

PRODUCT SPECIFICATIONS

Model 29-225



US-Built, Mid-Scale Electric Wind Turbine Generators

225 Kilowatts of Power -Filling the Mid-Scale Gap

For too long the wind industry has been looking for a turbine that produces much more than 100 kilowatts of power, without having to go to the size or expense of a 600 or 750 kilowatt machine. With the public now aware that wind power can be a viable source of electrical energy, customers want to know what it can do for their local factory, shopping center or school. The Aeronautica 29-225 fills that need.

The origin of this superb turbine goes back 25 years, with the first machines of this class installed in 1984. Over 360 turbines were installed across Denmark, the USA, Germany and Sweden. In California, these Norwin turbines - then manufacture red under the *DanWin* trade name - constantly scored among the highest marks for Up-Time Availability and Capacity Factor.

At less than 180' tall on a 40m monopole tower, the 29 -225 is a great stall-regulated wind turbine that will fit on many suburban and urban properties. It ships in standard shipping containers, making delivery to most locations a breeze. Erection can be made by readily available smaller cranes that can be mobilized easily. It's simplicity of design has created both a robust and very cost effective turbine for commercial, industrial or municipal needs.

With its low profile, and efficient output the 29-225 is a great match for many distributed generation applications. And *Aeronautica* wind turbines are *all manufactured in the United States*, reducing shipping costs and delivery times.

The industry has been waiting for a turbine like this to fill the needs of commercial and industrial facilities, schools, office complexes, etc. The wait is now over.

Fast Facts: Orientation: *Upwind* Rotor Diameters: *29m* Rotor Speed: *37.9 RPM at Load* Hub Height: *30, 40, 50m* Regulation: Stall Regulated with Fail-Safe Tip Brakes Blades: *Fiber Reinforced Polyester* • 225kW design for Class I, II or III winds

◆ Low overall height profiles: from 146'(44.5m) to 211'(64.5m)

Stall Regulated simplicity

 Erection and transport via common equipment - ships in standard containers!







225kW System Specifications:

Wind Class:	IEC Class IA	
Blades:	3 blades, upwind orientation,	
	Fiberglass reinforced polyester	
Rotor:		
Power regulation:	Stall Regulation	
Rotor size:	29m diameter	
Rotor speed:	37.9 rpm at Load	
Swept area:	664 m² (7,145 ft²)	
Tilt angle:	5°	
Coning angle:	0°	
Brake, normal:	Fail Safe Mechanical Disk Brake	
Brake, emergency:	Turning Blade Tip Brakes	
Pitch Angle:	Approximately 2.3 °, adjusted during run-in	
Mechanical brake:	Fail-safe type disk brake on high-speed shaft	
Brake torque:	2x of nominal torque (1x by normal braking sequence)	
RPM max. value:	1920 (60 Hz), 1600 (50 Hz), on the high-speed shaft	
_		

Generator:

Nom. Electric Power: 225 kW Generator: Single Wound Asynch. Induction, 4 pole DW, IP54 Generator speed: 1800 (60 Hz) or 1500 (50 Hz) rpm Loss in generator: Approx. 3% at Full Load Generator cut-in: Thyristor controlled gradual cut-in Grid connection: 480 v, 60 Hz (std) or 50 Hz

Weights:

Rotor w/blades:	Approx.	10,600 lbs (4,818 kg)
Nacelle (excl. Rotor):	Approx.	15,260 lbs (6,936 kg)
Mass (total):	Approx.	25,860 lbs (11,754 kg)

Certification:

Previously Certified by GL **Current Certification Pending**



Yaw motors: Yaw brakes: Yaw bearing: Cut-in wind speed: Cut-out wind speed: Survival wind speed: Controller: Noise:

2 pcs. electrical drives 3 pcs. active hydraulic brakes Slide bearing 4 m/s, based on 10 min average 25 m/s (60mph) based on 5 min average 67 m/s (150 mph) **CC Electronics** Operating Temp. Range: -20C TO +50C (Hi and Low Temp. Options Available) 98 dBA Sound Power (at Nacelle)

Monopole Tower

Construction: Nacelle access: Surface treatment: Conical Steel, White, 30, 40, 50m towers available Interior tower ladder through locked door In accordance with ISO 12944 Laser inspected flanges Ultrasonic inspection of raw materials and welds

SCADA:

Included in electrical cabinets at base of tower Remote surveillance and operation via Internet or ADSL

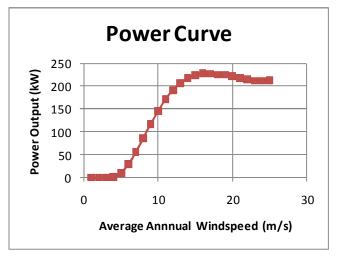
Safetv:

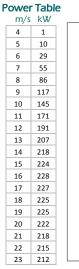
Induction generator has inherent anti-islanding Fail-safe hydraulic disk brake Grid monitoring for shutdown and operational performance Fall protection ladder system Lightning protected

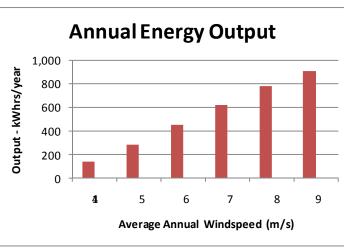
Warranty: Two year standard warranty. Extended warranties available.

Service Agreements: Annual Service Contracts are required under warranty period and are available upon request

Shipping: All Prices are FOB our plant







.225kg/m3 air density, clean blades and undisturbed horizontal air flow. In the stall range, at wind speeds over 16 m/s, the power factor may deviate from that The Power and Energy Curves shown are shown. For the Energy Graph, a Rayleigh wind speed distribution and 100% availability is assumed





 $^{\wedge}$ 500,000 sf Nacelle Manufacturing Facility at GOSS International, Durham NH

Main Headquarters, Plymouth, MA >





America's Wind Turbine Company

11 Resnik Road, Plymouth, MA 02360 1-800-360-0132 www.AeronauticaWind.com

Lui