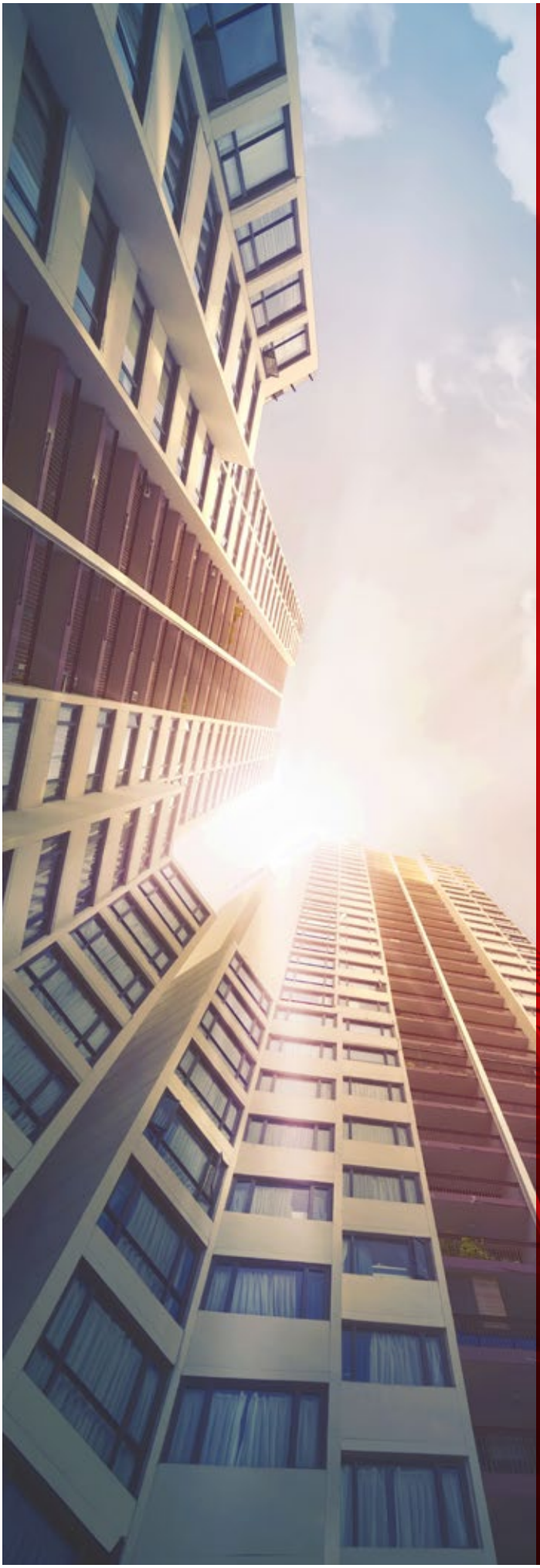


NuPower Solar

GRID-TIE SYSTEMS **OVERVIEW**

023 10 000 77
Shop 60B, Lemontree Shopping Centre
www.nupower.co.za

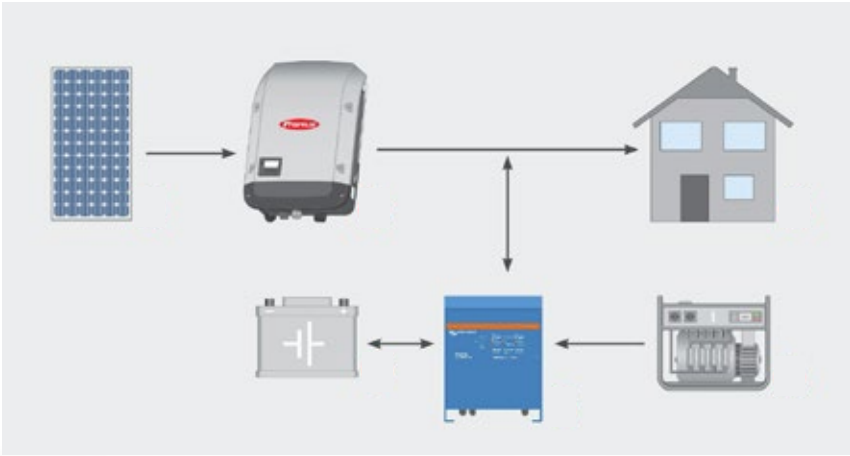
PV

FRONIUS PV-GENSET SOLUTION

/ In remote areas or regions with unstable public grids, a continuous supply of electricity - independent of the public grid - is required. As it makes complete financial and ecological sense to integrate photovoltaics into off-grid or backup systems of this kind, Fronius offers perfectly coordinated solutions for these applications. The first references demonstrate that diesel generators and photovoltaic technology can be combined in perfect harmony. Responsible for managing the entire setup is the Fronius PV system controller, which ensures fast and reliable control of the entire system.
Fronius also provides support in planning the PV-Genset solution.

Victron-energy Integration

PV systems with Fronius inverters can be easily integrated into Hybrid or Off Grid systems, as 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. Fronius and Victron Energy has a long standing developmental partnership that ensures a reliable phased approach to going completely off-grid.



Product Overview

LONG-TERM
RELIABLE YIELDS ARE POSSIBLE.
BECAUSE OUR DEMANDS FOR QUALITY
GUARANTEE MAXIMUM RELIABILITY.
/Fronius - Your partner for successful solar projects

GUARANTEED YIELDS FROM PHOTOVOLTAIC PROJECTS WITH FRONIUS

/ As the worldwide quality leader, Fronius is constantly setting new standards and ensuring that your photovoltaic system becomes a secure, high-yield investment. Our innovative inverter solutions tick all the boxes for solar projects that will be profitable in the long term. Our many years of experience, solid corporate structure and our innovative production facility in Austria make Fronius the dependable partner for system planners, project investors and system operators.

Inverters

FRONIUS STRING INVERTERS

/ The Fronius Symo and Fronius Eco string inverters perfectly meet all the requirements of largescale installations. These inverters impress with the highest yields, a compact design and extremely straightforward mounting and servicing thanks to the SnapINverter mounting system. The inverters also boast numerous interfaces for optimum system monitoring and an IP 66 protection class for unrestricted outdoor use. The Fronius Power Package is the system solution from a single source, consisting of the Fronius inverters, a Fronius AC Combiner and pre-fabricated cables. From planning right through to maintenance of the PV system, the impressive solution requires minimal effort and delivers maximum flexibility.

About Us

NuPower Solar was established in 2008 by a group of businessmen in the Western Cape. The current owner, Sampie Pienaar, invested in the company soon after it was formed. At the time he was involved in the electronic bank transaction environment in a joint venture with Absa Bank. The investment in a company in the renewable energy space was consistent with the pioneering spirit which was the hallmark of the IT environment which he was coming from.

The initial focus was on the soon to be implemented SA National Standard that stipulated that 50% of a new building's water heating had to come from an alternative source, other than electricity.

NuPower Solar quickly established itself as a leader in the high pressure solar water heating (SWH) industry and as part of the Eskom DSM rebate programme.

NuPower Solar developed a range of products suitable for the South African market and all products carry the SABS mark of approval. We are currently a major supplier to new affordable and mid-income housing projects.

NuPower Solar's unique selling point has always been based on our service levels and the fact that we have a 24/7 helpline available for clients.

Early in 2017, NuPower Solar made the strategic decision to expand with a photo voltaic (PV) energy division. The first objective was to leverage over 12000 existing clients that NuPower Solar had on the SHW side to take the next step in their renewable journey and install PV. We gained a fast understating in the Hybrid PV system market.
The next step was to target a specific commercial/industrial sector who could benefit from NuPower Solar's vast experience, customer service and technical know-how, to help educate them about the financial benefit possible with grid-tie PV system. With the knowledge gained from working with hybrid systems on larger applications, we are confidently able to deliver a customer-based solution at a market-related price, ensuring the best return on investment for our clients.

We currently have one of the largest in-house installation capacities in South Africa.

Grid-Tie Overview

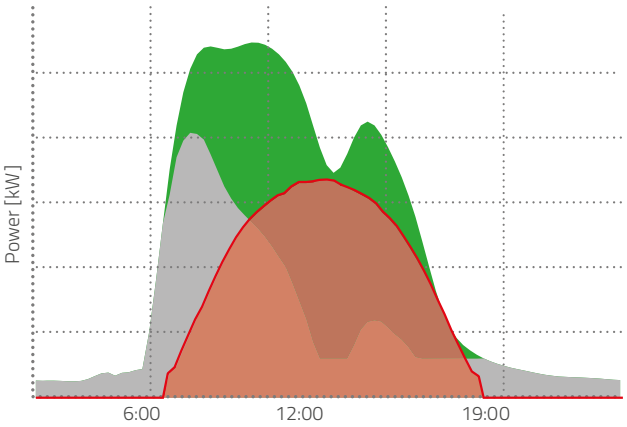
A grid-connected PV power system is an electricity generating solar PV power system that is connected to the utility grid. A grid-connected PV system consists of solar panels, one or several inverters, a power conditioning unit and grid connection equipment. They range from small residential and commercial rooftop systems to large utility-scale solar power stations. Unlike stand-alone power systems, a grid-connected system rarely includes an integrated battery solution, as they are still very expensive.

These systems use the available energy provided by the sun and directly converts it to usable power ready of instant consumption.

Systems must be designed in such a way the that the power production does not exceed the load during any time of the day as current grid feedback is limited to a small number of municipalities and is not in use in the greater Johannesburg area. The systems design is modular and can be extended once it becomes feasible to feed power back to the gird.

Systems are modular, and systems can be expanded on as and when required.

On below load graph, the advantage of load reduction can be seen (green area).



The load profile of an example load.
The area in red represents power from PV and therefore the saving on grid usage.
The difference between load and PV is met as before by the the grid.

Grid-tied PV Systems have the shortest payback periods of all PV solutions and these are the most financially viable option if cost reduction is the main aim for the Business.

Financial Overview

NuPower Solar's view is that a PV Solution is a financial investment and therefore must be viewed as an opportunity to create value for all stakeholders, which includes the financial savings as a result of lowered energy costs as well as the positive environmental impact.
NuPower Solar places emphasis on the monitoring of the systems performance to ensure returns are measured, and with a reporting structure written into the monitoring software it is easy for management to measure the performance of their investment.

System Size	Pricing***						
28kWh	315 000			ROI%			
Electricity Price R/kW		Y/1	Y/2	Y/3	Y/4	Y/5	PAYBACK in Years
0,90		12,56	13,61	14,59	15,65	16,77	6,5
1,20		17,42	18,86	20,21	21,65	23,18	4,9
1,50		22,29	24,11	25,82	27,65	29,6	4,1
2,00		30,4	32,86	35,17	37,64	40,28	3,1

System Size	Pricing***						
60kWh	615 000			ROI%			
Electricity Price R/kW		Y/1	Y/2	Y/3	Y/4	Y/5	PAYBACK in Years
0,90		14,34	15,52	16,63	17,81	19,07	6,3
1,20		19,68	21,28	22,79	24,39	26,11	4,6
1,50		25,02	27,05	28,95	30,98	33,15	3,7
2,00		33,93	36,65	39,22	41,95	44,88	2,8

System Size	Pricing***						
145kWh	1 550 000			ROI%			
Electricity Price R/kW		Y/1	Y/2	Y/3	Y/4	Y/5	PAYBACK in Years
0,90		14,02	15,17	16,24	17,39	18,61	6,2
1,20		19,14	20,69	22,15	23,7	25,36	4,4
1,50		24,27	26,22	28,06	30,02	32,11	3,7
2,00		32,8	35,43	37,9	40,54	43,36	2,8

System Size	Pricing***						
250kWh	2 600 000			ROI%			
Electricity Price R/kW		Y/1	Y/2	Y/3	Y/4	Y/5	PAYBACK in Years
0,90		14,5	15,68	16,79	17,97	19,23	5,9
1,20		19,76	21,36	22,86	24,46	26,17	4,6
1,50		25,03	27,04	28,93	30,95	33,11	3,6
2,00		33,8	36,5	39,05	41,77	44,67	2,8

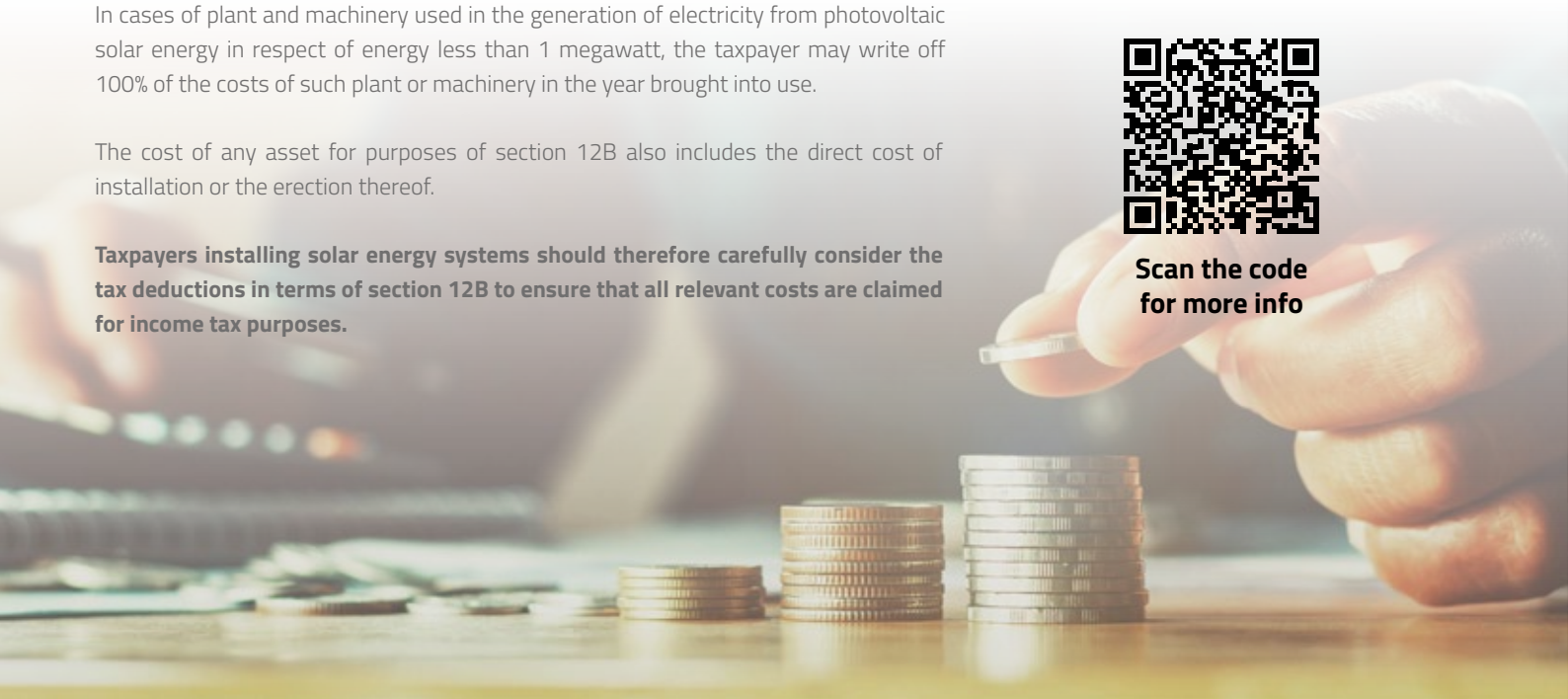
*** Indicative pricing. VAT Exclusive. *Standard installation.

Tax Benefits

Section 12B(1) and (2) of the Income Tax Act provides for a 50/30/20 income tax deduction in respect of certain machinery or plant owned by the taxpayer and which was or is brought into use for the first time by that taxpayer, for the purpose of his or her trade to be used by that taxpayer in the generation of electricity from, amongst others, photovoltaic solar energy (both for energy of more than 1 megawatt and energy not exceeding 1 megawatt) or concentrated solar energy. The tax deduction also applies to any improvements to the qualifying plant or machinery which is not repairs.
In cases of plant and machinery used in the generation of electricity from photovoltaic solar energy in respect of energy less than 1 megawatt, the taxpayer may write off 100% of the costs of such plant or machinery in the year brought into use.

The cost of any asset for purposes of section 12B also includes the direct cost of installation or the erection thereof.

Taxpayers installing solar energy systems should therefore carefully consider the tax deductions in terms of section 12B to ensure that all relevant costs are claimed for income tax purposes.

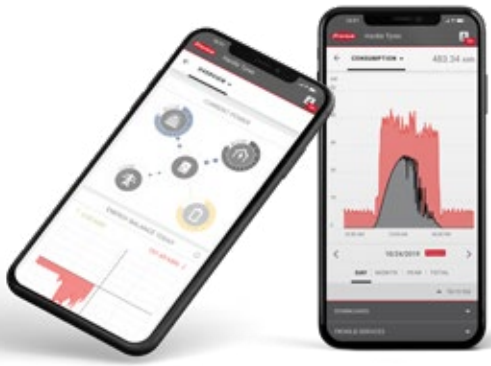


Scan the code for more info

Solar-web

HOW DOES FRONIUS SOLAR.WEB WORK?

Fronius Solar.web is an online portal with free and easy registration for photovoltaic system operators. It provides users with a convenient and clear way of monitoring and analysing their entire solar energy system – either at home from their PC or on the move via their tablet or smartphone. Several systems can also be compared with one another. All the up-to-date system data can be accessed at any time and is clearly presented. The system receives the information using a Datamanager integrated in the inverter, which transfers all the required data to Fronius Solar.web via a LAN or WLAN connection.



YOUR BENEFITS

/ Clear presentation of the latest system data and archive data
/ Thorough visualisation and analysis of energy storage systems
/ Management and comparison of multiple photovoltaic systems
/ Automatic notifications of system faults
/ Automatically generated reports

FRONIUS SOLAR.WEB CLASSIC AND FRONIUS SOLAR.WEB PREMIUM: TWO MONITORING SOLUTIONS FOR ALL REQUIREMENTS

Photovoltaic system operators have two versions of Fronius Solar.web at their disposal: Solar.web and Solar.web Premium. Solar.web is a free tool giving you a clear overview of all the up-to-date and archive data for your photovoltaic system. You can check the output and yields, and compare the values across several inverters or time periods. This gives you a convenient way of monitoring one or more photovoltaic systems. The system sends automatic notifications in the event of PV system faults and automatically creates reports. It is also easy to see your self-consumption rate using Fronius Solar.web. For operators who want to record more detailed system data over a longer period of time, Fronius Solar.web Premium contains additional functions. These include a comprehensive self-consumption analysis and a permanent overview of power consumption. It's easy to export the data and then process it in other programs, helping you to control and optimise your energy costs. Energy storage systems can also be monitored closely, thanks to the clear visualisation. A comprehensive overview of your photovoltaic system is thus always in your grasp.

FRONIUS SOLAR.WEB:

/ Clear presentation and evaluation of current and archive data
/ Automatic yield comparisons across several inverters or time periods
/ Comparison of photovoltaic system data against sensor data (target/actual comparison)
/ Automatic module fault detection
/ Automatic notifications and regular reports
/ Easy management of several systems
/ Simple self-consumption display
/ Free of charge

FRONIUS SOLAR.WEB PREMIUM:

/ Comprehensive self-consumption analysis
/ Permanent overview of power consumption for cost control
/ Visualisation and analysis of energy storage systems
/ CSV export of self-consumption data
/ Compatible with the Alexa Skill Fronius Solar.web