



Reducing energy waste at wastewater treatment plants



Environmental benefits

- Reduced energy use
- Reduced CO₂ emissions
- Oil-free operation
- Reduced noise levels
- Smaller, lighter footprint



High-speed permanent magnet motor solutions from SKF reduce aeration blower energy use by 10 to 40% and eliminate the need for oil lubrication.

In traditional biological wastewater treatment plants, aeration blower systems represent 40 to 80% of a facility's total energy use. Used to blow air into tanks so that bacteria can break down organic waste, a typical mid-size aeration system operates with two to five air blowers.

Reducing the energy requirements of those blowers will help plants cut their energy expenses and CO₂ emissions. High-speed permanent magnetic motor solutions from SKF are helping manufacturers develop a new generation of aeration blower systems to do exactly that.

These SKF solutions feature a high-speed permanent magnet motor, active magnetic bearings with an integrated control system, and a variable speed drive. By allowing the rotating components to levitate, the magnetic bearings enable a friction-free system that requires no lubrication and reduces energy use by 10 to 40% compared to traditional lobe-type blowers.

In one real-world example, a wastewater treatment facility in France replaced four 80 kW lobe-type blowers with two 160 kW aeration blowers featuring the SKF solution. Along with improving its treatment process and reducing noise levels by 40 dBA, the plant was able to cut annual energy use by 500 000 kWh, saving 375 tonnes of CO₂ emissions and €54 000 in energy costs in the process.



SKF BeyondZero solutions can help reduce CO₂ emissions, preserve limited resources and protect the environment from the use and spread of toxic substances. For more details, including documentation of reduced environmental impact, visit www.beyondzero.com.



High-speed permanent magnet motor solutions from SKF

Operational benefits

- Reduced total cost of ownership (TCO)
- 10 to 40% lower energy use
- Improved service life and reliability
- Reduced component wear and maintenance
- Oil-free operation eliminates risk of contamination
- Up to 30% less noise

Operational features

- Permanent magnet motor (75 to 350 kW range)
- Active magnetic bearings (AMB)
- AMB control system
- Variable speed drive

Driving aeration blower energy efficiency and reliability

For centrifugal air blowers, few technologies can match the energy efficiency and reliability that's possible with a permanent magnet motor, active magnetic bearings, and a variable speed drive.

High-speed permanent magnet motor solutions from SKF combine these cutting-edge technologies in a single system that can reduce energy use by 10 to 40% vs. traditional lobe-type blowers. The key components in these systems feature several performance benefits.

Permanent magnet motors, for example, are 10%+ more energy efficient than conventional motors at full and partial loads. Featuring a direct drive configuration that eliminates the need for a gearbox and oil, units can exceed mean time between failure (MTBF) rates of 100 000 hours.

Capable of speeds in excess of 40 000 RPM, active magnetic bearings levitate rotating components for contact-, friction- and lubricant-free performance. The active bearing control system tracks and controls rotor position up to 15 000 per second to eliminate vibration.

Able to continuously adjust to process changes for high energy efficiency, variable speed drives are SKF-validated for perfect alignment with the permanent magnet motor and the active magnetic bearings.

By bringing these advanced technologies together in a complete package solution from a single source, SKF can help manufacturers streamline product design, development and assembly as they produce the next generation of highly energy-efficient centrifugal air blower units.



Download the *PM Motors App from SKF* from the Apple® App Store, scan the "trigger" image above, and explore the complete SKF portfolio of high-speed permanent magnet motor solutions!

Get more details at skf.com/PMmotors

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