

/ Perfect Welding / Solar Energy / Perfect Charging



SHIFTING THE LIMITS



**LOW ENERGY COSTS  
ARE POSSIBLE.  
BECAUSE OUR INVERTERS  
MAXIMISE SELF-CONSUMPTION.**

/ Photovoltaics pay off  
for private households

# 24 HOURS OF SUN

/ We believe in a future where we cover our energy needs 100% with renewable energy sources. A world of 24 hours of sun. Here at Fronius we are turning this vision into reality by developing technologies and solutions for today and tomorrow.

**I AM  
24HRS  
SUN**

/ Every single one of us can help to create a world where energy is 100% renewable. Including you! Change the world together with us.

Find out more at  
[www.24hoursofsun.com](http://www.24hoursofsun.com)

## 20 YEARS OF QUALITY

/ As the global quality leader, the Austrian family-owned company has been a byword for safety and reliability for 70 years. During this time, Fronius has produced inverters with a total power output of more than 5 gigawatts, which more or less equates to the output of five nuclear power stations. All our inverters are thoroughly tested and come with a Fronius manufacturer's warranty of up to 20 years, offering you a degree of security that goes well beyond that required by law. You'll never have any worries with a Fronius system – and that's a guarantee!

## FUTURE-PROOF

/ A great deal of attention was paid during the development stage to ensure that the inverters could be easily upgraded to accommodate future requirements, thus keeping them completely up to date at all times.



## **INNOVATIVE**

/ Again and again Fronius sets new standards worldwide with revolutionary products and new technologies, combining innovative flair with the highest levels of quality.

## **DEPENDABLE YIELDS**

/ By choosing Fronius, you are selecting the fastest service plan on the market. Trained Fronius Service Partners are able to carry out repairs on site – without having to replace the device right away! This saves time and money – and safeguards your yields.



# SAY GOODBYE TO INCREASING ENERGY COSTS

/ The price of energy is rising, a fact reflected in every electricity bill you receive. The solution: become an independent electricity producer and free yourself from future price increases.

/ By using a photovoltaic system you are making a major contribution towards the energy revolution and an environmentally friendly energy supply. In contrast to fossil fuels, the sun will never run out and every kilowatt hour (kWh) of solar power saves CO<sub>2</sub>.

/ But what is photovoltaics? Photovoltaics is a method of generating electrical power by converting solar radiation through the use of solar cells **1**. The direct current from the solar

modules is converted by an inverter **2** into the alternating current typically used in households. It is then fed into the public grid via an electricity meter **3** or consumed directly by the electrical appliances in the home.

/ With a storage unit, the power from the photovoltaic system can be used day and night. The surplus energy from the photovoltaic system is stored in a battery **4** and is then available for use during the evening and at night.

## YOUR INVESTMENT IN THE FUTURE

/ Photovoltaic system on single-family home in Central Europe  
/ Annual power consumption: 3500 kWh

System orientation: 30° slope, <b>EAST/WEST</b>	<b>2.5 KWP</b>	<b>3.5 KWP</b>	<b>4.5 KWP</b>
PV generated [kWh]	2,150	3,000	3,900
Self-consumption without storage unit [kWh]	970	1,100	1,200
Degree of self-sufficiency without storage unit	28%	31%	33%
Self-consumption with storage unit [kWh]	1,500	1,950	2,140
Degree of self-sufficiency with storage unit [7.5 kWh]	43%	56%	61%

## DEGREE OF SELF-SUFFICIENCY:

/ The degree of self-sufficiency is the percentage of energy consumption covered by the self-produced electricity. This electricity therefore does not have to be purchased from an external supplier, reducing your bill accordingly by the degree of self-sufficiency.

System orientation: 30° slope, <b>SOUTH</b>	<b>2.5 KWP</b>	<b>3.5 KWP</b>	<b>4.5 KWP</b>
PV generated [kWh]	2,550	3,600	4,600
Self-consumption without storage unit [kWh]	970	1,100	1,200
Degree of self-sufficiency without storage unit	28%	31%	33%
Self-consumption with storage unit [kWh]	1,925	2,135	2,240
Degree of self-sufficiency with storage unit [7.5 kWh]	55%	61%	64%



# SELF-CONSUMPTION PAYS OFF

/ Self-consumption means that the self-generated solar power is used immediately within your property and is not fed into the grid. This increases your own level of autonomy and frees you from the burden of future hikes in energy prices. In many countries, the price of self-generated solar power is already cheaper than the cost of purchasing electricity from the grid! A high proportion of self-consumption also ensures rapid payback of the cost of your photovoltaic system. Your aim must be to use as much of the solar power you generate as possible.

## HOW CAN I INCREASE MY LEVEL OF SELF-CONSUMPTION?

### BUILD THE SYSTEM TO MATCH YOUR NEEDS

/ The key to being able to use a large proportion of the power you generate in your own home is to match the size of the system to your own power needs. The system should not be too large - particularly if the feed-in tariff in your country is low (or non-existent). Even if your roof does not face due south, a PV system is still a worthwhile investment. For instance, an east-west system delivers power earlier in the morning and later in the evening than a south-facing one.

### MODIFY YOUR CONSUMPTION PATTERN

/ Make more use of your domestic appliances (washing machine, dishwasher, etc.) when the sun is at its strongest.

### INTEGRATED ENERGY MANAGEMENT

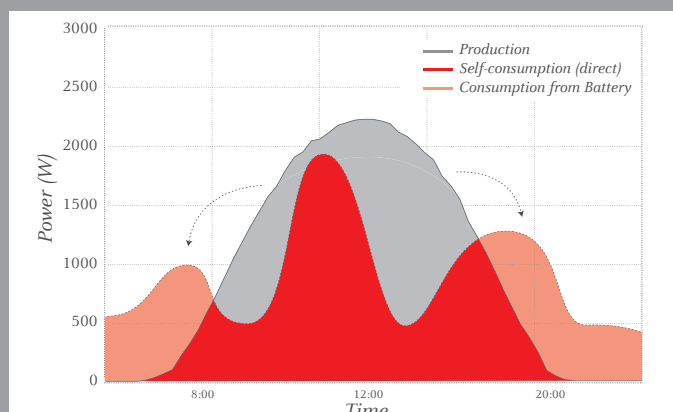
/ Fronius inverters with the energy management feature allow consumers to be switched on and off according to how much power is currently being generated.

### CONVENIENT HOME AUTOMATION

/ The open interfaces on Fronius inverters facilitate straightforward integration into home automation systems. In addition to maximum convenience, these also ensure efficient energy management throughout the home. Electrical devices can be switched on and off from a tablet or a smartphone according to the time, weather, etc. Fronius has teamed up with Loxone to offer an extremely simple and easy to use system.

### PHOTOVOLTAIC SYSTEM WITH STORAGE UNIT

/ In order to use as much as possible of the energy you have generated yourself, it is worth storing the surplus energy for when it is required later. With the Fronius Energy Package, it is even possible to store the solar power for use the next morning.



/ 60-70% increase in self-consumption and degree of self-sufficiency due to storage units.

# THE HEART OF YOUR PV SYSTEM

/ Fronius inverters are efficient, reliable and form the indispensable heart of every PV system. Besides converting the direct current into alternating current, the inverter also carries out a number of other important functions within a photovoltaic system. These include the entire management of the system, data communication and ensuring the safety of the system - the choice of inverter is therefore something that should not be left to chance!

/ The Fronius Galvo, Fronius Primo, Fronius Symo und Fronius Symo Hybrid inverter series give you the ideal inverter for your home. Power categories from 1.5 to 20.0 kW promise suitability for practically every system size. With an integrated energy management relay, the inverters are also

perfectly optimised for your self-consumption system. Now, for the first time, the inverters are also equipped with a WLAN interface inside the device. Your photovoltaic system is therefore wirelessly connected to the internet so you can call up your system data whenever you want.



**/ FRONIUS GALVO**  
1.5 - 3.1 kW  
1-phase



**/ FRONIUS PRIMO**  
3.0 - 8.2 kW  
1-phase



**/ FRONIUS SYMO**  
3.0 - 20.0 kW  
3-phase

# FRONIUS ENERGY PACKAGE

/ With the Fronius Energy Package storage solution, you can use the solar power day and night. The surplus power that is generated during the day with the Fronius Symo Hybrid inverter is stored in the Fronius Solar Battery and can be called on at any time. Lithium-iron phosphate technology is used for the storage solution and impresses with its long service life and maximum efficiency. Other benefits: you can easily integrate the storage solution into an existing photovoltaic system,

or purchase the Fronius Symo Hybrid inverter now and retrofit the storage unit at a later date. Also a possibility.

/ Sun by day, sun by night and sun during power outages. Thanks to the three-phase emergency power supply, you can ensure that your household is supplied with electricity even during power outages. Simply arrange for the photovoltaic system to be installed accordingly.

## / FRONIUS SYMO HYBRID

3.0, 4.0, 5.0 kW  
3-phase

## / FRONIUS SOLAR BATTERY

3.6 - 9.6 kWh



## / FRONIUS SMART METER

/ A meter for recording power consumption

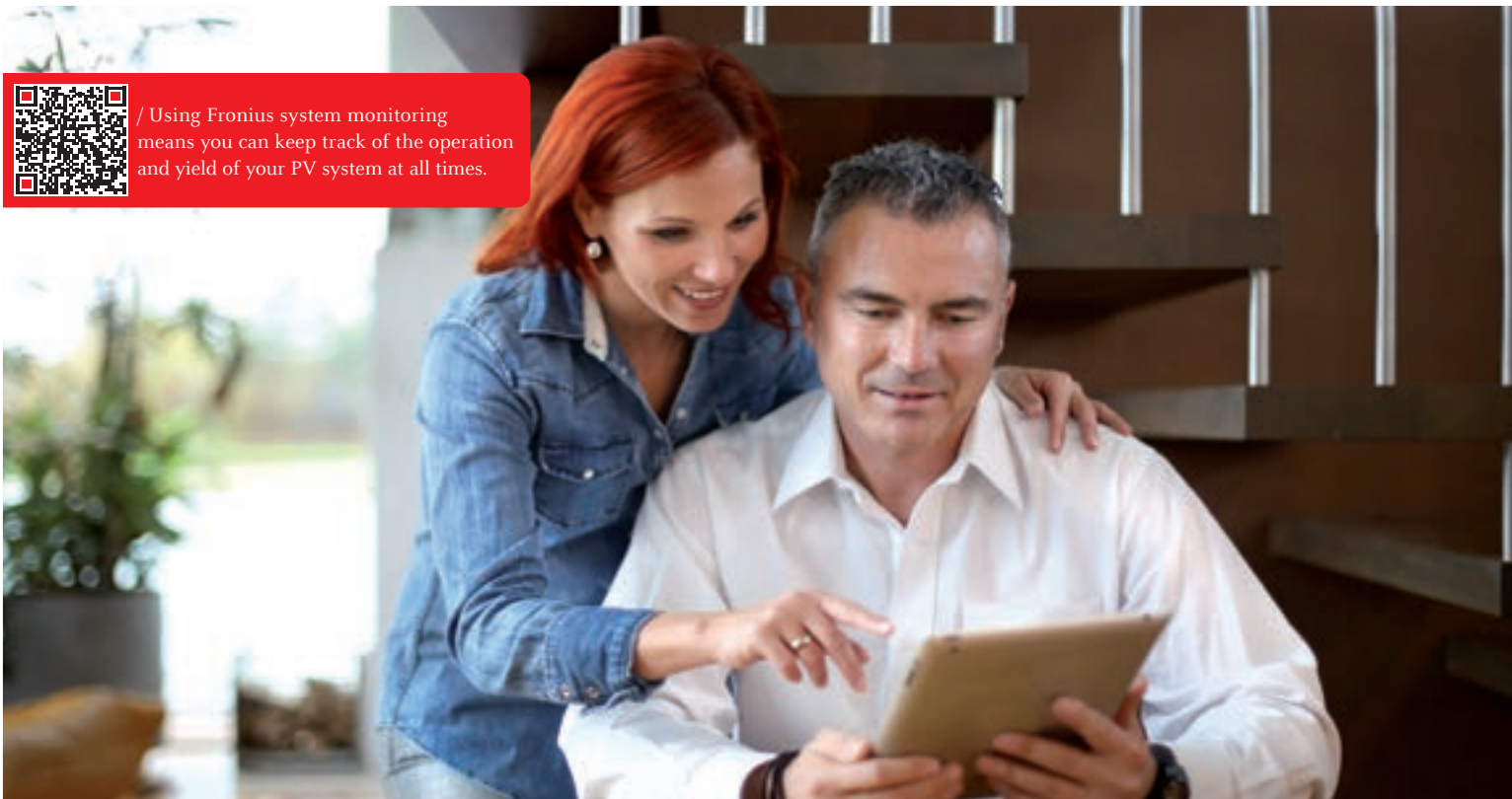


**INTERESTED?**

[www.youtube.com/froniusSolar](http://www.youtube.com/froniusSolar)



/ Using Fronius system monitoring means you can keep track of the operation and yield of your PV system at all times.



## KEEPING AN EYE ON YOUR SYSTEM

/ With Fronius Solar.web you always have a full overview of output and function of your photovoltaic system - at home and on the move. All the important data, such as output, yields and consumption, energy balance or the state of charge of your energy storage unit are clearly displayed.

### FRONIUS SMART METER

/ A meter for recording power consumption in the home

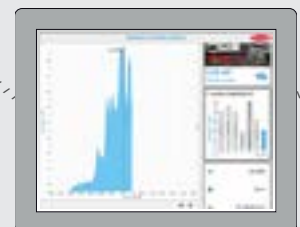


### FRONIUS SOLAR.WEB

/ Fronius Solar.web - the online portal for straightforward system monitoring

### APP

/ The Fronius Solar.web App for smartphones and tablets





# CUSTOM SOLUTIONS FOR SYSTEMS OF EVERY SIZE

/ Just picture all the different application areas for Fronius inverters and see for yourself how photovoltaic systems with reliable yields can be implemented using Fronius products.

## SINGLE-FAMILY HOME IN SCHARNSTEIN, AUSTRIA

/ Inverter provides maximum yield

/ The Aitzetmüller family from Scharnstein feel it is important to do something for the energy sector of the future, which is why they decided to install a 4.5 kWp photovoltaic system. With the help of a grant, they were able to put one on the roof of their single-family home. The three-phase Fronius Symo inverter provides the highest yields and maximum flexibility. *“Depending on the weather, we achieve a self-consumption rate of about 25 percent. The Fronius Solar.web App allows me to see the yield of my PV system on my iPhone or iPad whenever I want,”* reports system owner David Aitzetmüller. The decision was made in favour of Fronius due to the superb product quality and the comprehensive system monitoring feature. *“For me, it was important to buy the inverter from a well-known regional manufacturer – another reason, apart from the good quality, why I decided to go with Fronius,”* explained Aitzetmüller. The PV system was installed by a Fronius Service Partner in just one day.



SYSTEM DATA	
System size	4.5 kWp
Purpose, system type	Single-family home, roof-mounted
Module type and area	JA Solar, JAM6-60/250; 30 m <sup>2</sup>
Inverter	Fronius Symo 4.5-3
Commissioned	April 2013
Annual yield	4,500 kWh
CO <sub>2</sub> saved/year	Approximately 2.4 tonnes, equivalent to driving about 17,800 km in an average car
Special feature	Self-consumption



## INTERESTED?

/ Further reference projects can be found at [www.fronius.com/referenzen](http://www.fronius.com/referenzen)



# SINGLE-FAMILY HOME IN WAIZENKIRCHEN, AUSTRIA

/ Family home becomes energy independent

/ Having been interested in photovoltaics for a number of years, in 2012 Christian Kasberger and Elisabeth Grüneis decided to have a PV system installed on the roof of their own home. At first, the system was fitted with a Fronius Symo with an annual production of 7,500 kWh. In August 2014, the existing system received a rather special upgrade in the shape of a Fronius Symo Hybrid 4.0 and a Fronius Solar Battery 7.5.

*“We installed a photovoltaic system that we could also use to supply heat. To become even more independent, in 2014 we expanded our system to include a storage unit. Thanks to the storage solution, we don’t need to draw any energy from the grid during the summer months at all, and that has totally impressed us!”* says system owner Elisabeth Grüneis.



SYSTEM DATA	
System size	7.3 kWp
Purpose, system type	Rooftop, maximising self-consumption rate
Module type and area	Fronius Symo Hybrid: 5 kWp monocrystalline VTA 195M; Area: 32 m <sup>2</sup> Fronius Symo: 2.3 kWp polycrystalline CNPV-300P; Area: 16 m <sup>2</sup>
Inverter	1 Fronius Symo 8.2-3-M, 1 Fronius Symo Hybrid 4.0-3-S
Storage solution	1 Fronius Solar Battery 7.5
Commissioned	Fronius Symo: May 2012, Fronius Symo Hybrid & Fronius Solar Battery: August 2014
Annual yield	Approx. 7,500 kWh
CO <sub>2</sub> saved/ year	Approx. 4 tonnes
Special feature	Energy independence thanks to decentralised power generation coupled with a local storage facility





## SINGLE-FAMILY HOME IN MELBOURNE, AUSTRALIA

/ Fronius Galvo – maximum self consumption

/ This 3 kW PV system is installed on a single-family home in the outskirts of Melbourne, Australia. The photovoltaic system was designed for an average daily consumption of 8-9 kWh. In winter and on cloudy days, the system covers most of the daily power requirement. Its yield during the summer is almost double the level of self-consumption. *“We’re delighted that the surplus energy we produce is doing something to help reduce the use of fossil fuels, such as coal,”* explained house owner Wylie Vallance. The system owners like to view the yield of their photovoltaic system on a tablet - the Fronius Solar.web App provides a quick and easy overview of the situation.



SYSTEM DATA	
System size	3 kWp
Purpose, system type	Self-consumption, roof-mounted
Module type and area	REC 250 PE; 19.8 m <sup>2</sup>
Inverter	Fronius Galvo 3.0-1
Commissioned	January 2013
Annual yield	Approx. 5,000 kWh
CO <sub>2</sub> saved/year	Approximately 2.7 tonnes, equivalent to driving about 20,000 km in an average car
Special feature	Self-consumption



Fronius Solar.web App

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

/ What Günter Fronius started in 1945 in Pettenbach, Austria, has now become a modern day success story. Today, the company has around 3,700 employees worldwide and has been granted more than 800 patents. Our goal has remained constant throughout: to be the innovation leader. We shift the limits of what's possible. While others progress step by step, we innovate in leaps and bounds. The responsible use of our resources forms the basis of our corporate policy.

## PERFECT WELDING

/ We develop products and complete systems - both manual and automated - as well as the corresponding services for our customers in the global welding technology market. We have made it our goal to decode the "DNA of the arc".

## SOLAR ENERGY

/ The challenge is to make the leap to a regenerative energy supply. Our vision is to use renewable energy to achieve energy independence. With our services, inverters and energy-storage systems for optimising energy yields, we are one of the leading suppliers in the photovoltaics sector.

## PERFECT CHARGING

/ As know-how leaders in the world of battery charging, we deliver exceptional solutions to create the maximum benefit for our customers. For the intralogistics sector, we are committed to energy flow optimisation for electric forklift trucks and are constantly striving for the next innovation. Our powerful charging systems for vehicle workshops guarantee safe and reliable processes.

Further information about all Fronius products and our global sales partners and representatives can be found at [www.fronius.com](http://www.fronius.com)

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