



# Temposonics

AN AMPHENOL COMPANY

## Application Note

### Windenergy

#### With Temposonics® Sensors for optimum energy efficiency



Fig. 1: Windenergy Plant

**In current debates about renewable energies, wind power is often in the spotlight. The theory of wind energy dates back as far as the 18th century, and now it is arguably one of the most well-known and important types of energy generation.**

In order to get the optimum out of these turbines, a lot of development has been and is still being done. Currently, the energy yield of a single wind turbine is already very high. The contactless magnetostrictive position sensors from Temposonics® make an essential contribution to the high energy yield.

In modern wind turbines, the alignment of the rotor blades is controlled by the pitch control. Temposonics® position sensors are mounted in hydraulic cylinders that adjust the exact alignment of the rotor blades. They constantly and reliably record the position of these cylinders and transmit the data to the control console. This ensures that the rotor blades are always at the correct angle and that the maximum energy is extracted at all wind speeds.

If the weather is too stormy, the wind turbines must be stopped to prevent damage. For this purpose, a hydraulic brake is installed behind the gearbox. Here, too, a Temposonics® sensor is installed in the hydraulic cylinder and monitors its position. The data is passed on to a control console, which controls the brake. In this way, the sensors make a significant contribution to the safety of the system.

Temposonics® position measurement systems use the principle of magnetostriction for position measurement. This means that the measurement is contactless. Therefore, they can withstand extreme shocks, vibrations and even the conditions at the top of the wind turbine. They are maintenance-free, which prevents costly downtime and removal of the devices. If repairs are needed, the sensors can be easily replaced without opening the hydraulic cylinders. This means that work on the sensors requires minimal effort.

Temposonics® sensors make a major contribution to increasing efficiency in wind turbines and also to the energy transition. They can be used in many different renewable energy applications as well as in industry and mobile hydraulics to optimize processes and save costs.

Three sensors in particular from Temposonics' product portfolio are suitable for wind turbines:

- Temposonics® R-Series V RH5: High-performance sensor for in cylinder-integration
- Temposonics® R-Series V RDV: Detached electronics for space limited mounting
- Temposonics® E-Series EH: Compact cost-efficient solution for general purpose applications

## All advantages for windturbines at a glance

- Absolute, non-contact sensing with highest quality: Temposonics® sensors are wear-free over years and measure without rehoming. This implies reduced maintenance expenditure and increased availability
- Highest reliability and high precision: Their unmatched tolerance to shock & vibrations makes Temposonics® sensors first choice to the challenging environment of the wind turbines and guarantee highest control and efficiency
- Modular, environmentally friendly design: Replacement of the sensor cartridge (electronics and sensing element) without breaking the high-pressure seal is enabled
- Variety of interfaces: Analog, CAN, SSI, IO-Link- and Bus- outputs provide accurate position and velocity measurement and help to support early diagnosis of variation in the turbine operation

The application engineers from Temposonics are always looking forward to new challenges, will be happy to support you and are available around the clock.

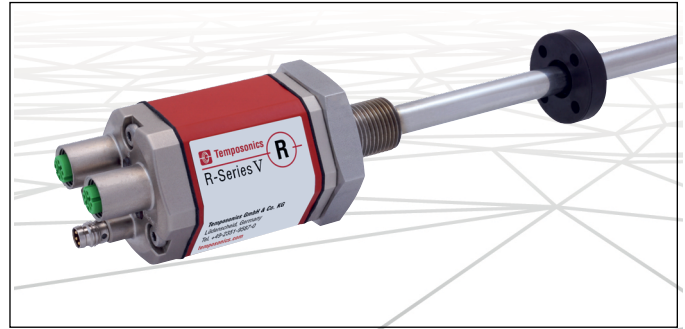


Fig. 2: Temposonics® R-Series V RH5

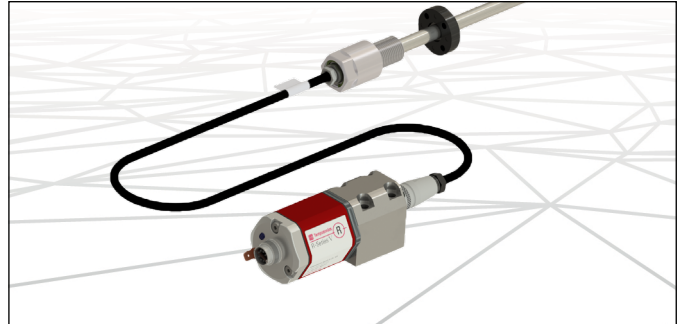


Fig. 3: Temposonics® R-Series V RDV

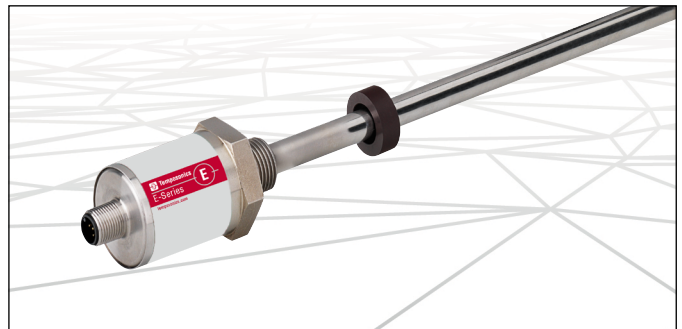


Fig. 4: Temposonics® E-Series EH

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