spindrive
High Speed Drive Systems

High-speed machinery and levitation technology

About SpinDrive

SpinDrive is a Finnish cleantech company working in the machinery industry. Our passion is to push energy efficiency to the maximum level and provide containment-free solutions in various industries. SpinDrive commercializes the research conducted in Lappeenranta University of Technology, Finland for more than 35 years.

Team

CEO Janne Heikkinen was a project manager in the customer driven projects. He is responsible for most of the business processes and finances. Janne holds a doctoral degree in mechanical engineering and he has an experience in drive system manufacturing processes.

CTO Alexander Smirnov has a project management experience. He is the developer of the company software tools. Alexander holds a doctoral degree in control engineering. He is a specialist in electromagnetic design, control and commissioning of AMBs.

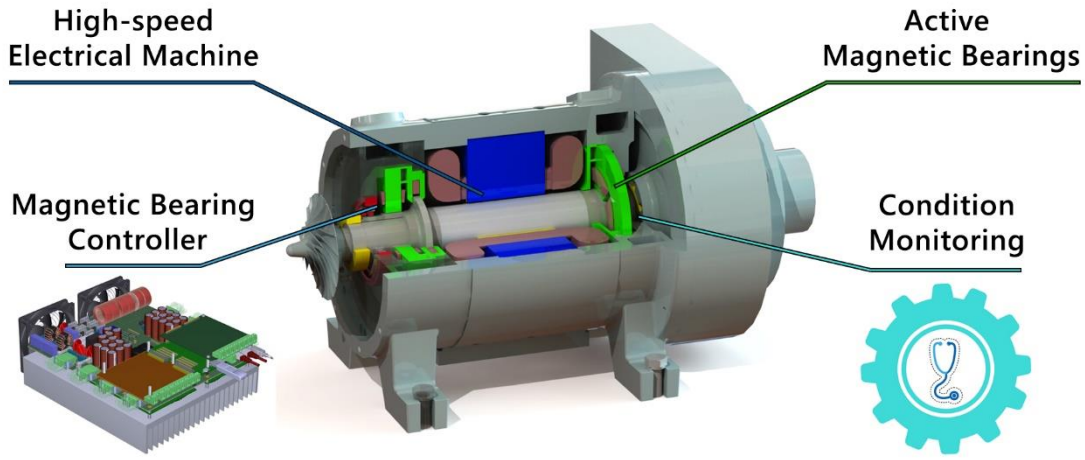
COO Nikita Uzhegov is responsible for the customer relations and business development. Nikita holds a doctoral degree in electrical engineering and he was a key electromagnetic designer of five different successfully tested high-speed electrical machines.

Product Development Director Teemu Sillanpää has been involved as a key electronics designer and test engineer various projects. He is a specialist in electronics design, sensor technology and system testing. He is responsible for SpinDrive's product development to reduce system costs.

Partners and Sponsors

LUT Lappeenranta University of Technology
eit Climate-KIC
Member of CLEANTECH FINLAND
BUSINESS FINLAND
Energy Spin
ACCELERACE

SpinDrive solution



SpinDrive provides turn-key drivetrains, which include high-speed electrical machine, active magnetic bearings (AMB), magnetic bearing controller and condition monitoring system. Drivetrain is a prime mover in various industrial applications or serves as an electricity generator. **High-speed machines** are rotating up to 50 times faster, which increases process efficiency. **Active magnetic bearings** are levitating the rotational part of the machine totally eliminating friction. No lubricant is needed and even higher efficiency is achieved. **Condition monitoring system** with built-in sensors constantly gathering data about equipment status and enables predictive maintenance.

Benefits

- **Energy efficiency** System efficiency can be increased by 10% due to gearbox elimination, high partial load efficiency and frictionless operation. Reduced electricity bills enables 2-4 year payback time.
- **Maintenance-free operation** Contactless operation saves at least 15 000 EUR on the maintenance costs per unit annually.
- **Containment-free operation** No lubricant requred, which brings an opportunity to enter the new market, where lubricant-free operation is a compulsory requirement.
- **Predictive maintenance** Built-in sensors constantly monitor condition of the system, provide reliable operation and eliminate customer's equipment breakdown risk.
- **Suitable for harsh environment**
- **Low-noise and low-vibration operation**
- **Reduced footprint of the system**
- **High power density**
- **Adjustable control algorithms**

Application examples

Our solution is aimed for the applications, where high rotational speed improves process efficiency

- Turbocompressors
- Turbo blowers and turbo pumps
- Small and microturbines
- Organic Rankine Cycle powerplants
- Oil and gas turbomachinery
- More electric aircrafts
- Marine turbogenerators
- Flywheels
- Computer Numerical Control (CNC) machines

Retrofittable solution is possible by replacing the old bearings with active magnetic bearings.

Feedback

"SpinDrive demonstrated a deep understanding of the fundamental concepts of AMB technology, which allowed them to provide solutions for the unique Teraloop bearing configuration."

TERA LOOP
Ian Denton, Chief Engineer, Teraloop Oy

"The key advantages of SpinDrive Oy are the expertise of the team in the field of AMB technology, and their transparent and collaborative design work that is required in high-end applications."

Tamturbo SUPREME AIR POWER
Jaakko Säiläkivi, CTO, Tamturbo Oy

Saving example

In the case of 500 kW machine with 8 000 operating hours/year and Finnish electricity price the total energy consumption savings for 20 years of operation with high-speed drivetrain is 920 000 EUR.

Contact

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