



The preferred partner in wind turbine protection

PCH 1026 Wind Turbine Monitor. Fully digitalised structural vibration monitor



Designed in close cooperation with leading wind and turbine manufactures

- Optimal protection
- High reliability
- GL certification
- Advanced functionalities

The safe and efficient solution.....

Uses

Different structural parts of a wind turbine oscillate, move or vibrate. The tower, blades, nacelle, main bearing and gearbox are some of the main components which are important to monitor. If these components, oscillate, vibrate too much or if they break loose and create large shocks it can endanger the wind turbine or cause severe damage. Therefore monitoring these components is an important part of the wind turbine safety chain. The PCH 1026 vibration monitor has been specially developed to fulfill this task and it is certified by Germanischer Lloyd according to Guide Lines 2010 chapter 2.3.2.7 and 2.3.2.8 and rated according to the functional safety standard ISO 13849-1 as a PL= d rated component.

Design

The PCH 1026 monitor has been designed in close cooperation with the leading wind turbine manufacturers around the world. The monitor features 12 simultaneous operating filter bands, and both internal and external sensors, and has been tuned according to a variety of requirements. Based on this knowledge the monitor solves comprehensive tasks to ensure the maximum protection of the wind turbine.

Examples of tasks:

- Monitors tower, blade and shock vibrations, all in one monitor
- Monitors torsion between the gearbox and the generator including simple gear mesh
- Monitoring of differential nacelle vibrations
- Tracks tower resonance frequency through a built-in dual band ZOOM FFT for monitoring of looseness or cracks in cement towers.
- Provides time critical "raw" data to the controller for tower damping loops.
- Secures redundancy through separate failsafe system fail and alarm relays, also operating if the turbine controller is out of operation
- Offers full access to readouts and configuration (parametration) through the CANopen, Modbus, Profi net, Profibus or Ethernet interface, and/or analog outputs.

Selective frequency filters

PCH Engineering has many years of experience in designing vibration monitors for wind turbines. The key factor is to use filters of high accuracy and precision, so you monitor what is important and eliminate false alarms. Using monitors from PCH Engineering you get maximum protection and high efficiency of your wind turbine in the most critical high wind conditions.

Different structural frequency components are often distributed very closely on a frequency scale. Consequently, filters must have a high selectivity in order to pass only the frequency component of interest. Simple filters will have problems functioning throughout the full frequency range and will not suppress structural resonance frequencies in higher frequency ranges, though they are expected to. This leads to false or too early alarms and down time. The frequency response is important, but also the time domain response like time delay, phase and transient response are important parameters.

PCH Engineering has a variety of filter types and orders to meet the required compromise between the frequency- and time domain response. The high precision filters from PCH Engineering are all designed to selectively pass frequencies originated from within the band of the structural component of interest and to suppress all non interesting frequencies outside the frequency band.

You can always trust the intelligent protection system from PCH Engineering, and consequently maximize the up time of the wind turbine even under the toughest wind conditions.

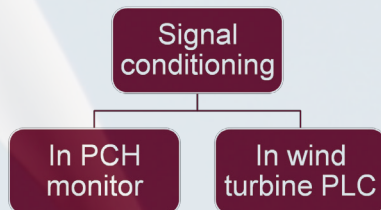




...Whatever you need

Sensor principles

Signal conditioning can be done according to 2 different principles:



Why choose?

Choosing the PCH 1026 monitor gives you the benefit of both sensor principles in the same monitor. Signal conditioning in the PCH monitor should be used if the monitor is an active part of the safety chain. Furthermore, your wind turbine PLC will not be stressed and can be optimized for main control tasks. You can also choose to use the monitor as a simple sensor and handle your own filters and detection routines in the wind turbine PLC instead. Or you can even combine the two and use the monitor for the safety chain and transfer the 'raw' data signal to your PLC for tower damping loops, etc. The important thing is; you have both options at the same competitive price.

Vibration sensors

The monitors offer 2 or 3 directions integrated sensors with the option of up to 4 external sensors. The monitor will fit your need for sensors today and can grow together with you if more advanced monitoring is needed in the future.

SSD Safety Shock Detection

Optionally the monitor offers an integrated Safety Shock Detection function, certified by Germanischer Lloyd, which eliminates the need of a less reliable mechanical switch.

TFD Tower Frequency Detection

Cracks in cement towers or looseness in tower bases can be detected by the TFD function. The monitor will constantly monitor the resonance frequency of the tower and any changes will be reported as an alarm to the turbine controller.

Basic drive train monitoring

The PCH 1026 monitor offers FFT-analysis for condition monitoring of the drive train, incl. turbine, main bearing, gearbox and generator.

We follow your needs

We offer exactly the functionality and support you need as manufacturer. Our solution is modular and consequently we offer you what you need today, with the option to add new functionalities in the future. Hence, keeping the costs at a minimum you obtain what is needed, nothing more, and nothing less. The PCH 1026 monitor will follow your needs into the future.

Modifications

Ask for a modification or a new feature if the monitor does not include what you need. We specialize in fast modifications.

We follow your needs

Optional features for PCH 1026

SSD - Safety Shock Detection. Data sheet CHF 1133. Germanischer Lloyd including our SSD feature, our PCH 1026 wind turbine monitor is certified by Germanischer Lloyd according to Guidelines 2010 chapter 2.3.2.7 and 2.3.2.8.

TFD - Tower Frequency Detection. Data sheet CHF 1116.

Basic drive train monitoring. Data sheet CHF 1115.

External sensors, one or two directions, CHB 1101 or CHB 1102. Data sheet CHF 1040.

For technical specifications, please ask for PCH 1026 product data sheet CHF 1126.

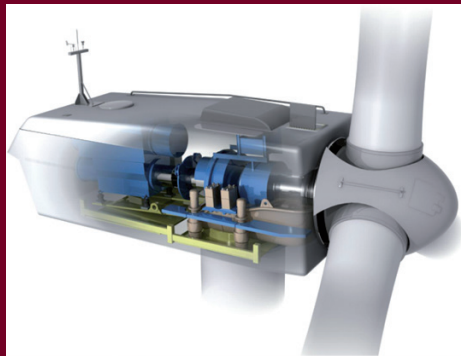




Years of experience

PCH Engineering has many years of experience in designing vibration monitors for wind turbines. Since our first wind turbine protection monitor in 1998 we have been the leading provider of safe protection systems to wind turbine manufacturers all over the world.

Our engineers help manufacturers to optimize the protection of the wind turbine both in projects for new wind turbines and in design improvements in existing wind turbines. By choosing us you get a professional worldwide partner, who listens to your requirements and modifies the solution accordingly.



Your safe choice in protection monitoring

We offer wind turbine manufacturers a well tested procedure using signed specification documents to ensure that each monitor is set as requested.

The monitor is fully configured for use and includes technician and administrator access levels for optimal security.

We constantly develop our products and offer you new, safe technologies, which improve the safety chain of the wind turbine. Our products grow together with your wind turbine and can always be upgraded or adapted to your future needs. We always select high quality and high precision components and offer the monitors at attractive prices.