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New magnetic system from SKF offers oil-free, energy-efficient solutions for centrifugal compressors in chillers

SKF has launched a new magnetic system, an oil- and contact-free drive solution for centrifugal compressors in chillers.

Combining a high-speed permanent magnet motor and active magnetic bearings with integrated controls, the magnetic system can operate with variable speed drives from various manufacturers to deliver energy savings of at least 10% versus conventional centrifugal compressor designs. In addition, the system's vibration- and nearly friction-free performance capabilities enable extremely quiet operation.

"Our magnetic system can help OEMs streamline product design, development and assembly, as they produce new highly energy efficient centrifugal compressor chillers. This innovative technology also reduces maintenance costs for the user and provides them with reliable and cost-effective air conditioning," says Richard Law, SKF Global Segment Manager, Fluid Machinery.

Electromagnets levitate the compressor shaft, allowing it to rotate without contact.

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By eliminating the mechanical contact and the losses that occur with oil-lubricated bearings, the magnetic system from SKF reduces energy use and costs significantly. By eliminating the need for oil lubrication, the system also improves heat transfer efficiency in the evaporator and condenser.

The permanent magnet motor at the heart of this SKF solution is more energy-efficient than induction motors at full and partial loads, and offers a higher power factor/lower current draw. It also operates with a smaller size variable speed drive than induction motors.

The system's active magnetic bearings are capable of speeds in excess of 40,000 RPM, and can accommodate instant and frequent start-ups and transient surge forces. An active control system tracks and maintains rotor position to within a micron-sized orbit up to 15,000 times per second, eliminating vibration.

High-speed permanent magnetic motor solutions from SKF utilise technology pioneered by S2M, one of the world's leading producers of magnetic bearings and high-speed permanent magnet motors. Acquired by SKF in 2007, S2M has been refining contact-free, levitating bearing technology for more than 30 years.

SKF is a leading global supplier of bearings, seals, mechatronics, lubrication systems, and services which include technical support, maintenance and reliability services, engineering consulting and training. SKF is represented in more than 130 countries and has around 15,000 distributor locations worldwide.

Annual sales in 2014 were SEK 70,975 million and the number of employees was 48,593. www.skf.com

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