ENERCON WEC TECHNOLOGY

ENERCON WEC technology is subject to ongoing development. This helps to ensure that it meets all of the requirements of competitive energy systems and highly competitive markets, and that it can deliver long-term, cost-optimized solutions in response to growing challenges. ENERCON continues to focus on its proven-quality standards and technological innovations in the process.

The next functional WEC design seen in the EPU line reflects the changes in market conditions. By abandoning its trademark leading tower for a new compact design, ENERCON is offering its customers a new, efficient and cost-optimized WEC range for future energy projects under tighter framework conditions. The wind energy converters in the new EPU platform are based on a comparable compact concept.

Worldwide flexibility
ENERCON wind energy converters can be easily integrated in grid structures worldwide and meet the most demanding grid requirements. Thanks to their integral grid technology, they make a huge contribution to maintaining and improving grid quality. In addition, ENERCON and energy converters are also suitable for reducing the number of conventional power plants and large interconnected systems required for stability, as well as supplying renewable grid lines and stand-alone systems.

Turbine and drive system
The tried and tested drive system has been kept for all ENERCON EP3 models. The hub-bearable type of the annular generator is directly connected to form one solid system unit. The entire unit is borne on a sealed pistol. Unlike conventional geared systems with a large number of bearing points in a moving drive train, the low-speed ENERCON’s drive system means it only requires two slow-moving rolling-element bearings.

Operating modes for noise optimisation
ENERCON wind energy converters are noise-optimised to ensure compliance with the noise emission levels permissible at the site at all times. If set parameters occur, the WEC automatically switches to a pre-defined operating mode.

GENERATOR

ENERCON’s WEC concept is based on the directly driven, separately excited annular generator. The magnetic fields required to power generation are created electrically. The new EP5 platform WECs are directly driven. However, annular generators with permanent magnets will also be used in the future. These generators are more compact and allow for a more efficient design. They require no field winding, no brushes or commutators, and no maintenance. ENERCON’s WEC concept is based on the directly driven, separately excited annular generator. The magnetic fields required for power generation are created electrically. The new EP5 platform WECs are directly driven. However, annular generators with permanent magnets will also be used in the future. These generators are more compact and allow for a more efficient design. They require no field winding, no brushes or commutators, and no maintenance.

The tried and tested drive system has been kept for all ENERCON model ranges. The hub, as such, forms the key component. Together with the hub, it provides an optimum flow of energy. In order to guarantee optimal performance, ENERCON is offering its customers a new, efficient and cost-optimized WEC range for future energy projects under tighter framework conditions.

FIELD CAPABILITIES

The sophisticated wind energy converter technology makes for maximum running smoothness, low sound emissions and a long service life. ENERCON’s annular generator is a multi-polar synchronous generator with a direct coupling. Output voltage and frequency vary with the speed and are converted for output to the grid via DC link and an inverter. The rotor unit is borne on a fixed axle pin. Unlike conventional geared systems with a large number of bearing points in a moving drive train, the low-speed ENERCON’s drive system means it only requires two slow-moving rolling-element bearings.

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E-MODULE

The introduction of the E-nacelle is another significant milestone in ENERCON’s integrated programme to reduce the Cost of Energy (CoE). The E-nacelle also houses the electrical systems that convert the electrical energy produced by the generator. This position was previously located in the tower base of ENERCON’s WEC and energy converters for this purpose is obsolete; the power converters will be performed at hub height in future. The E-nacelle also houses the electrical systems that convert the electrical energy produced by the generator. This position was previously located in the tower base of ENERCON’s WEC and energy converters for this purpose is obsolete; the power converters will be performed at hub height in future. The converters and the transformer required are placed into a new section at the top of the E-nacelle.

The new E-nacelle concept allows ENERCON to realise significant benefits by optimising its production, transport and installation processes. The components are not large mechanical systems. Manufacturing at the factory, the machine house is highly plug & play-enabled. As a result, the time allocated for the installation of the E-module at the construction site is no longer relevant. Likewise, no separate transport of these systems is required. The E-module also brings technological benefits with it: as the transformer is located directly behind the generator in the machine house, cable losses are reduced and higher yields are therefore generated. The E-module also brings technological benefits with it: as the transformer is located directly behind the generator in the machine house, cable losses are reduced and higher yields are therefore generated.

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WIND ENERGY CONVERTER TECHNOLOGY

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**OVERVIEW OF WIND ENERGY CONVERTERS**

ENERCON’s extensive product range offers WEC options for just about every onshore location. The new WEC ranges represent a radical cut in ENERCON’s wind energy converter design and are in response to the changing market conditions.

**OUR EXPERIENCE:**
MORE THAN 54 GW INSTALLED CAPACITY.