LTI MOTION
KÖRBER SOLUTIONS

Trend setting technology in pitch drive solutions

Compact, dedicated pitch solutions of the 5th device generation.

LTI Motion – A strong partner.

LTI Motion offers many years of experience and a variety of references around electromechanical pitch control systems for onshore and offshore wind turbines.

- Almost 20 years of application expertise in electromechanical pitch systems
- Dedicated, trendsetting pitch drives designed and tested for extreme environmental conditions and highest availability at challenging sites
- More than 100,000 installed pitch controllers worldwide
- Quick response times thanks to local production and service
- Customized, made-to-measure retrofitting solutions
- Servo specialist with more than 45 years of experience in electrical drives and automation technology

20 years of application expertise – A story of success and experience

DriveStar | PitchMaster I (c-line) | PitchMaster II | PitchMaster II+ | PitchOne

LUST 1997 – 2002 – 2007 LTI 2011 – 2018

Ever since wind turbines with active pitch control were introduced to the market, LTI Motion has been working with prominent wind turbine manufacturers and supported them in the optimization and continued development of their systems.
Early on LTI Motion – under the name of LUST at the time – started to adapt standard drive electronics to the rough environment and to tailor new developments to this type of application.
Today, pitch drives include a multitude of application-specific hardware and software features – specially made for reliable blade pitching in onshore and offshore wind turbines.

Cost efficiency and flexibility

for your preferred system architecture

Whether it's 3 or 4, 6 or 7-box architecture, LTI Motion offers you a flexible platform for implementing your system architecture. We support you with a variety of cooling systems and fanless designs for flexible integration into control cabinets and rotating hubs.

Our next-generation pitch controllers provide built-in electronic charging systems and condition monitoring of lead-acid batteries and double-layer capacitors for your preferred backup power technology.

Matthias Pauli
Global Industry Management – Head of Wind Energy

» Whether you are using DC motors, AC standard machines, or dynamic permanent magnet motors in SPM or IPM technology, LTI Motion can offer experience and references for your choice of control system. «

Cost saving potential.

Utilising advanced technologies!

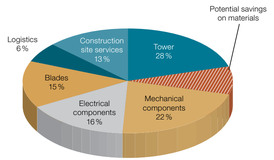
In the highly competitive power generation market, cost reduction is fundamental for the future of wind energy. The use of latest technologies in combination with new approaches in digitization will be crucial for success.

Even if the costs for a pitch system are comparatively low and only constitute 3% of the initial cost of a wind turbine, there is significant potential for a more efficient integration and utilisation of the pitch system with cost benefits at the turbine level.

As blades are getting longer and turbines bigger, the cost-efficient integration and immediate evaluation of the blade sensor load data by the pitch system becomes more important. Using active, decentralised pre-control for incoming gusts of wind allows for savings regarding the safety factors in the turbine design, which in turn provides significant structural cost savings.

Similar cost benefits can be achieved by implementing other decentralized safety features for the pitch system. Profiling-enabled, adaptive emergency pitching makes it possible to realize design benefits for the actuators as well as cost benefits at the turbine level.

Breakdown of investment costs for a wind turbine



Lowering the costs of electricity generation LCoE!

The reliability of the pitch system is fundamental for the safe operation of the wind turbine. Traditional systems come with long parts lists with a wide variety of components. Their integration and any troubleshooting later are complex and frequently cause expensive downtimes of the turbine. Future systems must support machine designers in the implementation of their platform strategies by providing for more highly automated manufacturing and easy scalability in the performance of the subsystem.
In order to guarantee the continued high availability of the turbines, the turbine subsystems must become more fault-tolerant so that they comply with new regional grid codes.

Advanced condition monitoring and subsequent preventive maintenance of the systems can save up to 30 % of service costs, e.g. by secure remote updates of the installed turbines. In addition, these measures are supported by new and reliable standards for remote diagnostics and machine software downloads.

Detlef Schlüter
Global Industry Management – Industry Manager Wind Energy

» LTI Motion pitch drives fulfill the latest requirements with regard to HVRT and LVRT in the key markets. Depending on the stored backup energy and the duration of the fault, they provide a configurable fault response. «

As a servo specialist, LTI Motion offers you a wealth of experience and variety of references in the dynamic synchronisation of multi-axis solutions. Our industry products based on the SystemOne CM platform allow for the implementation of new, intelligent control methods for yaw positioning.

- Higher energy yield thanks to more accurate yawing
- Significantly less wear of mechanical components thanks to active clamping of the axes
- Controlled acceleration and braking moments for controlled 4-quadrant operation
- Lower turbine costs thanks to the replacement of slow hydraulic brakes

A Single Source.

The LTI Motion technology portfolio.

Pitch servo controller
- Designed for the rugged external conditions in the rotating hub
- Increased robustness and extended temperature range for challenging wind sites
- TÜV-certified functional safety for emergency pitching of the rotor blades

Pitch motor
- AC synchronous motors with high power density, specially enhanced for use as pitch motors
- Suitable for onshore and offshore sites thanks to enhanced corrosion protection and special interior coating
- Optional wind-specific interfaces and versions, e.g. Cold Climate

Yaw servo controller
- Intelligent multi-axis solution based on the SystemOne platform for increasing performance and service life of the yaw systems

Accessories
- Pre-fabricated motor and sensor cables for quick installation
- Device-specific fasteners for cables and shielding
- Engineering and user software

Your benefits.

Cost-efficient pitch design
- Dedicated and highly integrated functionality for the safety of your wind turbine
- Flexibility for the backup energy storage system of your choice at low DC voltages
- Operation using standard 400 VAC motors
- ‚Local for local' – quick service thanks to local equipment manufacturing in China and Europe

High turbine availability
- Broad voltage range for compliance with current international grid codes e.g. OVRT requirements
- Extended temperature range and enhanced shock and vibration resistance for challenging wind energy sites
- Integrated condition monitoring functionality for anticipatory maintenance of the pitch drive

Flexibility for differentiation and protection of OEM know-how
- Optional PLC programming for implementing customer-specific features
- Direct coupling and decentralised evaluation of blade sensors
- Enhanced condition monitoring of connected pitch components

Lower structural costs thanks to functional safety
- Profiling-enabled emergency pitching with specific driving torques for reducing extreme loads on the turbine
- Simplified parts lists and utilisation of materials thanks to built-in safety features
- Lower one-off expenses when certifying the turbine

Lower operating costs OPEX
- Remote-controlled secure software updates
- Maintenance-free cooling systems for power electronics
- Device self-diagnostics and service life calculations based on real-time data

More yield thanks for shorter service downtimes
- Quick troubleshooting thanks to simple control cabinet layout
- Automated software update after device replacement
- Quick replacement in case of faults
- Application-specific status indicators

0920.2078 09/2018

Performance.
Sustained.

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