ENGINEERING
RENEWABLE
SOLUTIONS

The global renewable energy market is ready for a revolution. The solution? Windera's turbine and control system which emphasizes utility-scale energy production for both wind and hydroelectric applications.

The Windera turbine is capable of changing the energy landscape with a turbine design unlike any other. A highly efficient, direct-drive hydraulic design coupled with proprietary remote monitoring capabilities offers a cost-effective option to increase revenues through greater power production.

For more information, visit our website www.WinderaPower.com

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WINDera
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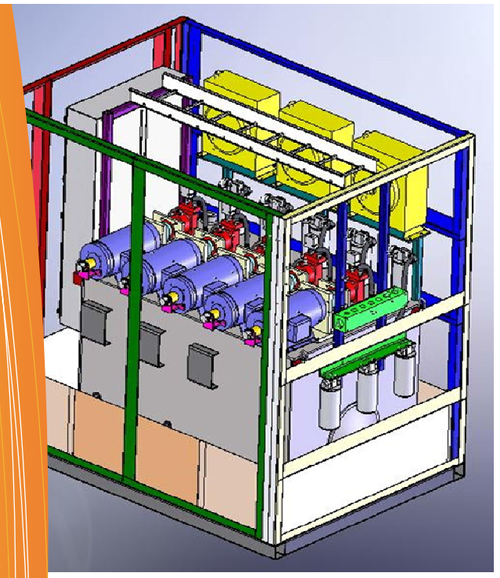
Generate **Revolution**

engineering
renewable
solutions



THE WINDERA SOLUTION

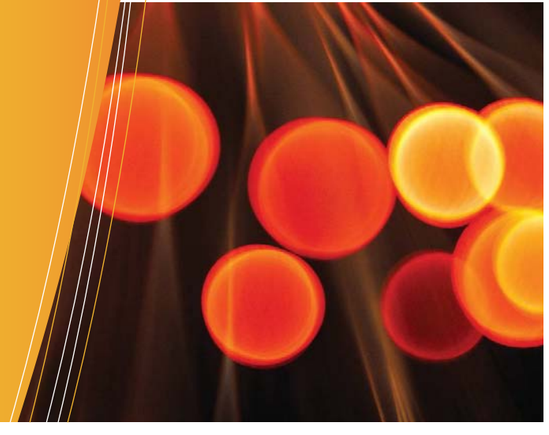
INCREASED REVENUE THROUGH GREATER POWER OUTPUT

The highly innovative Windera technology represents an evolutionary step in turbine design and performance and enables operators of aging wind farms and hydroelectric facilities to cost-effectively convert their existing fixed-speed, gear-driven generators to highly efficient, direct-drive, variable speed generators that deliver ultra-stable voltage and frequency to the grid without the need for expensive power electronics and maintenance-prone gearboxes. Windera's advanced generator and power control solution can also be used in the development of new MW-class wind turbine and hydroelectric generators including High Temperature Superconductor (HTS) and permanent magnet (PM) designs.

Excess forces are instantly converted to **heat** with no extra stress to the drive train or frame.

THE WINDERA SOLUTION

- DIRECT HYDRAULIC DRIVE TRAIN
- VARIABLE SPEED
- DYNAMICALLY CONTROLLED
- STABLE CONDITIONED AC POWER
- US AND EU COMPLIANT
- WIND AND HYDRO APPLICATIONS
- INCREASED REVENUE FOR WINDFARMS
- LOWER OPERATING COSTS
- SALEABLE POWER AT LOW RPM
- REMOTE MONITORING & CONTROL



VARIABLE SPEED, HYDRAULIC-DRIVE

The variable-speed characteristic allows the Windera wind turbine to produce electricity across a broader range of wind speeds as compared to conventional wind turbines of the same class. More electricity equals greater profit. As a result of these capabilities, the Windera solution is far more than a simple “wind turbine”. In short, the Windera Power Solution generates more electricity and higher revenues at higher efficiencies over a longer period of time and at lower wind speeds than existing wind turbines.

MORE ON WINDERA

- **Capable** of extracting useable constant voltage and frequency over a wide range of input RPMs.
- **Efficiency** is accomplished through unconventional hydraulics, controls and proprietary software.
- **Replaces** old wind turbines at much higher efficiencies, lower maintenance costs, and longer life of the unit.

TECHNOLOGY CONSULTING PROVIDES A TOTAL END TO END SOLUTION.

WINDERA re-POWER: ENERGIZING AGING WIND FARMS

Currently owners of the older sub-MW class of wind turbines must continuously recondition or replace aging generators and gearboxes in order to maintain their wind turbines. This involves shutting down the wind turbine for an extended period of time and, with crane services, removing the wind turbine’s generator, gearbox, and other machinery to be serviced or replaced.

This costly and time-consuming process extends the service life of the wind turbine by approximately four-to-five years, at which time the process must be repeated.

Windera offers wind farm owners a highly effective third option, which reduces wind farm owners’ growing operations and maintenance costs, extends their turbine service life by up to fifteen years, and increases their revenue generating potential by 25% or more!

NO GEARBOX

The Windera turbine has a direct-hydraulic , variable-speed drive train, which are two highly important characteristics that substantially change the wind farm owner’s economics. The direct-drive solution eliminates the need for a traditional gearbox, which is one of the most expensive components within the wind turbine to maintain and repair. Second, the gearbox causes energy losses as it transfers the mechanical energy from the wind turbine blades to the generator. By eliminating the gearbox, wind farm owners can produce more electricity and spend less on maintenance and repairs.

REMOTE MONITORING

The generator’s innovative power control and monitoring system ensures maximum power generation at the highest availabilities while at the same time supporting comprehensive remote monitoring and real-time control including full diagnostic and data collection capabilities. The system’s unique modular design, coupled with the use of field-proven components and ISO 9000 manufacturing standards, ensures the highest level of reliability and cost-effective operation of the Windera generator over its entire service life.