Background information

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Products and services for a key technology

Wind energy: safety for automation

Wind power plays an important role in discussions regarding the future of energy production. The technology behind it is generally considered to be mature. Turbine safety is a prerequisite for further expanding the use of wind energy. Not only does it serve to protect people from hazardous situations, it also protects investment in the turbine.

In the last few years, the subject of safety for wind turbines has increased in significance and complexity. This is not only down to normative changes, in particular the introduction of the new Machinery Directive and the latest edition of the guidelines for the certification of wind turbines published by Germanischer Lloyd (GL), but also to increasing public interest in these highly visible turbines.

One example of the increasing complexity is the analytical risk assessment and the obligatory determination of the performance level (PL) for safety functions. The performance level is the outcome of the assessment, derived from the severity of the potential injury, the frequency and duration of exposure to the hazard and the possibility of avoiding the hazard. The performance level established in a risk assessment is difficult to achieve using standard automation components. The work involved can be reduced by using type-tested components and the PAScal Safety Calculator software from Pilz.

Components and systems for all safety functions

Pilz, based in Ostfildern, is a complete safe automation supplier and has been supporting the world's leading wind turbine manufacturers and operators for many years. Its portfolio includes the monitoring relays

PMDsigma, used to monitor individual functions such as true power or the emergency supply to the pitch system, and the safety relays PNOZsigma, used to monitor the emergency stop or speed.
The configurable control systems PNOZmulti are used where reactions to different input signals are event-driven. That's because the modular design enables a solution that can be tailored flexibly to the respective wind turbine. PNOZmulti also offers a wide range of expansion modules, for safe speed monitoring for example, thereby covering all of a wind turbine's safety functions, such as monitoring the Azimuth system, cable twisting, emergency stop pushbutton and rotor speed, with just one system. The control systems can also be easily incorporated into the wind turbine’s control system via communication modules. The automation system PSS 4000 is used when the tasks are more demanding. It consists of hardware and software components, network devices and real-time Ethernet, which can be used to reproduce even complex, decentralised control architectures for wind turbines.

The safe speed monitor PNOZ s30 can perform all speed-related monitoring functions up to PL e as a standalone solution. In addition to the safety functions, Pilz solutions can also be used for plant protection, monitoring operating values such as vibration, electrical variables, temperature and pressure.

Services made to measure

A wind turbine is by definition a machine that falls within the scope of the EU Machinery Directive and requires a declaration of conformity in accordance with Annex IIA. However, while the closed environment of classic production machinery can mostly be controlled, wind turbines are exposed to the elements and changing environmental conditions. Alongside these specifications there are also industry standards, which due to market considerations can be regarded as effectively binding. These include the guidelines for the certification of wind turbines,

published by Germanischer Lloyd, for example. At international level, there are additional standards to consider in many countries.

Building on its experience in the field of machinery safety, Pilz offers a special services portfolio for wind energy – from risk assessment and validation of safety solutions through to assistance in developing a safety concept for wind turbines and assistance with CE marking. Pilz has bundled together relevant service packages to meet the various requirements; these are available worldwide due to the company's international orientation. The aim is not only to minimise existing risks, but to implement the stipulated safety requirements in such a way that fault or error sources are identified early, costly downtimes can be minimised and the service life of the turbine is extended.

(Characters: 4,391)

The Pilz Group

The Pilz Group is a global supplier of products, systems and services for automation technology. Based in Ostfildern, near Stuttgart, the family-run company employs around 2,400 people. With 42 subsidiaries and branches around the world, Pilz supplies safe solutions for people, machinery and the environment. The technology leader offers complete automation solutions comprising sensors as well as control and drive technology – including systems for industrial communication, diagnostics and visualisation. Consulting, engineering and training round off its international range of services. In addition to mechanical and plant engineering, solutions from Pilz are used in many sectors such as wind energy, railway technology and robotics.

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