



24

THE MAGAZINE FOR
24 HOURS OF SUN.

EN 01 / 2019

MEET THE NEW HEROES!

Faces of Fronius
JACK LONG

Commercial Inverter
Fronius Tauro

GEN24 Plus
Uniquely Versatile

24 hours of sun is the vision of a future powered by 100% renewable energy sources. In order to make 24 hours of sun a reality, we need technologies and solutions that help us to more efficiently produce, store, distribute and consume renewable energy. At Fronius, we work towards this goal every day.

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MARTIN HACKL

Head of Business Unit Solar Energy,
Fronius International GmbH

DEAR READER, MEET OUR NEW HEROES!

We are pleased to announce that we can finally introduce you to our new heroes. Versatile like no other inverter on the market, the new Fronius GEN24 Plus is the logical evolution of the proven SnapINverters. With new features such as flexible grid back-up functions, they are even easier to adapt to the needs of your customers. With this latest generation, the name says it all: GEN24 Plus is another step towards 24 hours of sun. We have also made plenty of progress in the commercial sector. Our R&D experts have been hard at work programming, analysing and building – and the results speak for themselves. In this magazine, you will get a first look at the Fronius Tauro commercial inverter. The first pilot series systems have already been put into operation. Find out what our employees and customers have to share about their experiences from page 18.

Much has happened en route to 24 hours of sun, and in the future, we will continue to achieve something extraordinary together. One of you will install the 1,000,000th Fronius SnapINverter, which will roll off our production line in Sattledt, Austria in July. We can also look back on a successful first year for our SOLH₂UB green hydrogen filling station. Our team of hydrogen experts is currently planning several projects that will soon be ready to be unveiled. When it comes to energy storage solutions, we are happy report on our strategic partnership with BYD.

It's not just the new inverters that are our heroes. You – our installers and partners – are our true super-heroes. You navigate the increasing complexity of the solar market on a daily basis. The combination of electricity, heat and mobility presents us all with new challenges. We want to face these challenges together with you. Our renowned Fronius Service Partner programme has developed into the Fronius System Partnership in order to better position you on the path to the energy revolution.

In this issue of 24 – The magazine for 24 hours of sun – we are starting a new series, “Faces of Fronius”. Here we will introduce people who passionately share our vision of 24 hours of sun. Kicking things off is an interview with our Australian Fronius System Partner Jack Long. Take a few minutes to find out why Jack is a solar industry hero and how he sees the opportunities of digitisation. If you also wish to know the story behind his Fronius tattoo, be sure to flick to page 22.

I hope that this issue of our magazine inspires you too to become a hero and join the 24 hours of sun force!

A handwritten signature in black ink, appearing to be 'M. Hackl', written in a cursive style.

GUIDING CUSTOMERS THROUGH THE ENERGY REVOLUTION

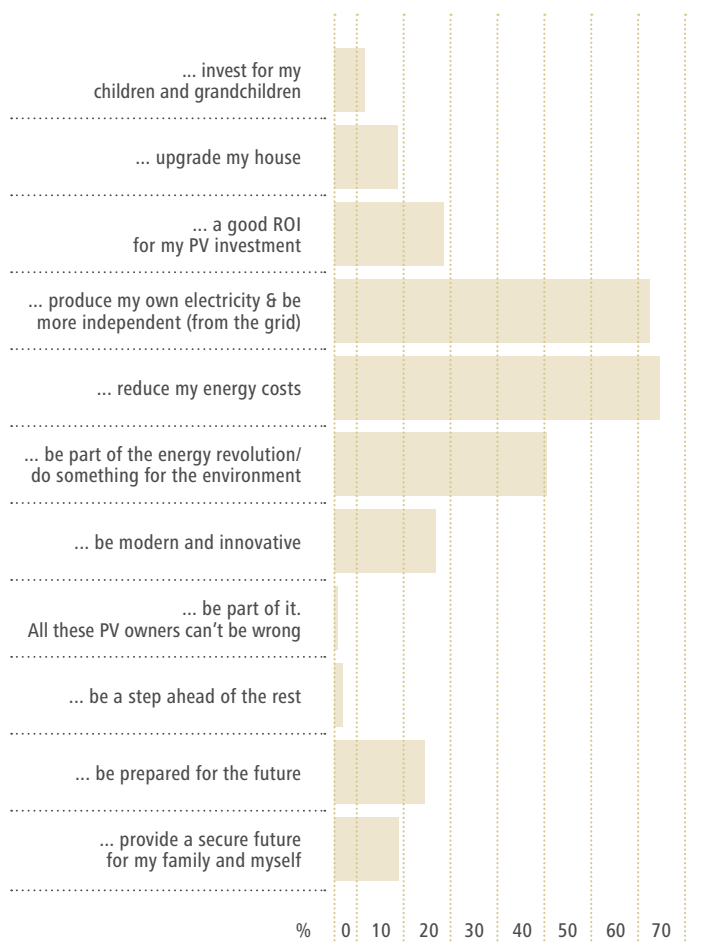
A GREAT OPPORTUNITY FOR INSTALLERS

WHY PEOPLE BUY a Fronius Solar.web study

In 2018, Fronius conducted a survey of around 8,000 German Solar.web users. One of the things they were asked about was their motives for purchasing a photovoltaic system. The overwhelming majority of respondents cited the following reasons:

- / Save on energy costs.
- / Produce their own electricity and be more independent (from the grid).
- / To be part of the energy revolution/to do something for the environment.

Market insiders will not be surprised by these responses, nor will they be surprised by the fact that financial motives are a key influencing factor. This is good news for the industry, as it offers huge growth opportunities – specifically when the energy revolution helps households to cut energy costs to a previously unimagined degree.



Solar.web user survey on buying motives (2018; multiple answers were possible)



HOW MUCH DO HOUSEHOLDS ACTUALLY SPEND ON ENERGY?

If you asked people on the street about their energy costs, most would probably think about their electricity bills. This is also reflected in a Google search. If one searches for terms such as energy costs, the results mostly turn up websites for electricity providers or sites comparing electricity costs. Whether in Germany, Great Britain, Canada or Australia, the picture is the same. Energy costs for heating or mobility are usually not considered.

But if you look at energy costs as a whole, it gets much more interesting. In Austria, for example, where electricity and petrol are relatively cheap, we are talking about energy costs in the thousands of euros. Let us take a typical Austrian four-person household and make the following assumptions.

- / Detached house, built in 2004
- / 2 adults, 2 kids
- / Two cars with an internal combustion engine; total annual mileage approx. 25,000km
- / Oil heating system, 15 years old, average heating behaviour
- / No special energy-saving measures
- / No PV system

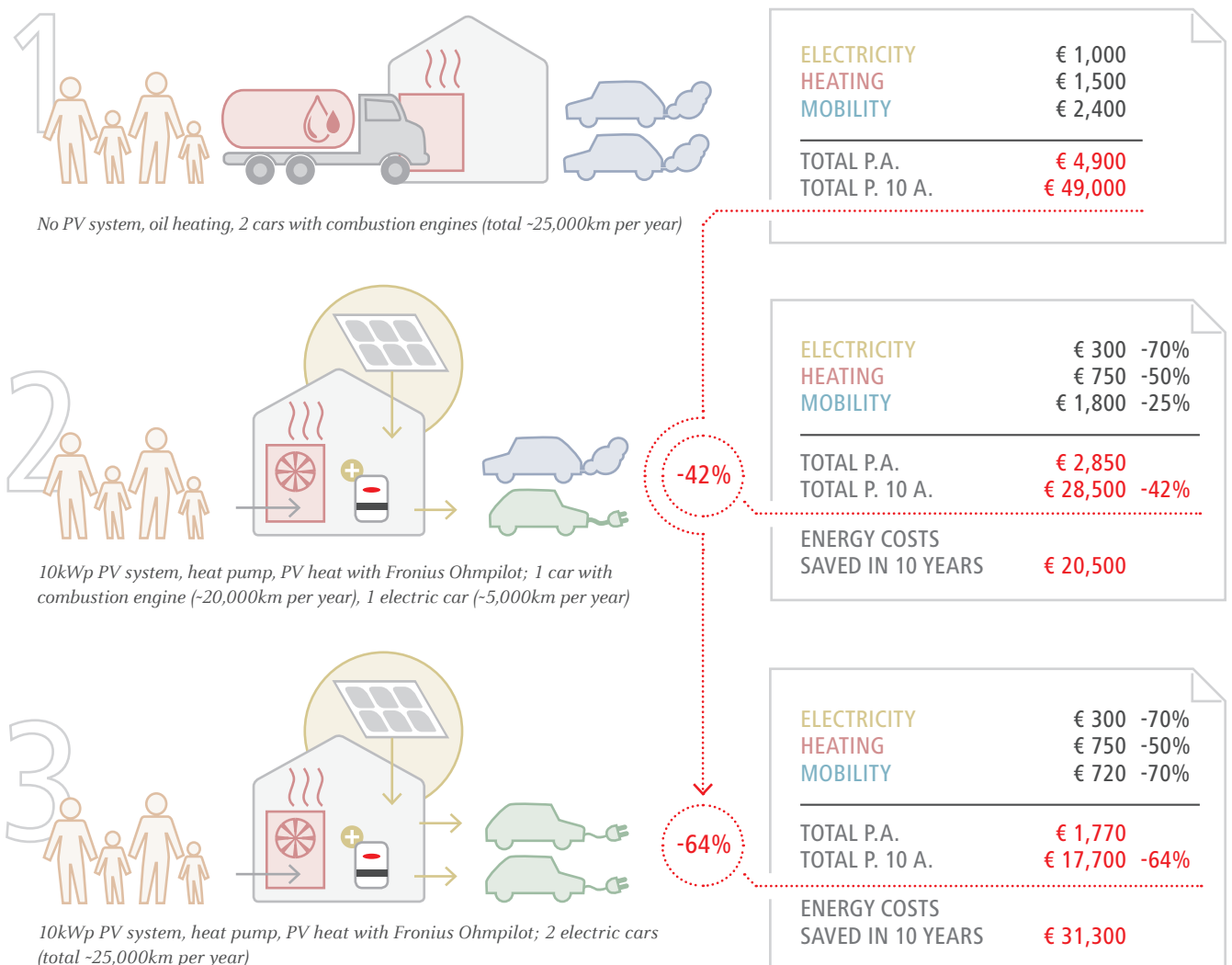
The total annual energy costs for such a household would typically add up to 4,000 to 5,000 euros, or 40,000 to 50,000 euros over ten years (see page 6). If one now considers the possibilities already available to households to change their energy consumption and usage behaviour, it quickly becomes clear that, depending on the assumptions made, 50 percent or more of these energy costs could easily be saved.

SAVING € 30,000 IN ENERGY COSTS? Impossible. Or is it?

What might seem unrealistic at first glance actually becomes quite easy to achieve on closer inspection – and with solutions that are already available today. So how do you go about it? In addition to constructional measures such as thermal insulation, which are always recommended, there are five main steps to take:

- ✓ Use the existing roof area to generate a sufficient amount of PV electricity for maximum self-sufficiency.
- ✓ Convert to a sustainable heating system with the highest possible degree of electrification.
- ✓ Maximise consumption of the energy generated at home by installing an energy-storage system.
- ✓ Replace petrol or diesel-powered vehicles with electric cars.
- ✓ Continuously optimise costs for energy that cannot be covered by solar.

If these measures are implemented in full or in part, scenarios 2 and 3 would result in energy cost reductions of 42 percent and 64 percent respectively compared to scenario 1 (which describes a typical situation today) – and thus savings of 20,500 euros and 31,300 euros respectively over a period of 10 years.



THERE ARE LIMITATIONS, HOWEVER ...

Nevertheless, there are a number of limitations that would need to be taken into account. Above all, implementing the measures described above would involve a number of not inconsiderable investments. A reasonable estimate for a 10kWp PV system including 10kWh battery storage solution can be upwards of 20,000 euros. Costs for converting a heating system from oil to a heat pump, for example, can quickly reach 25,000 euros, while electric cars remain unaffordable for many drivers. Clearly not every homeowner will be able to easily make these investments through their own means.

A GUIDE THROUGH THE ENERGY REVOLUTION?



/Klaus Kramler,
Head of Marketing
Fronius Solar Energy

“Installers should develop into all-round energy consultants and guide their customers through the energy revolution. The opportunities here are huge,” believes Kramler.

The process will be gradual for most customers and will extend over several years. “Step one may be a PV system. Two years later, the oil heating system will be replaced with a new heat pump and perhaps the first energy-storage system. Shortly after the first electric car will be purchased, as the money saved on petrol will finance the leasing rate. The car will of course need a charging station, etc, and the orders will just keep rolling in,” continues Kramler.

For the installer, this represents an opportunity for repeat sales to existing customers. For many, however, this will also mean significant changes to their business model.

... BUT ON THE OTHER HAND...

Despite the challenges, the economic sense of becoming self-sufficient through PV electricity is undisputed. For people who are unable to finance a PV system from their own resources, there are attractive financing models available that enable a PV system to be installed without any upfront costs (e.g. Fronius LUMINA.PV available from mid-2019 in Germany). Outdated heating systems, on the other hand, simply need to be replaced anyway – there is no way around this in the long run. So why not replace a clapped-out oil-based system with a future-proof heat pump? The heat pump could then also be operated with self-generated PV electricity that makes the investment cheaper over time. And although electric cars usually cost a little more to purchase, favourable operating costs often make them the cheaper option overall, even at today’s prices. Finally, it seems plausible to assume that prices for PV, domestic storage batteries and electric cars will continue to fall, while energy costs will continue to rise. So will these developments encourage people to invest? Of that Fronius has no doubt.

**OVER THE NEXT 10 YEARS, MILLIONS OF HOMEOWNERS
WILL TAKE THEIR ENERGY INTO THEIR OWN HANDS.
ELECTRICITY WILL BE GENERATED, MANAGED AND
CONSUMED AT HOME.**

AN ALL-ROUND ENERGY CONSULTATION MEANS HELPING CUSTOMERS ORIENT THEMSELVES AND GIVING THEM CERTAINTY ABOUT THESE QUESTIONS.

WHAT SHOULD INSTALLERS DO?

Three factors will make all the difference:

- ✓ Individual analyses and forecasts of the customer's energy usage
- ✓ An all-round energy consultation
- ✓ Specialist expertise in the required fields

Guiding the customer through their energy revolution means being able to offer solutions that are the perfect fit for their particular situation at the time. Both installers and customers therefore need a good understanding of the customer's energy usage patterns. Fronius Solar.web is an indispensable tool in this respect. With intelligent Fronius Smart Meters at the main energy consumers, Solar.web provides both the customer and the installer with information that then forms the basis of a joint analysis. This enables the installer to offer precisely what the customer needs, be it a larger battery or an expansion of the PV system when the new electric car arrives.

This already points towards the importance of an all-round energy consultation. In the past, people usually wanted a PV system to feed electricity into the grid at attractive conditions. Today, people still want PV, but they are also wondering whether it is worth investing in a battery solution, or whether they could use a higher portion of the energy they generate and whether this would make financial sense. Or whether the old oil heating system should be replaced by another oil-powered system or by a heat pump. Electric cars are also an unknown for many. An all-round energy consultation means helping customers orient themselves and giving them certainty about these questions. Providing appropriate advice can form the basis for many more orders over time.

To establish this foundation, comprehensive expertise is required. In addition to electricity applications such as PV and storage, other areas such as heating, hot water, home automation and e-mobility are now also coming to the fore. All in all, this means that much more extensive knowledge is required than in the past. Often this will have to be built up first. It can also be helpful to find partners whose expertise complements your own.



“We see the Fronius System Partner as the comprehensive companion to guide their customers through the energy revolution. With our range of training courses and webinars, which we are constantly updating and improving, we aim to provide our partners with the best support possible.”

/Elöd Albert, head of the Fronius System Partnership programme at Fronius International GmbH.



FRONIUS DELIVERS SOLUTIONS AND KNOW-HOW

Fronius thinks a lot about how to better support their Fronius System Partners in building up their knowledge base.

In addition to know-how, technical solutions are also needed, and Fronius is pursuing a clear strategy in this respect too. In addition to developing solutions for energy sector integration (e.g. the Fronius Ohmpilot for using excess PV electricity to heat water) as a supplement to the classic PV solutions, Fronius is also committed to using open interfaces to permit compatibility with third-party energy solutions. This allows a large degree of freedom to shape the customer's individual energy revolution – while also opening up opportunities for the installer.

PEOPLE WANT TO SAVE ENERGY COSTS

The respondents to the survey outlined in the introduction wanted to use their investment to save energy costs, become more independent from the grid and do something for the environment. It is safe to assume that people will still want this in the future. Fronius has no doubt that this will benefit those installers who master the complexity of energy supply most convincingly and thus show their customers how they can save money, become more independent and help the environment by making the right investments at the right time. ²⁴

GEN24 PLUS:



UNIQUELY VERSATILE

As you step through the door of the Ringer family's house, you instantly feel at home. Large windows bathe the rooms in light, the garden is well kept and the pool beckons you to take a dip.

The real showstopper, however, is the cutting-edge energy system.

"There was never any doubt that we would have a PV system on our house; we wanted to cover as much of our electricity needs as possible with solar energy. And that is exactly what we have achieved. With a 10.2kWp PV system with Q-Cells solar modules, Fronius GEN24 Plus hybrid inverter, BYD battery storage system, water heating with Fronius Ohmpilot, and an electric car." Coupled with Fronius Solar.web system monitoring and Loxone home automation, the Ringers are now largely in control of their energy.

There are many who would like to live like the Ringers. Yet many are unsure of how to go about it. The versatile GEN24 Plus battery inverter enables customers to shape and develop their energy system to suit their own needs.



GEN24 PLUS – THE BEST HYBRID INVERTER ON THE MARKET, PERFECTLY TAILORED TO CUSTOMER NEEDS

What would customers say if installers could offer them an energy system that is a perfect match for their needs? Flexible in terms of system size, storage size, storage medium and storage function? A system that can be extended and enhanced as you go, so customers can achieve a high level of self-sufficiency.

As the first hybrid inverter to offer such flexible and variable adjustment to suit customer needs, the new Fronius GEN24 Plus is a huge step forward. *"My wife and I were searching for a high-quality solution. We wanted to use the electricity we produce for ourselves, but as we both work during the day, we needed a storage system. We also use the Fronius Ohmpilot to heat the hot water using photovoltaics plus we charge our electric car. We are pretty close to 100% self-sufficiency,"* reports Ringer.



**A VARIETY OF EMERGENCY POWER SUPPLIES:
BASIC GRID BACK-UP OR FULL BACK-UP**

Grid back-up comes into play when everything else fails – when a grid fault or a storm leads to a power outage.

Equipped with the new PV Point feature the new GEN24 Plus inverter truly shines when it comes to providing emergency power supply. This provides straightforward basic grid back-up without any significant effort or additional expense. Furthermore, it is ideally suited for use with a battery storage system. And even without battery storage, the PV Point supplies power, at least during the day, in line with the available PV energy. On a sunny day when yields are high, you could use it to power a freezer. In any case, smaller loads such as charging a mobile phone or listening to the radio are taken care of.

It gets even better: The GEN24 Plus can also supply grid back-up for an entire home - be it single-phase with the



Fronius Primo GEN24 or full back-up with the three-phase Fronius Symo GEN24. “The GEN24 Plus gives our customers the means to take control of their energy supply; to safeguard and develop it in a way that was not possible before – and in a manner that suits their own situation and needs. This is particularly evident in the grid back-up options of our GEN24 Plus,” enthuses Klaus Kramler, head of marketing at Fronius.

The GEN24 Plus will initially be available with battery storage systems from BYD, further battery options will follow. The Ringer family uses a BYD storage system. “The system runs perfectly,” says Mr Ringer, who opted for the full back-up solution: “As we have our own well, we will also be self-sufficient in terms of water supply if we have to fall back onto emergency power.”

FRONIUS SOLAR.WEB: OPENING DOORS FOR THE BUSINESSES OF THE FUTURE

Fronius Solar.web give the Ringer family an overview of everything they need to know about their energy. With the aid of intelligent Fronius Smart Meters at the feed-in point (including water heating via a Fronius Ohmpilot), an electric car charging station, and pool and well pumps, Solar.web



Photo: © ekkaphan - stock.adobe.com

With the PV Point (an emergency power supply socket), you benefit from a basic grid back-up function.

PV POINT

In the event of a grid outage, you can run important loads such as a smartphone or radio. This means you are up-to-date and well informed even during a prolonged power outage.

On a sunny day, even the supply of larger loads such as a freezer is possible. The PV Point can be used both with and without battery storage.


provides the Ringers with a comprehensive energy profile – and a clear overview of their energy use. The Ringers use this information to optimise their energy consumption with the aid of a Loxone miniserver-based home automation system.

For those who do not want to go quite this far with their energy revolution, Solar.web acts as an analysis tool to help them make best use of the solar energy produced and expand their system over time. Installers use the energy profiles from Solar.web as a basis for providing tailored advice to customers – a real key to success.

FRONIUS ENERGY ECOSYSTEM: EMBRACING THE FUTURE

The Fronius GEN24 Plus is more than just a new hybrid inverter with great grid back-up options. Most of all, it is a central component of an energy ecosystem, consisting of photovoltaics, a battery storage system, as well as energy management, heating and mobility solutions. In combination with the LUMINA.Strom flexible electricity tariff (currently only available in Germany), Fronius Solar.web and a large number of compatible third-party solutions, Fronius offers a whole energy ecosystem. This enables installers and end customers to shape the energy revolution and make it a profitable one.

This gives people the means to contribute towards 24 hours of sun and the fight against climate change. It is also up to each and every one of us to actively embrace the energy revolution so we can live in a world where our energy needs are fully covered by renewable sources.

If your customers do not believe you, perhaps they will listen to the words of 16-year old climate activist Greta Thunberg (September 2018): *“What we do or don’t do right now will affect my entire life and the lives of my children and grandchildren.”* – What more is there to say. 





HUGE OPPORTUNITIES,
HUGE CHALLENGES:

PHOTOVOLTAICS IN AFRICA

When it comes to economic potential, there is no other continent so overlooked by the rest of the world as Africa. However, considering the success of companies active on the African PV market, it is high time to leave preconceptions behind. A closer look at the solar industry in the sub-Saharan regions of Africa reveals a market full of challenges, yet offering opportunities that you would be hard pressed to find elsewhere.

Many of the first PV systems to be installed in Africa are similar to the one installed in a residence in Kenya by Nawir Ibrahim from the Center for Alternative Technologies in Nairobi. The eight lodges in Laikipia are supplied entirely with PV power from a MicroGrid system with Fronius inverters and inverter-chargers from Victron.



/ Laikipia, Kenya

System size	80kWp AC-coupled, 20kWp DC-coupled
Type of system	Field installation, MicroGrid
Inverters	4 Fronius Symo 20.0-3-M
Inverter-charger	Victron Quattro
Charge controller	Victron BlueSolar MPPT 150/85
Battery	Sunlight OPzS
Commissioned	July 2015
Special feature	MicroGrid, 100% self-consumption

“There are a number of reasons why tourism companies in African countries are among the PV trailblazers,” explains Muhammed Seedat, technical advisor for South Africa. *“For one thing, the use of conventional generators is particularly disruptive in tourist areas – the spectacular landscape and unique soundscape of the African national parks are better enjoyed without the clattering of generators and the stench of diesel fumes.”*

Foreign investors are also often involved in tourism companies in Africa, and some bring with them knowledge of PV energy and the necessary capital.

“

“The technical support from Fronius before and during the installation was excellent. The inverters are also easy to install and maintain, even out in the field.”

Nawir Ibrahim from the Center for Alternative Technologies in Nairobi

It is therefore no surprise that many tourism companies are pioneers of solar power in Africa. However, it would be a mistake to assume that this is the sole extent of the PV market.

STEADILY INCREASING DEMAND, MAINLY FOR BACK-UP SYSTEMS

Aside from tourism, commercial PV now represents the majority of installed PV systems.

“

“The greatest proportion of installed PV systems comprises back-up solutions for businesses, designed to make up for the instability of the generally available but often unreliable grids,” explains Cyprian Okolo, Fronius technical advisor in Nigeria.



In addition to grid supply issues, the high energy prices provide considerable motivation to move towards photovoltaics. The price of energy for residential properties is often affordable thanks to subsidies, however for commercial use, the energy prices are on a par with those in Europe – hence very high in relation to the general price level. On top of this, consistent access to fuel in Africa is often not available.

Demand for intelligent PV solutions is high – and will keep rising. Experts predict that the urbanisation which is already taking place will continue over the coming decades, the poverty rate will fall and there will be significant economic growth in the majority of African countries. These developments will result in a growing demand for energy. In a region with ideal insolation conditions, this is good news for PV.

At first sight, it might seem as though success on the African PV market is a given for installers and manufacturers. But it is important not to overlook the challenges African installers face on a day-to-day basis.

These begin as soon as the financing phase: unlike in Europe and other markets, there are no state subsidies in Africa. In addition to this, the interest rates are generally quite high: *“With an interest rate of 25% and above, it’s clear that there are high expectations in terms of the return of investment for a system. A ROI after five years is not a rare expectation,”* Okolo explains.

HUGE POTENTIAL AND HUGE CHALLENGES



*/ Toyota Springbok,
Northern Cape, South Africa*



*/ Aldering
Wine Estate,
Stellenbosch,
South Africa*



*/ Beaumont
Primary School,
Somerset, South Africa*

Environmental conditions can be another challenging factor. *“I only use inverters that can withstand the high ambient temperatures and dust levels.”* Niyi Afolayan from Komponenten and Solutions Rack, a Fronius Service Partner Plus from Nigeria. Installation must be easy and straightforward and quick servicing is a must, particularly in regions that involve great distances and lack infrastructure.

Niyi Afolayan will therefore only consider inverters that can guarantee maximum yields under difficult environmental conditions. This ensures an optimum combination of CAPEX, OPEX and system yields across the service life of the system.

Reinhold Rothkegel, a long-standing Fronius Service Partner Plus from Namibia, also places his trust in products from Fronius:

“I’ve been working with Fronius for years and believe in their products. The active cooling technology of their inverters guarantees higher yields, and thereby shorter payback periods for my customers’ systems thanks to better derating behaviour.”

*/ Rascal Seed,
Christiana,
South Africa*



HIGH DEMAND FOR STRONG PARTNERS

Africa offers opportunities for forging effective partnerships: installers need products that are robust, easy to install and guarantee high energy yields – as well as easy servicing. Niyi Afolayan agrees: *“Thanks to the products which are ideal for the African market and the ease of completing projects, this collaboration has resulted in highly satisfied customers.”* 

*/ La Vista Lodge
Plettenberg Bay, South Africa*





NEW ARRIVAL

FOR THE COMMERCIAL SECTOR

A LOOK AT THE FRONIUS

Tauro

Fronius has been writing commercial PV success stories for over 15 years. Tens of thousands of Fronius IG Plus, Eco & Symo systems are in use around the world and are favoured and valued by installers and end customers alike. Now Fronius is launching its latest product for the commercial sector: the Fronius Tauro.

“When we were developing the Tauro, it was particularly important for us to really address the needs of our customers, right down to the finest details. So we spent some time visiting many of our customers, all around the world, to ask them about the challenges they face every day,” explains Peter Schmidhuber, the product manager for the new inverter.

The world tour, undertaken by the Research & Development team, was more than worth it: *“We returned with a long list of requirements and preferences. By incorporating these into the Tauro, we’ve developed a product that closes previous gaps and really adds value for our customers.”* The robust commercial inverter is suitable for unsheltered outdoor locations and designed for roof-mounted systems and field installations alike. And it is setting new standards.

FOCUS ON FLEXIBILITY

The Tauro continues the Fronius tradition of flexibility. Available as a Tauro and Tauro Eco model, the 50kW Tauro offers three MPP trackers and an extra-wide input voltage range, providing excellent flexibility. The Tauro Eco will be available as a 50kW or 100kW device. It has one MPP tracker and is designed for efficiency and cost-effectiveness. This gives planners the flexibility to configure systems to suit the conditions at hand and achieve top cost and performance results. Faced with an east-west alignment or a difficult roof surface – the Tauro performs in any situation.

There are practically no limitations with the Tauro, not even when it comes to mounting – any mounting angle between 90° and 180° is possible. This means it can be mounted upright or flat. Like the Fronius Eco, the Tauro is also suitable for decentralised or centralised topologies, meaning it can handle a whole range of system design requirements.

The Tauro also offers AC daisy chaining, a special feature which enables previously undreamed-of optimisation and simplification of the AC installation. This opens the door to huge savings on the BOS costs due to reduced cabling expenses.

MADE TO WITHSTAND HARSH ENVIRONMENTS

When it comes to application areas, the Tauro is certainly no killjoy. It delivers high yields, even under the most



“*“The AC daisy chaining option was particularly important as our customers frequently said that they wanted to reduce BOS costs with the inverter. The ability to link the AC cables for several Tauro inverters directly in the device drastically reduces the number of required AC Combiner boxes, which in turn lowers costs,”* explains Johannes Starzinger, who has been part of the R&D team since the start.

adverse conditions. Thanks to an IP 65 protection class and its unique cooling technology, the inverter can even be mounted – without an additional protective sleeve – in unsheltered outdoor locations subject to direct insolation. Generally, Fronius recommends mounting the Tauro in a sheltered outdoor area. But if this is not possible, its double wall system helps managing heat from the





“We realised the Tauro had to be a robust, straightforward alternative that delivers high yields.”

Peter Schmidhuber, product manager for the new inverter

outside. It ensures that external heat (e.g. from direct sunlight) does not reach the interior of the device, where the sensitive electronic components are, but stays in the interstices of the housing. From there, the heated air is continuously removed by means of the active cooling concept of the Tauro - this significantly improves the heat performance.

The Tauro can handle dust, humidity levels of 0-100% and ambient temperatures of -40 °C to +65 °C. *“Many of our customers around the world struggle with outdoor conditions affecting inverters,”* explains Peter Schmidhuber. *“We realised the Tauro had to be a robust, straightforward alternative that delivers high yields. The development of features such as active cooling has helped us achieve this. The inverter doesn’t work up a sweat, even when the outside temperature is very hot, allowing it to continue generating high yields.”*

The Fronius Tauro is at home all over the world – just like the customers, who have played a key role in its development.

IT’S WHAT’S ON THE INSIDE THAT COUNTS

The Tauro’s system components have been cleverly integrated. Installers have the option of purchasing an integrated surge protection device or AC disconnect. The housing is user friendly: plenty of space in the AC connection area, an MC4 connector, a mounting bracket and carrying handles for easy handling. This also reduces costs, as it minimises the error rate during installation.

But what if the device needs to be serviced? *“For many of our customers, it is very important that the device can be serviced with ease by one person,”* explains Schmidhuber. The developers at Fronius have mastered this challenge. One person can easily replace the 50kW power stage

set with the device remaining on-site. Not only does this reduce labour costs, it also saves time and lowers transport expenses.


ENDURANCE TESTING UNDER THE GREEK SUN

Fronius’s new addition has been putting its skills to the test near Kastoria, on the Greek mainland. The 1MW system installed there has been running since January 2019 with 13 pre-series Tauro devices. The initial results speak for themselves: *“Utilizing the system design options the Tauro provides, the system was set up in a highly cost-optimised manner, while maximising yields at the same time. For example, the AC daisy chaining option means you only need to use one cable for two inverters in a shared cable duct,”* reports Schmidhuber.

He also goes on to explain why the high Greek plains were chosen as a test region for the Tauro. *“The site in Greece is suitable due to the, for Europe, comparatively high temperatures and because the grid access conditions are a good match for the pre-series. The Tauro can also put its robustness to the test mounted outdoors without additional shading.”*

STRATEGIC IMPLEMENTATION OF A LONG-HELD BELIEF

The initial results from Greece make one thing very clear: the conviction behind the inverter’s development. *“When selecting an inverter you have to look at the details and make the right decision for each individual system. The real important factors are CAPEX cost savings, low OPEX costs and high yields,”* states Peter Schmidhuber. Fronius has already demonstrated the easiest way to influence these factors in systems with the Fronius Eco. The flexible and lightweight device can be adjusted to suit the topology requirements of a wide range of systems, thereby saving BOS costs.

The 50MW system of Tokmak Solar Energy in Ukraine – not exactly a typical day’s work for the Fronius Eco – reveals the wide range of applications that the Fronius Eco can handle (see info box beside). For the Fronius Service Partner Plus, the active cooling technology and the PC board replacement process were the key arguments for the Fronius Eco. 

TOKMAK, UKRAINE

System size	51.9MWp
System type	field installation
Module type	Talesun TP672P
Inverters	65 Fronius Eco 27.0-3-S, 1,858 Fronius Eco 27.0-3-S light
Annual yield	Approx. 67,000MWh

Fronius is and remains a reliable partner in the commercial sector. With the addition of the Tauro, Fronius is taking the next step towards 24 hours of sun – a world with 100% renewable energy.



FACES OF FRONIUS

JACK LONG

In our new series 'Faces of Fronius', we will be talking to our partners in the field – installers who have been in the business for long enough to have an informed opinion on the opportunities and challenges of the solar industry. In this issue, we are delighted to have JACK LONG here with us. He is a solar designer and co-founder of Solar Cutters in Australia.

Jack, you are a solar designer. What's your background, for how long have you been working in the solar industry and why did you choose to work in the industry?

My energy career began almost where it ended, working for an energy retailer and being close to being made redundant. In all honesty I didn't choose to work in renewables, it sort of came to me – someone just asked: "Do you want to work in renewables?" And with the prospect of no job, I just replied, "Why not" – I had no idea where the last 10 years would take me and the incredible journey that I was about to embark on.

Having entered the PV industry in 2009 in sales and customer service at Energy Matters, I immediately found myself getting passionate to the point of becoming obsessed with the potential for solar power. Years ago, this passion saw me advance towards the technical side of the business, where I currently work as the Solar Design Engineer for RACV Solar, and I am also the co-founder of Solar Cutters Pty Ltd.

What are the challenges in your everyday work?

I feel the main challenge is sending a clear message to the customer of the difference between a low-end "bill buster" quote, sold with sub-standard equipment and often using unethical sales tactics, and what is a premium-quality system.

I firmly believe that the cheapest system usually ends up being the most expensive in the long term and it is often difficult to justify the expense to a customer who has shopped around and can't see the immediate value. Further challenges I face as a designer are the increasing difficulties of certain properties; there are the obvious issues around shading, unique roof profiles, multiple splits and steepness, but also things like curved roofs, long cable runs, tight roof aspects and/or difficult multi-story dwellings with several obstructions.

Most companies in the low-end market tend to brush off these kinds of challenges as too difficult and won't install, but we like to exhaust every option and I really find I tend to learn a lot from these challenges, even if in the end we can't proceed.

On a personal level, though, the overall challenge of balancing Solar Cutters and my day job, whilst still leaving time for my personal life, is the most difficult. I really love what I do and it's hard to remove myself from these areas and find a balance sometimes.

What do you think is most important in order to tackle these challenges?

I place the greatest importance on educating the customer about solar and find this resolves most challenges. Often they have no idea or have been given false, misleading information about product quality, installation

workmanship, backed warranties and correct system sizing, as well as future considerations regarding energy storage. For more interested customers, explaining the impacts of system designs, orientation and shading are often challenging, but performance estimations and consumption monitoring give these customers concrete data that not only allows them to make an informed decision based on honest information, but to also see the results once the system has been installed.

I think finding a happy balance between work and personal life is crucial. I often struggle to find this centre point, but as of late I have devoted more time to myself and the other things I enjoy in life, other than solar.

When did you first encounter Fronius? What do you appreciate about the collaboration?

In early 2009, I was first introduced to the Fronius IG inverters whilst working at Energy Matters. A few years later, I was inevitably drawn to the Fronius SnapINverter range and remember a passionate discussion one afternoon with Adrian Noronho, who at that time was head of sales in Australia. The market launch of the Fronius Galvo and Fronius Symo ranges drew me in and I've never looked back since.

What I appreciate about Fronius is how genuine they are about the engrained family culture and I personally feel it shines through every aspect of the business. They employ some of the kindest and most genuine people I've ever interacted with, some of whom I genuinely call close friends.

As a business, the fact that they manufacture arguably the best inverter on the market, one still manufactured in its country of origin, means they are unrivalled as a whole, whether you look at the products, services, ethics or business operations.

In 2017, you co-founded Solar Cutters. Can you tell us a little bit about the organization. Why did you decide to establish SC and who else is involved?

Solar Cutters was formed via solar social media to establish a grass roots community that identifies with likeminded professionals who are authentic, enthusiastic and serious about influencing change. Originally it started as a bit of a joke when I used

the hashtag #solarcutters, derived from the Simpsons episode 'Homer the Great', where Homer is granted membership to an exclusive club called the 'Stonecutters'. From that point on, it blew up into something more than we could have ever imagined. At its heart, Solar Cutters understands that healthy competition, high quality workmanship, rapid support, community, collaboration and continuous improvement are vital. These principles are paramount to the longevity and success of our solar industry. One of the main reasons for initially starting and privately funding this movement was to host our own events devoid of product sales agendas.

We owe a lot to our sponsors, who enable us to host these events and give back to the very community that Solar Cutters aims to support. I couldn't possibly do any of it without my right hand and co-founder Kosta Bourandanis, who handles the day to day running of Solar Cutters. Kosta is integral to the operation and honestly, if he wasn't involved, I don't think I would have known where to start.

You obviously know the industry extremely well. What is your personal forecast for solar energy for the next 10 years? What will be the biggest challenges and the greatest opportunities?

The next decade will see a shift towards an increased power base load made up of solar, wind & storage, of that I am sure. On a state or federal level, we are seeing changes already with Hazlewood being shut down and solar farms like Nyngan in NSW opening back in 2016, but I forecast more of a shift towards a community of solar, things like increased distributed generation networks and community-lead virtual power plants.

On the installation side of things, solar has notoriously been perceived as an industry full of cowboys and poor workmanship, but we are now seeing operators taking increased pride in their work and the quality of installations.

I wouldn't attribute it entirely to Solar Cutters, but the community element that we've brought to the industry sets a far higher standard of what is acceptable, in terms of both residential and commercial installs. This trend will surely continue over the next decade with more and more cutters pushing the boundaries of

WHO IS SOLAR CUTTERS?

Solar Cutters was formed to create a community that believes in quality, integrity and unity by supporting individuals who are passionate about influencing change within the solar industry.

More information:
www.solarcutters.com





what's possible. The issue as always with any industry is financial – if someone else does it cheaper, it poses the challenge of answering why and how.

For the end user, I believe we are slowly moving to a smarter home both inside and on the roof, one where the solar power generated will be consumed more intelligently and more effectively within the home. You will be able to seamlessly integrate your solar system into any smart home platform. This can mean larger loads automatically switch depending on the solar situation, e.g. the washing machine, dryer, AC or pool pump will turn on in peak production hours. This will give the homeowner greater control and visibility over their asset, but also better control over their home and the costs of power.

If a colleague from Europe asked, what's special about the Australian solar market, what would you tell them?

I feel the Australian solar market is special because, for the most part, collaboration has seemingly become a strong way of doing business and a lot of quality operators are now sharing information with each other to support each other for the long term. The Solar Cutters community within Australia and New Zealand are constantly working together, helping each other, sharing knowledge, referring reputable 'cutters' and naturally self-regulating via solar social media. There is a great quality about all of these activities occurring in parallel and every single day, by people as equally as passionate as I am. That's what makes the Australian market special.

The Australian "Solar Coaster" really seems to be taking shape these days, with various state governments launching their own form of residential rebates to make solar and/or storage more accessible to homeowners. It's quite empowering seeing people really take charge of the

renewables movement lately, whether it's the big battery in South Australia, solar for renters, rapid growth in the commercial space or the general increase of installation quality within the industry. Australia is at last fully embracing renewables, however you look at it.

Are you 24 hours of sun? Why is the vision of 100% renewable energy important to you?

I'm 24 hours of sun because I basically spend that amount of time per day dealing with solar, whether it's through my day job as a designer or as a Facebook admin for the following pages: Solar Cutters Working Together, Crap Solar and Quality Solar Installations. It's all I do. Through my day-to-day activities I am constantly contributing to 24 hours of sun by making recommendations to better harness clean energy for our customers. Recommending an efficient energy solution that not only generates, but also stores, clean power for our customers is a genuine passion of mine – I am aiming for every household to be its own microclimate of 24 hours of sun. Meanwhile at home I'm using the Fronius Smart Meter and battery storage solution to help turn my household into a 24/7 solar-powered triumph.

One last question – we have to ask because we are extremely honoured – how did the Fronius logo make it onto your calf?

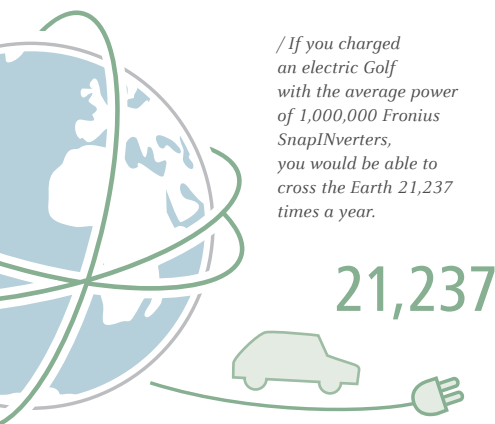
I believe the idea started when a colleague said I wouldn't get it – so I got it. It sits proudly with the Solar Cutters logo and solar panel tattoo. Some say it's slightly unhinged, however I think it represents being truly passionate about something you believe in. I believe in renewables and I wholeheartedly believe in Fronius.

Jack, thank you for your time and also for your commitment – it's great to have partners who are so passionate to join us on our way to 24 hours of sun. 24



ONE MILLION TIMES AND COUNTING!

In July 2019 we will have finally made it: the one millionth (1,000,000) SnapINverter will roll off the Fronius production line in Sattledt, Austria. But how can we picture such a huge number?

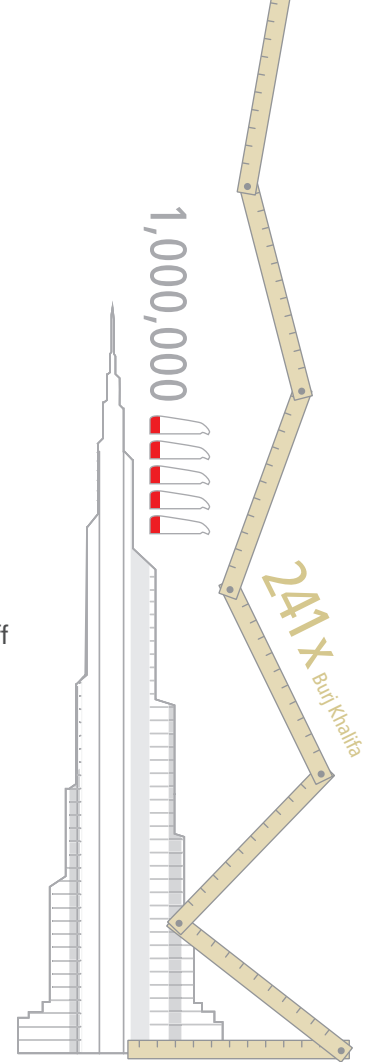


/ If you charged an electric Golf with the average power of 1,000,000 Fronius SnapINverters, you would be able to cross the Earth 21,237 times a year.

21,237



/ You could also supply 2,400,000 average Central European households with solar power for one year.



/ Or, to put it differently again, 1,000,000 stacked SnapINverters correspond to the height of 241 Burj Khalifa skyscrapers.

One million SnapINverters also means tens of thousands of satisfied customers who depend on the quality and reliability of Fronius inverters. With the unique mounting system of the Fronius

Primo, Galvo, Symo and Eco, we have also set a new benchmark in the global market. The success story continues, as our global growth is accompanied by the worldwide popularity of Fronius Snappys.

The 1,000,000th SnapINverter will actually be a Fronius Eco, which Fronius will give away this summer. More information will be available soon on the website. www.fronius.com

**NEW MARKETS
NEW FACES**

The global share of PV is growing, and Fronius is expanding accordingly. Last year, the Austrian solar expert welcomed several new recruits in all markets.

With the new Sales Manager **ASHOK THANGAVEL** in India and Technical Consultant **AZRUM ANSARI** in Dubai, Fronius is strengthening its presence on the Asian continent.

In South America, Sales Manager for Fronius Brazil **ALEXANDRE BORIN** and Technical Consultant for Colombia and the Caribbean **CAMILO RINCÓN** have been brought on board to support the existing team.

NEW

FROM FRONIUS



FRONIUS + BYD

JOIN FORCES

The Fronius Symo Hybrid is the only storage inverter on the market that permits three-phase emergency power to be supplied using BYD batteries, as has already been proven in real-life scenarios. Monika Rathmayr is one of the customers of the pre-series models and confirms the flawless operation of the grid back-up function: *"We recently had a scheduled power outage. The switchover to emergency power mode went without a hitch. That gives me the certainty that even in the event of an unplanned power cut, my home will still be supplied with electricity."*

The whole is more than the sum of its parts. This proverb perfectly describes how Fronius sees the strategic partnership with the high-tech company BYD.



RABAH BILAL is the new Sales Manager at Fronius Canada.

An entire article in our magazine (page 14) has been dedicated to the fantastic opportunities and challenges in Africa. Our new colleagues **HASSAN NADER**, **CYPRIAN OKOLO** and **MUHAMMED SEEDAT** have been recruited to provide expert support to our African clients.

The team has also been strengthened in Europe: Technical Consultant **MAKSYM KUTSENKO** is the solar expert for Ukraine, while **MARTIN ROSENKILDE VAABEN** has been looking after the Danish market for several months.

CHRISTOPH ANNERL has joined the team at Fronius Austria, while in Hungary, Fronius customers can rely on the technical expertise of **GERGELY MUTH**.



UNIQUELY VERSATILE.

The Fronius GEN24 Plus is the solution for solar energy supply. Whether it is used in photovoltaics, a storage system, back-up power, heating or e-mobility, the Fronius GEN24 Plus offers a unique range of solutions and is therefore playing a pioneering role in the home energy revolution.

www.fronius.com/gen24plus

