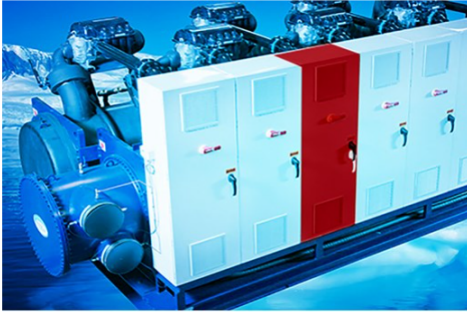


Data center cooling



1,400 Ton chillers improve efficiency and lower costs

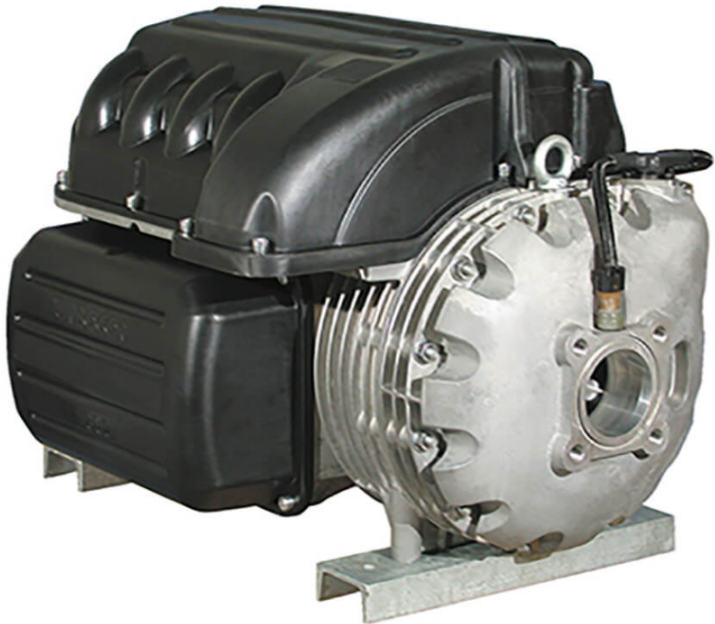
Expert team builds three 1,400 Ton chillers powered by 21 Danfoss Turbocor[®] compressors to improve efficiency and lower costs at Californian data center.

A world leading company in 3G, 4G and next-generation wireless technologies, houses multiple data centers at its 40 building campus in San Diego. In order to power the campus, the company uses an expansive, on-site energy infrastructure with gas turbine generators to provide prime power. According to some estimates, for every 100 watts spent on powering the servers, another 50 watts is needed to cool them. When operating at peak performance, costs associated with powering and cooling data centers are enormous.

In an effort to ensure the highest level of energy efficiency and to lower the total cost of ownership, the company decided it was time to upgrade its existing system. As part of the combined cooling and power requirement, the company needed to replace a 700 ton chiller with a new 1,400 ton chiller to provide reliable critical backup chilled water services to maintain proper temperature in the server rooms.

Experts seek industry's best technology

There was no off-the-shelf technology available to meet the specific requirements of the job and a team of experts was assembled to create a custom solution. The result is the first-of-its-kind ArcticCool ACW1400GT5022 – a 1,400 ton chiller equipped with seven Danfoss Turbocor[™] compressors. The new oil-free chiller provides sustainable variable speed energy efficiency, compressor redundancy, deep turndown flexibility, extremely low maintenance costs, and low noise. Since installing the new chiller, the company has saved more than 30% on compressor energy costs annually.



Creating a compact and powerful design

Murray Millander, CEO of Distributed Energy Solutions, knew that the job would require the use of the industry's leading Danfoss Turbocor[™] oil-free compressors. "This was an extremely exciting project that required a lot of creative problem-solving. When I initially learned the specific details, I knew we were going to have to utilize the best technology available today to make this project a success," commented Millander. "The technology of the ArcticCool/Danfoss Turbocor[™] solution was vital to the overall success of the project."

A highly efficient system

The chiller is designed with additional features that significantly increase the overall **energy efficiency** of the system, helping to reduce the company's carbon footprint. Each Danfoss Turbocor[™] compressor is up to 50 percent more efficient than constant speed compressors in the same size range. Additionally, the monitoring can take place on-site or remotely via a web-enabled diagnostics system.

All ArcticCool chillers leverage the Danfoss MCX adaptive logic controller. This compressor-specific controller was developed by Danfoss to properly operate the Danfoss Turbocor[™] compressors at maximum efficiency and reliability within its envelope and to avoid operating conditions that impact the system's productivity. The overall system is controlled by ArcticCool's ArcticJACE, which features a hardware-based Tridium[™] platform which controls the compressors, chilled water pumps, cooling tower fans, bypass valves, and system resets.

"This was one of the most efficient systems I've been involved in creating," says Millander. "Our top priority was to provide a system that would save time and money and the team at ArcticCool was very skilled in leveraging their experience with the Danfoss Turbocor[™] products. Together we developed a truly exceptional system that specifically fits the customer's needs."

Successful installation and operation

Millander recalls that the installation of the 1,400 ton chiller was a success. The compact size of the chiller unit had a ½ inch of clearance on all sides – a near perfect fit. Additionally, within a week of installation, the chiller unit was functioning flawlessly, helping to save more energy and lowering operating costs. Millander says that the ArcticCool/Danfoss Turbocor[™] chiller continues to perform at optimal efficiency, operating at an average of up to 0.4 kilowatts per ton, providing significant operating cost savings. Because it uses the oil-free ArcticCool and Danfoss Turbocor[™] technologies, the company's carbon footprint is also significantly reduced. The single unit offers reliable performance and required minimal installation, servicing and maintenance.

"Our client is so pleased with the solution we delivered that he decided to buy two additional 1,400 Ton chiller from ArcticCool with Danfoss Turbocor[™] compressors to be installed at the same chiller plant", commented Millander. "We're pretty sure these three 1,400 Ton chillers are the largest chillers in the U.S. that is trusted for critical duty applications". The two additional 1,400 Ton ArcticCool chillers with Danfoss Turbocor[™] compressors shipped in December of 2014 and will be installed beginning of 2015 in San Diego, California.

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