Pitch system suppliers

Electrical pitch controllers, i.e. electrical blade adjustment systems, can be found in more than 80% of all large wind turbines today. Since the pitch system plays a critical part in the safety infrastructure of a wind turbine, it must operate independently and be failure-proof. In order to ensure this, the system has electrical buffers and its own control system so that it can turn the blades out of the wind in case of emergency. As a consequence, two very interesting systems with different architectures – and with correspondingly different controllers from Beckhoff – are presented.

Moog

PC-based control and EtherCAT give a boost to pitch systems for extreme wind energy applications

Moog is a globally-known name in drive and control technology. Founded in 1951, the prominent company now has more than 10,000 employees in 25 countries. Moog’s core business is in the development and production of high-performance drive solutions. Moog produces approx. 2,000 pitch systems for wind turbines per year. As one of the company’s main suppliers, Beckhoff provides Industrial PCs (IPCs) for control and EtherCAT Terminals for system networking.

Moog’s latest innovation, the PITCHmaster® II + servo controller, is up to the task. An integrated acceleration sensor supplies measurement readings for rotor speed, rotor position and vibrations, ensuring optimum control. The electrical pitch system is designed for site altitudes of up to 3,000 meters (9,843 ft), which far exceeds the standardized operating elevation range of common electrical systems and, therefore, pitch systems. In addition, Moog pitch systems are tested under extreme climatic conditions between -30 ° and +70 °C (-22 ° and 158 °F) in order to guarantee their remarkable temperature resistance.

Moog offers hydraulic and electrical pitch systems, depending on the wind turbine manufacturer’s philosophy and design concept. With either approach, high shock and vibration resistance are guaranteed, as well as safety in case of emergency. In the event of a fault, the independence of the pitch boxes from the main system controller is ensured through an independent power supply provided by the pitch batteries.

Moog uses compact CX9000 or CX1010 Embedded PCs from Beckhoff as the controls centrepiece in its pitch systems. Ultimately, the modularity of the CX system was the key factor for the decision to use Beckhoff as supplier. The devices support all common fieldbus systems, both as a master and as a slave. Also, the fine granularity of the Bus Terminals enables Moog to more easily customize its pitch systems. According to Bernd Franzak, chief designer for Moog Unna GmbH, a special highlight of the system is the power measurement I/O terminal (KL3403/EL3403), which enables cost-effective monitoring of the batteries and the double-layer capacitors.

For some Moog customers, Beckhoff CP6008 Panel PCs with TwinCAT HMI are installed. These offer a high degree of user convenience for commissioning engineers and maintenance personnel that operate the pitch system in the hub.

Moog www.moog.com/wind