



Cancún International Airport continues to expand its facilities and air conditioning systems to accommodate millions of passengers.

Cancún Airport Cooling Capacities Soar with Magnitude® and Skyline®

ISSUE:

Cancún, Mexico, is a thriving, global tourist destination. Cancún International Airport, a gateway to the Mexican Caribbean and the country's second busiest airport, serves more than 17 million passengers each year requiring infrastructure expansion. With high volumes of tourist traffic and tropical conditions, the airport demands dependable cooling. "Air conditioning is huge here and the size of the cooling capacity needed for the airport is significant. While planning the expansion of Terminal 2 and 3, Cancún Airport also saw a need to upgrade some of its present systems," says Eduardo Alvarez, applied sales engineer with Daikin Mexico.

The HVAC upgrade is part of the airport's five-year expansion plan. "The aim of changing our equipment is mainly due to two important issues for the airport: the equipment efficiency gains with reduced power consumption and achieving comfort in the shortest possible time while earning energy-efficient savings from the equipment. In other words, comfort and efficiency go hand in hand," says Víctor S. Marino T., electrical and electromechanical engineer with Servicios Aeroportuarios del Sureste SA de CV (ASUR) in Cancún, Mexico.

Cancún Airport-ASUR sought the engineering services of Iberia Renovables, a unit of the Iberia Group, which performed a comprehensive analysis of single-compressor and dual-compressor chillers from three manufacturers, each in various operating scenarios. Importantly, the analysis showed that changing to a water-cooled system from the airport's primary use of an air-cooled system would save considerable operating costs.

SOLUTION:

Among the competition, Daikin demonstrated the most efficient, environmentally responsible solution with return on investment achieved in just over three years. "We selected Daikin which has proven to be good and reliable equipment that has provided excellent performance for more than 10 years," Marino T. says.

"The airport had 14 existing air-cooled chillers in various tonnage capacities, but because of the efficiencies of the water-cooled Daikin Magnitude chillers, the airport decided to transition from air-cooled to water-cooled chillers," Alvarez explains.

**NAME:**

Cancún International Airport

LOCATION:

Cancún, MX

**FACILITY SIZE:**Terminal 2 & 3: 100,000 m²**ISSUE:**

Upgrade expanding building cooling capacity with energy and cost-saving equipment

**SOLUTION:**

- (3) Daikin Pathfinder® air-cooled chillers
- (6) 1000-ton Daikin Magnitude®, magnetic bearing compressor chillers
- (44) Daikin Skyline® custom air handlers

SOLUTION (CONTINUED):

The existing air-cooled chillers in Terminal 2 and Terminal 3 are being replaced. The cooling and energy efficiency needs of the expanded terminals will be served by three dual-compressor Magnitude chillers, three Pathfinder® air-cooled chillers, and three existing water-cooled Daikin chillers that have been in service at the airport since 2006. The expansion includes a small, recently completed addition to Terminal 2, used for domestic travel, and a large addition of 13,000 square meters to Terminal 3, the hub of international travel.

In addition, of the three existing Daikin dual-compressor chillers, one will remain at Terminal 3, and two will be relocated to Terminal 4. "These conventional centrifugal units are all in very good condition and required minimal retrofit," Alvarez says.

The Daikin legacy equipment includes air handling equipment at the two terminals which will remain in service. Another 44 new Skyline custom outdoor air handlers (upper right) bring the total to 120 Daikin air handlers at the sprawling airport.

The transition from an air-cooled to a primarily water-cooled facility also signals conscious conservation of water and energy. "About 50 percent of businesses here rely on well-water systems, which are preferred in our humid climate because they use less evaporation than cooling towers. That equates to cost savings," Alvarez says. A new condenser well system was installed to supply water for the chillers, featuring a titanium condenser that is far more corrosion-

resistant than copper. Also, not using cooling towers at the Cancún Airport contributes to a low-maintenance solution afforded by the new chillers.



Six 1000-ton Magnitude chillers are among the new Daikin equipment serving the cooling needs for the airport's expanded terminals.

OUTCOME:

The first Magnitude chiller was started up in July at Terminal 3 (below), currently under construction, with the remaining new chillers coming online through year-end. "The start-up of the new equipment went as expected," Marino T. says. "The Daikin Magnitude is a very efficient, reliable piece of equipment with a very fast response time to reach the chilled-water setpoint."

Cancún Airport-ASUR appreciates the magnetic bearing design of the chillers which reduces maintenance requirements and saves on labor costs. "The start-up of the new equipment went as expected," Marino T. says. "The Magnitude is a very efficient, reliable piece of equipment with a very

fast response time to reach the chilled-water set point." Daikin Service has supported the airport's operation as the HVAC maintenance contractor for much of the last decade and will continue to partner with the airport.

Most of the new Daikin equipment will be in operation at Cancún Airport, concurrent with the completed expansions of Terminal 2 and 3. As the airport expands with a brand-new Terminal 4, three remaining Magnitude chillers will be placed in service, along with additional Daikin equipment as that terminal is expanded. The airport expansion is projected to continue through 2025.



44 new (in addition to 76 existing) Daikin Skyline outdoor air handlers provide air handling requirements for the airport's terminals.

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– Víctor S. Marino T., Electromechanical engineer,
Servicios Aeroportuarios del Sureste SA de CV