FLENDER

Press

Hamburg, September 22, 2026

WindEnergy Hamburg

Flender Introduces GENERA: New Generator Concept for Wind Turbines

- **Higher power density:** GENERA reaches up to 700 W/kg and reduces generator length by 25 percent compared with the previous generation, keeping standard truck and container transport available above 10 MW.
- **Independent of rare earths:** Above 10 MW, where similar generator concepts rely on rare earth materials, GENERA operates without them. Windings can be specified in aluminium or copper.
- **Lower noise, higher yield:** Noise emissions are 6 dB(A) below the previous generation. As the design requires no external cooling fans, no auxiliary power is consumed for cooling, which increases annual energy production.

Wind turbines continue to grow in output and dimension, both onshore and offshore. At the same time, the energy debate has shifted towards security of supply and affordability. Against this background, German drive specialist Flender is presenting a new generator concept under its wind energy brand Winergy at WindEnergy Hamburg today: Winergy GENERA, a validated generator design concept and a technology package from which solutions are configured for individual turbine projects.

“With Winergy GENERA we are doing more with less,” said Tommy Rahbek Nielsen, President of Winergy. “We combine very low noise with high power density and improved reliability, while eliminating magnets and rare earth materials – even in high power turbine classes. That reduces material input and improves the economics of wind projects.”

More Power per Kilogram

The validated GENERA design delivers power densities of up to 700 W/kg. This represents a 10 percent increase compared to previous versions and comparable competing products and is currently unmatched in the wind industry. Generator length is reduced by 25 percent compared with the previous generation, which allows the generator to fit into the nacelle and keeps transport by standard truck and container feasible for power classes above 10 MW. Because the concept does not require external cooling fans, no auxiliary power is consumed for cooling – which raises the annual energy production of the turbine.

Noise emissions are 6 dB(A) lower than in the previous generation, contributing to quieter turbine operation. Lower turbine generator noise levels gives project developers more headroom at noise-sensitive sites and supports local acceptance.

A Generator Design Without Rare Earths

GENERA is based on a Double Fed Induction Generator (DFIG) and available across power classes and does not depend on rare earth materials in any of them. The difference becomes relevant above 10 MW: in this range, alternative generator concepts typically rely on permanent magnets containing rare earths, whereas GENERA does not. Rare earths are available in limited quantities and their mining and processing are concentrated in a few regions worldwide, which exposes turbine manufacturers to price volatility and supply risk. A generator design that does without them removes this dependency from the drivetrain.

Depending on project requirements, windings can be specified in either aluminium or copper. Copper remains in tight supply: the International Energy Agency projects a global supply deficit of around 25 percent by 2035, and copper prices reached record highs in early 2026. The option to specify aluminium gives turbine manufacturers a second route for a material that affects both project cost and delivery reliability.

“Winergy GENERA shows that high performance and cost-efficiency are not contradictory,” added Jörg Sieber, Vice President Wind Generators in Flender’s wind segment. “We are increasing power density, reducing noise and lowering material use – in one solution. That helps our customers improve the overall economics of their wind projects.”

Optimized for the Entire Drivetrain

GENERA is designed to work with any gearbox and is particularly optimized in combination with the Winergy REVO system, Flender's gearbox concept for wind turbines. REVO was the first drive concept to reach a torque density of 300 Nm/kg, which enables more compact turbine designs or higher output without an increase in size. Combined, the two concepts form a drivetrain that pairs new technology with established components.

Key drivetrain benefits of this combination include optimized gear ratio for high efficiency across the entire system. In addition, robust support for reactive power and grid compatibility and smooth integration into wind power plants.

"Winergy GENERA is not a standalone generator but part of a system approach," Nielsen emphasized. "By coordinating gearbox and generator design, especially in combination with REVO, we can offer our customers drivetrain solutions that are built for the future turbine generations."

Configured for Individual Requirements

Not every project requires the full technology package. "Together with our customers, we configure the solution that is optimal for each project instead of a one-size-fits-all approach," said Nielsen. From the choice of winding material to noise and logistics constraints, GENERA offers configuration options while maintaining consistent reliability standards.

Monitoring Across the Lifecycle

GENERA is embedded in Flender's service and digitalization offering. With AIQ, Flender's drive intelligence, which is also available for the Winergy portfolio, the condition of the entire drivetrain can be monitored – from the main bearing through the gearbox and coupling to the generator. AIQ Orbit combines up to eight AIQ Pulse vibration sensors with integrated speed monitoring and consolidates the data in the AIQ web portal, which provides a view of individual turbines as well as of the entire wind farm. Expert service by Winergy's condition monitoring specialists translates the monitoring data into concrete maintenance recommendations. Together with long service intervals, this is intended to reduce unplanned downtime and maintenance costs and to support high turbine availability.

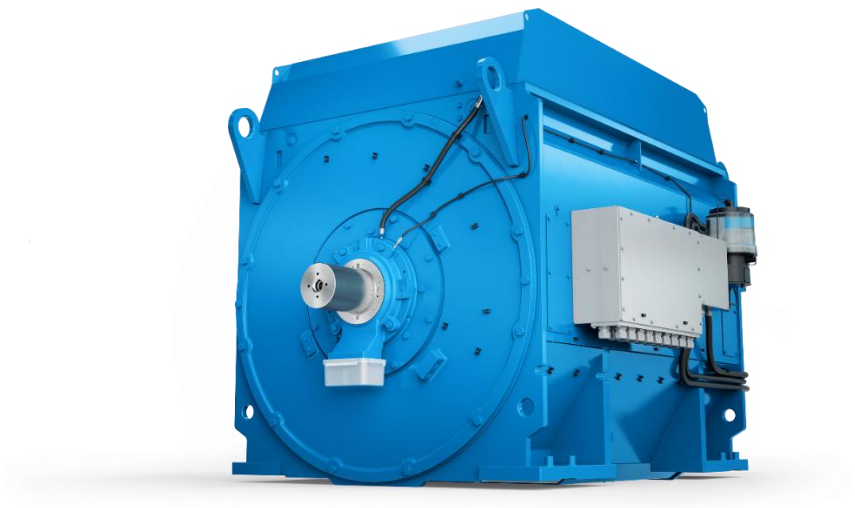
A Contribution to Secure and Affordable Energy

Efficiency in the drivetrain has a direct effect on the cost of wind power and on how quickly capacity can be added. Lower component mass reduces requirements for towers, foundations and logistics, and compact designs keep sites accessible that would otherwise be difficult to reach.

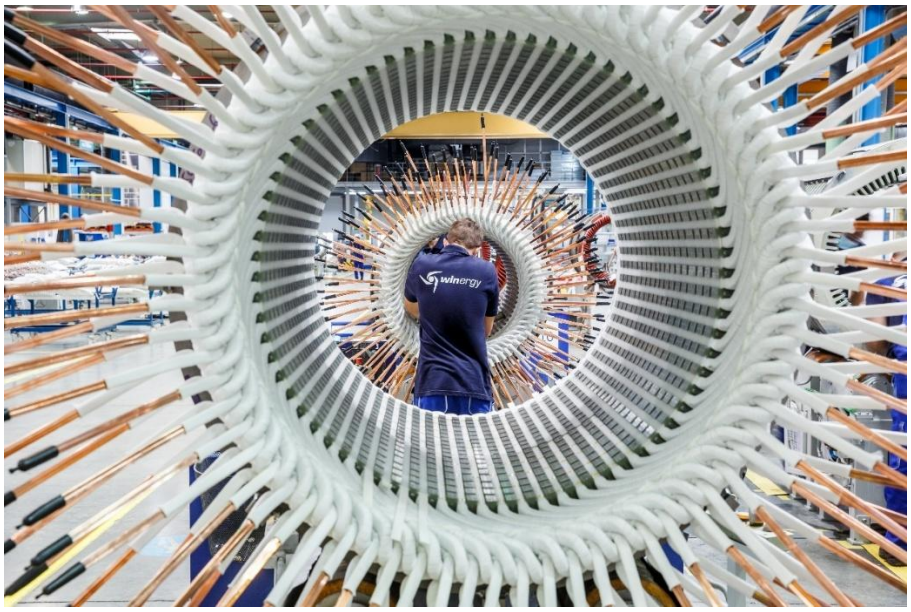
“Wind energy has become a central pillar of a secure energy supply in Europe,” said Andreas Evertz, CEO of the Flender Group. “Every kilogram of material saved and every point of efficiency gained makes wind power more competitive – and competitiveness determines how fast the industry can build. GENERA and REVO are our contribution to that.”

At WindEnergy Hamburg

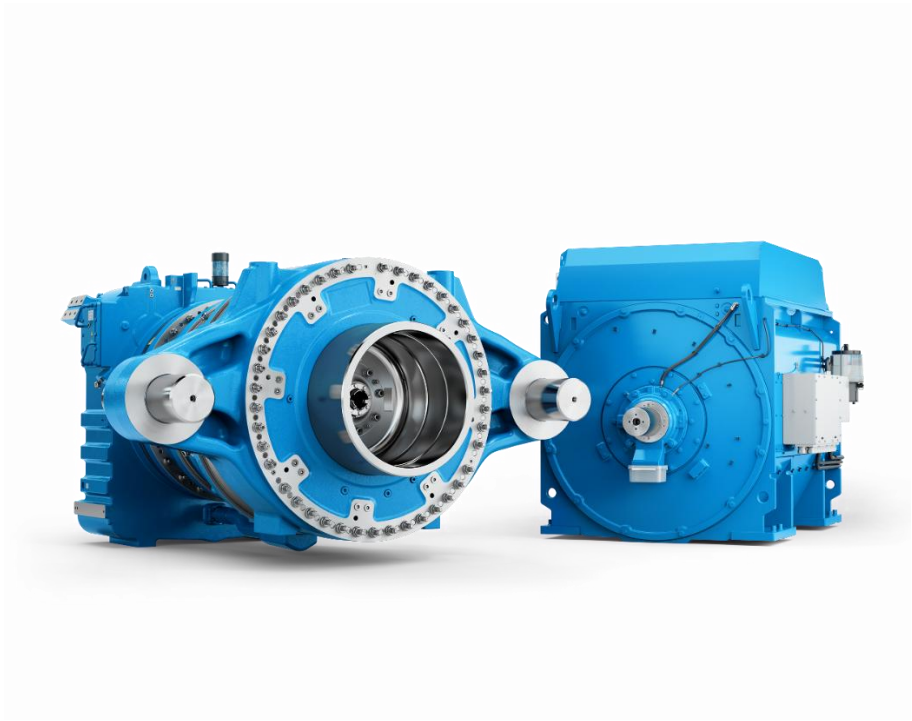
GENERA and REVO are both on display at the Winergy stand in hall B5, Stand 130 from September 22 to 25, 2026, with GENERA presented to the public for the first time on the opening day of the trade fair. Also on show are AIQ drive intelligence, the wind coupling portfolio with a focus on the ARPEX ARV, and the comprehensive Winergy Service360 portfolio.



Winergy GENERA is a validated generator design concept and a technology package from which solutions are configured for individual turbine projects.

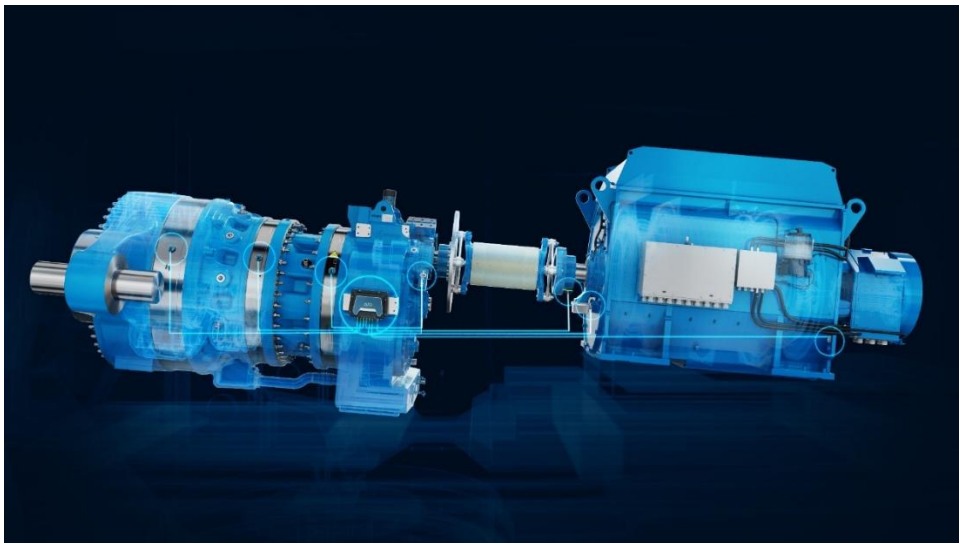


View into the Winergy generator manufacturing. “GENERA reduces material input and improves the economics of wind projects,” says Winergy President Tommy Rahbek Nielsen.



Optimized for the entire Drivetrain: GENERA enfolds its full potential in combination with the Winergy gearbox concept REVO.

With AIQ, Flender's drive intelligence, the condition of the entire drivetrain can be monitored – from the main bearing through the gearbox and coupling to the generator.



AIQ Orbit combines up to eight AIQ Pulse vibration sensors with integrated speed monitoring and consolidates the data in the AIQ web portal, which provides a view of individual turbines as well as of the entire wind farm.

This press release and press pictures are available at www.flender.com/company/press.

Contact for media and press

Press mailbox: press@flender.com

Doris Bush
Vice President Corporate Development & Communications
Phone: +49 152 54718127; E-mail: doris.bush@flender.com

Tobias van der Linde
Manager Corporate Communications
Phone: +49 174 2415434; E-mail: tobias.vanderlinde@flender.com

Flender is a leading, tech-enabled provider for drivetrain solutions, globally supplying highest quality, performance, and innovation for more than 125 years. Flender offers a wide range of gear units, couplings, generators, and associated digitally enabled lifecycle services across various end markets. The two product brands “Flender” and “Winergy” focus on key industries such as wind energy, minerals and mining, cement, power generation, plastic and rubber, defense, marine and metals. The renowned sustainability rating by EcoVadis ranks Flender among the top 1 percent of the most sustainable companies worldwide. (EcoVadis recognition page) Flender employs more than 8,000 people globally. The company is headquartered in Bocholt, Germany. For more information, visit www.flender.com.