



Ingeteam has developed a new technology, named **xDFM**, featuring a power converter not connected to the grid and an additional generator acting as an exciter. It is an innovative, variable speed technology offering significant advantages over the DFM and Full Converter systems.

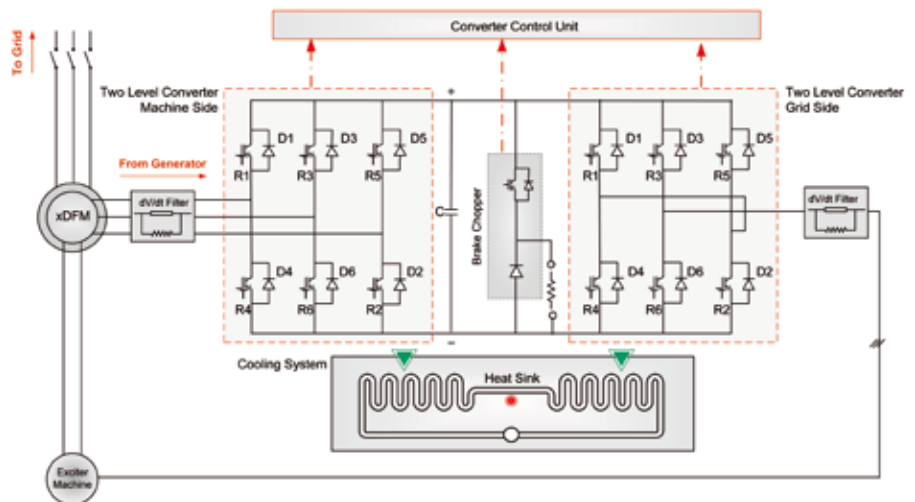
The **xDFM** can be considered an evolution of the classic DFM topology, wherein two electric machines, a synchronous permanent magnet machine and a doubly fed asyn-

chrous machine, are used together in such manner that the power is only fed to the grid through the stator of the doubly fed induction generator and the power converter manages the power between both electric machines. The output is accurately controlled and remains constant above rated speed avoiding power fluctuations dependent on wind speed variations. Additionally, power generation is less sensitive to grid disturbances, such as grid faults, and provides a better performance in stand-alone and weak grids.

For wind turbines up to 6 MW On & Offshore

Highlights

- Full grid code compliance with torque peak limitation
- Mechanical load reduction (xDEB)
- High Power quality (No power converter is connected to the grid)
- Suitable for HVRT connection



Exciter doubly fed power converter for wind turbines equipped with a doubly fed induction generator and an exciter with high speed drive train technology.

xDFM 500-6000

General data				
Rated power range	< 2 MW	1.5-3 MW	3-5 MW	> 5 MW
Converter type	Back to back	Back to back	Back to back	Back to back
Semiconductor type	IGBT	IGBT	IGBT	IGBT
Efficiency (at rated power)	> 96.5%	> 97%	> 97%	> 97%
Generator type	DFIG	DFIG	DFIG	DFIG
Application	Onshore	Onshore/Offshore	Onshore/Offshore	Onshore/Offshore
Product certification	CE (UL, CSA... on request)	CE (UL, CSA... on request)	CE (UL, CSA... on request)	CE (UL, CSA... on request)
Electrical data				
Output voltage	690 V			
Grid voltage range	±10%			
Frequency	50/60 Hz			
Generator filter				
dV/dt	< 1 kV/us			
LVRT				
LVRT compliance	Strictest grid codes (EEG2009, EON2006, Q/GDW 392-2009, FERC 661-A)			
Cooling				
Type	Air cooled (Ambient)	Water cooled (Liquid)		
Temperature range	5°C to 40°C	5°C to 55°C		
Derating 2% each 1°C	40°C to 50 °C	50°C to 55 °C		
Cold/Hot climate version	On request	On request		
Mechanical data				
Protection degree (IP)	IP23/IP54	IP23/IP54	IP54	IP54
Corrosion class	C3H	C3H/C4M	C3H/C4M	C3H/C4M
Communication				
Protocols	All industry standards			