

Innovative Power Transmission



AeroDrive

*8 MW Offshore Wind Turbine without
Frequency Converter*

Lower Cost of Energy (CoE) – Our Goal

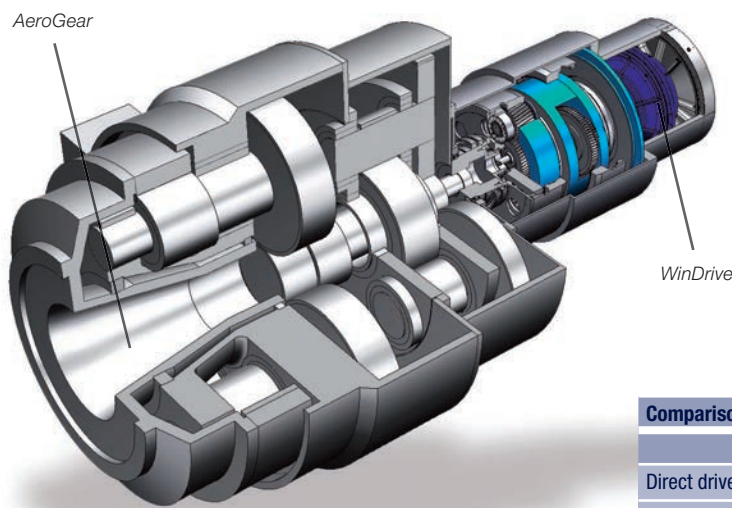
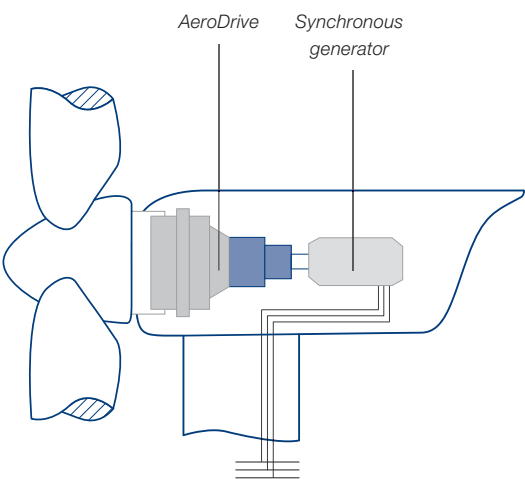
Wind turbine makers can now rely on one compact, economical and reliable drive train solution from one source, meeting the request of wind turbine buyers to reduce operating costs.

The AeroDrive technology is a ground breaking development within the field of offshore wind turbines. It is the result of a close cooperation between the two German drive train specialists RENK and Voith.

Among the goals of this joint development are lower investment and operating costs for turbine owners combined with outstanding reliability. The integration of the Voith WinDrive into the RENK AeroGear combines the benefits of both systems into one innovative solution.

The exceptional feature: The AeroDrive does not require a frequency converter or any power conversion electronics. Instead it allows for the use of a proven synchronous generator that runs at fixed speed and can directly feed energy into the grid at mid voltage level, just like conventional power stations.

Concept of AeroDrive



Schematic view of AeroDrive

Comparison of drive train concepts			
	Reliability	Weight	CoE
Direct drive	+		
Geared medium speed generator	+	+	
AeroDrive	++	+	+



Advantages and benefits of the AeroDrive technology

One compact solution

- Compact coaxial drive train:
A new development within the AeroDrive technology allows a six-fold power split together with an optimized load sharing. The result is an exceptionally high power density with an uncompromised high operational safety factor.
- The innovative solution used for the transfer of the pitch connection through the main gear makes a helical gear stage obsolete and allows for a compact coaxial drive train arrangement.

Increased reliability and extended service life

- Increased reliability:
The wind turbine does not require failure sensitive power conversion electronics. The failure rate and the resulting down time is therefore reduced significantly.
- Extended service life:
The AeroDrive reduces dynamic loads within the drive train that for example occur during grid fault situations. Additionally the hydrodynamic power transmission works wear-free. This combines to significantly extend the service life of the drive train.

Optimized cost of energy

- Operating costs:
In comparison to concepts based on frequency converters, the AeroDrive does not require any costly replacement of major components. The life time of the AeroDrive exceeds the life time of the wind turbine.
- Investment costs:
The feed-in quality of the standard type synchronous generator is comparable to that of conventional power stations. This high level of grid support is achieved without any additional equipment. No frequency converter and therefore no costly efforts to protect those sensitive electronics are necessary. This reduces overall investment costs.



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