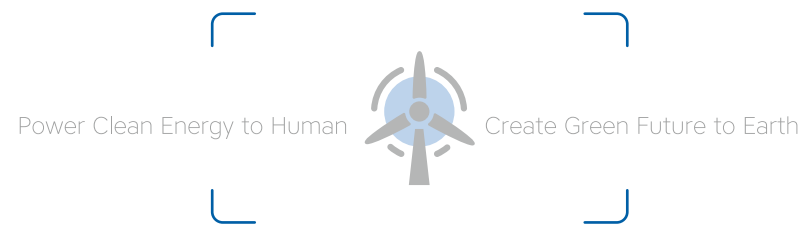




Stock name: 运达股份
Stock code : 300772



Windey

Products and Solutions

Power Clean Energy to Human
Create Green Future to Earth

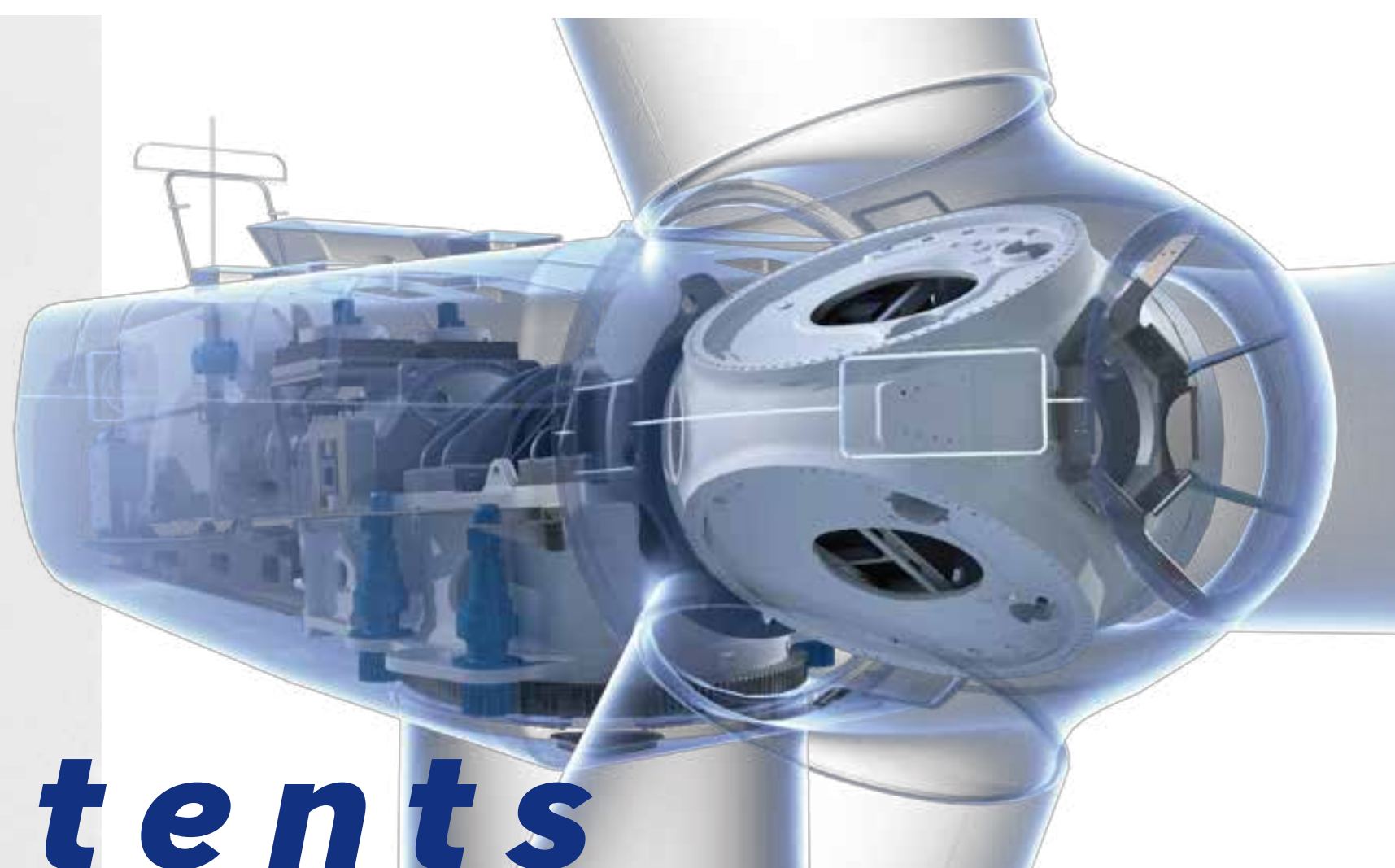
www.chinawindey.com



Add: 18F, Building A, the West Lake International Plaza S&T, No.391, Wen'er Road, Hangzhou,
Zhejiang Zip code: 310012
Tel: 0571-87397666 Fax: 0571-87397667
Website: www.chinawindey.com



Zhejiang Windey Co., Ltd.



Contents

01/_{PAGE}
Smart Wind Turbine

05/_{PAGE}
Excellent Features

07/_{PAGE}
Wind Farm Applicability

09/_{PAGE}
Technical Parameters

21/_{PAGE}
Energy Storage Solutions

24/_{PAGE}
Full Life Cycle Services

SMART WIND TURBINE



NO.1

Operation Stability



NO.1

Availability



HIGH RELIABILITY

01 Structural Design

- 1.Redundancy design makes the whole wind turbine more safer.;
- 2.Modular and platform-based design, mature structure and strong expansibility

02 Intelligent Control

- 1.Independent pitch control technology to significantly reduce fatigue load of the wind turbines and prolong the service life of components;
- 2.Load optimization technology of specific site to significantly reduce the vibration of the wind turbines and make the operation more stable;
- 3.Fast resonance ride-through control technology of soft tower and control strategy for dynamic thrust to make the operation safer.

03 Operation Monitoring

Digital integrated intelligent monitoring system and early fault warning system to monitor the wind turbines operation in real time.



HIGH ECONOMY

- 1.High transmission conversion efficiency of the wind turbines;
- 2.The longest blade and maximum swept area for the same MW-class, as well as combination with high tower technology to provide optimal power generation;
- 3.Optimal speed control and optimal pitch angle control technology to improve the operation performance and power generation efficiency;
- 4.Smart O&M management system to realize the ultra-low failure rate of products and ultra-low O&M costs.

HIGH ADAPTABILITY



01 Environmental Adaptability

1. Customized design scheme for ultra-high altitude
2. Customized design scheme for high temperature and humidity environment
3. Intelligent noise reduction operation scheme
4. Anti-freezing mode and intelligent active deicing scheme
5. Intelligent typhoon resistance scheme for coastal environment
6. Small erection platform and single blade lifting scheme and modular transportation scheme for complex mountain environment



02 Site Adaptability

1. High tower solutions for areas with high wind shear
2. Customized long blade, large capacity and site specific solutions for low wind speed areas



03 Power Grid Adaptability

1. The world's leading domestic high/low/zero voltage ride-through capability
2. The world's first voltage source unit, with active grid support technology, inertial response and primary frequency regulation capabilities

2018

Windey cooperated with China Hydropower Engineering Consulting Group Co., Ltd. to carry out research on ultra-high altitude, and developed large-capacity wind turbines that can be applied to the plateau environment of 5500 meters (Tibet region), which add exploitable value to the plateau area with low air density and greatly expanded the feasibility of development in these areas.

2020

The technology of three-phase 1140V full-power WTGs was developed first in the world by Windey in 2020, which realizes lower cost of energy by greatly improving the efficiency of the electric drive system and transformation system.

2014

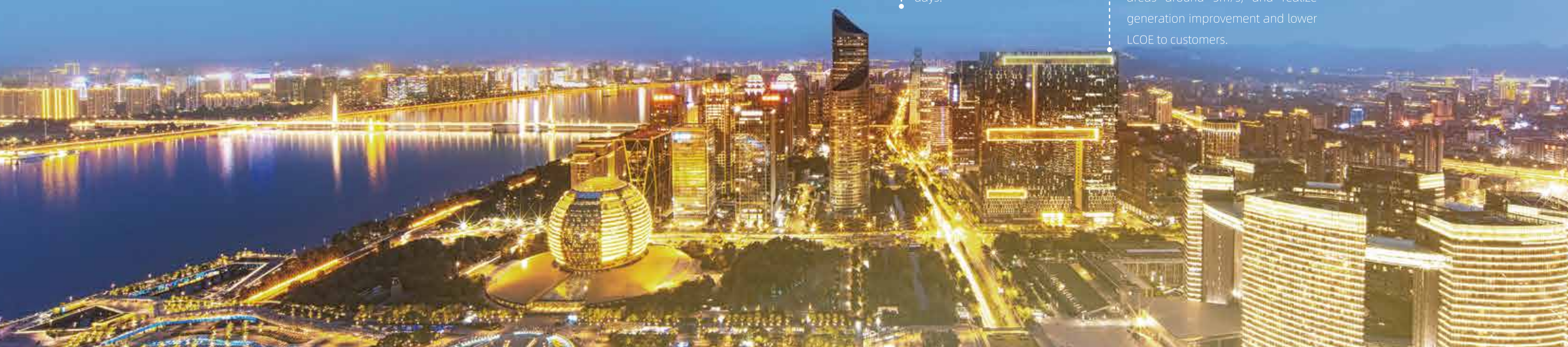
Windey launched 2.XMW resistance wind turbines, which have been widely used in coastal areas such as Zhejiang and help owners realize more incomes from power generation in typhoon days.

2019

Windey launched new wind turbines with high tower for areas with low wind speed and high wind shear. The customized towers with different height from 125m to 160m can match the diversified site conditions, which explored the feasibility of development for low wind speed areas around 5m/s, and realize generation improvement and lower LCOE to customers.

2021

In 2021, Windey launched the world's largest onshore 7MW platform wind turbines with rated power from 6.5MW to 7.5MW, opening a new era of onshore wind turbine with lower LCOE. Provide products and services with higher reliability, lower cost and better adaptability to customers, and create greater value for them.



EXCELLENT FEATURES



INTELLIGENT



Intelligent Remote Sensing

Precise control and early fault warning through real-time monitoring of key parts of the wind turbines.



Intelligent Prediction

High-precision weather and generation prediction through big data analysis platform of Alibaba Cloud.



Intelligent Control

By utilizing adaptive control technologies, such as wake loss management, energy management and sector control to realize intelligent control in optimization.



ADAPTIVE



Power Grid Adaptability

The platform-based wind turbines are equipped with active power control to achieve grid support and effectively improve power quality.



Environmental Adaptability

Special design schemes for ultra-high altitude, intelligent and flexible noise reduction solution, and special solutions for deicing, typhoon resistance, etc.

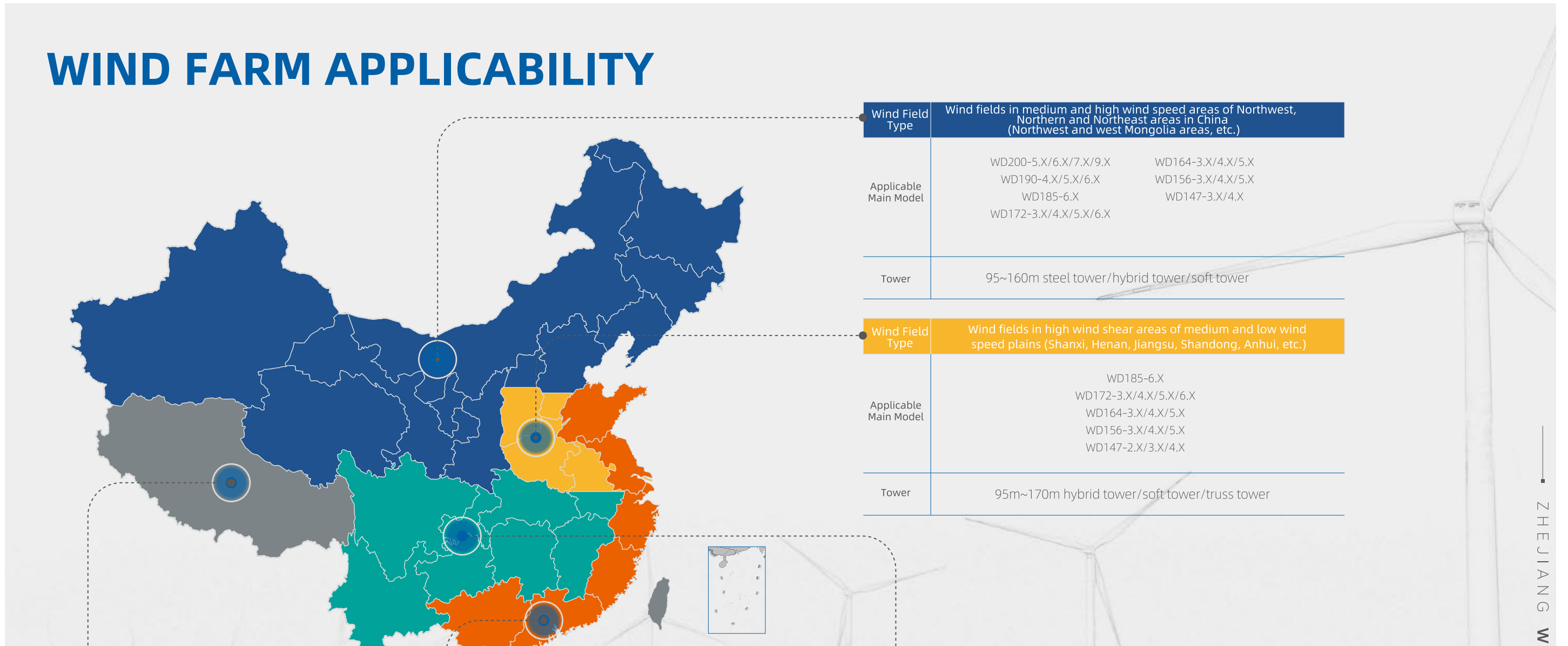


Supply Chain Adaptability

The platform-based and standardized design of the units creates an efficient, efficient and collaboration supply chain system.



WIND FARM APPLICABILITY



Wind Field Type	Wind fields in medium and high wind speed areas of Northwest, Northern and Northeast areas in China (Northwest and west Mongolia areas, etc.)	
Applicable Main Model	WD200-5.X/6.X/7.X/9.X WD190-4.X/5.X/6.X WD185-6.X WD172-3.X/4.X/5.X/6.X	WD164-3.X/4.X/5.X WD156-3.X/4.X/5.X WD147-3.X/4.X
Tower	95~160m steel tower/hybrid tower/soft tower	

Wind Field Type	Wind fields in high wind shear areas of medium and low wind speed plains (Shanxi, Henan, Jiangsu, Shandong, Anhui, etc.)	
Applicable Main Model	WD185-6.X WD172-3.X/4.X/5.X/6.X WD164-3.X/4.X/5.X WD156-3.X/4.X/5.X WD147-2.X/3.X/4.X	
Tower	95m~170m hybrid tower/soft tower/truss tower	

Wind Field Type	Wind fields in special environment areas (Tibet, etc.)
Applicable Main Model	WD147-2.XGX /3.XGX WD140-2.XGX WD131-2.XGX WD121-2.XGX
Tower	90m~160m steel tower

Wind Field Type	Wind fields in medium and high wind speed offshore areas (offshore, medium and high seas)
Applicable Main Model	WD245-13.X/14.X/15.X WD225-8.X/9.X/10.X WD195-6.X/7.X
Tower	95m~160m steel tower

Wind Field Type	Wind fields in low wind speed mountains of middle and Southeast China (Sichuan, Yunnan, Guizhou, Guangxi, Guangdong, Jiangxi, Zhejiang, etc.)	
Applicable Main Model	WD190-4.X/5.X/6.X WD172-3.X/4.X/5.X/6.X WD164-3.X/4.X/5.X WD156-3.X/4.X/5.X	WD147-2.X/3.X/4.X WD140-2.X/3.X WD131-2.X WD121-2.X
Tower	90m~160m steel tower/hybrid tower/soft tower	

TECHNICAL PARAMETERS

Model	WD77-1500	WD82-1500	WD88-1500	WD93-1500	WD103-2000	WD107-2000	WD110-2000	WD115-2000	WD121-2000	WD131-2000	WD131-2200	WD103-2500	
Rated Power (kW)	1500	1500	1500	1500	2000	2000	2000	2000	2000	2000	2200	2500	
Operating parameters													
Cut-in Wind Speed (m/s)	3	3	3	3	3	3	2.5	2.5	2.5	2.5	2.5	3	
Rated Wind Speed (m/s)	11	10.5	10.1	10.1	9.9	9.6	9.4	9.2	8.8	8.3	8.6	10.7	
Cut-out Wind Speed (m/s)	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	
Extreme Wind Speed (m/s)	70	52.5	59.5	59.5	70	70	52.5	52.5	52.5	52.5	52.5	70	
Design Grade	GLS	GLS	IEC S	IEC S	IEC S	IEC S	IEC III B	IEC S	IEC III B	IEC III B	IEC III B	IEC S	
Standard Operating Temperature	-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)						-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)						
Rotor													
Diameter(m)	77	82	88	93	103	107	110	115	121	131	131	103	
Swept Area (m ²)	≈4657	≈5281	≈6082	≈6793	≈8332	≈8992	≈9503	≈10387	≈11499	≈13478	≈13478	≈8332	
Sweeping Area Per Kilowatt	3.105	3.521	4.055	4.529	4.166	4.496	4.752	5.194	5.750	6.739	6.126	3.333	
Number of Blades	3	3	3	3	3	3	3	3	3	3	3	3	
Generator													
Generator Type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	
Rated Power of Generator (kW)	1550	1550	1550	1550	2100	2100	2100	2100	2100	2100	2260	2600	
Rated Voltage of Generator (V)	690	690	690	690	690	690	690	690	690	690	690	690	
Rated Speed (rpm)	1800	1800	1800	1800	1800	1800	1800	1800	1750	1750	1750	1200	
Gearbox													
Grade	Second stage planetary gear and first stage parallel axis						Second stage planetary gear and first stage parallel axis						
Transmission Ratio	1:104			1:116			1:130			1:138			1:86
Conversion System													
Rated Power (KVA)	365 (grid side) /695 (turbine side)				502 (grid side) /956 (turbine side)				1125 (grid side) /1375 (turbine side)				
Input/Output Voltage (V/V)	690±10%				690±10%				690±10%				
Input/Output Current(A/A)	305 (grid side) /580 (turbine side)				420 (grid side) /800 (turbine side)				550 (grid side) /1000 (turbine side)				
Input/Output Frequency Range(Hz)	47.5~51.5				47.5~51.5				47.5~51.5				
Braking System													
Air Braking	Electric-pitch pneumatic brake						Electric-pitch pneumatic brake						
Mechanical Braking	Hydraulically driven brake clamp						Hydraulically driven brake clamp						
Tower													
Hub Height(m)	65~160				80~160				85~160				80~160
Weight													
Single Blade (t)	5.9	6.1	6.4	7.52	11.6	11.3	11.8	12.5	13.7	13.8	13.8	11.6	
Hub (t)	17	17	17	17	23	23	23	23	23	25	25	25	
Total Weight of Nacelle (t)	61	61	61	61	85	85	85	85	85	85	85	95	
Size													
Blade Length (m)	37.5	40.2	42.8	45.3	50.5	52.5	53.8	56.5	59.5	63.5	63.5	50.5	
Hub(m)	4.5×3.9×3.6				4.8*4.2*3.8				4.8×4.3×3.8				
Nacelle (m)	10.1×3.8×3.5				11.5×4.2×4.3				11.4×4.2×4.0				

TECHNICAL PARAMETERS

Model	WD107-2500	WD125-2500	WD140-2500	WD147-2500	WD140-3000	WD147-3000	WD156-3000	WD164-3000	WD156-3300	WD164-3300	WD147-3600	WD156-3600
Rated Power (kW)	2500	2500	2500	2500	3000	3000	3000	3000	3300	3300	3600	3600
Operating parameters												
Cut-in Wind Speed (m/s)	3	3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Rated Wind Speed (m/s)	10.1	9.4	8.5	8.3	9.1	8.8	8.5	8.2	8.8	8.4	9.4	9.2
Cut-out Wind Speed (m/s)	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25
Extreme Wind Speed (m/s)	59.5	52.5	52.5	52.5	52.5	59.5	59.5	52.5	59.5	52.5	59.5	59.5
Design Grade	IEC IIB	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S
Standard Operating Temperature	-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)						-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)					
Rotor												
Diameter(m)	107	125	140	147	140	147	156	164	156	164	147	156
Swept Area (m ²)	≈8992	≈12272	≈15394	≈16972	≈15394	≈16972	≈19113	≈21124	≈19113	≈21124	≈16972	≈19113
Sweeping Area Per Kilowatt	3.597	4.909	6.158	6.789	5.131	5.657	6.371	7.041	5.792	6.432	4.714	5.309
Number of Blades	3	3	3	3	3	3	3	3	3	3	3	3
Generator												
Generator Type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type
Rated Power of Generator (kW)	2600	2600	2600	2600	3100	3100	3100	3100	3450	3450	3750	3750
Rated Voltage of Generator (V)	690	690	690	690	1140	1140	1140	1140	1140	1140	1140	1140
Rated Speed (rpm)	1200	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Gearbox												
Grade	Second stage planetary gear and first stage parallel axis	first stage planetary gear and Second stage parallel axis					first stage planetary gear and Second stage parallel axis					
Transmission Ratio	1:86	1:159				1:159	1:167	1:175	1:167	1:175	1:159	1:167
Conversion System												
Rated Power (KVA)	1125 (grid side) 1375 (turbine side)	657 (grid side) /1195 (turbine side)				574 (grid side) /1153 (turbine side)			639 (grid side) /1254 (turbine side)		695 (grid side) /1294 (turbine side)	
Input/Output Voltage (V/V)	690±10%	690±10%				1140±10%			1140±10%			
Input/Output Current(A/A)	550 (grid side) 1000 (turbine side)	550 (grid side) /1000 (turbine side)				291 (grid side) /584 (turbine side)			324 (grid side) /635 (turbine side)		352 (grid side) /655 (turbine side)	
Input/Output Frequency Range(Hz)	47.5~51.5	47.5~51.5				47.5~51.5			47.5~51.5			
Braking System												
Air Braking	Electric-pitch pneumatic brake						Electric-pitch pneumatic brake					
Mechanical Braking	Hydraulically driven brake clamp						Hydraulically driven brake clamp					
Tower												
Hub Height(m)	80~160	85~160	90~160	92~160	90~160	92~160	95~160	95~160	95~160	95~160	92~160	95~160
Weight												
Single Blade (t)	11.3	14	14	16.6	14	16.6	18.5	19	18.5	19	16.6	18.5
Hub (t)	25	24	34	34	40	40	40	40	40	40	40	40
Total Weight of Nacelle (t)	95	94	100	100	100	100	100	110	100	110	100	100
Size												
Blade Length (m)	52.5	61.5	68.6	71.5	68.6	71.5	76	80.5	76	80.5	70.5	76
Hub(m)	4.8×4.3×3.8	4.9×4.3×4.2				5.0×4.5×4.2						
Nacelle (m)	11.4×4.2×4.0	11.4×4.5×4.3				11.4×4.5×4.0						

TECHNICAL PARAMETERS

Model	WD164-3600	WD172-3600	WD164-4000	WD172-4000	WD164-4200	WD172-4200	WD147-4500	WD156-4500	WD164-4500	WD172-4500	WD190-4500
Rated Power (kW)	3600	3600	4000	4000	4200	4200	4500	4500	4500	4500	4500
Operating parameters											
Cut-in Wind Speed (m/s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3	3
Rated Wind Speed (m/s)	8.9	8.7	9.3	9.1	9.5	9.3	10.6	10.1	9.9	9.5	9.1
Cut-out Wind Speed (m/s)	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25
Extreme Wind Speed (m/s)	52.5	52.5	52.5	52.5	52.5	52.5	70	59.5	59.5	59.5	59.5
Design Grade	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S
Standard Operating Temperature	-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)						-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)				
Rotor											
Diameter(m)	164	172	164	172	164	172	147	156	164	172	190
Swept Area (m ²)	≈21124	≈23235	≈21124	≈23235	≈21124	≈23235	≈16972	≈19113	≈21124	≈23235	≈28353
Sweeping Area Per Kilowatt	5.868	6.454	5.281	5.809	5.030	5.532	3.771	4.247	4.694	5.163	6.301
Number of Blades	3	3	3	3	3	3	3	3	3	3	3
Generator											
Generator Type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type
Rated Power of Generator (kW)	3750	3750	4200	4200	4400	4400	4750	4750	4750	4750	4750
Rated Voltage of Generator (V)	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
Rated Speed (rpm)	1700	1700	1700	1700	1700	1700	1640	1640	1700	1700	1700
Gearbox											
Grade	first stage planetary gear and Second stage parallel axis						first stage planetary gear and Second stage parallel axis				
Transmission Ratio	1:175	1:170	1:170	1:170	1:170	1:170	1:162	1:162	1:162	1:170	1:195
Conversion System											
Rated Power (KVA)	695 (grid side) /1294 (turbine side)		701 (grid side) /1481 (turbine side)		735 (grid side) /1548 (turbine side)		792 (grid side) /1738 (turbine side)			792 (grid side) /1738 (turbine side)	
Input/Output Voltage (V/V)	1140±10%		1140±10%		1140±10%		1140±10%			1140±10%	
Input/Output Current(A/A)	352 (grid side) /655 (turbine side)		355 (grid side) /750 (turbine side)		372 (grid side) /784 (turbine side)		401 (grid side) /880 (turbine side)			401 (grid side) /880 (turbine side)	
Input/Output Frequency Range(Hz)	47.5~51.5	47.5~52.5	47.5~52.5		47.5~52.5		47.5~52.5			47.5~52.5	
Braking System											
Air Braking	Electric-pitch pneumatic brake						Electric-pitch pneumatic brake				
Mechanical Braking	Hydraulically driven brake clamp						Hydraulically driven brake clamp				
Tower											
Hub Height(m)	95~160	100~160	95~160	100~160	95~160	100~160	92~160	95~160	95~160	100~160	108~160
Weight											
Single Blade (t)	19.5	21.7	19.5	21.7	19.5	21.7	18.4	18.6	20	21.7	23
Hub (t)	40	42	42	42	42	42	42	42	42	42	42
Total Weight of Nacelle (t)	110	116	112	116	112	116	112	112	112	118	122
Size											
Blade Length (m)	80.5	84	80.5	84	80.5	84	71.5	76	80.5	84	92.5
Hub(m)	5.0×4.5×4.2						5.0×4.5×4.2				
Nacelle (m)	11.4×4.5×4.0						11.4×4.5×4.0				

TECHNICAL PARAMETERS

Model	WD147-4800	WD156-4800	WD164-4800	WD172-4800	WD190-4800	WD164-5000	WD172-5000	WD190-5000	WD200-5000	WD156-5200	WD172-5200	WD190-5200	
Rated Power (kW)	4800	4800	4800	4800	4800	5000	5000	5000	5000	5200	5200	5200	
Operating parameters													
Cut-in Wind Speed (m/s)	2.5	2.5	2.5	3	3	2.5	3	3	3	2.5	3	3	
Rated Wind Speed (m/s)	10.9	10.3	10.2	9.7	9.5	10.4	9.9	9.7	9.4	10.6	10.1	9.9	
Cut-out Wind Speed (m/s)	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	
Extreme Wind Speed (m/s)	70	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5	
Design Grade	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	
Standard Operating Temperature	-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)					-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)							
Rotor													
Diameter(m)	147	156	164	172	190	164	172	190	200	156	172	190	
Swept Area (m ²)	≈16972	≈19113	≈21124	≈23235	≈28353	≈21124	≈23235	≈28353	≈31416	≈19113	≈23235	≈28353	
Sweeping Area Per Kilowatt	3.536	3.982	4.401	4.839	5.907	4.225	4.647	5.671	6.283	3.676	4.468	5.453	
Number of Blades	3	3	3	3	3	3	3	3	3	3	3	3	
Generator													
Generator Type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	
Rated Power of Generator (kW)	5050	5050	5050	5050	5050	5250	5250	5250	5250	5450	5450	5450	
Rated Voltage of Generator (V)	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	
Rated Speed (rpm)	1640	1640	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	
Gearbox													
Grade	first stage planetary gear and Second stage parallel axis					first stage planetary gear and Second stage parallel axis							
Transmission Ratio	1:162	1:162	1:170	1:170	1:195	1:170	1:170	1:195	1:195	1:162	1:170	1:195	
Conversion System													
Rated Power (KVA)	843 (grid side) /1797 (turbine side)					867 (grid side) /1864 (turbine side)				909 (grid side) /1943 (turbine side)			
Input/Output Voltage (V/V)	1140±10%					1140±10%				1140±10%			
Input/Output Current(A/A)	427 (grid side) /910 (turbine side)					439 (grid side) /944 (turbine side)				460 (grid side) /984 (turbine side)			
Input/Output Frequency Range(Hz)	47.5~52.5					47.5~52.5				47.5~52.5			
Braking System													
Air Braking	Electric-pitch pneumatic brake					Electric-pitch pneumatic brake							
Mechanical Braking	Hydraulically driven brake clamp					Hydraulically driven brake clamp							
Tower													
Hub Height(m)	92~160	95~160	95~160	100~160	108~160	95~160	100~160	108~160	112~160	95~160	100~160	108~160	
Weight													
Single Blade (t)	18.4	18.6	20	21.7	23	20	22	23	26	20	22	23	
Hub (t)	42	42	42	42	42	42	42	42	51	42	42	42	
Total Weight of Nacelle (t)	112	112	112	118	122	115	120	122	122	115	120	122	
Size													
Blade Length (m)	71.5	76	80.5	84	92.5	80.5	84	92.5	97.5	76	84	92.5	
Hub(m)	5.0×4.5×4.2					5.0×4.5×4.2							
Nacelle (m)	11.4×4.5×4.0					11.4×4.5×4.0							

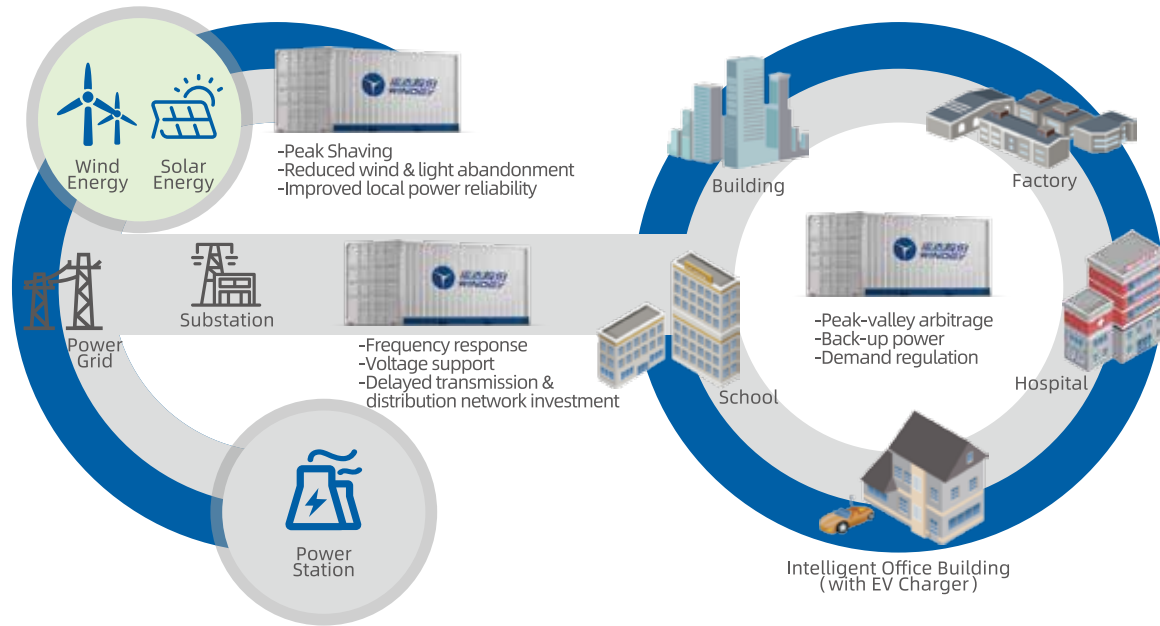
TECHNICAL PARAMETERS

Model	WD156-5500	WD172-5500	WD190-5500	WD200-5500	WD172-6000	WD172-6250	WD185-6250	WD185-6660	WD200-6660	WD200-7000	WD200-7500	WD200-9000
Rated Power (kW)	5500	5500	5500	5500	6000	6250	6250	6660	6660	7000	7500	9000
Operating parameters												
Cut-in Wind Speed (m/s)	2.5	3	3	3	3	3	3	3	3	3	3	3
Rated Wind Speed (m/s)	10.9	10.4	10.1	9.8	10.1	10.4	10.2	11.2	10.8	11.5	12.2	12.8
Cut-out Wind Speed (m/s)	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25
Extreme Wind Speed (m/s)	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5	59.5
Design Grade	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S
Standard Operating Temperature	-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)						-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)					
Rotor												
Diameter(m)	156	172	190	200	172	172	185	185	200	200	200	200
Swept Area (m ²)	≈19113	≈23235	≈28353	≈31416	≈23235	≈23235	≈26880	≈26880	≈31416	≈31416	≈31416	≈31416
Sweeping Area Per Kilowatt	3.475	4.225	5.155	5.712	3.873	3.718	4.301	4.036	4.717	4.488	4.189	3.491
Number of Blades	3	3	3	3	3	3	3	3	3	3	3	3
Generator												
Generator Type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type
Rated Power of Generator (kW)	5800	5800	5800	5800	6300	6600	6600	7000	7000	7000	7950	9400
Rated Voltage of Generator (V)	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
Rated Speed (rpm)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Gearbox												
Grade	first stage planetary gear and Second stage parallel axis						first stage planetary gear and Second stage parallel axis					
Transmission Ratio	1:162	1:170	1:185	1:185	1:170	1:170	1:185	1:185	1:188.9	1:188.9	1:188.9	1:179
Conversion System												
Rated Power (KVA)	909 (grid side) 1943 (turbine side)	960 (grid side) /2040 (turbine side)			1043 (grid side) 2097 (turbine side)	1084 (grid side) /2174 (turbine side)		1262 (grid side) /2157 (turbine side)		1325 (grid side) 2261 (turbine side)	1418 (grid side) 2413 (turbine side)	1586 (grid side) 3168 (turbine side)
Input/Output Voltage (V/V)	1140±10%				1140±10%	1140±10%			1140±10%			
Input/Output Current(A/A)	460 (grid side) 984 (turbine side)	486 (grid side) /1033 (turbine side)			528 (grid side) 1062 (turbine side)	549 (grid side) /1101 (turbine side)		639 (grid side) /1092 (turbine side)		671 (grid side) 1145 (turbine side)	718 (grid side) 1222 (turbine side)	761 (grid side) 1533 (turbine side)
Input/Output Frequency Range(Hz)	47.5~52.5				47.5~52.5	47.5~52.5			47.5~52.5			
Braking System												
Air Braking	Electric-pitch pneumatic brake						Electric-pitch pneumatic brake					
Mechanical Braking	Hydraulically driven brake clamp						Hydraulically driven brake clamp					
Tower												
Hub Height(m)	95~160	100~160	108-160	112~160	100~160	100~160	105~160	105-160	112~160	112-160	112~160	112~160
Weight												
Single Blade (t)	20	22	23	27	24	24	25	25	27	27	27	28
Hub (t)	42	42	42	42	51	51	51	51	62	62	62	60
Total Weight of Nacelle (t)	115	120	122	125	145	145	135	135	150	150	150	150
Size												
Blade Length (m)	76	80.5	92.5	97.5	84	84	90	90	97.5	97.5	97.5	97.5
Hub(m)	5.0×4.5×4.2				5.1×4.6×4.1			5.1×4.6×4.1	5.1×4.6×4.1			5.3×4.9×4.1
Nacelle (m)	11.4×4.5×4.0				13.3×4.5×4.2			13.3×4.5×4.2	13.3×5.5×4.2			13.5×5.7×4.2

TECHNICAL PARAMETERS

Model	WD195-6600	WD195-7000	WD225-8000	WD225-9000	WD225-10000	WD245-13000	WD245-14000	WD245-15000
Rated Power (kW)	6600	7000	8000	9000	10000	13000	14000	15000
Operating parameters								
Cut-in wind Speed (m/s)	3	3	3	3	3	3	3	3
Rated wind Speed (m/s)	9.7	9.9	9.5	10	10.5	10.7	11.1	11.4
Cut-out wind Speed (m/s)	20~25	20~25	20~25	20~25	20~25	20~25	20~25	20~25
Extreme wind speed (m/s)	59.5	77	77	77	77	77	77	77
Design Grade	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S	IEC S
Standard Operating Temperature	-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)				-20°C~40°C (Normal temperature) ; -30°C~40°C (Low temperature)			
Rotor								
Diameter(m)	195	195	225	225	225	245	245	245
Swept Area (m ²)	≈29865	≈29865	≈39761	≈39761	≈39761	≈47144	≈47144	≈47144
Sweeping Area Per Kilowatt	4.525	4.266	4.970	4.418	3.976	3.626	3.367	3.143
Number of Blades	3	3	3	3	3	3	3	3
Generator								
Generator Type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type	Double-fed type
Rated Power of Generator (kW)	7000	7000	8500	9500	11000	14000	15000	16000
Rated Voltage of Generator (V)	1140	1140	1140	1140	1140	1140	1140	1140
Rated Speed (rpm)	1700	1700	1200	1200	1200	1200	1200	1200
Gearbox								
Grade	first stage planetary gear and Second stage parallel axis				first stage planetary gear and Second stage parallel axis			
Transmission Ratio	1:204.8		1:150		1:150		1:160	
Conversion system								
Rated Power (KVA)	1240 (grid side) 2310 (turbine side)	1307 (grid side) 2409 (turbine side)	1388 (grid side) 2783 (turbine side)	1561 (grid side) 3131 (turbine side)	1734 (grid side) 3478 (turbine side)	2255 (grid side) 4522 (turbine side)	2428 (grid side) 4870 (turbine side)	2602 (grid side) 5218 (turbine side)
Input/Output Voltage (V/V)	1140±10%				1140±10%			
Input/Output Current(A/A)	660 (grid side) 1340 (turbine side)	695 (grid side) 1400 (turbine side)	703 (grid side) 1409 (turbine side)	791 (grid side) 1585 (turbine side)	878 (grid side) 1762 (turbine side)	1142 (grid side) 2290 (turbine side)	1230 (grid side) 2466 (turbine side)	1318 (grid side) 2642 (turbine side)
Input/output Frequency Range(Hz)	47.5~52.5				47.5~52.5			
Braking system								
Air Braking	Electric-pitch pneumatic brake				Electric-pitch pneumatic brake			
Mechanical Braking	Hydraulically driven brake clamp				Hydraulically driven brake clamp			
Tower								
Hub Height(m)	115~140		130~150			140~160		
Weight								
Single Blade (t)	32	32	47	47	47	53	53	53
Hub (t)	42	42	60	60	60	120	125	130
Total Weight of Nacelle (t)	185	190	265	265	265	410	420	430
Size								
Blade Length (m)	95	95	110	110	110	120	120	120
Hub(m)	5.6×4.8×4.5	5.6×4.8×4.5	6.8×6.3×6.3	6.8×6.3×6.3	6.8×6.3×6.3	8.5×8×8m	8.5×8×8m	8.5×8×8m
Nacelle (m)	14×4.8×4.7	14×4.8×4.7	16×6.1×5.8	16×6.1×5.8	16×6.1×5.8	20×7.5×6.5m	20×7.5×6.5m	20×7.5×6.5m

ENERGY STORAGE SOLUTIONS



MULTI SCENE COVERAGE

- ESS battery and converter products from 30 kW to 100 MWESS battery and converter products from 30 kW to 100 MW
- Flexible configurations covering multi-scenario energy-storage applications on power generation, transmission, transformation, distribution and consumption

EFFICIENT AND RELIABLE

- Highly integrated design with system conversion efficiency
- High precision battery sorting & prediction with ultra long cycle life and safety
- Modular design with convenient operation and maintenance

EMPOWERMENT & VALUE-ADDED

- Improved power quality and generating benefits
- Conducive to zero carbon with optimized system configuration and investment
- Multiple functions on energy services and power market

Model		WD ESS-1500/3000	
DC Parameters	Cell	Type	long cycle life LFP
		Specification	3.2V/280V
	Module	Configuration	1P14S
		Energy	12.5kWh
	Battery Rack	Configuration	1P14S*17
		Energy	213.2kWh
	Battery System	Quantity	14
		Rated Energy	2985kWh
		Nominal voltage	761V
		Voltage range	666.4~856.8V
	Container System	Dimension	12196*2896*2438mm
		Weight	40t
		IP Grade	IP54
		FAS	HFC-227ea/FM200
Thermal control system		Industrial air conditioner	
RH		0~95%	
communication interface		Ethernet	
AC Parameters	AC rated power	1.5MW	
	AC maximum power	1.65MW	
	Rated grid frequency	50Hz/60Hz	
	Frequency range	47~53Hz	
	AC current distortion	< 3%	
	Power factor	-1~1	

The latest physical object shall prevail against any change in product size and parameters

FULL LIFE CYCLE SERVICES

INTELLIGENT MONITORING

1. Mature and perfect standardization experience in wind turbines operation and maintenance through installation and operation of more than 9,000 wind turbines;
2. The third-generation intelligent monitoring solution: Twenty-four hours of 360° omnibearing monitoring for wind turbines operation can be achieved based on monitoring systems of the intelligent online vibration, tower and tower base status, structural safety and bolt;
3. Intelligent fault diagnosis system to integrate fault analysis, diagnosis and treatment of wind turbines;
4. Wndey Scada wind power forecasting system to forecast weather and electricity in high precision through big data analysis platform of Alibaba Cloud.

EXCELLENT CONTROL OPTIMIZATION

Intelligent control optimization technology, adaptive control technology based on system identification, and intelligent field-level control technologies such as wake flow management, energy management, and sector control.

SMART O&M SERVICES

1. Intelligent sector management and field-level control technology to reduce the O&M costs of wind turbines and prolong the service life of wind turbines components;
2. Smart O&M management system to achieve digital management for daily O&M of the wind farm and lean management for the costs;
3. Wind farm information platform (Windy MIS) to achieve full life circle management for operation of the wind farm through big data analysis.

CONVENIENT WIND FARM UPGRADES

Provide multi-dimensional and customized solutions such as value-added operation and maintenance, wind turbines upgrade, adaptive transformation of power grid, wind farm demolition and wind turbines decommissioning.



Intelligent Manufacturing in Flexible Assembly Center

Implement supporting industries, ensure product quality and reduce transportation costs through production line and robot, as well as promote local employment.

Solutions for Complex Sites

Provide integrated solutions for transportation and lifting in complex sites through modular transportation and single blade lifting technology.

Assessment and Prediction of Wind Resources

Have refined wind energy assessment tools and big database of wind resources, and provide wind resource solutions covering the planning, construction and operation of

Fully Managed Intelligent Operation and Maintenance

Achieve refined operation and maintenance, timely supply of spare parts and efficient operation of the wind turbines based on field-level data platform.

Decommissioning and Cycling of Wind Turbines

Provide a complete set of harmless recycling scheme through recycling technology of components with metal and composite materials.

