POWER CONVERTERS

MAIN FEATURES

KIT OPTIONS & CUSTOMIZABLE DESIGNS FOR THE BEST LCoE

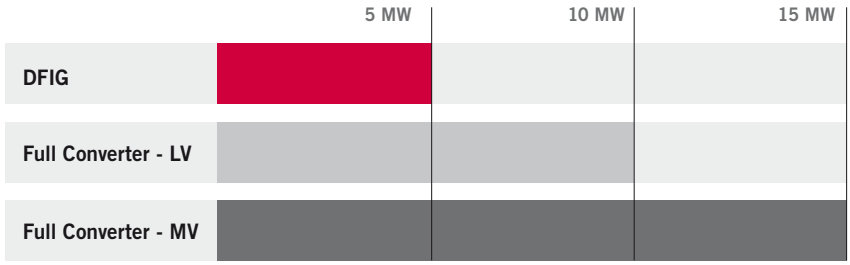
FLEXIBILITY TO ADAPT TO DIFFERENT GRIDS

INTEGRATION SUPPORT IN WIND TURBINES & WIND FARMS

ACTIVE LIFECYCLE PERFORMANCE OPTIMIZATION

INGECON® WIND Power converters are designed to increase reliability, boost efficiency and reduce maintenance costs.

The power converters are based on IGBT power semiconductors and are equipped with a web application service tool that allows monitoring and remote control.



DFIG POWER CONVERTERS

Doubly fed power converter for wind turbines equipped with a doubly fed induction generator with high-speed drivetrain technology.

A mature technology used by many of the main turbine manufacturers. A key advantage is its costs and sizes savings, due to the fact that the converter and associated parts are sized for 30% of the rated power.

FULL POWER CONVERTERS

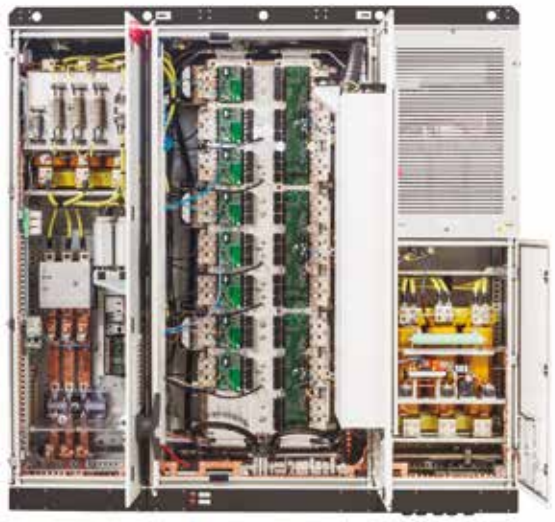
Full power converter for wind turbines equipped with a synchronous or asynchronous generator with direct drive, medium-speed or high-speed drivetrain technology.

A technology used by many wind turbine manufacturers due to its operating flexibility, energy management advantages and high efficiency at low wind speeds.

INGECON WIND

DFIG

POWER CONVERTERS



3.6 MW DFIG Power Converter

POWER RANGES

UP TO 5 MW

Low voltage DFIG power converters have been developed with a modular FRT solution in order to optimize cost-effectiveness and fulfil the strictest international grid codes.

General Data		
Rated power range	**< 2 MW**	**2 MW - 5 MW**
Converter type	Back to back	
Semiconductor type	IGBT	
Efficiency (at rated power)	> 96.5%	> 97%
Generator type	DFIG	
Application	Onshore	Onshore/Offshore
Product certification	CE (UL, CSA… on request)	
Electrical Data		
Output voltage	690 V	
Grid voltage range	±10%	
Frequency	50/60 Hz	
Power Quality		
Power converter THD (i)	< 3%	
Generator Filter		
dV/dt	< 1 kV/us	
FRT		
FRT compliance	Strictest grid codes (VDE & FGW, Q/GDW 392-2009, FERC 661-A, INDIAN CEA)	
Cooling		
Type	Air cooled (Ambient)	Water cooled (Liquid)
Temperature range	5ºC to 50ºC	5ºC to 60ºC
Derating 1.5 % each 1 C°	40ºC to 50ºC	55ºC to 60ºC
Cold/Hot climate version	On request	On request
Mechanical Data		
Protection degree (IP)	IP23/IP54	IP54
Corrosion class	C3H	C3H/C4H
Communication Protocols		
	All industry standards	

INGECON WIND

FULL
POWER CONVERTERS

3.7 MW FC Power Converter

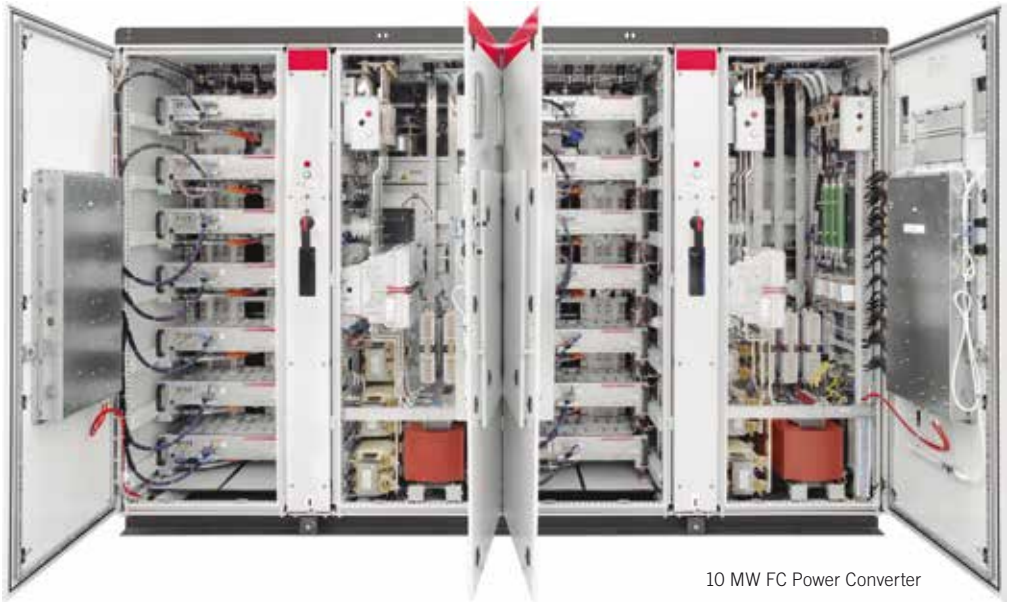
LOW
VOLTAGE

POWER RANGES

UP TO 10 MW

Low voltage FC single power converter units up to 5 MW and parallelized power converters up to 10 MW. The power converters can be adapted to the generator technology and the environmental conditions.

General Data		
Rated power range	**< 5 MW**	**5 MW - 10 MW**
Conversion line		
Converter type	Back to back	
Semiconductor type	IGBT	
Efficiency (at rated power)	> 97%	
Generator type	IG/EESG/PMG	
Application	Onshore	Onshore/Offshore
Product certification	CE (UL, CSA… on request)	
Electrical Data		
Output voltage	690 V	
Grid voltage range	±10%	
Frequency	50/60 Hz	
Grid Filter		
Power converter THD (i)	< 3%	
Generator Filter		
dV/dt	< 1 kV/us	
FRT		
FRT compliance	Strictest grid codes (EEG2009, EON2006, Q/GDW 392-2009, FERC 661-A)	
Cooling		
Type	Air cooled Water cooled (Liquid)	Full water cooled (Liquid)
Temperature range	5ºC to 50ºC	
Derating 2% each 1 Cº	50ºC to 55ºC	
Cold/Hot climate version	On request	
Mechanical Data		
Protection degree (IP)	IP54	
Corrosion class	C3H	
Mechanical Data		
	All industry standards	



10 MW FC Power Converter

MEDIUM VOLTAGE

POWER RANGES

UP TO 15 MW

Medium voltage FC HV IGBT power converters up to 15 MW have been optimized for parallelized solutions in order to increase efficiency, minimize downtime and reduce the impact on overall cost.

General Data		
Wind turbine rated power	**< 7.5 MW**	**7.5 MW - 15 MW**
Conversion line		
Converter type	Back to back	
Semiconductor type	HV-IGBT	
Efficiency (at rated power)	> 97.8%	
Generator type	IG/EESG/PMG	
Application	Onshore/Offshore	
Product certification	CE (UL, CSA… on request)	
Electrical Data		
Output voltage	3,000 V	
Grid voltage range	-10% to 20%	
Frequency	50/60 Hz	
Grid Filter		
Power converter THD (i)	< 5% (other values on request)	
Generator Filter		
dV/dt	1.5 kV/us (other values on request)	
FRT		-
FRT compliance	Strictest grid codes (EEG2009, EON2006, Q/GDW 392-2009, FERC 661-A)	
Cooling		
Type	Water cooled (Liquid)	
Temperature range	-10°C to 55°C	
Cold/Hot climate version	On request	
Mechanical Data		
Protection degree (IP)	IP54	
Corrosion class	C3H/C4H	
Mechanical Data		
	All industry standards	