

WIND POWER EVOLVED

# AW1500

**KNOWLEDGE REALLY IS POWER.** Our wind turbine technology is grounded in more than 15 years of operational observations made within our own wind farms in varied terrains and climates across the globe. Our turbine design answers the challenges facing project developers and owners today in areas of performance, reliability, safety and cost-of-energy. We know what works and what doesn't and the AW-1500 reflects this experience.

## ENHANCED PERFORMANCE

- ▶ The proven AW-82 is now available for Class IIa wind sites, increasing versatility and improving capacity factors for sites with medium wind speed
- ▶ The 100 meter concrete tower is now a standard product offering, improving production for sites with moderate to high wind shear

## PROVEN TRACK RECORD

- ▶ With approximately 2,500 units installed in 13 countries, the AW-1500 global average fleet availability is over 98%
- ▶ ACCIONA Windpower has no serial defects and our machines post a remarkably low global failure rate of less than 1% on major components
- ▶ Double bearing support on main shaft to reduce bending loads on the gearbox

## SAFETY FIRST

- ▶ Hydraulic pitch control for safe and reliable blade pitching in all wind environments
- ▶ Safety features like a two-person lift; hub access from inside the nacelle; and spacious, ergonomic nacelle design allow for operational efficiency

## COMPATIBILITY & CONTROL

- ▶ Zero voltage ride-through beyond current regulatory requirements, in addition to grid integration and reactive power solutions to allow for maximum control for stringent grid codes
- ▶ Control software that allows intelligent automatic monitoring and operation

## 12 KV VERSUS 690 V

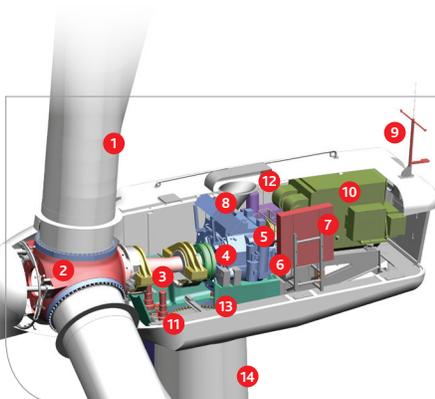
- ▶ This configuration, proven in our wind turbines, can remove the step-up transformer from the equation and is ideal for projects that are in close proximity to the substation
- ▶ The result is a significant savings over the life of the project
- ▶ Up to 50% savings in collection system costs
- ▶ Average of 1% greater energy productions due to the avoidance of transformer electrical losses
- ▶ Avoidance of maintenance and potential failures of transformers

## AW1500 MAIN COMPONENTS

- |                              |                          |
|------------------------------|--------------------------|
| 1) Rotor Blades              | 8) Cooling Radiator      |
| 2) Hub                       | 9) Wind Measuring System |
| 3) Main Shaft                | 10) Generator            |
| 4) Gearbox                   | 11) Yaw Drive            |
| 5) Disk Brake                | 12) Hydraulic System     |
| 6) Generator Coupling        | 13) Yaw Bearing          |
| 7) Control System Monitoring | 14) Tower                |



AW1500  
AW 70/1500 | AW 77/1500 | AW 82/1500



# AW1500

TECHNICAL SPECIFICATIONS

MODEL	AW 70/1500	AW 77/1500	AW 82/1500
Rotor diameter	70 m	77 m	82 m
Wind class	IEC Ia	IEC IIa+	IEC IIa
<b>OPERATING DATA</b>			
Cut-in wind speed	4m/s	3.5 m/s	3 m/s
Cut-out wind speed	25 m/s	25 m/s	25 m/s
Nominal power	1,500 kW		
Cold Weather Operational Temperature range (Optional)	-30°C to + 40°C		
Power factor range	+/- 0.93 (600 kVA)		
Zero voltage ride through	Meets or exceeds global requirements		
<b>ROTOR</b>			
Swept area	3,848 m <sup>2</sup>	4,657 m <sup>2</sup>	5,289 m <sup>2</sup>
Nominal rotation speed	20.2 rpm	18.3 rpm	16.7 rpm
Nominal tip speed	74.1 m/s	73.8 m/s	71.7 m/s
Max sound level	105.4 dBA	104.9 dBA	103.9 dBA
Power regulation	Independent pitch regulated with variable speed		
<b>DRIVE TRAIN</b>			
Gearbox	3 stages: 1 planetary, 2 parallel (helical)		
Bearings	Double spherical roller bearings		
Lubrication	Pressure and splash with oil cooler/oil filter		
<b>PITCH SYSTEM</b>			
Pitch bearings	Double row four point contact		
Actuation	Hydraulic		
Failsafes	Blade independent accumulators on hub		
<b>YAW SYSTEM</b>			
Type	Four point ball bearing, external gear		
Slewing ring	External		
Braking system	Hydraulic friction pads, plus electro-mechanical brake per motor drive		
<b>GENERATOR</b>			
Type	6 poles, double feeding		
Frequency	50/60 Hz		
Nominal voltage	12,000 V (able to eliminate step-up transformers depending on wind farm layout)		
Speed range	770 – 1,300 rpm 50 (Hz) / 920 – 1,560 rpm 60 (Hz)		
<b>TOWER</b>			
Steel hub height standard options (m)	60, 80	60, 71.5, 80	80
Steel tower number of sections	3	3	3
Concrete hub height standard options (m)	-	100	100
Concrete tower number of sections	-	5	5
<b>NACELLE</b>			
Nacelle weight (tons)	52.3 t		
Hub weight (tons)	15.2 t		
Nacelle dimensions	8.7 m (length) 3.4 m (width) 4.1 m (height)		
Nacelle transportability	One piece, rail-capable		
<b>LIFE AND HOIST CAPACITIES</b>			
Service lift capacity	250 kg		
Onboard crane hoist lift capacity	250 kg		



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