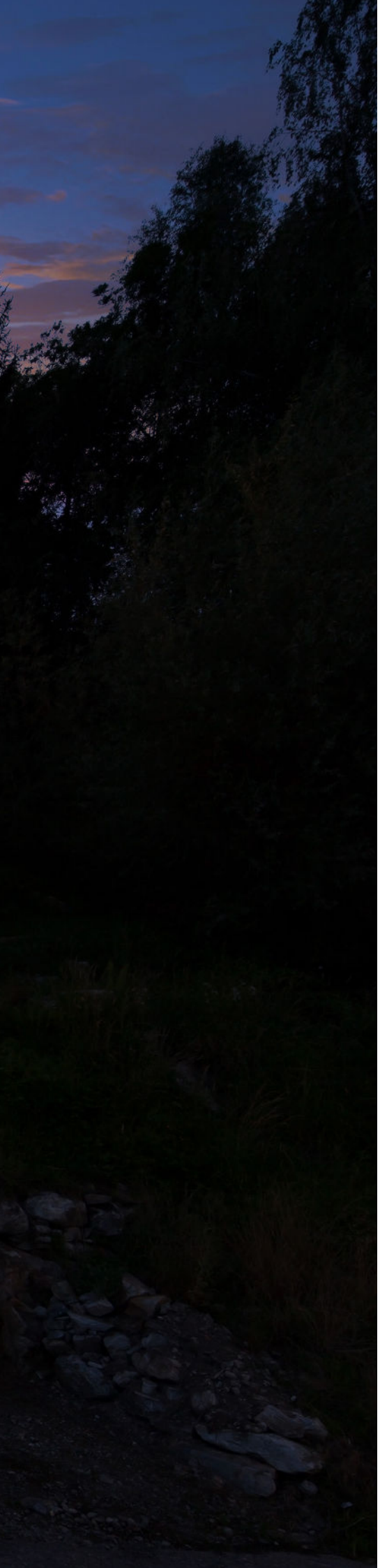
# Powering the new era of solar autarky





Solar and battery systems are changing the energy landscape, but many hybrid inverters lack the power and intelligence to deliver true grid independence. Studer Innotec has responded with the 'next3', an all-in-one solution for the new era of solar self-sufficiency.

With carbon emissions and energy costs on the rise, electricity users of all kinds are seeking effective and affordable ways to go green. At the same time, achieving net-zero emissions requires empowering homes and businesses to become self-sufficient with solar and battery storage.

As a result, a large number of grid-connected hybrid inverters have hit the market in recent years, each making impressive claims of autonomy and backup power. However, many lack the capacity, features, and flexibility to deliver a comprehensive, future-proof solution. To make a meaningful and permanent transition to clean energy, users need hybrid inverters that can mimic and ultimately surpass the grid itself, including maintaining power during a blackout.

In response, Switzerland's Studer is helping consumers realize the ultimate goal of 24-hour solar power with the next3, a 3-phase smart hybrid inverter for both on grid and off grid applications.

### Powerful, reliableand built to last

As part of its clean energy vision, Studer has designed the next3 to be powerful enough for the most demanding solar and battery applications. The results are truly impressive: it can supply up to 16 kW of continuous power and 30 kW of peak power via 2 x high-voltage solar MPPTs, 8 kW + 8 kW, and battery storage. In addition, its AI-powered smart energy management system maximizes self-consumption by automatically regulating loads such as heat pumps and EV charging.

For end-users, the next3 creates independence in three key areas, including environmental, replacing fossil fuels with renewable energy generated and stored on-site.

Financially, the system offers unlimited free electricity from sunlight and shields system owners from rising energy costs. Technically, next3 reliably interacts with the grid and provides complete backup power during a blackout.

For energy users seeking long-term reliability, the next3 epitomizes European innovation. It is designed and made in Switzerland and delivers peace of mind with a 12 year warranty. With its exceptional power capacity, features, and build quality, it is a versatile energy solution suitable for a broad range of on grid and off grid systems.

### A new era of solar independence

The ultimate goal of the next3 is to enable homes and businesses to transcend autonomy and achieve energy autarky, a word of Greek origin that describes a state of complete self-sufficiency. For grid-connected users, this means enjoying the best of both worlds: total control over their energy production, storage, and distribution, while still retaining the grid as a backup power source. In the future, consumers may also be rewarded for participating in the energy market, such as selling their stored electricity into the grid to reduce peak demands.

The challenge of achieving and sustaining energy autarky is intensified by the rise of electric vehicles (EVs), which can easily consume 100 kWh of electricity or more each week. With skyrocketing fuel costs and the EU's ban on new internal-combustion engines from 2035, consumers are increasingly seeking to power their homes, and by extension, their vehicles, with clean and free electricity. The next3 provides an ideal solution, enabling users to access renewable energy day and night and charge their EVs directly with solar power. This trend has given rise to 'solar mobility,' where EV owners achieve the holy grail of cost-free, emission-driving.

'Without question, the next3 is 100% ready for energy autarky,' says Studer CEO Loïc Viret. 'Whether it is on grid or off grid, it forms a comprehensive and reliable solar energy solution that gives homes and businesses a head-start on the future.'

### Off grid reliability for on grid systems

Studer's growing success in the on grid space follows more than 35 years of designing and building advanced off grid inverters, chargers, and controllers. Today, hundreds of thousands of systems worldwide rely on Studer products, from small huts located high up in the Swiss Alps, to remote properties in the harsh Australian outback.

'When you are designing inverters and components for off grid energy systems, reliability is absolutely critical,' says Pierre-Olivier Moix, CTO at Studer. 'With the next3, we have built on our decades of off

grid experience to create a powerful inverter charger that is fully grid-interactive and can provide complete backup power whenever it's required.'

For enhanced system design flexibility, the next3 is compatible with virtually all 48V battery technologies, including lead-acid and lithium-ion. In keeping with the rapid growth of lithium batteries in residential and commercial systems, it features an integrated CAN-BMS interface for simple plug-and-play installation with compatible models. In the future, it will also be possible to connect up to three next3 units in parallel to a single battery, creating a more powerful system or leaving room for ongoing capacity upgrades.

### The benefits of Smart Boost technology

To meet the needs of an evolving energy market, the next3's upgraded Smart Boost function provides valuable grid services and maximizes self-consumption. For example, its phase balancing function ensures even voltage distribution across all three phases for more reliable and efficient operation, which benefits users and network operators alike.

The next3 also includes a peak shaving feature that uses battery storage to reduce demand spikes and maintain smoother consumption from the grid. This function is especially valuable for commercial buildings on peak demand tariffs, where even brief spikes in consumption can result in higher demand charges for an entire month. For residential properties, the peak shaving function can manage the start-up current of heat pumps, air conditioners, and power tools, helping to reduce costs and contribute to a more stable and reliable power grid.

### Comprehensive blackout protection

As electricity networks struggle with stability issues, fuel shortages, retiring coal and gas plants, and decentralized power generation, energy security has become a high priority. As a result, consumers are increasingly investing in solar and battery systems to not only generate their own clean energy, but maintain supply in the event of a blackout. The next3 addresses this need head-on by automatically providing complete backup power from battery storage whenever the grid is unavailable.

The inverter features an 'AC flex' interface that can accommodate a second input source, such as a generator, or an extra output to a controlled load. In the latter case, the next3 can also be configured with separate 'crucial' and 'deferrable' loads for optimum energy distribution. For example, during blackouts when battery capacity is low, the inverter can prioritize essential appliances such as fridges, lights, kitchens, and heaters, while deferring from non-essential loads that may quickly drain the battery. In addition, the next3 can be integrated with existing solar inverters to form a complete system upgrade.

'The goal of investing in a solar and battery system is to access clean energy whenever you need it, and that includes during a blackout,' explains Moix. 'The next3 can power an entire property during a grid failure and has the intelligence to make the best possible use of the available battery capacity.'

### Sustainability through simplicity

As solar and battery systems grow in sophistication, they also consume more resources and have a larger environmental impact. To reverse this trend, the next3 combines several advanced features into a single box, resulting in the 58kg unit replacing up to six pieces of hardware weighing 200kg or more. This streamlined approach doesn't just make for pleasing aesthetics; it dramatically reduces the system's associated materials, wiring, packaging, and transport emissions. It also makes for a much faster installation, requiring just two people equipped with an electric drill and basic screwdrivers.

As a leading solar inverter manufacturer, Studer's holistic approach and innovative design results in a simple system with a considerably smaller carbon footprint. Taking this minimalistic approach a step further, Studer is also developing a 19-inch rack version of the next3 for an even more integrated and consumer-friendly solution.

**A complete energy solution for installers and end-users**

The next3 is powered by Studer's nextOS platform, making it simple to remotely configure, control, and monitor the system in various languages. The interface provides a complete overview of solar generation, battery state of charge, electricity consumption, and system configuration, which are valuable details for both installers and end-users. In addition, system owners will benefit from new features and functionality via ongoing software updates to the nextOS platform.

'The next3 is a comprehensive, grid-ready inverter solution that can adapt and evolve with consumers' energy needs,' says Moix. 'In addition to launching a single-phase version later in 2022, we are also developing other new features such as AC coupling, support for residential mini-grids, and multi-unit and multi-battery support for even larger and more powerful systems.'

Overall, Studer Innotec's next3 smart hybrid inverter offers all the power, features, and intelligence needed to achieve complete energy autarky. With the global push towards net-zero and the rise of renewable energy, battery storage, and electric mobility, the next3 enables homes and businesses to embrace a solar-powered future.

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