

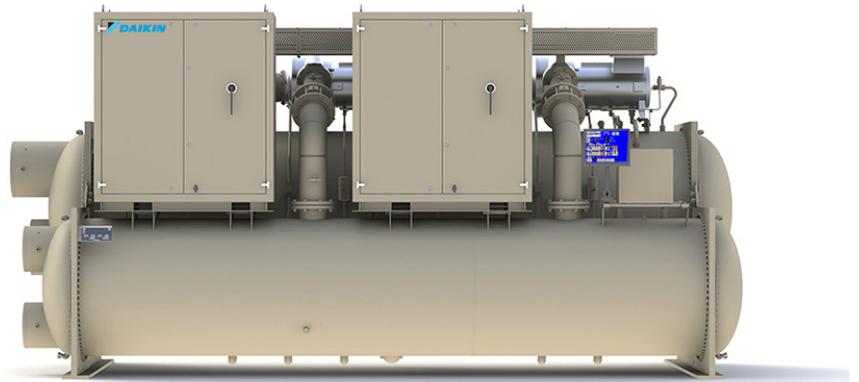
The Benefits of Oil-free Chiller Technology

Oil-free technology continues to attract attention — and for good reason. From efficiency levels never before seen to decreased maintenance costs and increased uptime, it is among the ways Daikin has led the way in the HVAC industry.

Reliable IAQ:

A recent Harvard study reported the key to feeling, working, and sleeping better depends on the design, maintenance, and operation of the buildings in which people spend most of their time.

At Daikin, we design HVAC equipment and solutions to support a healthier environment for building tenants. Our Magnitude® magnetic bearing chiller consistently performs to reliably create the ultimate climate-controlled environment for offices, schools, and healthcare facilities to help those who work, study, teach, heal, and recover inside, achieve their full potential.



Daikin 75 to 1500-ton Magnitude chillers with magnetic bearing technology provide 40% more efficiency than standard centrifugal chillers.

In environments demanding chiller operation over wide capacity ranges – building managers are opting to rely on Magnitude's dual compressor chillers to maximize savings with excellent performance at high and low capacity, and to get the redundancy only delivered with a dual compressor chiller.

Efficiency:

Oil, among the most common refrigerant contaminants, can cripple system efficiencies and hike energy costs. Difficult to detect, oil contamination in refrigerants makes a formidable adversary to maintaining peak efficiency.

While oil analyses are routinely performed on systems to detect moisture, acids, and metal fragments, only a refrigerant analysis will reveal the presence of oil. Since oil accumulates gradually, the loss in equipment efficiency is usually misdiagnosed until performance is significantly degraded.

To avoid the risk of oil contamination, facility managers turn to chillers with oil-free technology, like magnetic bearing, to run at peak efficiency year after year with a design. It's a decision that wipes out the risk of contamination from efficiency-robbing oil buildup on heat-transfer surfaces. In fact, oil-free magnetic bearing technology is over 40 percent more energy efficient than standard centrifugal chillers, with the potential to save more than \$4 million over the life of the equipment.

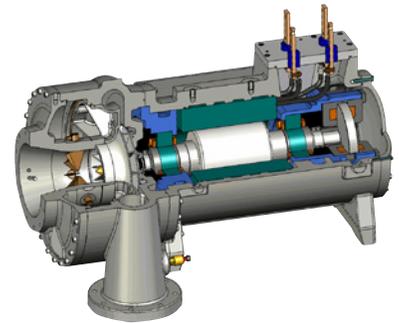
“We save 57% on energy costs compared to a similar county office building down the road,” said Neil Angrisano, Deputy Facility Manager of Johnson County, Kansas, Office Building. “And with the high performance magnetic bearing chiller as part of our system, we earned LEED® Gold certification from the U.S. Green Building Council.”

Maintenance:

A new chiller is a big investment for any building owner. Oil-free chillers deliver immediate savings—including reduced energy costs, and they work in the longer-term by reducing maintenance and service calls.

Keith Liken, facilities director at Mount Sinai Medical Center in Miami Beach, Florida, knows what it's like to sell these benefits and outcomes when driving a massive replacement project to retire outdated chillers. “Based on my experience with these systems, I knew oil-free chillers were the right choice for our hospital,” said Liken. “The savings we'll realize with this new system is one of the biggest reasons we selected an oil-free chiller for this project.”

Oil-free chillers have fewer moving parts, require no oil or oil-circulation equipment, and therefore are less likely to need maintenance or service. Removing oil from the system means that maintenance tasks such as oil samples, oil changes, oil filter changes, oil disposal and leaks from shaft seals are completely eliminated. The results, for organizations like Mount Sinai Medical Center, are fewer service demands and operational cost savings.



Magnetic bearing technology eliminates oil, bearing wear surfaces, and gears for longer machine life and increased reliability.

Sustained Performance:

When it comes to staying online, no setting is as fragile as hospitals where processes and controls are in place to ensure life-saving equipment is never interrupted. Data centers operate in the same way, but for different reasons – losing power even for just a few minutes could mean significant loss of data, and subsequently, customer trust and revenue.

Regardless of the business motivation, in mission-critical environments use of innovative technology that helps reduce risk and improve business outcomes is mandatory. Enter Daikin Applied's oil-free chillers: industry leaders with innovative reliability and performance that ensure peace of mind.

Magnitude's compressor can protect itself from low power quality and control its response in power loss situations. In many cases, Daikin's proprietary RideThrough® technology will keep the chiller online during minor power disturbances and re-synchronize with the rotor once power is restored.

In extreme or extended power disruptions, Magnitude's RapidRestore® option restarts the chiller in as little as 43 seconds after power is restored. The compressors are designed to regenerate power from the spinning motor and feed that power back to the bearings and control system. This regenerative power allows the compressor shaft to coast down and gently reseat onto touchdown bearings. A fast-loading option is able to restore 80 percent load-cooling capacity in less than 75 seconds.

For more information about our complete line of HVAC systems, contact your local Daikin Applied Sales office or visit www.DaikinApplied.com to find an office near you.