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Solar Choice CEO Jeff Sykes gives a rundown of Fronius as a company and their 5kW Primo inverter. This Fronius inverter review is performed independently by Solar Choice and has no affiliation with Fronius. Overview of Fronius – Company History Founded in Austria on June 20th 1945, Fronius is an international company with a 75-year history in the manufacture of welding equipment and nearly three decades of experience with solar inverters and other devices for monitoring and controlling energy, including battery chargers. Fronius launched its first grid-connected solar inverter back in 1995. Since then Fronius has grown to become one of the industry leading solar inverter manufacturers, with 19 of 28 offices worldwide being involved with solar energy. This includes the Australian office located in Tullamarine, Victoria. Fronius inverters are suitable for a wide range of applications, including residential solar and commercial solar projects, including their recently launched Fronius Tauro inverter with 100kW capacity. A solar system's inverter is the point at which the DC electricity produced by solar panels is turned into grid-compatible AC electricity. String inverters have traditionally been the standard in the solar industry. They send the power produced by solar panels to a central inverter that changes it from DC electricity to usable AC electricity that powers homes. Microinverters, on the other hand, convert DC to AC electricity at each individual panel and allow for monitoring and power regulation at the panel level. This is useful for homes that are located somewhere with shading from clouds, trees, or other buildings. PV Evolution Labs (PVEL) independently test solar inverter reliability. The tests are voluntary, with solar inverter manufacturers paying to participate in the testing. This testing process is internationally renowned and is an accurate reflection of the solar inverter's performance. To read the full PVEL scorecard click here. In 2019 Fronius Symo ranked as a top performer in the following tests: High-Temperature Operation Transient Response Ground and Arc Fault As Fronius inverters are manufactured in Europe this higher quality product comes with a higher price tag in comparison to the inverters that are manufactured in China. The most popular Fronius GEN24 Primo 5kW model retails for about $2,200 to $2,400, which excludes installation and any additional required wiring and components. Keep in mind that inverter costs generally only run between 10-20% of your total system, so often it is worth investing in a high-quality inverter given this will have a large impact on the efficiency and performance of your entire system. There are many solar panels out there, what makes Fronius inverters stand out? Fronius has earned a strong reputation for its high-quality inverters, advanced technology, and excellent customer support. Their inverters are widely used in residential, commercial, and industrial solar installations across Australia. Based on information from Solar Choice's database of residential solar quotes, Fronius has maintained over 50% market share of installers' premium options. Fronius inverters offer advanced monitoring capabilities, allowing real-time access to energy production and system status through mobile apps and web portals. This data empowers users to detect and resolve issues promptly, optimise energy usage, and integrate with smart home systems and energy management platforms for more efficient energy consumption. A unique aspect of Fronius inverters is the SnapINverter technology. It's a standardised wall-mounted bracket with the inverter on a hinge system. This enables easy access for servicing as the inverter opens like a car boot, without needing to be removed from the wall. The majority of Fronius's Inverters are approved by the Clean Energy Council for the Small-scale Renewable Energy Scheme, which is Australia's home solar rebate program. The Fronius Primo series is designed primarily for residential household applications with power ranging from 3.0kW to 10kW. These inverters are single-phase inverters, meaning they are suitable for smaller solar PV systems typically found in homes. The newer GEN24 series has dropped the LCD screen which displayed the real time performance of the system and has replaced with status lights. The GEN24 series includes their Dynamic Peak Manager which helps the inverter improve output in shaded situations without any optimisers or micro-inverters installed on the panels. Contrary to many other inverter manufacturers, Fronius has stuck with active cooling with a built in fan. This may mean that the inverter makes a bit more noise, but Fronius argue that it improves the service life of their products. The Fronius Primo also comes in a GEN24 Plus option which is Fronius' hybrid version suited to connecting a battery to the system. All other features and appearance remain similar to the GEN24. These inverters are three-phase inverters that are suited to larger residential homes and small commercial projects. The power range of Symo is from 3.0kW to 20kW. The Symo series offers higher efficiency and the same advanced features as the Primo series, including reactive power control and support for dynamic grid conditions The Fronius Eco is a transformerless three-phase inverter designed for medium to large-scale commercial solar systems. The commercially used inverter comes in 25kW or 27kW power ratings. The Fronius Eco inverter holds an Ingress Protection Rating (IP Rating) of 66, which means it's dust-tight and able to withstand heavy seas or powerful jets of water. Both power categories hold an efficiency rating of over 98%. Unfortunately, the 27kW inverter is not well-designed for the Australian market where inverters are able to extend to 30kW without requiring extra network protection. The optimal design for many small businesses is to use a 30kW inverter and extend the solar panel capacity to 39.9kW, while the Fronius Eco 27kW can only support 35.9kW of solar panels. In Australia, all CEC-approved Fronius inverters come with a 5-year warranty for parts and labour. A free additional 5-year extension (parts only) to the warranty can be claimed by, registering at solarweb within 30 months of the factory inverter dispatch. This means in the first 5 years Fronius will cover most of the labour and shipping associated with any covered repairs or replacements. In years 6 – 10 the customer will bear that cost. This is definitely now below what is the standard for an inverter warranty in Australia. Most inverter companies offer 10 years full coverage including labour, including both of Fronius' European competitors SMA and Fimer. A full warranty extension can also be purchased from the inverter installer within 30 months of the inverters dispatch from the Fronius factory. This can extend the full parts and labour coverage to a total of 10, 15, 20 or 25 years. Fronius do have a local office and excellent local support for their customers looking to resolve issues with their system. See Fronius' full Australian warranty document here. Fronius has one of the strongest brand names and recognitions in the solar inverter market having stood the test of time with regard to its quality Fronius have an Australian office and helpful support staff to handle sales and service enquiries Fronius' products are amongst the most expensive string inverters on the Australian market The 5 years full + 5 years parts-only warranty is now below the market standard Fronius' monitoring is a freemium service. They only provide 3 days of history for free and attempt to upsell customers to the premium version to get greater visibility. Most other inverters offer full data and history at no cost. Fronius Primo 5.0-1 AUS Fronius Symo 5.0-3-MRated AC Power Output4,600W5,000WMaximum Continuous Output Current21.7A7.2AMaximum DC Power7,500W10,000WMaximum Inverter Efficiency98.1%98%Dimensions with Safety Switch/Connection Unit645 x 431 x 204 mm645 x 431 x 204 mmWeight21.5kg19.9kgWarranty5 Years (Extendable up to 25 years)5 Years (Extendable up to 25 years)Operational Temperature Range-40°C to 55°C-25°C to 60°CMade inAustriaAustria We consider Fronius as the premium option for both residential and small commercial uses. Fronius is one of the longest-standing brands in the solar inverter market with an excellent reputation. In recent years, many of the Chinese solar inverters have caught up to Fronius (and in some cases overtaken) when it comes to the technical performance characteristics of the inverter. Fronius' point of difference comes from the long track record they hold in terms of reliability and after-sales support. In our opinion, you can't go wrong with Fronius, and it would be worth paying a bit more to go with this brand over many of the others in the market. The Philippines has seen quite a rise in the number of solar systems being installed over the past few years. This is due to the public grid being unable to reliably supply power to the 13 million Filipinos living in the metropolitan area surrounding Manila. In April of 2019, a field located in Tarlac City, Philippines had a 20MW system equipped with 612 Fronius Eco inverters go live. The system included 61,200 solar panels to total the 20MW, the installation was completed in 5 months. By installing the Fronius Eco the overall potential yield of the panels was increased. Although, for an installation of this magnitude it is unusual for the inverters used to be string inverters. However, it is because of the string inverters that the system is able to be more efficient. String inverters work better in conditions such as partial shade compared to central inverters. It was estimated that the system will produce around 32,000MWh of electricity, reducing CO2 by around 18.6million kg. Read more product reviews from Solar Choice This Fronius inverter review is performed independently by Solar Choice and has no affiliation with Fronius. Review left 3 years after system installed Recently stopped working technician came out opened it up, looked around nothing fried, when put back started working again. Looking for new system for another property but will not use fronius, 5 year warranty sets of alarm bells and no one ever answers the phone in office Review left 3 years after system installed Needed something that was robust and able to work together with victron The one we have on our legacy system is brilliant Fronius is great, has an excellent customer support team and contracted installer! I am go glad the Aussie Solar and Storage choose Fronius invertor! A very trust-worthy brand. I highly recommend to find out local installer via Fronius company who does a brilliant job! Fronius have an excellent reputation and I'm confident my inverter will live up to it. Excellent app for monitoring performance Review left 3 years after system installed Chose this brand as they were the best, had many issues with install and not generating power. Well known and had a great reputation for solar battery brands We chose the Fronius 8 kw inverter, and this inverter has been delivering the power as advised from the first day of installation. Review left 3 years after system installed Excelent realtime monitoring of the solar sytem. (I paid for Premium until I installed my Powerwall) Very happy with quality and monitoring software. Gen 24 also a bit quieter fan. Shelled out for the premium monitoring which gives me info from the first install in 2021 right through. Also adding second inverter was no problem as it was all Fronius and just worked. Worth the money in avoiding headaches. Go Fronius! happy, but the app and web site is a bit slow to update the time, can be over an hour behind Glad I chose Fronius, everything about this Inverter is A1. Recommended to all. Review left 6 years after system installed I supplied the inverter myself. Its excellent. The App is simple to use and reads clearly. It's good to know how much energy you are using, producing and exporting all at the same time. This is going to be my new fascination. I can use electricity now without feeling guilty. Fronius Gen24 6kW Hybrid Inverter. Though it has a cooling fan, the operation is very quiet and we haven't noticed it whilst in operation. Apparently the addition of solar batteries later will require an additional module to be installed but that it is ready for that addition and parts are freely available. Apparently Fronius (European made) have been around for a long time and have a good name. (The other inverter brand quoted was Sungrow. Of 11 different configurations quoted from 4 suppliers, 4 recommended Sungrow and 7 being for Fronius). The inverter works well in converting the solar power to 240V AC. I don't get much value from the app. Review left 8 years after system installed Yes the Fronius gen 24 inverter is a quality unit with a 10 year warranty , we had a Catchpower smart relay installed this powers up the hot water in the morning usually with only 1-2 hours of sunlight the water is heated The app gives us a clear indication of the solar installation performance. as above, once installed correctly it has worked well We luv the fact we can monitor our usage on the phone very cool. When choosing a solar inverter, Fronius is a name that frequently tops the list of recommendations. Known for their innovative features, reliability, and advanced technology, Fronius inverters are widely used in residential, commercial, and industrial solar systems. In this comprehensive review, we'll cover all you need to know about Fronius inverters, including costs, specifications, performance, and answers to commonly searched questions. Let's explore whether Fronius is the right fit for your solar energy needs. Fronius inverters are highly regarded in the solar industry for their efficiency, reliability, and advanced features. With over 75 years of experience in energy solutions, Fronius has built a reputation for delivering quality products that cater to modern energy needs. Their inverters come equipped with advanced monitoring systems, compatibility with battery storage, and robust designs suitable for harsh climates. Customers value the brand's focus on innovation, making Fronius an excellent choice for sustainable energy solutions. Fronius and Sungrow are both well-known inverter brands but cater to different audiences. Premium build quality. Advanced monitoring features via the Solar.web platform. Ideal for long-term reliability and performance. Cost-effective with reliable performance. Simpler features compared to Fronius. Suitable for budget-conscious customers. Fronius is the better option for users seeking advanced features and superior durability. Sungrow is an excellent choice for those prioritising affordability. The cost of Fronius inverters varies based on the model, system size, and installation requirements. Below are the approximate costs: Fronius Primo (3-8 kW): $2,000–$3,000 (installed). Fronius Symo (3-20 kW): $2,500–$4,500 (installed). Fronius GEN24 Plus: $4,000–$6,000 (installed, battery-ready). While Fronius inverters are more expensive than some competitors, their durability, high efficiency, and advanced features justify the premium price. Fronius inverters are relatively quiet compared to other brands. They use an "active cooling system," which includes a fan that may produce a low humming sound, especially during peak operation. However, this sound is usually negligible and unnoticeable in outdoor or enclosed installations. To minimize noise concerns, it is recommended that the inverter be installed in a garage, utility room, or a shaded outdoor area for residential systems. High Efficiency: Fronius inverters operate at up to 98.1% efficiency, ensuring optimal energy conversion. Smart Monitoring: The Solar.web platform provides detailed insights into energy production and system performance. Durable Design: Built to withstand extreme weather conditions, these inverters are perfect for Australian climates. Battery Compatibility: Models like the GEN24 Plus support hybrid systems with battery storage. Long Warranty Period: Fronius offers a standard 5-year warranty, extendable up to 20 years. Higher Cost: Fronius inverters are more expensive than budget-friendly alternatives. Noise Levels: Although minimal, the cooling fan can produce a low humming sound. Installation Requirements: Advanced features may require skilled technicians, increasing installation costs. Fronius inverters are equipped with cutting-edge technology to enhance performance. Key specifications include: Efficiency: Up to 98.1% for most models. Input Voltage Range: Wide input voltage range to maximize solar production. Communication: Built-in WiFi, Ethernet, and data logging capabilities. Cooling: An active cooling system is used for enhanced durability. Size Options: Ranging from 3 kW (residential) to 20 kW (commercial). Popular models like Primo, Symo, and GEN24 Plus cater to various energy needs, from small households to large businesses. Fronius inverters are built to last. They are less prone to overheating and wear due to a focus on quality materials and an active cooling system. Users often report seamless performance for 10–15 years with minimal maintenance. The extended warranty options provide added peace of mind, making Fronius a long-term investment. Fronius inverters excel in energy monitoring, thanks to their Solar.web platform. This cloud-based system offers: Real-time performance tracking. Historical data analysis. Fault detection alerts. Optimization tips to improve energy efficiency. These features make it easier for users to monitor and maximize their solar energy usage. Yes, Fronius inverters, particularly the GEN24 Plus, are designed for hybrid systems operating in off-grid modes. They are compatible with battery storage, making them a good choice for energy-independence users. However, for a complete off-grid setup, they may require additional components, such as charge controllers and specialized batteries. Customer feedback on Fronius inverters highlights: Reliability: Consistent performance across varying conditions. Monitoring Ease: Positive reviews for the Solar.web platform. Durability: Proven track record in extreme weather environments. While some customers mention higher upfront costs, most agree that the performance and quality justify the investment. Fronius inverters are an excellent choice for those seeking reliable, high-efficiency inverters with advanced features. Although they are a premium product, their durability, monitoring capabilities, and long-term performance make them worthwhile investments in residential and commercial solar systems. Whether upgrading your current solar system or installing a new one, Fronius inverters provide the reliability and innovation needed for sustainable energy solutions. Choose from a range of trusted Solar inverter brands, including Fronius, with Greenlight Solar. Reach out today for tailored advice and a solar solution designed to suit your energy needs. What Are the Best Alternatives to Fronius Inverters? Some top alternatives include Sungrow, Huawei, and GoodWe. While these brands may offer lower costs, Fronius outshines them in quality, durability, and advanced features. How Does Fronius Handle Warranty Claims? Fronius offers a straightforward warranty process. Users can register their inverter on the Fronius website to extend their standard 5-year warranty up to 10 or 20 years, depending on the model. Is Installation Complicated for Fronius Inverters? Installation requires skilled professionals familiar with Fronius products. Their advanced features and connectivity options may need specific setup configurations. NextDo All Solar Batteries Work During a Blackout?Next Today I'm reviewing the Fronius Gen24 inverter – Fronius' latest solar inverter – which supersedes their wildly popular and ever-dependable SnapINverter range in Australia. Based on my experience in the field, I'll be looking at the pros and cons and the technical specifications to help you decide if the Gen24 is the right fit for your own solar energy system. From its modular design to its active cooling system and innovative backup power supply, the Fronius Gen24 has a lot to offer. But is it worth the investment? After all, it's at least $700 more than some other good solar inverter options. Let's find out. Overview of the Fronius Gen24 Arguably a reassuringly expensive solution, the Gen 24 is a fairly new device, and I suspect it will further cement Fronius' market leadership down under. These inverters are a good, solid first-world solution, and despite what the haters of fan noise say, the Fronius Gen24 has active cooling for a very good reason: the more heat you remove from the power electronics, the longer they will last — an important feature in our sunburnt country. The Fronius Gen24 is also an order of magnitude quieter than the previous models. Beautifully executed Gen24 with 8-cell stack. Credit to Jae Taylor at Joondalup Electrical Services Design and Sustainability Features The Gen24 has been designed with sustainability from the outset, and I'm not just talking about how they refuse to pack it in polystyrene. The modular nature of what's under the cover means your service technician can replace parts in the field without shipping the whole unit to Fronius for repairs. I've done it myself with earlier models, and it's a great way to save time, money and energy, especially when the Fronius technical support service is so good. I've mentioned it before, but it's worth repeating that having support on the phone for commissioning and warranty is priceless. But don't take my word on Fronius Australia's support and service; just read all the happy Fronius reviews from Australian consumers. Fronius Monitoring App Is Good And Getting Better Fronius also has SolarWeb, a great free app for monitoring production and consumption. But if you want some of the extra features, you'll need to pay a $33 per year subscription. The most useful 'premium' features are: Unlimited history – instead of just three days Return on investment data PV production forecast The new PV production forecast uses satellite weather data with a 100m resolution to tell you what your solar production should be for the rest of the day. Currently, it only looks forwards, but they have all the weather data to look backwards. If they simply add a 'looking backwards' feature in the SolarWeb app, they could show you what your energy production should have been versus what it was, helping consumers see how well their system is performing and if it's time for a service – similar to the pricier Solar Analytics monitoring service. Although if you do want the whizz-bang Solar Analytics monitoring – their cloud monitoring is directly compatible with the Fronius Inverter's external smart meter. Backup Without A Battery – Albeit Very Limited I'm not sure anyone else has a basic backup power supply without a battery. Fronius calls it "PV Point"; if there's enough sunshine, you can charge your phone or run other modest devices from a dedicated emergency powerpoint. 3kW is actually pretty good (i.e. 12amps), and even though the solar irradiance might vary, the Fronius will deliver as much electricity as there is daylight to power it. Gen 24 Solar Inverter Can Upgrade To Batteries Of course, if you want a comprehensive full backup emergency power supply, then you can pay for a firmware upgrade, add a BYD battery and some control gear in the switchboard, then Gen24 will deliver a pretty gutsy output for a single phase or a three-phase supply. (though the small three-phase units don't offer full backup) Firmware to control a battery costs between $650 – $1000; the smaller the inverter size, the lower the price. Bear in mind that – unlike most other hybrid inverter manufacturers – Fronius don't provide a pre-built 'backup box', so you'll need a good sparky who can do all the backup wiring themselves – essentially making their own backup box from scratch: 3 phase backup of a Gen 24 will typically need 12 'poles' of space in your main switchboard but doesn't require a separate cable run for the essential circuit out of the inverter, saving on cable and losses. This example is 20 poles. Credit to Jae Taylor at Joondalup Electrical Services For example, the 6kW single-phase machine (Primo) will deliver just that, plus a surge rating of 8.2kW for 5 seconds. The three-phase 10kW variant (Symo) delivers a nominal 16amps or 3.68kW per phase and a surge of 12.4kW total (4.1 per Phase). However, to get these numbers, you must have enough battery capacity stacked up behind them. Two classes of batteries are available, and each can be in several different sizes. Bear in mind that some can be expanded more than others. If you need extra storage later, they'll scale incrementally to 35 or 68kWh. The actual max. sizes can vary per inverter, but in general it's as below: The Gen24 Will Raise Your Frequency In A Blackout When running off grid the Gen24 will boost the supply frequency to 53Hz to deliberately bump other energy sources off the system. This can make clocks run fast and give your coffee machine a headache. It also means that only one Gen24 will operate in backup mode unless you do some mildly tricky wiring. They will, however, talk to the same monitoring platform, so if you already have a Fronius system, they will appear on Fronius Solarweb together. The warranty is void if you run off-grid for more than 20% of the time. 20-Second Switchover Time The other complaint/feature of the Gen24 is that when the grid does fail, it takes up to 90 seconds for the inverter to fire up in off-grid mode. Like SolarEdge and some others, this is a safety function to ensure the grid is really gone. While it might seem painful, it's also an unmissable analogue warning signal, so you can turn things off to preserve your battery. The specified 'up to' ninety seconds does seem like an inordinately long time, though. Fronius has recently assured me that the latest firmware update has that down to 20 or 30 seconds, but that's still quite a wait compared to the SolarEdge battery's three seconds. Fronius Ecosystem and Energy Management The last point I'll make for Fronius is that they have an ecosystem of other devices, such as the Ohmpilot for hot water and the Wattpilot for car charging, but not only that, they have open communication protocols and relay contacts to drive third-party devices. I have set up a "sunshine circuit" to run a hot water service with surplus solar using programmable priorities to manage energy flows. It works well. Warranty and Battery Life Considerations All in all, it's a pretty solid choice. Fronius offer 5+5 years warranty, which I've used before, and the procedure is good. If you are considering adding a BYD battery, the BYD warranty specifies it'll retain 60% of its usable energy for ten years, or 3Mwh throughput per kWh installed. All is well and good, but the issue with this figure is that if you use the battery's full capacity daily, you won't reach ten years. So 42690kWh ÷ 13.8kW nominal = 3093 days or 8½ years Or 42690kWh ÷ 10years ÷ 365days = 11.69kWh/day In the real world, where you may not fully charge or fully discharge the battery daily, then 11.69kWh is probably realistic, but technically, the warranty only scores 8.5 out of 10 from the judges. Fronius Gen24: Technical Specs Fronius Gen24 'Primo', Single-phase inverters are available in 3 to 6kW versions. The 'Symo' three-phase inverters are available in 3 to 10kW versions. These are the specs for a typical system: a single-phase 6kW system paired with a 13.8kWh BYD battery: Nominal capacity: 6kW Surge rating: 8.2kW Solar capacity: 9kW PV current ratings: 22 & 12amp nominal – 33 & 18amp short circuit – A and B input respectively Inverter Warranty: 5 + 5 years Battery: BYD Usable Capacity: 13.8 kWh Warranty: 10 years – 60% remaining capacity – 42.69MWh throughput Throughput limit @ 1 full cycle per day: 8 ½ years Approx retail: $3950 inverter + $11367 battery = $15317+ installation $-per-usable-kWh: $1110 $-per-warranted-kWh :$0.358 @ 1 cycle per day / $0.179 @ 2 cycles per day Three-phase option available with different specifications Summing Up, My Fronius Gen24 Review: It's One Of The Best The Fronius Gen24 hybrid solar inverter is a high-quality, relatively high-priced solar inverter that can be upgraded to handle batteries anytime. Boasting impressive features such as a modular design, active cooling, good monitoring and PV Point for basic backup power supply without a battery, it's a reliable choice for your solar power system. The compatibility with BYD batteries and integration with other Fronius devices and third-party products makes it a versatile option. If you are using the Fronius Gen 24 with the recommended BYD battery, it's important to remember the BYD battery's warranty limitations and the long delay when switching to off-grid mode. Also, your sparky will need to build their own 'backup box' as Fronius don't supply a pre-built one. Despite these minor drawbacks, the Fronius Gen24 remains a solid and well-rounded choice for those looking to invest in a solar or hybrid solar inverter system. With a reputation for quality, the Fronius Gen24 is my top choice for Australians who want a reliable, high-performance solar or hybrid inverter. And according to our 2023 poll, it's lots of other installers' favourite solar inverter too: Related First established: 1994 - Long-standing companyBest Solar inverter: GEN24 series up to 10kWBest Hybrid inverter: GEN24 Plus series up to 10kWPrice bracket: High $$$$$Warranty: Standard - 10 years (5 full + 5 parts only)Quality and reliability: Excellent 5/5Service and support: Excellent 5/5System Monitoring: Very Good 4.5/5Overall: Highly Recommended ☆☆☆☆☆ Fronius is highly regarded in the solar world and is generally considered the world's leading string solar inverter manufacturer. This reputation is not based on sales volume, but on service, quality and, most importantly, reliability. With the solar inverter being the most complex component in any solar system, it is also the part most likely to develop problems. Inverter faults can be extremely frustrating for installers and customers alike and often result in complete system shutdown, hence why reliability is crucial. All Fronius solar inverters are engineered, designed and manufactured in Austria. With over half a century of experience in inverter (welder) design and manufacturing, it's not surprising Fronius is considered an industry leader in power conversion equipment. Fronius's history in designing high-performance welding inverters provided the ideal background for moving into solar inverter production over two decades ago, with the first Fronius solar inverter released in 1994.Fronius continued to develop a number of solar inverters, but it wasn't until the release of the snap-in inverter (snapINverter) range in 2012 that Fronius really created a stir and quickly developed a strong following around the world. Up until this point, SMA was widely regarded as the industry leader. SMA experienced some issues during the transition to the new generation AV series inverters and lost a lot of ground to Fronius. However, they are one of the few manufacturers which can still compete with Fronius on quality and reliability. Residential single-phase string inverters from 3kW to 8.2kW The Fronius Primo 'SnapINverters' surged in popularity after the release of the new design nine years ago and are widely regarded as one of the best quality and most reliable residential string solar inverters. While larger and heavier than most modern inverters available today at 21.5kg, the unique snap-in design makes installation and servicing easy. Inverter monitoring and setup are quick and easy via the large clear display and four multi-function buttons.Primo inverters are cooled via an active cooling system using fan-forced air. Active cooling, while being a little more complex, is claimed to increase performance and reliability when compared to the more common passive cooling systems. As further examined below, we believe this is a key reason behind Fronius's reliability and low recorded failure rate.Key featuresUnique Snap-in design for easy installation & serviceHigh input current - 18A per MPPT (5kW+ SC version)Integrated DC isolator (CEC certified)Fan-forced active cooling systemExternal relay control - Digital outputThe Primo range of single-phase transformerless inverters are available in a wide range of power ratings from 3.0kW to 8.2kW, all featuring dual MPPT inputs and a high input voltage limit of 1000V. More importantly, the larger inverters, rated 5kW and above, have a high input current rating of 18A per MPPT and Isc of 27A. This allows two strings of panels to be connected in parallel. Note, this is now referred to as the Superior Current (SC) version in Australia.Download the Fronius Primo Snap-in Inverter datasheet. Residential single-phase string inverters from 3.0kW to 10.0kW The GEN24 Primo series is the next evolution in the Primo range based on the popular GEN24 Plus hybrid inverter. In fact, the GEN24 Primo is virtually identical to the hybrid version; only the battery connection is disabled. For an additional cost, the inverter can be upgraded to a GEN24 Plus (hybrid) version via a special firmware update using the Solar.web monitoring portal. If the owner decides to add battery storage in the future, it is an easy over-the-air update. However, additional parts will be required to enable full backup power. The GEN24's unique design and central-mounted fan created quite a stir when it was first released. However, the retro design hides many advanced engineering features and functions, including enhanced active cooling, easy access DC isolator, internal snap-fit connections, and easy disassembly and servicing.GEN24 Inverter features and highlightsWide MPPT voltage range - 65V to 530V (up to 480V for 6 - 10kW models)High input current 3-6kW models - 22A / 12A (Isc 36A / 19A) Very high input current 8-10kW models - 22A / 22A (Isc 41A / 36A) Over-sizing solar arrays up to 150%Fan-forced active cooling system with front heat shieldArc fault detection (US only)Integrated DC isolator (CEC certified)External relay control - Digital outputEasy auto Wifi connection using a one-touch WPS buttonNo tool, spring clip internal cable connectionsRear access and large internal cable area for neat installsEasy inverter service and exchange of partsFast cover removal - access via 180 locking screwsDownload the Fronius GEN24 Primo 3-6kW datasheet.Download the Fronius GEN24 Primo 3-10kW datasheet. 3-phase string inverters, 3.0kW to 27kW The Fronius Symo three-phase inverters are built around the same snap-in design and are available in an impressive range of sizes to suit both residential and commercial applications. Symo inverters range from 3.0kW up to 20kW, while the ECO's are available in 25kW or 27kW sizes. The GEN24 Symo is now also available in 3kW, 6kW and 10kW options.Many commercial inverters are located in exposed locations and have to perform in extreme conditions, including high summer temperatures. This is where the Fronius active cooling system really shines enabling continuous operation with minimal power derating in high ambient temperatures up to 50 degC.Download the Fronius Symo Inverter datasheet.Key featuresUnique Snap-in design for easy installation & serviceHigh input current (ECO 27) = 47.7A (Isc max 71.6A)Integrated DC isolator and DC string fusing.Fan forced active cooling system.External relay control - Digital output.The Fronius ECO series are highly sought after for larger scale commercial systems due to the high performance, reliability, advanced communication options, and unique features such as the integrated string fusing. The integrated all-pole string fusing (fuses optional) mean string combiner boxes are no longer required making installation quicker and easier.See the Fronius ECO Solar Inverter Specification sheet here. Over the years, Fronius Primo and Symo inverters have become key features in many off-grid solar or stand-alone power systems. Primo and Symo (3-phase) inverters are string solar inverters, not battery inverters, but can be coupled with a compatible off-grid battery inverter-charger to form an advanced AC-coupled energy storage system. *Fronius Primo solar inverter AC-coupled with the popular Selectronic SP PRO off-grid inverter-charger AC-coupling for off-grid power systems has become the configuration of choice over recent years. The flexibility and simplicity of AC coupling allowed off-grid systems to become much larger and more powerful. Several years ago, Fronius made the clever move of teaming up with two of the leading off-grid inverter manufacturers, Selectronic and Victron Energy, to allow the Primo and Symo inverters to operate in both on-grid or off-grid systems.*NOTE: The Fronius inverter must be 'Selectronic certified' to function in a 'managed' AC-coupled off-grid system. Selectronic certified or 'Scert' single-phase inverters are slightly modified to enable high-precision battery charge control. However, Victron AC-coupled off-grid systems use a standard Primo or Symo inverter and enable off-grid charge control using frequency shifting. This is adequate but not as precise and can affect some sensitive electronic appliances. Fronius designed and engineered an entirely new hybrid Inverter platform known as the GEN24 Plus. It was a long wait with the GEN24 Symo 3-phase version released in October 2020, while the Primo was released in May 2021. The GEN24 plus range is built around Fronius's vision of '24 hours of sun', referring to the use of solar combined with energy storage to deliver power day and night for maximum self-sufficiency.One of the unique features of the GEN24 Plus is the PV Point power function, which provides backup power, up to 3000VA (2.4kW), during the day without a battery. Since the PV point powers the backup loads directly by solar, the amount of backup power will vary throughout the day depending on the weather conditions. An adequately sized solar array could easily power smaller loads such as a fridge, lights, and laptops.GEN24 Plus Inverter FeaturesSome standout features of the new inverter range include the extremely wide PV operating (MPPT) voltage range, which starts from a very low 65V for the Primo and 80V for the Symo. This means strings can be as small as three panels or up to 14, depending on the panel voltage.Very wide MPPT voltage range - 65V to 530VDual MPPT trackers - 22A / 11A - Parallel strings okVery high battery efficiency - 94% round-trip with BYD BatteryPV point backup power without a battery - PV point (3kVA)Full backup power with battery (22A) & external contactorOver-sizing solar arrays up to 150%Advanced active cooling system with front heat shieldArc fault detection (US only) The most obvious physical feature is the unique front-mounted fan giving it a surprisingly retro look. Although much more is behind the front cover, it hides a sophisticated thermal management system with a cleverly designed spiral heat sink. This active cooling system, described in more detail below, helps improve both performance and reliability. But it doesn't stop there; the GEN24 Plus also features integrated grid backup and four digital inputs/outputs to take full advantage of smart home controls and load management. The one apparent deficiency is the lack of a display or buttons. Although, this has become an industry norm as inverters transition to app-based setup and monitoring.Download the Fronius GEN24 Plus specifications datasheetGEN24 Plus Battery OptionsThe GEN24 plus inverters are currently only compatible with BYD's higher voltage battery systems (Premium HVS & HVM models). The GEN24 is currently only compatible with the BYD HVM and HVS batteries. Like the snap-in inverter range, the new Gen24 plus inverters have an enclosed cable/terminal connection area which makes installation much neater and easier for installer. Throughout the long development process, Fronius was actively gathering feedback from solar installers about features that would make the installation and commissioning process quick and easy. This led to several innovative design features and a new mobile App which will no doubt make the new GEN24 plus series some of the easiest inverters to install and set up.Fast 3-Step commissioning with the new Fronius AppEasy auto Wifi connection using one-touch WPS buttonFast cover removal - access via 180 locking screwsNo tool, spring clip internal cable connectionsRear access & large internal cable area for neat installsEasy inverter breakdown and exchange of parts Is active cooling the secret to long term reliability? Like the current snap-in inverters, the new Gen24 Plus hybrid inverters use an active cooling system. Unlike the majority of manufacturers, Fronius only design inverters with active or fan-forced cooling. Most inverters available today are transformerless and utilise large rear-mounted heat sinks which use natural convection to cool the inverter. This simple design, known as passive cooling, doesn't rely on any moving parts such as fans which can fail over time. However, relying on passive cooling alone can be problematic, especially in higher temperatures or locations with low natural air circulation. While mounting a solar inverter in locations exposed to the sun should be avoided, it is sometimes not possible and this is where many 'cheap' inverters relying on passive cooling alone can fail. Mounting in exposed positions with full sun (especially during the afternoon), heats the inverter to extreme levels and can cause severe power derating, thermal shutdown, and early failureFronius only use fan-forced active cooling which extracts heat at a more constant rate. As highlighted in the chart below, this can increase performance with less power 'derating' in high ambient temperatures. Power electronics have a maximum operating temperature after which the power transfer needs to be reduced to prevent overheating and potential damage. This is where active cooling can dramatically improve reliability. Fans can also fail; however, modern brushless DC fans have a very long lifespan. If a fan replacement is required, then it is easier to replace a fan rather a blown transistor or capacitor which may be impossible. Fronius Inverter power derating at different temperatures and string voltages Adequate cooling is essential for increasing the life of any electronic product. It is particularly crucial for solar inverters that use sophisticated power electronics to transfer thousands of watts of power in extreme environments. Modern inverters use solid-state transistors (semiconductors) to convert DC power from solar to AC power. High temperatures will reduce the efficiency, performance, and life of transistors and most other electrical components. The new generation Fronius Symo hybrid solar inverter with the front cover removed, revealing the advanced spiral heat sink design. Based on the long development time and vigorous testing, we are confident the Fronius engineers have designed the new GEN24 inverters to be extremely reliable, efficient, and offer high performance in all conditions. Looking at the GEN24 Plus specification sheet, it appears the new inverters have a high tolerance to being located in exposed locations with little protection.Fan NoiseNaturally, using fans for cooling creates some level of noise. As the inverter's internal temperature increases, so too does the fan speed and associated fan noise. For most installations, the relatively low fan noise, which is reported to reach a maximum of 65 dB(A) for the older snap-in inverter range, is not an issue. However, if installed outside in specific locations, such as outside a bedroom window, the noise may be problematic as the fan can start cooling early in the morning, soon after sunrise. In this situation, a long sleep-in on a hot summer morning might be more difficult with the window open. The new GEN24 inverters have a more efficient cooling system and a much lower fan speed meaning the sound level is extremely low at less than 42 dB(A). In regards to service, Fronius has ranked very highly for many years due to the low failure rates and great service. If a failure occurs, they usually ship replacement units in 3-5 business days. Fronius inverters are available with either a 5 or 10-year warranty as standard, depending on the location or country. The warranty period can be extended up to 20 years by paying additional annual fees. However, the regular warranty is 5+5 years, meaning the inverter is covered by a full parts, labour and transport (shipping) warranty for the first 5 years but only parts for the following 5 years. The limited 5-year parts-only warranty can be problematic for both customers and installers as the cost of shipping and labour needs to be negotiated.In most countries, all Fronius string inverters come with five year Fronius Warranty Plus. Customers can obtain an additional free, 2 to 5-year extended warranty when the inverter is registered online via www.solarweb.com. This provides a free 10-year warranty period in Australia and some other countries. Fronius solar inverter warranty details and options The smart meter. Required for both solar & energy consumption monitoring. (single phase meter shown) Wifi monitoring comes standard with all inverters via the Fronius Solar.Web. The addition of the Fronius smart meter enables monitoring of energy generation and consumption and can be used as a complete home energy monitoring system. A free Solar.web smartphone app is also available for android or iOS.There is also the option of adding the Fronius Ohmpilot which is designed to automatically use excess solar energy to heat water.The Fronius Solar.web app is a simple, easy-to-use app that displays the current solar generation and estimated savings. Digging a little deeper into the analysis section, users can chart detailed operating statistics like string current, voltage and grid voltage. Up to 3 days of consumption monitoring data can be accessed, but unfortunately, full consumption and generation history cannot be accessed without a premium subscription to Fronius Solar.web, described in more detail below. Fronius Solar. Web portal - Image credit Fronius The Solar.web premium upgrade offers an array of financial insights and additional data, but considering many competing platforms offer usage and generation history for free, this is a little disappointing. However, it offers other unique features, including a weather-based PV production forecast. In Australia, the cost is AU$33 per year, or AU$89 for three years which isn't too excessive, but there should be longer options available with a greater discount. Fronius Solar.web features compared to Solar.web Premium From reading this review, it's obvious why Fronius is widely considered a leading solar inverter manufacturer. When you sum it up, the reasons are pretty simple - high build quality, proven performance and reliability from an experienced manufacturer. The only real problem is getting hold of one is often tricky due to the limited supply and high demand.The decision to engineer active cooling into all inverter platforms seems to have paid off by providing a higher level of performance and reliability, especially in extreme environments. The clever snap-in design, advanced communications, and features such as the integrated DC isolator and string fusing won over many installers. This, together with a high level of service and support, means any issues have been promptly addressed. In an industry plagued by cheap, unreliable inverters, this kind of service and reliability is essential.Energy storage was one area where Fronius had been lacking in the past, but this has now changed with the GEN24 Plus inverters. The rapid evolution of hybrid inverter technology over the last 5 to 6 years has seen many manufacturers rush out inferior and problematic products with multiple issues. In some ways, this may have benefited Fronius, who doesn't rush through development. The slow and steady approach to designing new inverters has resulted in Fronius producing one of the most advanced hybrid battery storage inverters, with clever load management and control features well suited to modern smart homes. While Fronius offers fantastic, high-quality inverters, one of our few criticisms is the subscription cost for the Solar.web Premium system monitoring, which seems to offer very little considering many competing brands offer the same information, including solar performance and full history, for free. Jason Svarc Fronius inverters have received positive reviews overall for their reliability, efficiency, and advanced technology. Users often highlight the company's high-quality customer service. However, some users have encountered issues related to the inverter's connectivity and software. With its roots in Austria and over seven decades of expertise in power electronics, Fronius has become a trusted leader in the solar technology. A company which began in 1945 welding transformers and battery chargers has, over the years, evolved into a global powerhouse, placing special importance on innovation and quality. As an industry giant, their renewable energy solutions have gained substantial popularity and are of significant interest to consumers, making this in-depth Fronius inverter review all the more relevant. Fronius Inverters Quick Summary Fronius inverters are renowned for their robustness and durability. Offering a comprehensive range of products (Primo, Symo, and ECO), they cater to varying needs, whether it's for residential, commercial, or large-scale industrial projects. Known for their top-notch performance, sleek design, and advanced built-in features like Wi-Fi connectivity and easy access for servicing, they truly stand out in the crowded marketplace. See also: Best Solar Inverters: Your Ultimate Guide to Choosing a High-Performance Model About Fronius Inverters: Key Models and Features Fronius offers several inverter models, each presenting unique features designed for specific requirements. Let's delve further into what each Fronius inverter brings to the table. Fronius Snap-in Primo Inverters The Fronius Primo, a single-phase inverter with dual MPPT, is perfect for residential use. It ranges from 3.8 to 15 kW, offering a fantastic solution for homeowners. Notably, its snap-in design ensures straightforward installation and repair. Key Features The Fronius Primo comes with a wide range of features, including Wi-Fi and Ethernet connectivity for easy monitoring, superior energy harvesting, and comprehensive solar system monitoring with Fronius' online monitoring tool, Solar.web. Fronius GEN24 Primo Inverter The Fronius GEN24 Primo is a versatile hybrid inverter packed with a plethora of features – flexible system design, integrated backup power, and the ability to be utilized in solar, storage, and three-phase, to name a few. GEN24 Inverter Features and Highlights What makes this model standout? Its Multi Flow Technology allows simultaneous energy flows in all directions, offering maximum versatility. Its reliable, uninterrupted PV Point provides basic backup power supply even during power cuts. Fronius Symo and ECO Inverters The Symo inverters (three-phase) and ECO inverters (central inverter) are stellar options for commercial projects. They cover power categories from 10 kW to 27 kW and 25 kW to 50 kW respectively, ensuring businesses enjoy customized, high-performing solar energy solutions. Key Features Like the Primo, the Symo and ECO inverters also boast remote monitoring through Wi-Fi or Ethernet connection. Moreover, they possess Dynamic Peak Manager (DPM), improving yields in partial shading conditions. Fronius Inverters Technologies Fronius inverters come with advanced technologies like the Dynamic Peak Manager, facilitating optimal energy yield in all weather conditions and Multi Flow Technology in GEN24 Plus Hybrid Inverters, enhancing overall operational efficiency. Fronius GEN24 Plus Hybrid Inverters The GEN24 Plus Hybrid Inverters merge PV, storage, and energy management solutions for an all-encompassing energy solution. GEN24 Plus Inverter Features One of its top features is the PV Point, providing essential backup power during power outages while its Multi Flow Technology provides multiple energy flows for maximum energy use. Additionally, its compatibility with different battery types further amplifies its versatility. GEN24 Plus Battery Options The GEN24 Plus offers multiple battery options, from high-voltage BYD Battery-Box Premium HVS/HVM batteries to simultaneous emergency power provision in combination with the battery. Quick Installation and Setup With an innovative snap-in design, Fronius inverters offer quick and easy installation and servicing. This perk ensures less time troubleshooting and more time harvesting solar energy. Active Cooling and Fan Noise Fronius inverters are designed with active cooling technology, providing superior efficiency and longer shelf-life compared to passively cooled inverters. However, it's worth noting that the accompanying fan can sometimes elevate the noise levels. How Long do Fronius Inverters Last One of the most common queries during a Fronius inverter review is: "How long do Fronius inverters last?" The good news is that they are built to last with an average lifespan of approximately 15 to 20 years, thanks to robust engineering and quality. Where are Fronius Inverters Made A question often asked during a Fronius inverter review is: "Where are Fronius inverters made?" Well, while Fronius is headquartered in Austria, its manufacturing units are globally situated. This includes locations throughout Europe and even the United States. Off-Grid Solar with Fronius Fronius inverters can be effectively paired with a battery backup for an off-grid solar energy solution. The Fronius Symo Hybrid, for instance, is quite popular for off-grid usage. It allows for easy integration of battery storage at any point, ensuring resources are well-utilized. Fronius Inverter Efficiency Irrespective of the type of inverter, Fronius delivers impressive efficiency – above 98% for many models. This implies more solar production for your household or commercial entity, strengthening your return on investment. Fronius Inverter Value and Warranty When it comes to the Fronius inverter warranty, rest assured that you're covered for a good period (usually 5-10 years, extendable up to 15-20 years). This guarantees peace of mind and underlines the brand's confidence in their products. Fronius Inverter Monitoring – Solar Web Monitoring your solar production and consumption is made seamless with Solar.web. Being user-friendly, it offers real-time data, various analysis features, and even forecast-based charging decisions for optimal usage. User Reviews of Fronius Inverters By and large, most user reviews applaud the high efficiency, easy installation, and reliable service of Fronius inverters. Nevertheless, some reviews highlight potential software and connectivity hiccups, suggesting that there may be room for improvement in these areas. Fronius Inverters: Pros & Cons As we conclude this Fronius inverter review, let's summarize the pros (reliability, high efficiency, ease of installation and use) and the cons (potential for software issues, relative loudness, and high upfront cost). This will facilitate a balanced decision-making process. Conclusion: Should You Buy Fronius Inverters? Fronius inverters score high on robustness, efficiency, and advanced technology. Mindfully designed to meet a variety of energy needs, they do command a higher upfront cost, but their long lifespan and substantial returns on energy make them a smart investment. This comprehensive Fronius inverter review should empower you to decide if Fronius aligns with your solar energy aspirations. Happy solar harvesting! div#stuning-header .dfd-stuning-header-bg-container {background-image: url(;background-size: cover;background-position: center top;background-attachment: initial;background-repeat: no-repeat;}#stuning-header div.page-title-inner {min-height: 100px;} Skip to content Posted on January 13, 2025