



VACON AC DRIVES AND POWER CONVERTERS
A DRIVING FORCE IN WIND ENERGY

VACON
DRIVEN BY DRIVES



VACON – A STRONG GLOBAL PRESENCE

Vacon was founded in Vaasa, Finland in 1993. Since then we have designed and manufactured high performance and high-quality AC drives for demanding industrial applications and operating environments. Vacon has also been involved in renewable energy for over ten years and, in having solid foundations to build on, we thrive on actively driving the industry forward.

In addition to over 30000 MW of industrial inverter application supplies, over 5000 MW of capacity has been supplied to various renewable applications through Vacon inverters. To put these numbers into perspective, a typical nuclear power plant can produce up to 1000 MW of capacity. With a dedicated R&D resource focusing solely on the development of renewable energy applications, we continue to strengthen the position of renewable energy as one of the cornerstones of our company strategy.



VACON IN BRIEF

Vacon is an established and international company that has production facilities on three different continents. We also have a large and continuous flow of spare parts, which improves our reliability. We offer a global network service and have Vacon offices at your service in 27 countries. Through our extensive partner network we have a further 83 service locations in 50 countries.

With a long history of producing reliable solutions, we are able to provide extensively tested field and factory products that have full lifecycle maintenance support for the wind energy industry. All our products are extensively tested at the factory before delivery.

VACON – TRULY GLOBAL

- **MANUFACTURING AND R&D** on 3 continents
- **VACON PRODUCT SALES** via Vacon offices or partners in more than 100 countries
- **VACON OWN SALES AND SERVICES** in 27 countries
- **SERVICE CENTERS** in 50 countries (including partners)



FACING THE WIND

Technology and Expertise

With our first deliveries to the wind energy sector dating back to before the new millennium, we are proud to say we have a long history, extensive expertise and the technology necessary to connect power from renewable sources to a national grid.

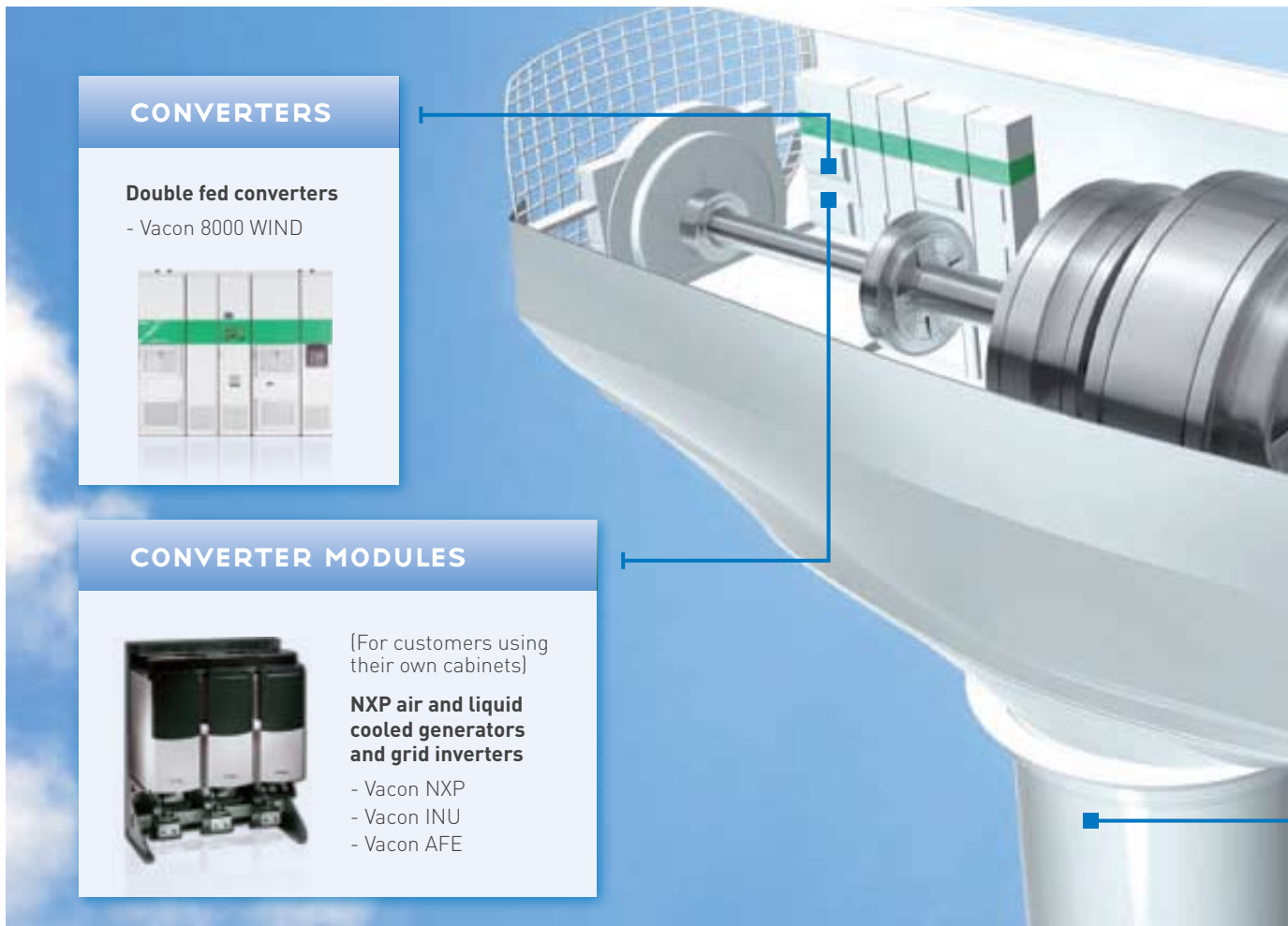
A Solution with Services

In addition to high-quality equipment and components, a service that is based on understanding our customer's business and needs is at the core of our offering. By having a team of professionals that can provide a customised solution, whether you're an machine builder or a system integra-

tor, we ensure that the service we provide goes much further than just component sales. The service and support we offer also spans the entire lifecycle of the products we provide.

Vacon Offering

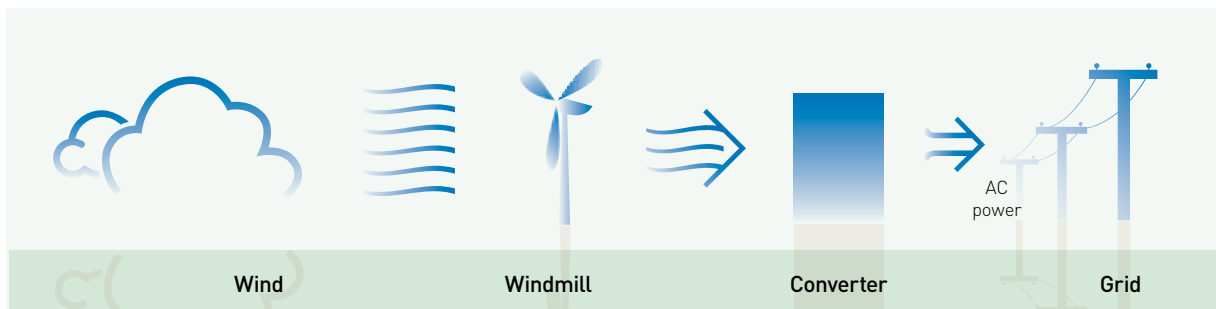
Our inverters are already a significant part of full power converters in various individual windmills. In addition we are able to offer complete double fed windmill converters and drives with application support for windmill yaw control, pitch control and other auxiliary controls. We approach each new customer with equal enthusiasm and aim to provide all customers with a tailor-made solution for their specific needs.



WIND ENERGY – AN INVESTMENT INTO THE FUTURE

Renewable energy demand is growing hand in hand with the ever-increasing concerns we have regarding the environment and global warming in particular. Environmental concerns, sustainable development and green values are hot topics of discussion, which have had a direct impact on the growth rate of the wind energy market. In addition to the knowledge of the environmental effects of burning fossil fuels for energy, we are also painfully aware of the fact

that those resources are quickly diminishing. The need to permanently search out alternative and sustainable sources of energy is inevitable. Wind, as far as energy production is concerned, is a truly renewable and clean source. It is also the furthest developed and most established of these truly renewable sources. Consumers and people in the energy industry alike are realising this, and the market is expected to continue growing well into the future.



Modern windmills can be used to convert energy from wind into usable electricity for the electricity grid. Vacon products, like the Vacon 8000 WIND, are essential parts of windmill installations that convert the kinetic energy produced by the rotating blades into AC power.



DRIVES FOR YAW, PITCH AND AUXILIARY CONTROLS



AC drives for a range of various applications

- Vacon NXL
- Vacon NXS
- Vacon NXP

VACON WIND – APPLICATIONS AND SOLUTIONS

Products and Applications

Vacon produces high performance quality inverters, drives and power converter solutions for wind energy applications. Our comprehensive offering is easily tailored to suit your specific technical and branding needs. We can provide anything from single converters and auxiliary drives components to complete converter unit solutions like the Vacon 8000 WIND, which is used especially in double fed induction generators (DFIG) as a converter for controlling and adjusting power.

In addition to the essential windmill converter solutions, Vacon has products in its portfolio that consist of numerous other individual applications and control functions within a windmill. These functions include e.g. yaw control, pitch control and other auxiliary controls.

Grid-code Compliance

We also have wide experience of and the tools for building grid-code compliance systems, low voltage ride-throughs, micro-grid functionality and fieldbus interfaces for windmill control systems helping to ensure your windmill power investment.

Service

Having highly skilled and motivated personnel means that you not only get products of the highest standard, but have local and global 24/7 support available for the commissioning, maintenance and service of your investment during its entire lifecycle.





VACON 8000 WIND – A COMPREHENSIVE CONVERTER SOLUTION

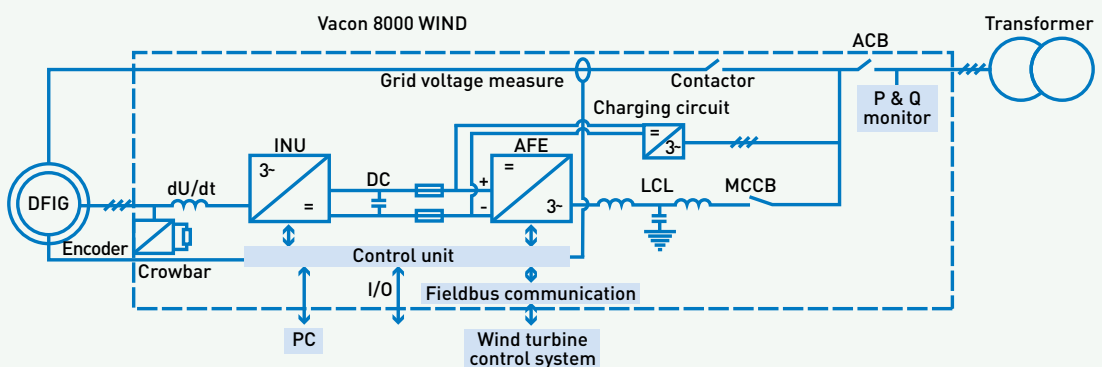
FEATURES

- Wide speed range of the generator from subsynchronous to oversynchronous
- High power quality
- Active and reactive power control
- Heavy-duty active crowbar
- Wide temperature characteristics
- Automatic grid synchronization
- Lightning protection
- Low voltage ride-through
- Wide range of fieldbus communications
- Advanced monitoring tools
- Internal fault protection
- Optional arc protection

BENEFITS

- Produces high-quality power
- Reliable and durable (low maintenance)
- High level of automation and connectivity
- Easily expandable and customizable solution
- Easy monitoring and control
- Expert service and support available

MAIN CIRCUIT DIAGRAM



VACON 8000 WIND - TECHNICAL DATA

RATED POWER	1.5 MW	2 MW
DIMENSIONS W x H x D (mm)	2406 x 2000 x 605*	2606 x 2000 x 605*
GRID RATED CURRENT	634 A	634 A
GRID MAXIMUM CURRENT	698 A	698 A
ROTOR RATED CURRENT	590 A	920 A
ROTOR SIDE MAXIMUM CURRENT	649 A	1012 A
GRID VOLTAGE	690 VAC, -10%...+10%	
GRID FREQUENCY	45-66 Hz	
SWITCHING FREQUENCY	1.5 kHz	
SPEED FEEDBACK	Incremental encoder	
TORQUE CORRESPONDING TIME	<10 ms	
AMBIENT OPERATING TEMPERATURE	-10°C — +40°C**	
STORAGE ENVIRONMENT TEMPERATURE	-40°C — +70°C	
COOLING MODE	Air cooling	
ALTITUDE	<1000 m***	
IP CLASSES	IP23/IP54	
FEATURES	Grid side MCCB and stator side air circuit breaker Internal crowbar and crowbar resistor Internal input LCL and output filters Wide range of fieldbuses Automatic synchronization Overvoltage, overcurrent, input phase monitor	

* D = 781 mm with fan housing

** If the ambient operating temperature exceeds +40°C, the load capacity of the converter decreases.

*** If the altitude exceeds 1000 m, the load capacity of the converter decreases.

For further information, please contact Vacon.

SIZES AND RATINGS

ORDER TYPE CODE	IP PROTECTION	DIMENSIONS W x H x D (mm)*	WEIGHT (kg)
NXE15006G2L1RSG_	IP23	2406 x 2000 x 605	2000
NXE15006G5L1RSG_	IP54	2406 x 2000 x 605	2000
NXE20006G2L1RSG_	IP23	2606 x 2000 x 605	2100
NXE20006G5L1RSG_	IP54	2606 x 2000 x 605	2100

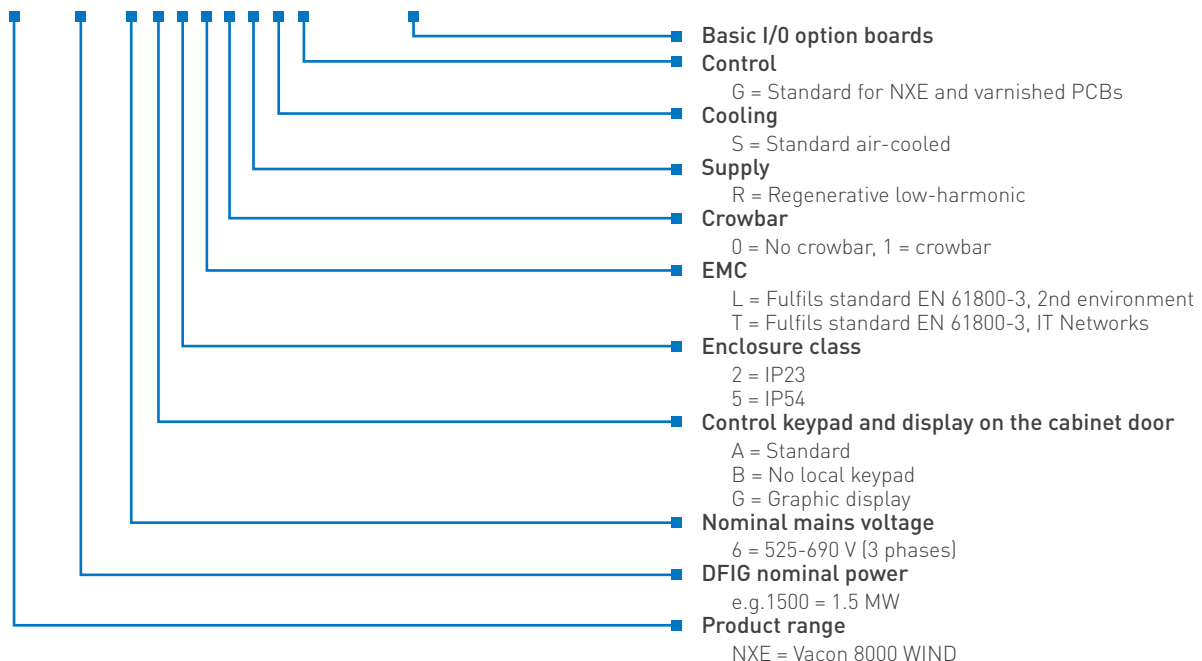
INCLUDED COMPONENTS	
+ICB	AFE side MCCB
+IAC	Stator side contactor
+AM0	ICB motor operation
+ADC	Power supply 240 W
+DMS	Remote/Local/Service switch
+ODU	dU/dt filter
+ILC	LCL filter

OPTIONS	DESCRIPTION
+ACH	Additional cabinet heaters
+ACL	Cabinet light
+DPM	Power monitor
+PAP	Arc protection system
+PLT	Lightning protection
+ACS	230 VAC customer socket
+PDF	Fuse in DC bus
+AT3	4 kVA auxiliary transformer

FIELD BUS OPTIONS	DESCRIPTION
OPT-C2	RS485 [Multiprotocol], Note: Modbus, N2
OPT-C3	Profibus DP
OPT-C4	Lonworks
OPT-C5	Profibus DP [D9-type connector]
OPT-C6	CanOpen [Slave]
OPT-C7	DeviceNet
OPT-C8	RS485, Note: Modbus, N2
OPT-CF	CAN/Euromap
OPT-CI	Modbus/TCP

TYPE DESIGNATION CODE

NXE 0000 6 A 2 L 1 R S G 0000000000 + OPTIONS



VACON

DRIVEN BY DRIVES

Vacon Partner

www.vacon.com

Subject to change without prior notice.

BC00424A