High-Speed Magnetic Bearing Drive Solutions for Turbo Blowers

Reliability and efficiency from a single source
LTI Motion –
Your Strong Partner

Experience and competence in technology

LTI Motion has been marketing magnetic bearing drive systems for high-speed blowers for ten years, and almost 500 units in the waste water sector represent a wealth of experience.

Based on its uniquely broad technology portfolio, LTI Motion offers all components from grid connection to motor shaft. This provides benefits all around: fast time to market as well as targeted support based on clear responsibilities. Currently, LTI Motion manufactures about 3,000 magnetic bearing systems per year.

• 45 years of high-frequency drive electronics
• 35 years of high-speed motors
• 20 years of magnetic bearing systems
• 10 years of waste water aeration

Partner for system solutions

• We work together to plan your entire solution for the high-speed turbo blower.
• You are the expert in fluid engineering – we are the expert in magnetic bearing high-speed drive systems.
• The entire drive train comes from a single source – you focus on your core competency.
• If you need technical support, you talk to one dedicated point of contact.
• We provide all necessary training for your staff.

Thomas Stach
Industry Manager Turbo Systems

>> Our customers appreciate the partnership and cooperation with LTI Motion. Together, we create state-of-the-art solutions for high-efficiency turbo blowers in waste water aeration. <<

We are driven by innovation

Our mission is to solve your drive system challenges of tomorrow. Thanks to our know-how about the current challenges in waste water aeration and our outstanding team performance, our magnetic bearing drive solutions always remain one step ahead.

New innovative drive solution in development.

Talk to us!
Demands in Waste Water Aeration

Reduction of operating costs

Efficiency – the ultimate benchmark

Waste water treatment plants (WWTP) use approx. 50-60% of their entire energy for aeration. This is where a direct-drive turbo blower can provide substantial savings compared to the roots blowers that are still frequently used today. Application-optimized permanent-magnet synchronous motors and non-wearing bearing designs make it possible to achieve efficiencies > 80% for the entire blower unit. As a result, the total cost of ownership is minimal. This allows even old plants to achieve annual cost savings in the five-figure range.

Around-the-clock operation

Plant availability – a matter of concept

Waste water treatment plants are part of the critical infrastructure. An outage has huge consequences. Typically, systems include redundancies that cover the event of a failure as well as planned necessary maintenance. In order to keep the costs for the required redundancies as low as possible, unplanned system outages or maintenance intervals must be reduced to a minimum. This is where the non-wearing, maintenance-free magnetic bearing design in turbo blowers with built-in solutions for condition monitoring and predictive maintenance comes in.

![Breakdown of energy costs in waste water treatment plant](image)

Your savings potential with LTI Motion
One Single Source
The LTI Motion technology portfolio

✓ Magnetic bearing motors
  • High-speed synchronous motors up to 300 kW
  • Five-axes active magnetic bearing with permanent-magnetic bias
  • Liquid cooling
  • Direct installation of customer turbo rotor
  • 1 mm air gap

✓ High-frequency drive controllers
  • HF drive controllers for frequencies up to 2,000 Hz
  • Magnetic bearing power supply from DC link
  • Controlled mains support: Set-down speeds onto touchdown bearing close to zero, no batteries or UPS

✓ Magnetic bearing controller
  • Compact electronic unit for controlling the five-axes active magnetic bearing
  • 10,000 samples/second for shaft position and bearing currents
  • Position control with µm precision
  • Active orbit monitoring

✓ Accessories
  • Matching EMC filters and chokes
  • Power supply units for supplying the magnetic bearing with power from the drive DC link
  • Pre-assembled low-sensitivity magnetic bearing cables for quick installation
  • User software for drive and magnetic bearing

Did you know?

LTI Motion magnetic bearing systems …
  • run contactless until standstill (cyclic operation supported)
  • do not require any battery or UPS during a grid loss
  • need less than 100 W during operation, mains power of 300 kW
  • offer higher and more controlled axial forces than air bearings
  • provide process-oriented data for optimized plant management
  • do not need any labyrinth seals
Your Benefits

Maximum availability
- Uninterrupted operation thanks to built-in mains support functionality without batteries or UPS
- Maintenance-free thanks to touchless magnetic bearing

Oil-free air
- Contactless magnetic bearings do not require any lubricants
- No media contamination

Fast installation and commissioning
- Pre-configured and system-tested components (plug & play)
- Only one communication interface between PLC/PC and drive train

Single point of contact
- Fast project planning and introduction to the market
- Single responsibility for motor and magnetic bearing

All information at a glance
- Condition monitoring and predictive maintenance
- Built-in sensor system in motor and magnetic bearing

Low total cost of ownership (TCO)
- Energy efficiency thanks to optimized system efficiency
- No bearing maintenance required
- Smaller system footprint

Robustness against process and environmental effects
- Resistant to pressure fluctuations and impurities in the air
- Adjustable system damping and stiffness
- Can operate even at high ambient temperatures and high air humidity

Quiet operation
- Contactless, no mechanical rolling of ball bearings
- Imbalance compensation through magnetic bearing

The added value of an LTI solution convinces plant operators and offers annual energy savings in the five-figure range. Additional saving potentials can be realized during the planning, installation and service operation of the plant.
Fit for the future through bundled competencies

KEBA AG is an internationally successful electronics company with headquarters in Linz/Austria and locations worldwide. For 50 years, KEBA has been developing and producing according to the claim „Automation by innovation“ innovative automation solutions of the highest quality for a wide variety of industries.

LTI Motion GmbH, a technologically leading German supplier of drive solutions, has been part of the KEBA Group since the end of 2018. Both companies have years of experience in the areas of control and safety technology as well as servo drive technology. The bundled competencies result in complete solutions from a single source - appropriate for the respective industries.

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