

Reach the PINNACLE of Performance and Reliability



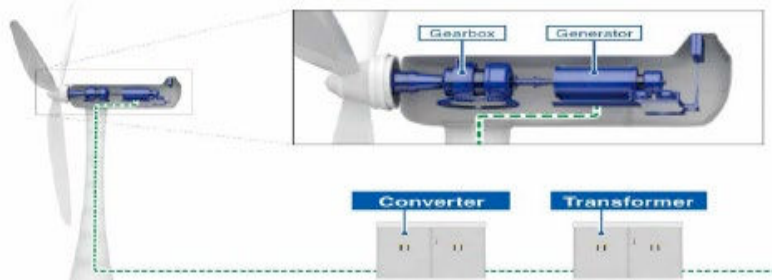
Wind Power Generation

As wind turbines collect energy from the wind, it converts the air into mechanical energy which generates power for cities. They are becoming more popular globally as a clean method of power generation that is environmentally friendly. Fuji Electric's semiconductors play a crucial role in this conversion between wind and energy to generate power globally.

Wind turbines with increased blade lengths to raise the amount of power generated per turbine are becoming the mainstream type of power generator.

The output power of wind power generators is converted to DC power in an AC/DC converter, and then converted from DC power to commercial frequency AC power by an inverter.

Fuji Electric supplies IGBT modules that are suitable for conversion circuits that are required to have a large capacity. Our state-of-the-art high-quality IGBT technology convert direct current (DC) to alternating current (AC) with high-efficiency and high-reliability. Fuji Electric's 7th generation IGBT semiconductors permit 175 degrees C maximum continuous temperatures (T_{jop}).



Wind Power Generation Configuration

poly	Double	Direct	Direct + Multi-Level
Configuration			
Efficiency	89%	90%	93%
Cost	100%	98-100%	90-95%
Quality	Low	High	High
Gear Box	Need	Do Not Need	Do Not Need
Step Up Transformer	Need	Need	Do Not Need
Generator	Induction	Synchronous	Synchronous + Multi-winding
Converter Capacity	15 - 30%	100%	100%
IGBT	1700V / 450A-1000A	1700V / 1000A-3600A	3300V / 150A-400A



Wind Power Generation IGBT Modules

IGBT modules proposal for Double fed system.

Wind Power Converter	Package	Rotor Side			Grid Side		
		IGBT Module		Number of Parallels	IGBT Module		Number of Parallels
		V Series	X Series		V Series	X Series	
1.5MW	Dual XT	2MBI450VN-170-50	2MBI450XNA170-50	6	2MBI450VN-170-50	2MBI450XNA170-50	3
		-	2MBI600XNG170-50	4	-	2MBI600XNG170-50	2
	PrimePACK™	2MBI1000VXB-170E-50	2MBI1000XXB170-50	3	2MBI1000VXB-170E-50	2MBI1000XXB170-50	1
		2MBI1400VXB-170P-50	2NBI400XXB170-50	2	2MBI1400VXB-170P-50	2NBI400XXB170-50	1
		-	2MBI1800XXF170-50	1	-	2MBI1800XXF170-50	1
		-	2MBI1800XXG170-50	1	-	2MBI1800XXG170-50	1
	HPM	1MBI1600VC-170E	-	2	1MBI1600VC-170E	-	1
2.0MW	Dual XT	2MBI450VN-170-50	2MBI450XNA170-50	8	2MBI450VN-170-50	2MBI450XNA170-50	1
		-	2MBI600XNG170-50	6	-	2MBI600XNG170-50	4
	PrimePACK™	2MBI1000VXB-170E-50	2MBI1000XXB170-50	4	2MBI1000VXB-170E-50	2MBI1000XXB170-50	3
		2MBI1400VXB-170P-50	2NBI400XXB170-50	3	2MBI1400VXB-170P-50	2NBI400XXB170-50	2
		-	2MBI1800XXF170-50	1	-	2MBI1800XXF170-50	2
		-	2MBI1800XXG170-50	1	-	2MBI1800XXG170-50	1

Direct Drive System

IGBT modules proposal for Direct drive system.

Wind Power Converter	Package	Rotor Side			Grid Side		
		IGBT Module		Number of Parallels	IGBT Module		Number of Parallels
		V Series	X Series		V Series	X Series	
1.5MW	PrimePACK™	2MBI1000VXB-170E-50	2MBI1000XXB170-50	3	2MBI1000VXB-170E-50	2MBI1000XXB170-50	2
		2MBI1400VXB-170E-50	2MBI400XXB170-50	2	2MBI1400VXB-170E-50	2NBI400XXB170-50	2
		-	2MBI1800XXB170-50	1	-	2MBI1800XXF170-50	-
		-	2MBI1800XXF170-50	1	-	2MBI1000XXG170-50	-
2.0MW	PrimePACK™	2MBI1000VXB-170E-50	2MBI1000XXB170-50	3	2MBI1000VXB-170E-50	2MBI1000XXB170-50	3
		2MBI1400VXB-170E-50	2NBI400XXB170-50	3	2MBI1400VXB-170E-50	2NBI400XXB170-50	2
		-	2MBI1800XXF170-50	2	-	2MBI1800XXF170-50	1
		-	2MBI1800XXG170-50	1	-	2MBI1800XXG170-50	1