



NorthWind[®] 100 Wind Turbine



*Extending today's resources...
creating tomorrow's choices*

Distributed Energy Systems' NorthWind 100 wind turbine provides cost-effective, highly reliable renewable energy in demanding environments worldwide.

Designed specifically for isolated grid and distributed generation applications, the NorthWind 100 wind turbine is a state-of-the-art, village-scale wind turbine. Distributed Energy Systems has drawn on 30 years of experience to engineer a wind turbine that provides cost-effective, highly reliable renewable energy in a wide variety of applications. The patented design of the NorthWind 100 wind turbine meets the needs of small utilities and independent power producers.

Key Features

Simplicity

High reliability and low maintenance were the focus in developing the NorthWind 100 wind turbine. The design integrates industry proven robust components with innovative design features to maximize wind energy capture in rural, remote and harsh environment locations. The NorthWind 100 wind turbine features a minimum of moving parts and vital subsystems to deliver high system availability. The uncomplicated rotor design allows safe, efficient turbine operation.

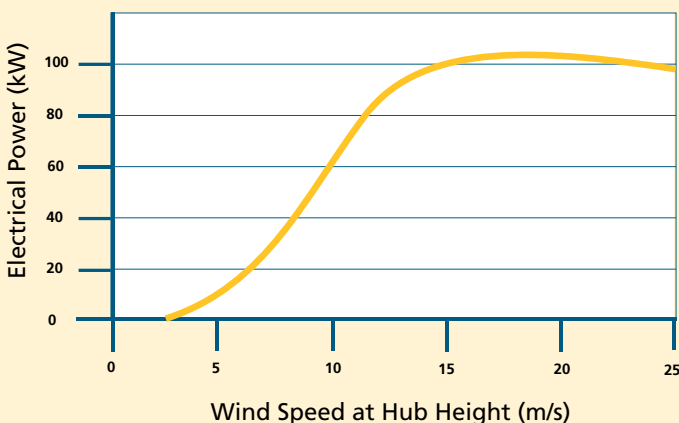
Serviceability

Our sophisticated remote monitoring and control software allows real-time accessibility of the turbine thus minimizing unnecessary service calls. When a site visit is required, all service activities can occur within the tubular tower or heated nacelle housing, providing complete protection from harsh or unpredictable weather conditions. Designated work areas provide ample room to perform service activities.

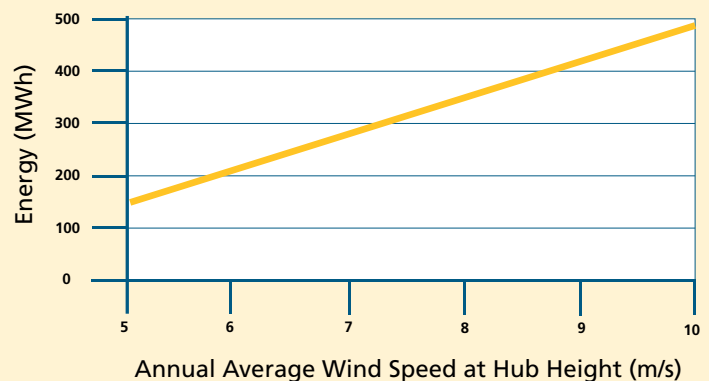
Power Quality

The NorthWind 100 wind turbine provides reliable power in distributed generation and village systems where the power grid is typically "soft and unbalanced." Our synchronous, variable speed, permanent magnet, direct drive generator and integrated power converter increase energy capture while eliminating current inrush during control transitions. This turbine can be connected to large power grids and remote wind-diesel configurations without inducing surges, effectively providing grid support rather than compromising it.

NorthWind 100/21 Wind Turbine Power Curve
Standard Density

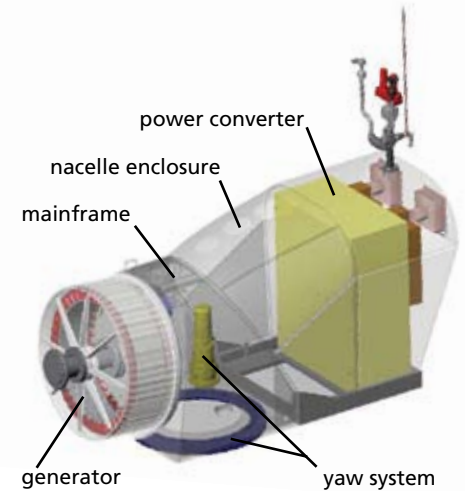


NorthWind 100/21 Wind Turbine Annual Energy Production
Standard Density, Rayleigh Distribution



Patented NorthWind 100 System

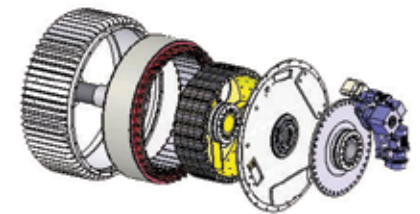
- Three fiberglass reinforced plastic blades bolted to a rigid hub that mounts directly to the generator shaft eliminates the need for rotating blade tips, blade pitch systems and speed increasing gearboxes.
- Variable speed, permanent magnet, direct drive generator/converter system is tuned to operate the rotor at the peak performance coefficient, and also allows stall point rotor control to contend with wide variation in air density found in the target applications.
- Safety system provides both normal shutdown and emergency braking backup functions.
- Advanced power converter features setpoint control of power factor and/or VARs.
- Web-based SmartView® remote monitoring system also available.



Nacelle assembly

NorthWind 100 Wind Turbine Technical Specifications

Turbine Design Class	IEC WTGS Class S
Design Standard	Compliant with IEC 61400-1
Rated Power	100kW
Power Regulation	Variable speed stall
Rotor Diameters	19m, 20m, 21m
Hub Heights	25m, 30m
Yaw System	Active upwind
Turbine Electrical Output	480VAC, 3 phase, 50/60Hz
Grid Tolerance	+10/-15% voltage; +/- 2Hz
Grid Interface	115kVA transformer (spec available)
Operating Temperature	-40 °C to 50 °C
Lightning Protection	Compliant with IEC 61024-1
Icing	to 30mm



Passively-cooled, permanent magnet, direct drive generator eliminates the drivetrain gearbox and maximizes energy capture.

Case Study

Wind-Diesel Systems in Remote Alaska

Distributed Energy Systems successfully installed and commissioned three new NorthWind 100 turbines in the community of Kasigluk, Alaska. As part of a larger wind-diesel energy initiative by Alaska Village Electric Cooperative (AVEC), these turbines will produce approximately 675,000 kWh annually. By displacing 32% of the energy normally generated by diesel fuel, the new systems are expected to generate a potential savings of over \$95,000 per year.



Contact us

Corporate Headquarters

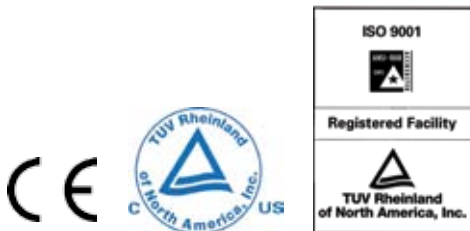
Hydrogen Generation | Technology Generation
10 Technology Drive
Wallingford, CT 06492
Tel: +01.203.678.2000

Power Generation

29 Pitman Road
Barre, VT 05641
Tel: +01.802.461.2955

Visit us online at
www.distributed-energy.com

NASDAQ: DESC



© 2007 Distributed Energy Systems Corp, All Rights Reserved
PD-0600-0053 04.07

NorthWind and SmartView are registered trademarks
of Distributed Energy Systems Corp.



*Extending today's resources...
creating tomorrow's choices*