nXL

A revolution in the industry of Converters for Utility-Scale Applications

Norvento TECHnPower

The new technology brand of the Galician company Norvento, represents a technological leap towards equipment aimed at large-scale applications. Norvento TECHnPower brings together the most advanced solutions for energy generation, intelligent management, and storage.

Norvento TECHnPower nXL Family of Multi-MW Converters

Norvento TECHnPower has unveiled the nXL family, a new class of multi-megawatt, multipurpose converters designed for utility-scale applications.

These devices serve a wide range of power-conversion tasks in grid-connected and off-grid environments, supporting renewables, storage systems, hydrogen, data centers and other high-demand infrastructure.

Key Features & Technical Highlights

1. **Bidirectional** multi-MW capability with grid-forming and black-start modes.
2. **Power density** up to 9 MVA in 20 feet (622 kVA/m³).
3. **Multipurpose** for PV, BESS, hydrogen, data centres, ports, and railways.
4. **Grid- and off-grid** compatibility with seamless transition.
5. **IP65** sealed design with hybrid liquid and air recirculation cooling.
6. **Low harmonic** distortion (THDi < 1 %) and DC/AC ratio up to 200 %.
7. **AI-based predictive** maintenance and digital control.
8. **Sustainable** manufacturing at Norvento's carbon-neutral neFO factory in Lugo, Spain.

Architecture and Operation Modes

The nXL converters integrate a medium-voltage cell and transformer in a 20-foot container, featuring **high-efficiency** cooling and high-density layout. They achieve minimal harmonic injection (THDi < 1 %) and ensure grid compliance.

Operation Modes

• **Grid-forming**: Independent operation with voltage/frequency regulation.

• **Black-start**: Startup without grid connection.

• **Bidirectional conversion**: AC↔DC for PV/BESS/electrolyser systems.

• **Multipurpose**: Use as converter, grid interface, or STATCOM/active filter.

Application Scenarios and Use-Cases

• Large-scale PV + storage systems.

• Stand-alone micro-grids or remote infrastructure.

• Green hydrogen production facilities.

• Critical infrastructure (data centres, ports, railway systems).

• Grid ancillary services (STATCOM, harmonic compensation).

Competitive Advantages & Market Implications

• Extremely **high-power density** and compact footprint.

• Versatile applications.

• IP65 design for harsh environments.

• Predictive maintenance reducing OPEX.

• Sustainable, emission-neutral manufacturing.

• Markets: Europe, USA, and Latin America, driven by renewables, storage, and hydrogen growth.

Technical Challenges & Considerations

• Real-world reliability and maintenance data pending.

• Integration complexity across diverse applications.

• Thermal management in extreme environments.

• Certification, support, and service network essential.

• System-level coordination for advanced grid and storage integration.

A new benchmark

The nXL family from Norvento TECHnPower sets a new benchmark for multi-MW power conversion with its **flexibility, robustness, and digital intelligence**. Its ability to serve multiple sectors—renewables, storage, hydrogen, and critical infrastructure—positions it as a strong solution for the energy transition.

To fully capture market share, Norvento will ensure proven field performance, scalable production, and strong integration support for developers and utilities alike.

Data centers and extreme environments

One of the sectors where this technology is particularly relevant is data centers, where energy continuity and stability are critical. Norvento TECHnPower's nXL converters offer a secure and adaptable energy source, with **direct integration with batteries to cover demand peaks** or possible outages, ensuring a continuous energy supply.

Furthermore, thanks to its **sealed cooling system**, the nXL family of converters is suitable for desert areas, highly corrosive areas near the sea or with extreme temperatures, and even areas with conductive particles in the air, such as mines and volcanic regions

New brand, new challenges

The launch of the nXL range marks the beginning of a new era, highlighted by the launch of Norvento TECHnPower, Norvento's new technology brand, which also represents a significant technological advancement in equipment designed for large-scale applications. Norvento TECHnPower brings together **the most advanced solutions for energy generation**, **intelligent management and storage**. This brand was created with a clear vision: to accelerate decarbonisation providing an exclusive, certified, and flexible technology for a green energy model.

Norvento TECHnPower represents a natural evolution in Norvento's trajectory, consolidating its **more than 40 years** in the renewable energy sector and a team with more than 20 years of experience in power electronics, while adapting to the new needs of the market. With this initiative, Norvento is not only supporting the energy transition, but also driving it forward, offering cutting-edge solutions to move towards a cleaner, more efficient and autonomous system.

nXL converter family will be manufactured at neFO, the **pioneering self-sufficient, carbon-neutral factory that Norvento** is building in Lugo. Once operational, this facility will produce all Norvento TECHnPower equipment and serve as a practical demonstration of Norvento's sustainability principles. It is estimated that this plant will prevent an annual emission of 187,000 tonnes of CO_2.

→ Find out more at this link.