANAGEMENT

/ With dynamic power reduction, Fronius is offering a solution for optimum feed-in management of photovoltaic systems. When feed-in limits are imposed, the inverter supplies the household or building consumers with energy first and then reduces the system output to the maximum energy feed-in permitted by the grid operator. Zero feed-in is increasingly required in many countries. Dynamic feed-in regulation from Fronius combined with a Fronius Smart Meter make this possible: in this case, the inverter DC power is reduced so that only the household/building consumers are supplied and no current is fed into the grid. The relevant requirements of the grid operator can be fulfilled by simply enabling a setting on the web interface of the Fronius Datamanager.


Fronius
FRONIUS SYMO

FRONIUS GALVO

/ The future-proof inverter for small self-consumption systems.

/ The Fronius Galvo is the perfect, single-phase HF transformer inverter for private households – and is especially suitable for self-consumption systems. With power categories from 1.5 to 3.1 kW and electrical isolation, it is also a future-proof inverter for existing PV systems. The Fronius Galvo combines maximum flexibility, innovative technologies and the highest levels of safety in a single device. An inverter of proven Fronius quality that is sure to impress you.

THE ADVANTAGES AT A GLANCE

/ WLAN and Ethernet connections as standard for extremely easy integration of third-party components

/ Optimisation of self-consumption thanks to integrated energy management relay and digital energy management output

/ Innovative plug-in card technology enables the flexible addition of extra functions at a later date

/ Suitable for all module technologies and for repowering small existing systems thanks to electrical isolation

/ Easy installation and maintenance thanks to SnapINverter technology

/ SnapINverter technology

/ HF transformer switchover

/ Integrated data communication

/ Smart Grid Ready

/ Zero feed-in

FRONIUS GALVO
1.5-1 / 2.0-1 / 2.5-1 / 3.0-1[1] / 3.1-1

INPUT DATA	FRONIUS GALVO
Number of MPP trackers	1
Max. input current ($I_{dc\ max}$)	13.3 - 20.7 A
DC input voltage range ($U_{dc\ min}$ - $U_{dc\ max}$)	120 - 550 V
Number of DC connections	3

OUTPUT DATA	FRONIUS GALVO
AC nominal output ($P_{ac,r}$)	1.5 - 3.1 kW
Max. output power	1.5 - 3.1 kVA
Grid connection (voltage range)	1~NPE 230 V (+17% / -20%)
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)

GENERAL DATA	FRONIUS GALVO
Dimensions (height x width x depth)	645 x 431 x 204 mm
Weight	16.4 - 16.8 kg
Degree of protection	IP 65
Night-time consumption	< 1 W
Inverter concept	HF transformer
Ambient temperature range	-25 - +50 °C

EFFICIENCY	FRONIUS GALVO
Max. efficiency	95.9 / 96.0 / 96.1 / 96.1 / 96.1%
European efficiency	94.5 / 94.9 / 95.2 / 95.4 / 95.4%

INTERFACES	FRONIUS GALVO
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver
USB (type A socket)	Data logging, inverter update via USB flash drive
2x RS422 (RJ45 socket)	Fronius Solar Net
Signalling output	Energy management (floating relay output)
Datalogger and web server	Integrated
External input	S0 meter connection / Evaluation of overvoltage protection
RS485	Modbus RTU SunSpec or meter connection

[1] Up to 3 kW for countries with relevant support thresholds.

FRONIUS PRIMO

/ The communicative inverter for optimised energy management.

/ The Fronius Primo in power categories from 3.0 to 8.2 kW perfectly complements the SnapINverter generation. This single-phase, transformerless device is the ideal inverter for private households. Its innovative SuperFlex Design provides maximum flexibility in system design, while the SnapINverter mounting system makes installation and maintenance easier than ever before. The communication package included as standard, with WLAN, energy management, several interfaces and much more besides, makes the Fronius Primo a communicative inverter for home owners.

THE ADVANTAGES AT A GLANCE

/ WLAN and Ethernet connections as standard for extremely easy integration of third-party components

/ Optimisation of self-consumption thanks to integrated energy management relay and digital energy management output

/ Maximum design flexibility provided by two MPP trackers, high system voltage and wide input voltage range

/ Dynamic Peak Manager for continuous, intelligent yield optimisation

/ Easy installation and maintenance thanks to SnapINverter technology

/ Ideal for use as a repowering inverter

/ SnapINverter technology

/ Integrated data communication

/ SuperFlex Design

/ Dynamic Peak Manager

/ Smart Grid Ready

/ Zero feed-in

FRONIUS PRIMO
3.0-1 / 3.5-1 / 3.6-1 / 4.0-1 / 4.6-1 / 5.0-1 / 6.0-1 / 8.2-1

INPUT DATA	FRONIUS PRIMO
Number of MPP trackers	2
Max. input current ($I_{dc\ max\ 1}$ / $I_{dc\ max\ 2}$)	12.0 A / 12.0 A or 18.0 A / 18.0 A
DC input voltage range ($U_{dc\ min}$ - $U_{dc\ max}$)	80 - 1000 V
Number of DC connections	2+2

OUTPUT DATA	FRONIUS PRIMO
AC nominal output ($P_{ac,r}$)	3.0 - 8.2 kW
Max. output power	3.0 - 8.2 kVA
Grid connection (voltage range)	1 ~ NPE 220 V / 230 V (180 V - 270 V)
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)

GENERAL DATA	
Dimensions (height x width x depth)	645 x 431 x 204 mm
Weight	21.5 kg
Degree of protection	IP 65
Night-time consumption	< 1 W
Inverter concept	Transformerless
Ambient temperature range	-40 - +55 °C

EFFICIENCY	FRONIUS PRIMO
Max. efficiency	98.0 / 98.0 / 98.0 / 98.1 / 98.1 / 98.1 / 98.1 / 98.1 / 98.1 %
European efficiency	96.1 / 96.8 / 96.8 / 97.0 / 97.0 / 97.1 / 97.1 / 97.3 / 97.5%

INTERFACES	FRONIUS PRIMO
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver
USB (type A socket)	Data logging, inverter update via USB flash drive
2x RS422 (RJ45 socket)	Fronius Solar Net
Signalling output	Energy management (floating relay output)
Datalogger and web server	Integrated
External input	S0 meter connection / Evaluation of overvoltage protection
RS485	Modbus RTU SunSpec or meter connection

FRONIUS SYMO

/ Maximum flexibility for the applications of tomorrow.

/ Boasting power categories ranging from 3.0 to 20.0 kW, the transformerless Fronius Symo is the three-phase inverter for every size of installation. With a high system voltage, wide input voltage range and two MPP trackers, it guarantees maximum flexibility in system design. A WLAN or Ethernet internet connection as standard plus easy integration of third-party components make the Fronius Symo one of the most communicative inverters on the market.

THE ADVANTAGES AT A GLANCE

/ WLAN and Ethernet connections as standard for extremely easy integration of third-party components

/ Optimisation of self-consumption thanks to integrated energy management relay and digital energy management output

/ Maximum design flexibility provided by two MPP trackers, high system voltage and wide input voltage range

/ Dynamic Peak Manager for continuous, intelligent yield optimisation

/ Easy installation and maintenance thanks to SnapINverter technology

/ Ideal for use as a repowering inverter

/ SnapINverter technology

/ Integrated data communication

/ SuperFlex Design

/ Dynamic Peak Manager

/ Smart Grid Ready

/ Zero feed-in

FRONIUS SYMO

3.0-3-S / 3.7-3-S / 4.5-3-S / 3.0-3-M / 3.7-3-M / 4.5-3-M / 5.0-3-M / 6.0-3-M / 7.0-3-M / 8.2-3-M

INPUT DATA	FRONIUS SYMO
Number of MPP trackers	1 / 2
Max. input current ($I_{dc\ max}$)	16.0 A / 16.0 A
DC input voltage range ($U_{dc\ min}$ - $U_{dc\ max}$)	150 - 1000 V
Number of DC connections	3 / 2+2

OUTPUT DATA	FRONIUS SYMO
AC nominal output ($P_{ac,r}$)	3.0 - 8.2 kW
Max. output power	3.0 - 8.2 kVA
Grid connection (voltage range)	3~NPE 400 V / 230 V or 3~NPE 380 V / 220 V (+20% / -30%)
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)

GENERAL DATA	FRONIUS SYMO
Dimensions (height x width x depth)	645 x 431 x 204 mm
Weight	16.0 - 21.9 kg
Degree of protection	IP 65
Night-time consumption	< 1 W
Inverter concept	Transformerless
Ambient temperature range	-25 - +60 °C

EFFICIENCY	FRONIUS SYMO
Max. efficiency	98.0%
European efficiency	96.2 / 96.7 / 97.0 / 96.5 / 96.9 / 97.2 / 97.3 / 97.5 / 97.6 / 97.7%

INTERFACES	FRONIUS SYMO
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver
USB (type A socket)	Data logging, inverter update via USB flash drive
2x RS422 (RJ45 socket)	Fronius Solar Net
Signalling output	Energy management (floating relay output)
Datalogger and web server	Integrated
External input	S0 meter connection / Evaluation of overvoltage protection
RS485	Modbus RTU SunSpec or meter connection

SOLUTIONS FOR HEAT GENERATION

USING SOLAR ENERGY INTELLIGENTLY

/ A large proportion of energy requirements in the home is used for heat. Covering this expenditure of energy from your own PV energy not only increases the self-consumption of a PV system and with it the yield – it really makes sense to use the PV energy in your own home. With the Fronius Ohmpilot, we are introducing our most efficient solution for the use of solar energy for heat generation.

/ Thanks to the Fronius Ohmpilot consumption regulator, PV electricity can also be used very efficiently to provide hot water. Whether it is a heating element, towel radiator or another ohmic consumer, as soon as surplus energy is available, this is fed directly to the consumer via the Fronius Ohmpilot. The result? Optimum use of the PV energy in your own home. All this in a fully integrated system from a single source.

/ Many households these days are heated using heat pumps. By combining the PV system and heat pump, you can also use PV electricity to provide hot water or heating. Thanks to the Smart Grid Ready interface, heat pumps can easily be combined with Fronius inverters. This increases the degree of self-consumption and the yield of the PV system.

ENERGY MANAGEMENT WITH FRONIUS OHMPILOT FOR HEATING WATER

/ Four-person household with a daily hot water consumption of 250 litres
/ Electric boiler for heating water
/ 50% of the electricity for heating the water comes from the PV system
/ Electricity rate of 28 c€/kWh, feed-in tariff of 12.3 c€/kWh, cost of generating PV electricity at 7 c€/kWh

Energy requirement E = m * c * ΔT = 250l * 1163 * 50 °C = 14.5 kWh
Annual saving = tariff difference * E * days * PV proportion = 15.7 c€ * 14.5 kWh * 365 * 0.5 = € 416

SAVING € 416 PER YEAR OR A MINIMUM OF € 5,600 IN 10 YEARS
ESTIMATED COST OF RETROFITTING (INCLUDING RELAY AND WIRING) IS BETWEEN € 1,100 TO € 1,300
--> PAYS OFF IN APPROXIMATELY 3 YEARS

FRONIUS OHMPILOT

/ Optimising self-consumption through the intelligent, continuously adjustable regulation of heat sources.

/ The Fronius Ohmpilot is a consumption regulator designed to use excess solar power to heat water. Thanks to the continuously adjustable regulation from 0 to 9 kW, surplus PV current can be put to highly efficient use and fed to the consumers in the household. The Fronius Ohmpilot is primarily used to intelligently control heating elements for providing hot water in boilers and buffer storage tanks, but can also be used for infrared heating or towel radiators. Solar power can thus provide a family home with average levels of water consumption with most of their hot water from April to October. The result is maximum self-consumption, a reduction in the household's CO_2 emissions and less wear on the building's main heating system during the summer months.

THE ADVANTAGES AT A GLANCE

/ Optimum use of surplus solar energy in your own home

/ Continuously adjustable regulation from 0 to 9 kW

/ Up to two heating elements can be controlled

/ Simple installation and start-up

/ Easy to retrofit into existing PV systems or where a heating element is already present

/ Suitable for single or three-phase ohmic consumers

/ No thyristor regulator – due to the clean and interference-free control of the consumers, the Fronius Ohmpilot also takes the strain off the grid

/ Fully integrated system: inverter and consumption regulator from a single source

/ The Fronius Ohmpilot is compatible with all Fronius inverters (excl. the Fronius Symo Hybrid). The prerequisites for use are a Fronius Datamanager 2.0 and a Fronius Smart Meter.

FRONIUS OHMPILOT

INPUT DATA	FRONIUS OHMPILOT
Frequency	50 Hz
Max. input current ($I_{ac\ max}$) [1)]	1*16 A / 3*16 A
Input voltage [1)]	230 V / 400 V

OUTPUT DATA	FRONIUS OHMPILOT
Max. output power [1)]	Continuously adjustable 3 kW - 9 kW
Frequency	50 Hz
AC output current (Iac nom) [1)]	1*13 A / 3*13 A
Output voltage [1)]	230 V / 400 V

GENERAL DATA	FRONIUS OHMPILOT
Type of power regulation	Pulse width modulation
Dimensions (height x width x depth)	350 x 280 x 110 mm
Protection class	IP 54
Installation	Wall mounting
Ambient temperature range	0 - 40 °C
Permitted humidity	0 - 99%, non-condensing
Certificates and compliance with standards	CE, EN 61000-6-2, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3, EN 300 328

[1)] single-phase / three-phase

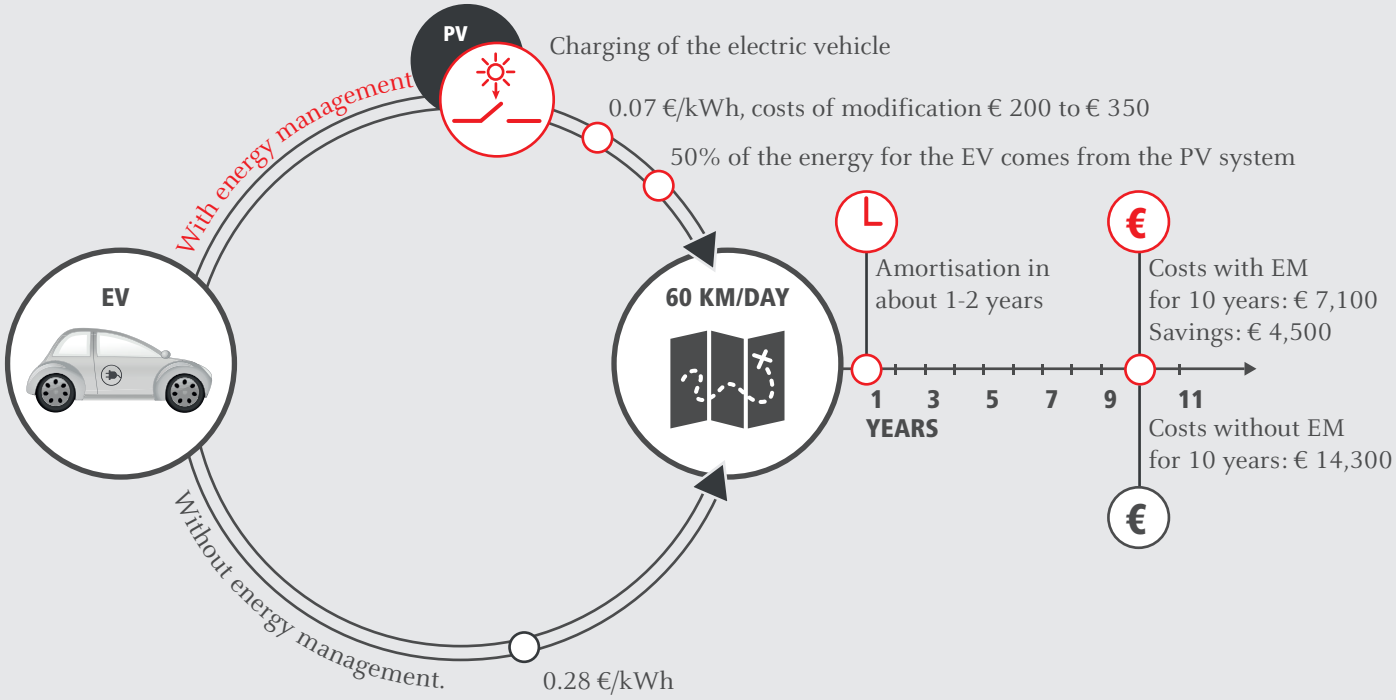
SOLUTIONS FOR E-MOBILITY

/ The market for electric vehicles is growing rapidly – as is the role of electric cars in the mobility energy sector. What could therefore be more obvious than powering the growing number of electric vehicles with self-generated solar power?

/ Filling up vehicle storage tanks with a capacity for up to 100 kWh of self-generated solar power, has its own challenges. Fronius is already offering solutions to realise this easily and reliably. Every SnapINverter has energy management functions and open interfaces to all the usual communication protocols as standard. Charging stations (e.g. wall boxes) for all kinds of electric vehicles can therefore be easily connected and electric vehicles can be charged with PV electricity.

/ Connecting a charging station to a home automation system such as Loxone, is also very easy. The Loxone Miniserver offers synchronisation with other consumers, e.g. a heat pump or a Fronius Ohmpilot, thereby creating the most optimised energy system with solar power.

/ Use our flexible solutions and bring together solar power and e-mobility.



In consideration of opportunity costs and an annual 4% price increase.
EM = Energy management, EV = Electric vehicle

ENERGY MANAGEMENT FOR CHARGING AN ELECTRIC CAR

/ Medium-sized electric cars with an average consumption of 18 kWh/100km (c)

/ 60 km driven per day (s)

/ 50% of the charge for the electric car comes from the PV system

/ Electricity rate 28 c €/kWh, feed-in tariff 12.3 c €/kWh, cost of generating electricity PV 7 c€/kWh

Energy requirement E = s * c = 60 * 0.18 = 10.8 kWh
Annual saving =
tariff difference * E * days * PV proportion = 15.7 c € * 10.8 kWh * 365 * 0.5 = € 309

SAVING € 309 PER YEAR OR A MINIMUM OF € 4,500 IN 10 YEARS
ESTIMATED COST OF RETROFITTING (INCLUDING RELAY AND WIRING) IS BETWEEN € 200 TO € 350
--> PAYS OFF IN APPROXIMATELY 1-2 YEARS

SOLUTIONS FOR ENERGY MANAGEMENT

USE SOLAR ENERGY EFFICIENTLY WITH FRONIUS ENERGY MANAGEMENT

/ An intelligent energy management system helps system owners to use as much as possible of their self-generated solar power. It switches individual consumers on or off, according to the power currently available, to help them maximise their self-consumption rate.

/ Fronius offers a range of options for efficient energy management. A Fronius inverter comes as standard with an integrated energy management relay to optimise self-consumption of self-generated power. Consumers such as a hot water boiler, pool or garden pond pump can therefore easily be used more cost-effectively.

/ Furthermore, there is also the option to further optimise the use of energy with the open interfaces integrated in the inverter. The photovoltaic system can therefore be easily connected to third-party components, such as home automation systems, heat pumps or third-party energy management systems.

FRONIUS ENERGY MANAGEMENT RELAY

/ With the energy management relay, we offer our customers a solution for optimising the self-consumption level of self-generated solar power. If the inverter produces more than the set power, a relay output is activated and the solar energy generated is used to operate a consumer, instead of being fed into the public grid. Typical examples of consumers include household appliances, heat pumps, or pool and garden pumps.

FRONIUS SMART METER

/ Even better self-consumption levels can be achieved when combined with the Fronius Smart Meter. The Fronius Smart Meter is a bidirectional meter that records the power consumption in the home. This gives system owners full control of their electricity bill since, in addition to their self-generated power, they are also aware of their consumption level and can therefore make improvements. This means using the power automatically when there is a surplus.

THIRD-PARTY COMPONENTS

/ Fronius inverters can be easily and quickly connected to third-party components such as home automation systems, e.g. Loxone or Evon Home, via a range of integrated interfaces and digital inputs and outputs. Selective switching of consumers – dependent on the PV power, excess power, time, electricity rates, weather or the like – increases self-consumption. The possibilities here are endless. Applications include the provision of hot water, lighting, blinds, heating, cooling and many more.

/ Self-consumption can be optimised even further by our storage solutions and solutions for providing hot water.

ENERGY MANAGEMENT COMBINED WITH A HOT WATER HEAT PUMP

/ Four-person household with a daily hot water consumption of 250 litres

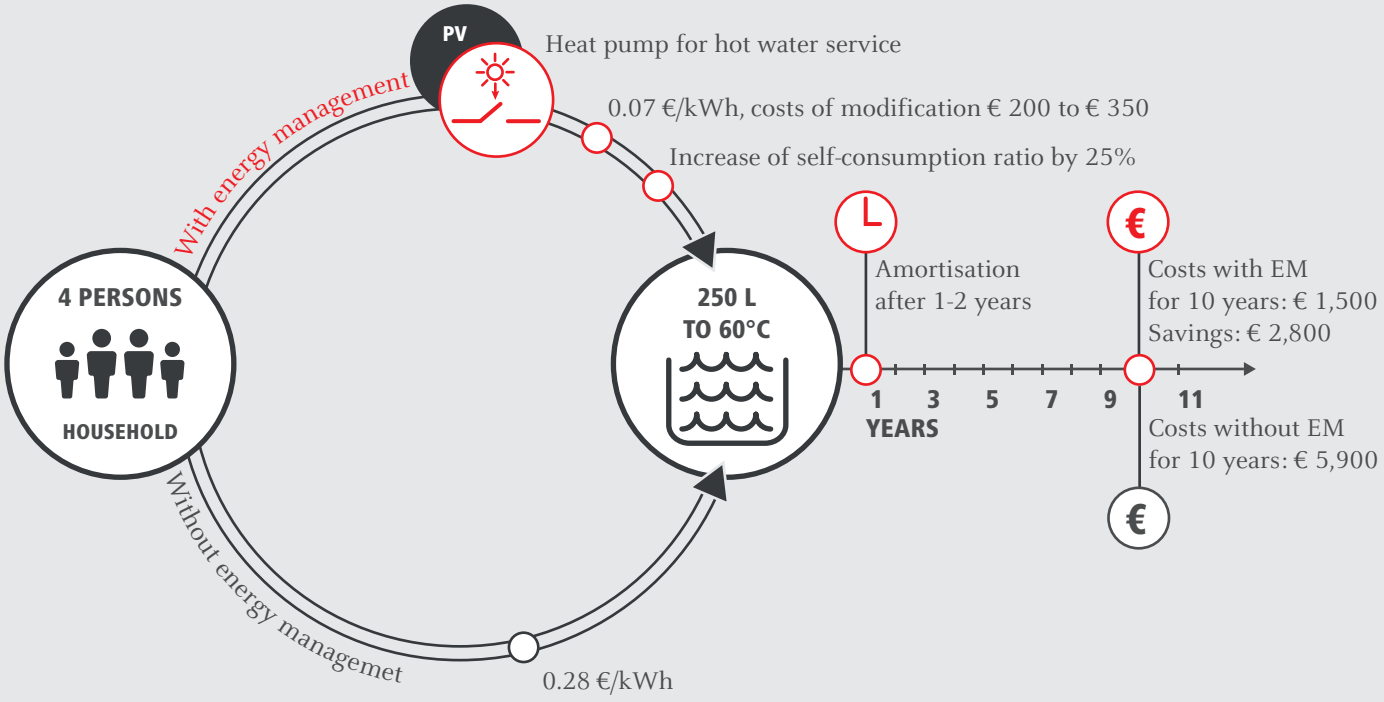
/ Hot water heat pump with 700 W, 3:1 coefficient of performance

/ 50% of the electricity for heating the water comes from the PV system

/ Electricity rate of 28 c€/kWh, feed-in tariff of 12.3 c€/kWh, cost of generating PV electricity at 7 c€/kWh

Energy requirement E = m * c * ΔT = 250l * 1163 * 50 °C = 14.5 kWh heat requirement (equivalent to: 4.85 kWh electric energy requirement) Annual saving = tariff difference * E * days * PV proportion = 15.7 c€ * 4.85 kWh * 365 * 0.5 = € 139

SAVING A MINIMUM OF € 139 PER YEAR OR A MINIMUM OF € 2,800 IN 10 YEARS
ESTIMATED COSTS FOR RETROFIT (INCLUDING RELAY AND WIRING) IS € 200 TO € 350
--> PAYS OFF IN APPROXIMATELY 2 YEARS



In consideration of opportunity costs and an annual 4% price increase.
EM = Energy management

COMMERCIAL, INDUSTRIAL AND FIELD INSTALLATION SOLUTIONS

/ Our aim is maximum efficiency, not just in terms of energy conversion, but also with regard to the costs of the PV system as a whole throughout its entire service life. This is why we strive to minimise expense, reduce risk and maximise yields with our commercial, industrial and field installation solutions.

REDUCE EXPENSE

/ We strive to improve your competitive edge. After all, when you are successful, so are we. How do we do this? By developing solutions that minimise your expenses and make you even more efficient. This is why Fronius inverters are the lightest and easiest devices to install on the market. This is why the SnapINverter technology guarantees rapid power stage set or component replacement directly in-situ. This is why we offer you maximum flexibility when it comes to layout and help you design your system.

UNRIVALLED SERVICE

/ Choosing a brand is always a question of risk. Will the device fail? Can I trust the manufacturer's service offerings? Will the manufacturer still be in business in three or five years? These are all legitimate questions. In response, we say: Fronius is a partner you can rely on. For more than 70 years, Fronius has stood for the highest quality standards paired with a first-rate and proven service programme.

EFFECTIVE SYSTEM MONITORING

/ Fronius Solar.web not only offers you a professional monitoring tool, but also the integrated open interfaces in the inverters permit easy connection of all common third-party systems. The advantages at a glance:

/ By entering an e-mail address or phone number in Fronius Solar.web, you will automatically receive notification from the system or individual inverters in the event of an error.

/ Use the Remote Update function to update Fronius inverters with just one click of the mouse. This saves both time and money.

/ With a Fronius Solar.web API data interface, data from Fronius inverters can be integrated centrally from the Fronius Solar.web server into third-party applications.

FRONIUS SNAPINVERTER

THE INNOVATIVE INVERTER GENERATION FROM FRONIUS

/ The SnapINverter generation features a uniform, intelligent design and maximum flexibility. As an installer, enjoy the benefits of simple installation and commissioning along with quick and uncomplicated servicing. A standardised product line up to 27.0 kW guarantees you have the optimum inverter solution for every size of installation – from a small industrial unit to a megawatt system.

/ Fronius SnapINverters feature a standardised and simple mounting system. Mounting a SnapINverter is impressively easy: all the connections are integrated in the mounting bracket. After fitting and wiring the mounting bracket, simply swivel the power stage set into the bracket – done. An integrated DC disconnector provides additional safety. In addition, the inverters are extremely compact and lightweight.

/ SnapINverters also impress during servicing. The proven PC board replacement process together with the SnapINverter technology guarantees rapid servicing directly at the system location. This guarantees maximum yield dependability with minimum expenditure of time and money.

/ *"We only invest in projects with a long and successful lifespan. To realise this goal, we need partners we can rely on for decades to come. This is why we opted for Fronius for the megawatt system. The company's excellent foundations were one of the main reasons behind our choice of inverter manufacturer"* reports Roger Kanzenbach from Investor Activ-Solar.

DATA COMMUNICATION

/ With a Fronius SnapINverter, you get an all-in-one system monitoring package. Thanks to the integrated Fronius Datamanager, our inverters offer a communication package with fully integrated datalogging, WLAN, Ethernet, energy management, a web server and a range of interfaces as standard. For you, this means no additional components and no hidden extra costs; simply a complete solution.

STRAIGHTFORWARD START-UP THANKS TO THE INTEGRATED WEB SERVER

/ With the Fronius Datamanager, installation and commissioning of the system monitoring function is extremely easy thanks to the dedicated website on the integrated web server. The Setup wizard guides you through the configuration process up to and including registration on the Fronius Solar.web online portal.

OPEN INTERFACES

/ The integrated Modbus RTU SunSpec, Modbus TCP SunSpec and Fronius Solar API (JSON) interfaces allow Fronius inverters to be seamlessly linked to third-party systems and run in parallel with Fronius Solar.web. A ripple control receiver can also be connected via the digital inputs and outputs so that the power and reactive power can be controlled remotely in accordance with electricity retailer requirements.

PUSH SERVICE

/ Using the Fronius Push Service, system data can be sent directly from any Fronius SnapINverter or Fronius Datamanager to any server to be used as you desire. Various different data formats are available (for example, XML and JSON). Supported protocols: HTTP POST and FTP upload.

FEED-IN MANAGEMENT

/ With dynamic power reduction, Fronius is offering a solution for optimum feed-in management of photovoltaic systems. When feed-in limits are imposed, the inverter supplies the household or building consumers with energy first and then reduces the system output to the maximum energy feed-in permitted by the grid operator. Zero feed-in is increasingly required in many countries. Dynamic feed-in regulation from Fronius combined with a Fronius Smart Meter make this possible: in this case, the inverter DC power is reduced so that only the household/building consumers are supplied and no current is fed into the grid. The relevant requirements of the grid operator can be fulfilled by simply enabling a setting on the web interface of the Fronius Datamanager.


Fronius
FRONIUS SYMO

FRONIUS SYMO

/ Maximum flexibility for the applications of tomorrow.

/ Boasting power categories ranging from 3.0 to 20.0 kW, the transformerless Fronius Symo is the three-phase inverter for every size of installation. With a high system voltage, wide input voltage range and two MPP trackers, it guarantees maximum flexibility in system design. A WLAN or Ethernet internet connection as standard plus easy integration of third-party components make the Fronius Symo one of the most communicative inverters on the market.

THE ADVANTAGES AT A GLANCE

/ Maximum design flexibility provided by two MPP trackers, high system voltage and wide input voltage range

/ Various options such as overvoltage protection, DC connector kit or MC4 cable

/ Unrestricted use outdoors thanks to IP 66 protection class

/ WLAN and Ethernet connections as standard for extremely easy integration of third-party components

/ Dynamic Peak Manager for continuous, intelligent yield optimisation

/ Easy installation and maintenance thanks to SnapINverter technology

/ Ideal for use as a repowering inverter

/ SnapINverter technology

/ Integrated data communication

/ SuperFlex Design

/ Dynamic Peak Manager

/ Smart Grid Ready

/ Zero feed-in

FRONIUS SYMO
10.0-3-M / 12.5-3-M / 15.0-3-M / 17.5-3-M / 20.0-3-M

INPUT DATA	FRONIUS SYMO
Number of MPP trackers	2
Max. input current ($I_{dc\ max}$)	27.0 A / 16.5 A or 33.0 A / 27.0 A
Max. input current ($I_{dc\ max\ 1}$ + $I_{dc\ max\ 2}$)	43.5 A / 51.0 A
DC input voltage range ($U_{dc\ min}$ - $U_{dc\ max}$)	200 - 1000 V
Number of DC connections	3 + 3

OUTPUT DATA	FRONIUS SYMO
AC nominal output ($P_{ac,r}$)	10.0 - 20.0 kW
Max. output power	10.0 - 20.0 kVA
Grid connection (voltage range)	3-NPE 400 V / 230 V or 3~NPE 380 V / 220 V (+20% / -30%)
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)

GENERAL DATA	FRONIUS SYMO
Dimensions (height x width x depth)	725 x 510 x 225 mm
Weight	34.8 - 43.4 kg
Degree of protection	IP 66
Night-time consumption	< 1 W
Inverter concept	Transformerless
Ambient temperature range	-40 - +60 °C

EFFICIENCY	FRONIUS SYMO
Max. efficiency	98.0 / 98.0 / 98.1 / 98.1 / 98.1%
European efficiency	97.4 / 97.6 / 97.8 / 97.8 / 97.9%

INTERFACES	FRONIUS SYMO
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver
USB (type A socket)	Data logging, inverter update via USB flash drive
2x RS422 (RJ45 socket)	Fronius Solar Net
Signalling output	Energy management (floating relay output)
Datalogger and web server	Integrated
External input	S0 meter connection / Evaluation of overvoltage protection
RS485	Modbus RTU SunSpec or meter connection

FRONIUS ECO

/ The compact project inverter for maximum yields.

/ The three-phase Fronius Eco in power categories 25.0 and 27.0 kW perfectly meets all the requirements of large-scale installations. Thanks to its light weight and SnapINverter mounting system, this transformerless device can be installed quickly and easily either indoors or outdoors. This inverter range sets new standards with its IP 66 protection class. In addition, its integrated all-pole string fuse holders and optional overvoltage protection mean that string collection boxes are no longer required.

THE ADVANTAGES AT A GLANCE

/ Compact dimensions and lightweight design

/ Unrestricted use outdoors thanks to IP 66 protection class

/ WLAN and Ethernet connections as standard for extremely easy integration of third-party components

/ Various options such as string fuses, overvoltage protection, DC connector kit or MC4 cable

/ Dynamic Peak Manager for maximum yields

/ Easy installation and maintenance thanks to SnapINverter technology

/ SnapINverter technology

/ Integrated data communication

/ Smart Grid Ready

/ Dynamic Peak Manager

/ Zero feed-in

FRONIUS ECO
25.0-3-S / 27.0-3-S

INPUT DATA	FRONIUS ECO
Number of MPP trackers	1
Max. input current ($I_{dc\ max}$)	44.2 - 47.7 A
DC input voltage range ($U_{dc\ min\ -\ max}$)	580 - 1000 V
Number of DC connections	6

OUTPUT DATA	FRONIUS ECO
AC nominal output ($P_{ac,r}$)	25.0 - 27.0 kW
Max. output power	25.0 - 27.0 kVA
Grid connection (voltage range)	3~NPE 380 V / 220 V or 3~NPE 400 V / 230 V (+20% / -30%)
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)

GENERAL DATA	FRONIUS ECO
Dimensions (height x width x depth)	725 x 510 x 225 mm
Weight	35.7 kg
Degree of protection	IP 66
Night-time consumption	< 1 W
Inverter concept	Transformerless
Ambient temperature range	-25 - + 60 °C

EFFICIENCY	FRONIUS ECO
Max. efficiency	98.2 / 98.3%
European efficiency	98.0 / 98.0%

INTERFACES	FRONIUS ECO
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver
USB (type A socket)	Data logging, inverter update via USB flash drive
2x RS422 (RJ45 socket)	Fronius Solar Net
Signalling output	Energy management (floating relay output)
Datalogger and web server	Integrated
External input	S0 meter connection / Evaluation of overvoltage protection
RS485	Modbus RTU SunSpec or meter connection

FRONIUS POWER PACKAGE

THE SYSTEM SOLUTION FROM A SINGLE SOURCE

/ With the Fronius Power Package you can take full advantage of the benefits offered by Fronius string inverters for small and large-scale projects – from planning through to maintenance of the PV system. Maximum flexibility in the design of the PV system, the pre-installed inverter cabling and the supplied Fronius AC Combiner significantly reduce the planning work. Failure rates during initial installation and the installation time are therefore minimised.

/ The Fronius Power Package is made up of three components: the Fronius Symo or Fronius Eco inverters, the Fronius AC Combiner and the pre-fabricated cables. The inverters and the Fronius AC Combiner are supplied with pre-installed cabling. This means that during installation, the individual parts simply have to be connected, minimising the installation time and installation errors.

/ For maximum flexibility of the system design, the Fronius Power Package offers numerous options. From selecting the DC inputs, through to choosing the power categories and deciding between different DC connection technologies, the system solution can be tailored to the specific PV system.


Fronius
Fronius
Fronius
FRONIUS ECO
FRONIUS ECO
FRONIUS ECO
FRONIUS AC COMBINER

SOLUTIONS FOR RURAL ELECTRIFICATION

/ Rural electrification relies on the ability to connect and maintain reliable PV solutions locally with little expense. To do so, flexible, user-friendly, easy-to-service solutions are a must. Our solutions offer exactly that: simple, user-friendly solutions that work in perfect harmony, with maximum performance and independence.

SUPPORT WHEN PLANNING YOUR PROJECT

/ With our Fronius PV system design service we actively help you plan your PV-Genset system. Our services range from analysis of the current situation and evaluation of the system through to detailed simulations and design options.

EASY INTEGRATION INTO EXISTING SYSTEMS

/ Integrating PV into existing diesel Genset MicroGrids is still a young but emerging field. Challenges arise as it is often time consuming for the installer to connect complex components to existing systems. Fronius PV-Genset and MicroGrid solutions are characterised by their user-friendliness and flexibility. This makes it much easier to integrate photovoltaics into existing MicroGrids.

MAXIMUM INDEPENDENCE

/ MicroGrid and Genset systems are often located in remote regions or areas with poor infrastructure. When it comes to servicing, this can often result in huge problems because shipping spare parts to remote regions of the world often takes weeks. Fronius Service Partners don't have this problem, since they work locally and largely independently of Fronius. This provides maximum independence and protects against long system outages.

FRONIUS MICROGRID SOLUTION
FOR A STABLE AND REGIONAL POWER SUPPLY

/ In many regions, there is no stable and area-wide power supply, which is why diesel generators are often used instead. For systems up to 150 kW, battery-powered inverter MicroGrids are often an alternative to the diesel generator. Due to the battery system voltage, high currents however often arise at higher outputs and the safety technology becomes unnecessarily costly. In these cases, AC coupling with Fronius inverters is the cost-effective and efficient solution for an off-grid and stable power supply.

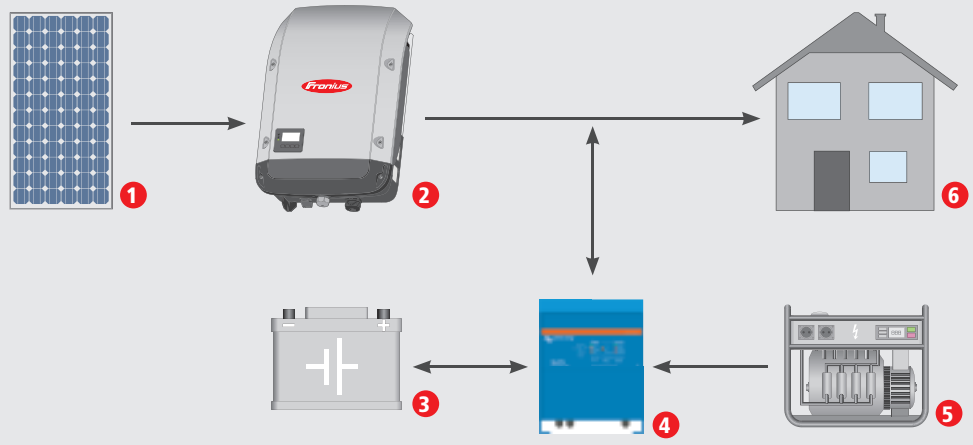
/ In MicroGrid systems, the inverter supplies the load and any excess power can be stored temporarily in the battery and used when needed. The diesel generators are only used as backup if, for instance, the battery is discharged too deeply. This brings about maximum potential savings, from fuel costs through to the maintenance and service costs. Flexibility is one of the many plus points. Wherever there is consumption and an AC line can be installed, power can be generated with photovoltaics.

Not only can PV system owners monitor their system through the Victron Monitoring Portal, which shows the live values, but also through the Fronius Solar.web online portal, which provides a comprehensive range of display and analysis functions for PV system data.

FRONIUS MICROGRID SOLUTION

/ Photovoltaics combined with an inverter charger.

/ With the Fronius MicroGrid solution, PV systems can be easily integrated into battery-powered inverter MicroGrids. Fronius inverters have a special MicroGrid setup for this purpose with various functions to ensure stable MicroGrid operation. All functions required to ensure that the PV and inverter charger work together optimally are pre-set in the MicroGrid setup.



1 PV Generator
2 Fronius inverter
3 Battery
4 Inverter-Charger
5 Backup Generator
6 Load

/ MicroGrid System with PV

FRONIUS INVERTERS WITH MICROGRID FUNCTION

/ All Fronius SnapINverters (except Fronius Symo Hybrid)

INVERTER CHARGERS TESTED BY FRONIUS: [1)]

/ Victron MultiPlus
/ Victron Quattro

[1)] To use with other inverter chargers that carry out frequency conversion, please contact Fronius Technical Support.


Fronius
Fronius
Fronius
Bellcaire
electric
Bellcaire
electric

FRONIUS PV-GENSET SOLUTION

SAVE FUEL WITH FRONIUS PV-GENSET SYSTEMS

/ In many regions, a stable supply of electricity cannot be taken for granted. The grid is often not particularly well developed and frequent power outages are the norm. In such cases, grids powered by diesel generators are an absolute must. However, the consequences of this are high fuel and transport costs. Photovoltaic systems, on the other hand, can generate electricity much more cheaply. The integration of PV systems into diesel systems is therefore extremely beneficial technically, ecologically and, last but not least, in terms of cost effectiveness.

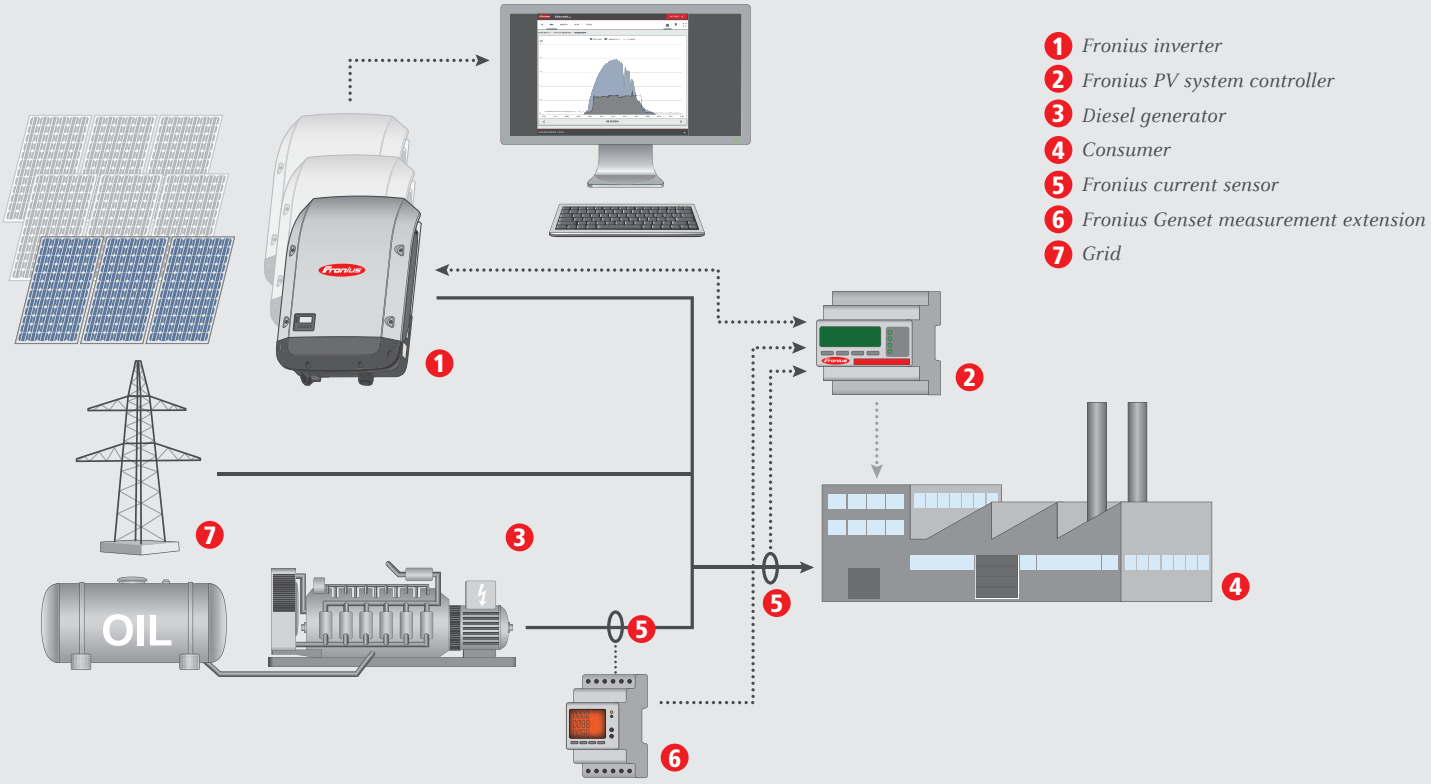
/ Fronius PV-Genset solutions allow PV systems to be easily and cost effectively integrated into existing diesel systems. The solution impresses with a robust and fail-safe control system. Available in three different versions, the various solutions are ideal for both single-generator and multi-generator installations as well as for low-voltage and medium-voltage systems with power outputs in the megawatt range.

/ Fronius provides planning tools that calculate the maximum savings potential and optimise the overall system at the same time. We support your project from a pre-feasibility study right though to commissioning.


FRONIUS ECO

FRONIUS PV-GENSET EASY

/ The Fronius PV-Genset Easy solution allows PV systems to be easily and quickly integrated into existing diesel systems. The solution is optimised for low-voltage applications with a diesel generator.



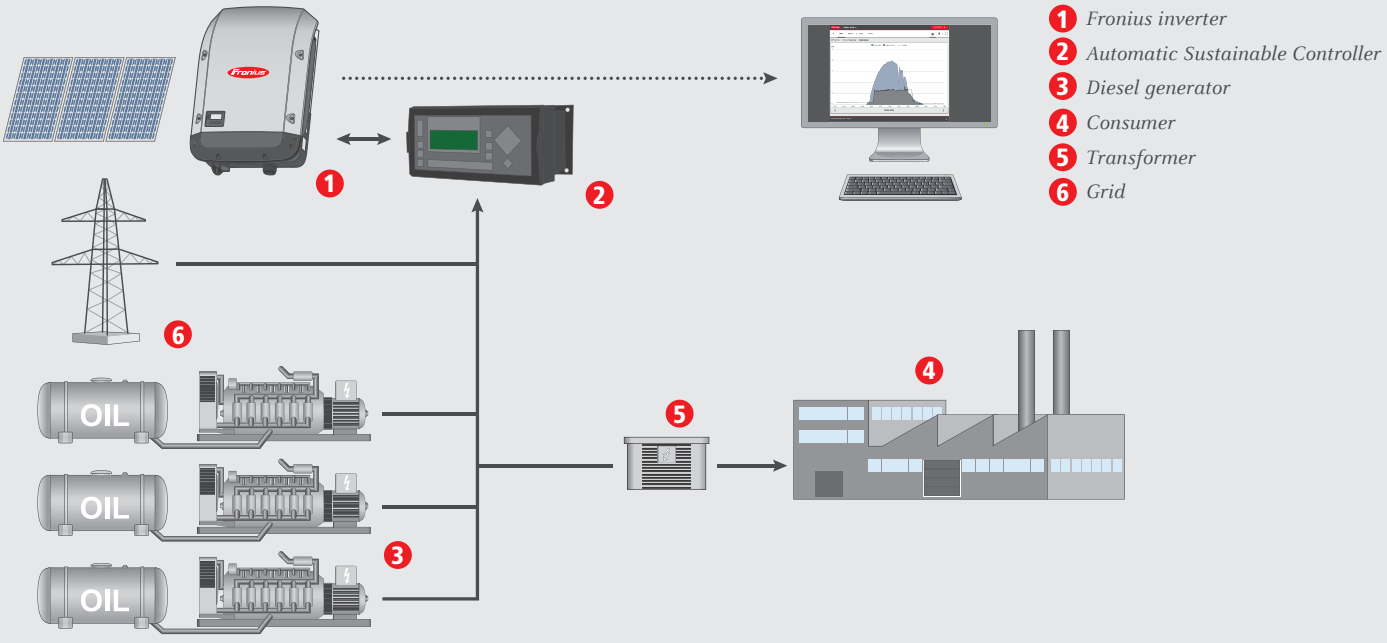
1 *Fronius inverter*
2 *Fronius PV system controller*
3 *Diesel generator*
4 *Consumer*
5 *Fronius current sensor*
6 *Fronius Genset measurement extension*
7 *Grid*

PRODUCTS FOR THE FRONIUS PV-GENSET EASY SOLUTION:

/ Fronius PV system controller
/ Fronius measuring extension
/ Fronius current sensors
/ Fronius inverter with Fronius Datamanager or Fronius Datamanager Box

FRONIUS PV-GENSET ADVANCED AND PROFESSIONAL

/ The Fronius PV-Genset Advanced and Professional solutions are optimised for systems in which several diesel generators are used. The solutions are suitable for both low-voltage and medium-voltage applications. Power outputs in the multi-megawatt range are therefore also possible.



Fronius PV-Genset Advanced is the retrofit solution for multi-generator systems.
Fronius PV-Genset Professional is the fully-integrated solution for multi-generator systems.

PRODUCTS FOR THE FRONIUS PV-GENSET ADVANCED SOLUTION:

/ Automatic Sustainable Controller ASC, DEIF A/S
/ Fronius inverter with Fronius Datamanager or Fronius Datamanager Box

PRODUCTS FOR THE FRONIUS PV-GENSET PROFESSIONAL SOLUTION:

/ Automatic Sustainable Controller ASC, DEIF A/S
/ Automatic Genset Controller AGC, DEIF A/S
/ Fronius inverter with Fronius Datamanager or Fronius Datamanager Box

FRONIUS SERVICE SOLUTIONS

/ Nowadays, system owners want their energy system to be fully optimised. Installers are increasingly turning into advisers for their customers as a result. We are offering you the tool you need, which combines a sophisticated service plan and professional monitoring. If you want to benefit from this offer, it is vital to act now. Only by starting now to record customers' PV systems online in Fronius Solar.web, will it be possible to better analyse systems now and in the future, and to provide better advice for your customers and customised solutions for an optimised energy system.

FASTEST SERVICE ON THE MARKET

/ The foundation for the unique service plan is the Fronius Service Partner programme. Only Fronius Service Partners are permitted to replace components in inverters during a service visit. This enables us to provide you with the fastest inverter service on the market, along with the lowest costs.

NOTIFICATION SHOULD SERVICING BE REQUIRED

/ Should servicing be required, as an installer, you will be informed of the system status by e-mail or SMS via the Fronius Solar.web online portal. You can then proactively inform your customer and take the necessary troubleshooting measures. This allows you to take the necessary preparatory steps before visiting the customer's site. It will also often save you a journey – thanks to the Remote Update function.

PROFESSIONAL MONITORING

/ The clear overview in Fronius Solar.web enables extensive analytical functions, automatic notification in the event of an error and a comprehensive overview of the energy costs and yields of the PV system. Based on this data, you can then demonstrate your technical expertise, provide your customers with the best possible advice and create customised offers, e.g. for integrating a storage unit.

FRONIUS SOLAR.WEB

THE ALL-IN-ONE SOLUTION FOR PROFESSIONAL MONITORING

/ The benefits of professional monitoring for the system owner are obvious. What is however often overlooked is the fact that effective system monitoring is one of the keys to future business success for you, the installer. Fronius Solar.web enables system data to be analysed and to be used to prepare offers – for a storage system for example. This means you are in a position to advise your customers according to their needs and based on real data, thereby giving you a clear competitive edge.

/ An effective system monitoring solution has many benefits for the system owner and for you, the installer. PV systems can be monitored, analysed and compared quickly and easily using the Fronius Solar.web online portal. Up-to-date system data can be accessed at any time and is clearly presented: the portal is very user-friendly and a comprehensive range of analysis functions is included.

/ Fronius Solar.web is however far more than just monitoring. The online portal features a variety of tools and functionalities, such as the Fronius Solar.configurator for system design, the Fronius Solar.web Apps when on the go, Fronius Solar.TV for public displays and the warranty extensions.

FRONIUS SOLAR.WEB PREMIUM

/ Take advantage of the full potential of Fronius Solar.web – with Solar.web Premium.

/ Fronius Solar.web is a free tool for monitoring photovoltaic and storage systems. It offers convenient management of systems, clear visualisation of current data, simple evaluation options and many other functions.

/ If you want to take advantage of the full potential of Fronius Solar.web, use Solar.web Premium. Over and above the standard functions of Fronius Solar.web, Solar.web Premium offers a comprehensive range of analysis functions for photovoltaic and storage systems, the long-term availability of archive data, a permanent overview of power consumption for cost control, yield comparisons at MPP-tracker level, customised reporting and much more.

/ Fronius Solar.web Premium can be purchased and ordered as a subscription or for a fixed period online in the Fronius Solar.web portal.

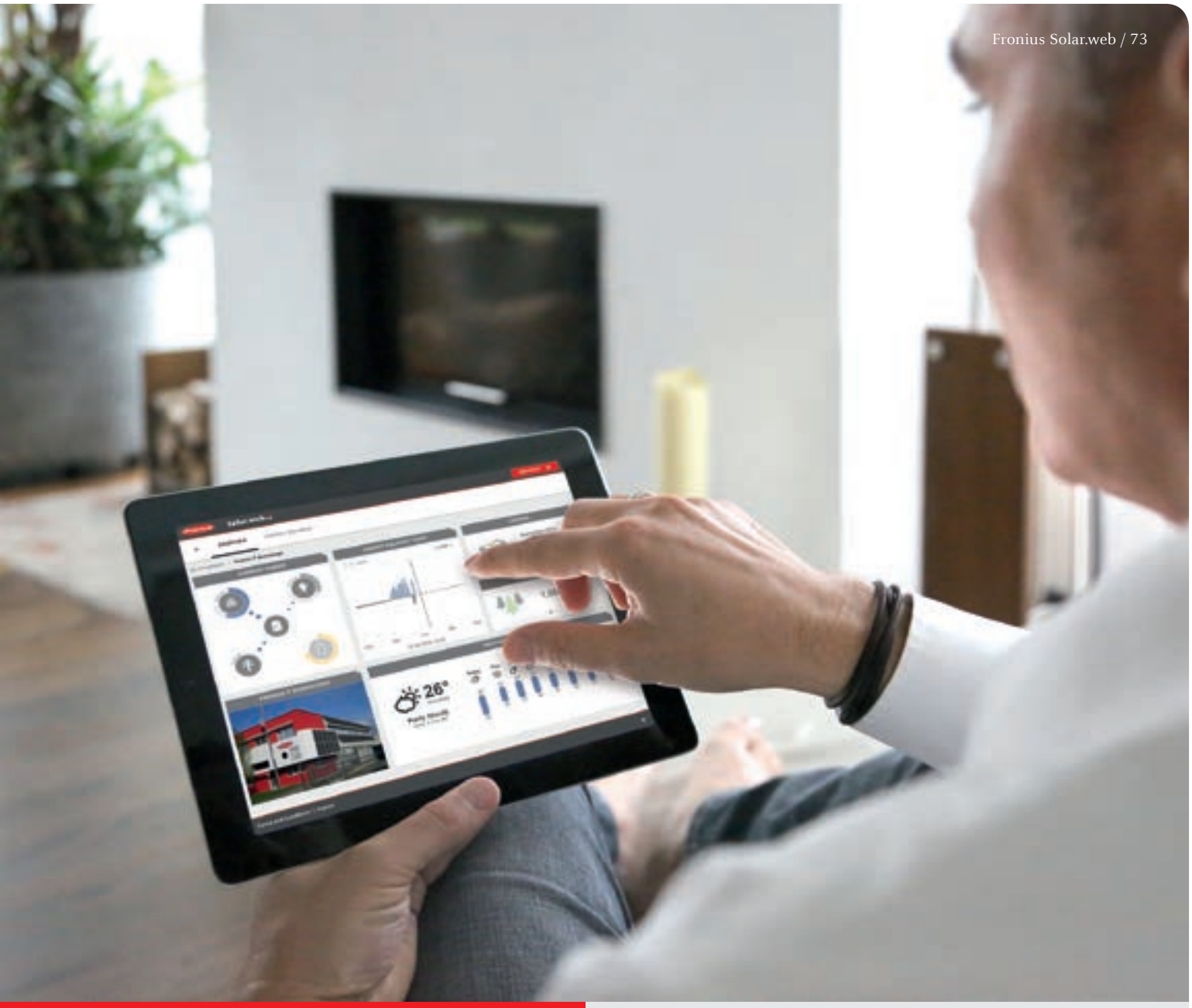
/ You can get Fronius Solar.web Premium online in the portal: **www.solarweb.com**

FRONIUS SOLAR.WEB APP

/ The convenient app for the simple visualisation of PV system data

/ The Fronius Solar.web App is the mobile version of the online portal. You can always keep an eye on the energy yield of your PV system by simply installing the app on your iPhone, iPod touch, iPad, Android smartphone or tablet, or Windows smartphone. Thanks to the Setup wizard, registering the PV system in Fronius Solar.web is simple and intuitive using the app itself.

/ The Fronius Solar.web Live App is also available for Mac devices and Windows 7, allowing you to conveniently view your system data at a glance.



/ The system installer, Surindar Ahuja from Medors Bio-tech explains: *"The Fronius Solar.web online platform helps us monitor the performance of the system and also increases the customer's awareness of the energy generated."*

FRONIUS DATAMANAGER

/ The integrated WLAN datalogger for every application

/ The Fronius Datamanager is the Fronius inverter communication hub for all types of applications. Using an internet connection via LAN or WLAN, the Fronius Datamanager sends the PV system values directly to the Fronius Solar.web online portal, providing an overview of how the system is operating at any given time. The Fronius Datamanager enables inverters to be connected directly to the internet via WLAN.

FRONIUS SMART METER

/ The bidirectional meter for recording power consumption in the home

/ The Fronius Smart Meter is a bidirectional, digital meter with rapid communication via the Modbus RTU interface, which is used in addition to the electricity meter from the electricity retailer. With the Fronius Energy Package storage solution, the Fronius Smart Meter manages the various energy flows in a perfectly coordinated way, optimising the overall energy management.

THE ADVANTAGES AT A GLANCE

/ Straightforward start-up thanks to the integrated web server and Setup wizard

/ Transfer of PV system data via LAN or WLAN to the Fronius Solar.web online portal

/ Numerous integrated interfaces for simple integration into third-party systems

/ Energy management function to optimise self-consumption

/ The Fronius Datamanager 2.0 is compatible with all Fronius inverters. The Datamanager function is integrated as standard into the Fronius Galvo, Fronius Primo, Fronius Symo, Fronius Eco and Fronius Symo Hybrid inverters. The Fronius Datamanager can also be retrofitted to existing inverters whenever required.

FRONIUS DATAMANAGER

GENERAL DATA	FRONIUS DATAMANAGER 2.0	FRONIUS DATAMANAGER BOX 2.0
Storage capacity	max. 4096 days	
Supply voltage	12 V DC – power supplied by inverter	12 V DC Power is supplied by the Fronius Solar.Net ring or an external plug-in power supply (not supplied)
Energy consumption	< 2.0 W	
Protection class	-	IP 20
Dimensions	132 x 103 x 22 mm	190 x 114 x 53 mm
Operating temperature range	-20 - +65 °C	

INTERFACES	FRONIUS DATAMANAGER 2.0	FRONIUS DATAMANAGER BOX 2.0
Ethernet (RJ45 socket)	LAN, 10/100 MBit / Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)	
RS422 (RJ45 socket)	Fronius Solar.Net IN	
RS422 (RJ45 socket)	-	Fronius Solar.Net OUT
WLAN	Wireless standard 802.11 b/g/n / Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)	
8 digital inputs	Interface to ripple control receiver	
4 digital inputs/outputs	Interface to ripple control receiver, load management	
2x RS485	Modbus RTU SunSpec or meter connection	

THE ADVANTAGES AT A GLANCE

/ Clear overview of own power consumption in conjunction with Fronius Solar.web

/ Highly accurate measurements and rapid communication via the Modbus RTU interface

/ Perfectly coordinated control of the energy flows for optimised energy management

/ The Fronius Smart Meter is compatible with all inverters with an RS485 interface (Modbus RTU). The Fronius Smart Meter can be retrofitted at any time together with the Fronius Datamanager 2.0 in inverters that have already been installed.

FRONIUS SMART METER 63A-3 / 50KA-3 / 63A-1

TECHNICAL DATA	FRONIUS SMART METER 63A-3	FRONIUS SMART METER 50KA-3 [1]	FRONIUS SMART METER 63A-1
Nominal voltage	400 - 415 V		230 - 240 V
Maximum current	3 x 63 A	3 x 50,000 A	1 x 63 A
Connection cross section, current path	1 - 16 mm²	0,05 - 4 mm²	1 - 16 mm²
Connection cross section, communication & neutral conductor	0.05 - 4 mm²		
Self-consumption	1.5 W	2.5 W	1.5 W
Starting current	40 mA		
Accuracy class	1		
Accuracy Active energy	Class B (EN50470)		
Accuracy Reactive energy	Class 2 (EN/IEC 62053-23)		
Overload (short-term)	30 x I_{max} / 0,5 s		
Installation	Indoor installation (DIN rail)		
Housing	4 modules DIN 43880		2 modules DIN 43880
Degree of protection	IP 51 (front panel) / IP 20 (terminals)		
Operating range	-25 - +55°C		
Dimensions	89.0 x 71.2 x 65.6 mm		89.0 x 35.0 x 65.6 mm
Interface to inverter	Modbus RTU (RS485)		
Display	8-digit LCD		6-digit LCD

1) Delivered without current sensors. Further information about selecting suitable current sensors can be found at www.fronius.com.

FRONIUS WARRANTY

/ The quality of our products and services provide the highest levels of safety. If you want extra protection, simply choose a Fronius warranty.

/ Fronius products come with a two-year factory warranty. Simply register your product online on our Fronius Solar.web portal to extend the warranty to up to 7 years – at no extra cost. [1)]

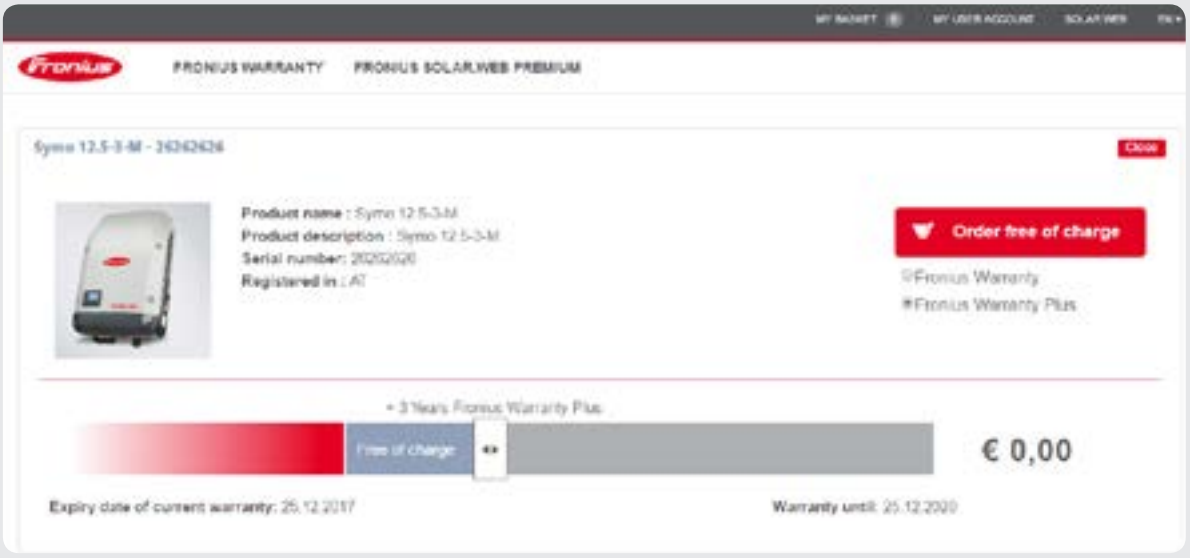
/ For added protection, you can buy extended warranty cover – either when you buy the Fronius product from the installer or online, on Fronius Solar.web.

/ At Fronius, we offer two types of warranty, the Fronius Warranty and the Fronius Warranty Plus.

If a valid claim is made, the Fronius Warranty Plus covers all material, servicing and transportation costs, thereby offering maximum protection. [1)]

The Fronius Warranty is a material warranty. This means that if a valid claim is made, the Fronius Warranty covers the costs of spare parts. Additional costs such as labour or transport are borne by the customer. [1)]

1) Dependent on the installation site and the warranty terms in force in the respective country. Warranty models may differ depending on the product category. Detailed information can be found at www.fronius.com/solar/warranty



/ Reliability, a long service life and sustainability play a crucial role for PV system owners – just like they do for Fronius. This is why we give our customers the option to extend the warranty for their Fronius products. System owners thereby benefit from the unrivalled high-quality service of our Fronius Support team well into the future.

YOUR INDIVIDUAL WARRANTY PACKAGE IN JUST A FEW STEPS

01 / PRODUCT REGISTRATION IN FRONIUS SOLAR.WEB

02 / SELECT FREE WARRANTY MODEL

03 / PURCHASE WARRANTY EXTENSIONS FOR GREATER PROTECTION

/ Have you seen our video about the new warranty registration?
www.fronius.com/solar/warranty

SYSTEM DESIGN

CORRECT DIMENSIONING OF PV SYSTEMS

/ System design requirements are varied. Different inclinations, orientations and partial shading make every PV system unique. System planners are therefore faced with the challenge of adapting every PV system to the individual conditions. This is why we place great importance on developing the inverters in such a way that they offer maximum flexibility in system design. With the Fronius Solar.configurator, we also offer an online tool for optimum system design.

/ The Fronius Solar.configurator online tool supports the precise dimensioning of PV systems. Correctly dimensioning even complex PV systems is now a straightforward matter.
/ Thanks to the integrated SuperFlex Design, the Fronius Symo and Fronius Primo inverters are suitable for every requirement. Whether for photovoltaic systems facing east/west, with or without shading, or the connection of residual modules. If shading is an issue, the Dynamic Peak Manager comes into play. The Dynamic Peak Manager is a new MPP tracking algorithm, which allows the maximum yield to be achieved, even when there are negative influences, e.g. shading.

FRONIUS SOLAR.CONFIGURATOR 4.0

/ The online tool for optimum system design

/ The Fronius Solar.configurator is the perfect tool for the precise dimensioning of photovoltaic systems with Fronius inverters. This online design tool means that the latest solar module and inverter data is always available when you configure a system – no need to carry out an update. With the Fronius Solar.configurator, you can dimension PV systems extremely easily and quickly. Simply enter the inverter and module type and the configurator will provide you with an overview of possible module connections.

THE ADVANTAGES AT A GLANCE:

/ Easy and quick design thanks to the Fronius Solar.configurator 4.0
/ The latest solar module and inverter data is always available without the need for manual updates
/ Calculation of PV systems with or without a storage unit
/ Clear report with project information and a list of all components
/ Standardised display on any device, be it a laptop or tablet

SOLUTIONS FOR MODULE ELECTRONICS

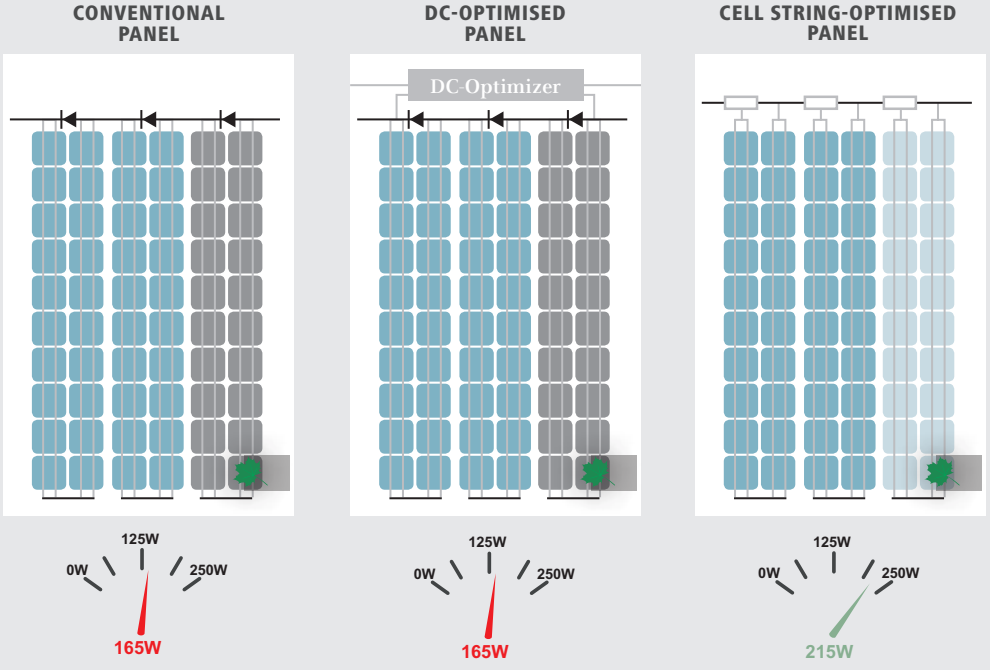
/ Optimised solutions for maximum yield

/ From roofs with differing orientations or temporary shading, each photovoltaic system must be individually adapted to suit the roof in question. Thanks to the integrated SuperFlex Design and Dynamic Peak Manager, Fronius SnapINverters impress with their high degree of planning flexibility and maximum yields (see page 12).

/ In some cases, the use of DC optimisers can be rewarding. For several years now, there have been suppliers of box solutions, which are mostly compatible with Fronius products. But they have serious shortcomings. To start with, they are costly and extremely complex to install. Then there is also the expected rise in the number of outages due to the extreme environmental conditions on the roof, which are also very detrimental to electronic parts. Solutions like these are therefore usually only popular in countries where standards or other external factors have a beneficial effect.

/ In the medium term, it is to be expected that chip-based cell string optimisers will replace the solutions currently on the market. While guaranteeing the advantages of DC optimisers, cell string optimisers reduce the proportion of electronics on the roof, which by and large solves the outage problem. But above all, they enable easy and cost-efficient integration during the production of the module. Complex installations are now a thing of the past. Smart modules will thereby lower in price – and may very soon represent the new standard.

/ Alongside other manufacturers, Maxim Integrated in particular now leads the way when it comes to cell string optimiser solutions. At Fronius we are working together with Maxim on economically and technologically sustainable solutions.



/ Lower losses in the case of temporary shading are often stated as an argument for DC-optimised solar modules. Such losses in conventional modules and DC-optimised modules are actually identical due to the bypass diodes, which are integrated as standard these days into modules (Figures 1 & 2). Cell string-optimised modules (e.g. with Maxim) on the other hand can lead to extra yields if there is temporary shading (Figure 3).

ON-SITE SERVICE
FROM COMMISSIONING TO SERVICING

/ To make sure that you, as an installer, can offer your customers the best possible service at all times, we focus on the highest level of service quality from the outset. We already do this at the development stage, ensuring Fronius products are designed for a quick and easy on-site service.

/ When the PV system is commissioned, you can already start to benefit from the knowledge of our technicians. Fronius technicians are happy to come to you at the site of installation. You will then install the system correctly together and carry out extensive function tests. Should servicing be required, Fronius Service Partners can repair or replace the devices directly at the installation site – thanks to the unique PC board replacement process.

/ If servicing is needed, getting hold of someone quickly is key. The qualified technicians in our Technical Support team will help you whenever you get stuck. The Fronius Solar Online Support (SOS) tool will also save you valuable time. All the key information is at your fingertips at all times on your notebook, tablet or smartphone and you can initiate the repair process online at any given time.


Fronius
FRONIUS SYMO

FRONIUS COMMISSIONING SUPPORT

/ As an installer, you can count on the support of our experienced technicians when commissioning a PV system. We are happy to share our wealth of knowledge about our products and digital services. Work together with our experts to commission the Fronius products correctly – for your own benefit and to the full satisfaction of your customers.

CURRENT TOPICS THAT MAY BE OF INTEREST TO YOU:

/ Assistance in correctly commissioning storage systems
/ Assistance in setting up the emergency power functionalities

/ Tip: For more details about the correct installation and commissioning of our devices, please refer to our how-to videos.

/ Note: With the "Commissioning support" service, travel expenses are at an additional charge.

FRONIUS REPLACEMENT AND REPAIR SERVICE

/ When it comes to servicing, you are in good hands with Fronius. Our highly qualified Fronius Support team is available at all times – either by telephone, e-mail or, for help around the clock, via the Fronius Solar Online Support (SOS). And even after your warranty period has expired, over the entire life of your system.

/ CONTACT THE FRONIUS SUPPORT TEAM AND REQUEST REPLACEMENT COMPONENTS
/ Simple, fast and reliable
/ Fronius SOS - available around the clock
/ Alternatively, by telephone or e-mail

01

/ CARRY OUT ON-SITE SERVICE
/ Unique PC board replacement process
/ SnapINverter technology

02

03

/ RETURN THE DEFECTIVE DEVICE TO FRONIUS

04

/ COLLECT THE SERVICE FEE

WHAT IS FRONIUS SOS?

/ Fronius SOS (Solar Online Support) offers a variety of helpful functions, from retrieving device information to troubleshooting and component ordering. As an installer, you are guided through the service process in just a few steps, saving you valuable time.

FRONIUS TRAINING COURSES

WE TRAIN YOU FOR THE REALITY

/ The complexity and professionalism in our industry are constantly growing. To be successful, it is becoming increasingly important to stand apart from the competition with your know-how. Our training courses help you achieve this goal by providing you with expert knowledge directly from the manufacturer. In target group-specific training sessions, face-to-face or online, we teach you the technical skills you need to be ahead of the game.

OVERVIEW OF OUR TRAINING PROGRAMME

/ PV Basics: basic principles of photovoltaics
/ Fronius products and solutions: an overview
/ System design I: Fronius solutions for the home and commercial market sectors
/ System design II: Fronius solutions for PV field installations and large-scale systems
/ Fronius inverters: installation, commissioning, servicing (Fronius Service Partner Qualification)
/ Fronius storage solutions: installation, commissioning, servicing
/ Fronius Energy Management: planning, installation and commissioning
/ Fronius Webinars

/ The current training courses and dates for your country as well as a registration form can be found at **www.fronius.com/en/pv-trainings**

AT A GLANCE: ITEM NUMBERS.

/ The item numbers are listed on the next few pages to provide a quick, clear overview of our products.

FRONIUS ENERGY PACKAGE

ITEM DESIGNATION	ITEM NUMBER
Fronius Symo Hybrid 3.0-3-S	4,210,070
Fronius Symo Hybrid 4.0-3-S	4,210,071
Fronius Symo Hybrid 5.0-3-S	4,210,072
Fronius Solar Battery 4.5	4,220,110
Fronius Solar Battery 6.0	4,220,111
Fronius Solar Battery 7.5	4,220,112
Fronius Solar Battery 9.0	4,220,113
Fronius Solar Battery 10.5	4,220,114
Fronius Solar Battery 12.0	4,220,115
Fronius Smart Meter 50kA-3	43,0001,1478
Fronius Smart Meter 63A-3	43,0001,1473

FRONIUS SYMO

ITEM DESIGNATION	ITEM NUMBER
Fronius Symo 3.0-3-S	4,210,030
Fronius Symo 3.7-3-S	4,210,031
Fronius Symo 4.5-3-S	4,210,032
Fronius Symo 3.0-3-M	4,210,036
Fronius Symo 3.7-3-M	4,210,038
Fronius Symo 4.5-3-M	4,210,033
Fronius Symo 5.0-3-M	4,210,034
Fronius Symo 6.0-3-M	4,210,040
Fronius Symo 7.0-3-M	4,210,041
Fronius Symo 8.2-3-M	4,210,039
Fronius Symo 10.0-3-M	4,210,050
Fronius Symo 12.5-3-M	4,210,051
Fronius Symo 15.0-3-M	4,210,052
Fronius Symo 17.5-3-M	4,210,053
Fronius Symo 20.0-3-M	4,210,054

Accessories	
DC Connector Kit 10 - 27 kVA	4,251,015
DC Connector Kit 10 - 27 35 mm²	4,251,029
Option DC SPD Typ 1+2 - S	4,251,024
Option DC SPD Typ 1+2 - M	4,251,025
Option DC SPD Typ 2 - S	4,251,019
Option DC SPD Typ 2 - M	4,251,020
Option 1 DC-plug +-pair MC4	4,251,021

FRONIUS PRIMO

ITEM DESIGNATION	ITEM NUMBER
Fronius Primo 3.0-1	4,210,069
Fronius Primo 3.5-1	4,210,068
Fronius Primo 3.6-1	4,210,067
Fronius Primo 4.0-1	4,210,066
Fronius Primo 4.6-1	4,210,065
Fronius Primo 5.0-1	4,210,063
Fronius Primo 5.0-1 AUS	4,210,663
Fronius Primo 6.0-1	4,210,062
Fronius Primo 8.2-1	4,210,060

FRONIUS GALVO

ITEM DESIGNATION	ITEM NUMBER
Fronius Galvo 1.5-1	4,200,011
Fronius Galvo 2.0-1	4,200,012
Fronius Galvo 2.5-1	4,200,013
Fronius Galvo 3.0-1	4,200,014
Fronius Galvo 3.1-1	4,200,015

FRONIUS ECO

ITEM DESIGNATION	ITEM NUMBER
Fronius Eco 25.0-3	4,210,056,040
Fronius Eco 27.0-3	4,210,057,040

Accessories	
DC Connector Kit 10 - 27 kVA	4,251,015
DC Connector Kit 10 - 27 35 mm²	4,251,029
Option DC SPD Typ 1+2 - S	4,251,024
Option DC SPD Typ 1+2 - M	4,251,025
Option DC SPD Typ 2 - S	4,251,019
Option 1 DC-plug +-pair MC4	4,251,021
Option fuses 6x15A DC+	4,251,022
Option 6xbolts DC+	4,251,023

FRONIUS POWER PACKAGE

ITEM DESIGNATION	ITEM NUMBER
Fronius AC Combiner, left	4,240,149
Fronius AC Combiner, right	4,240,150

FRONIUS PV-GENSET SOLUTION

ITEM DESIGNATION	ITEM NUMBER
Fronius PV System Controller	43,0001,1471
Fronius Genset measurement extension	43,0001,1472
Fronius current sensors 3-ph (40 – 170 kVA 3-ph)	43,0010,0407
Fronius current sensors 1-ph (150 – 1,000 kVA 3-ph)	43,0010,0323
Fronius current sensors 1-ph (500 – 1,400 kVA 3-ph)	43,0010,0322

FRONIUS SYSTEM MONITORING

ITEM DESIGNATION	ITEM NUMBER
Fronius Datamanager Box 2.0	4,240,125
Fronius Sensor Card	4,240,004
Fronius Sensor Card retrofit	4,240,004,Z
Fronius Sensor Box	4,240,104
Fronius Update Package	4,240,019
Grid and system protection	43,0008,0188
Fronius Smart Meter 50kA-3	43,0001,1478
Fronius Smart Meter 63A-3	43,0001,1473
Fronius Smart Meter 63A-1	43,0001,1477

Sensors	
Ambient temperature sensor	43,0001,1188
Module temperature sensor	43,0001,1190
Irradiation sensor	43,0001,1189
Wind sensor	42,0411,0027

FRONIUS SERVICES

ITEM DESIGNATION	ITEM NUMBER
Commissioning support	42,005,013
PV System Design	42,008,006

Training	
PV Basics: basic principles of photovoltaics	42,005,002
Fronius products and solutions: an overview	42,005,003
System design I: Fronius solutions for the home and commercial market sectors	42,005,004
System design II: Fronius solutions for PV field installations and large-scale systems	42,005,005
Fronius inverters: installation, commissioning, servicing (Fronius Service Partner Qualification)	42,005,006
Fronius storage solutions: installation, commissioning, servicing	42,005,007

You can find an overview of the Fronius warranty extensions at **www.fronius.com/solar/warranty**
Up-to-date information about product availability in your country can be found at **www.fronius.com**

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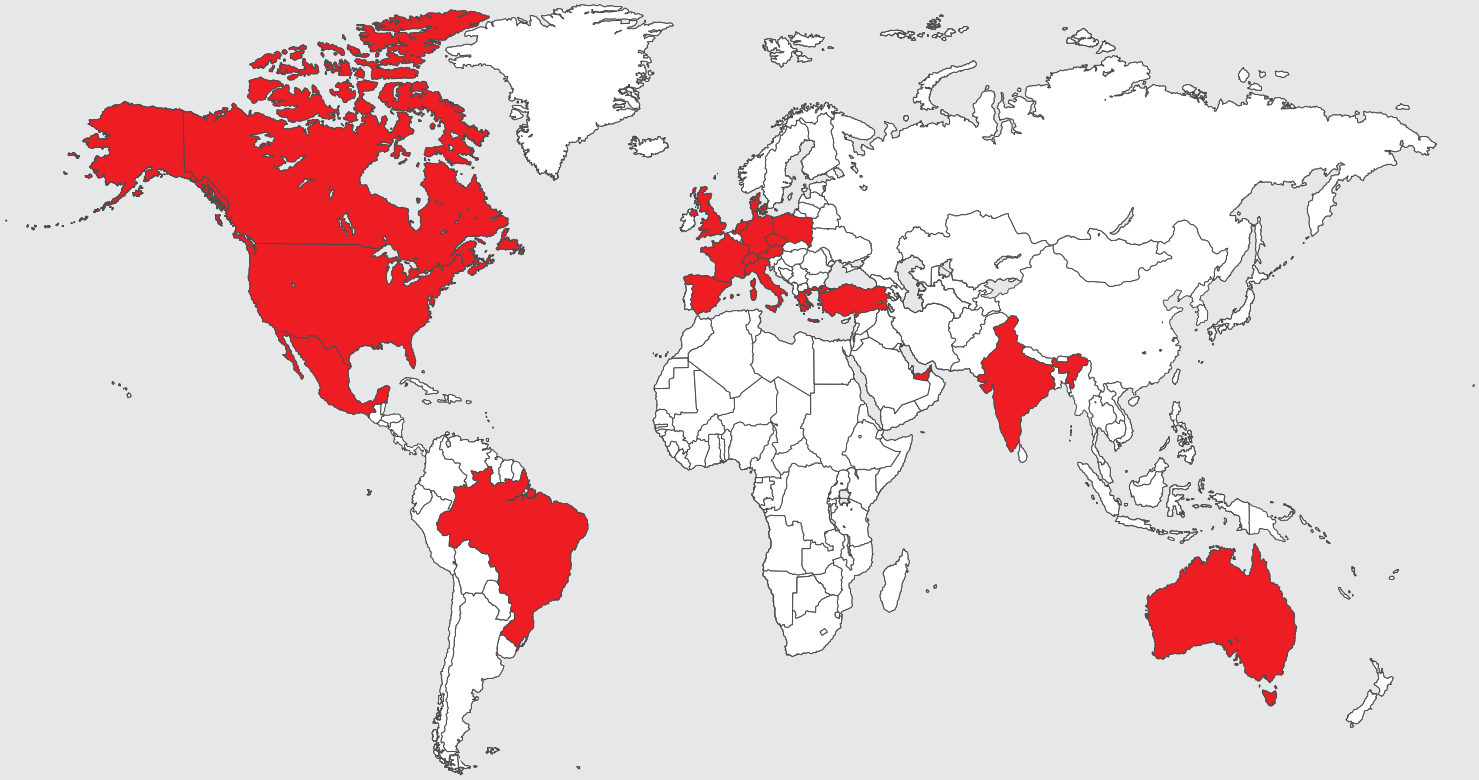
/ We have a global network of 19 subsidiaries, giving us an international presence and ensuring we are close to our customers wherever they are in the world.



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WE HAVE THREE DIVISIONS AND ONE PASSION: SHIFTING THE LIMITS OF POSSIBILITY.

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Further information about all Fronius products and our global sales partners and representatives can be found at **www.fronius.com**

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