



Hotel Nikko
San Francisco is a
seven-time recipient
of the EPA's Energy
Star® Award for the
hospitality industry.

Hotel Enhances Guest Comfort and Improves Energy Efficiency

ISSUE:

The Hotel Nikko San Francisco provides the ultimate in comfortable, serene environments for its guests. When it became clear that the unreliability of the hotel's cooling system jeopardized guest comfort, innovative magnetic bearing chillers from Daikin were selected to replace the old, inefficient chiller system.

As the recipient of a Four Diamond Award® rating from AAA, Hotel Nikko San Francisco placed high priority on guest comfort and amenities. Located just steps away from Union Square in downtown San Francisco, the 25-story, 533-room hotel features luxury suites, abundant meeting space, restaurants, a 121-seat entertainment venue, indoor swimming pool, and fitness center.

Hotel Nikko's two 250-ton centrifugal chillers, original to the building, were approaching 25 years at the time of their replacement. "Repair costs and reliability of the original chillers were an issue," says Nori Kanda, project manager with Takenaka Corporation (USA), the general contracting sector of the owner. "We selected the two 280-ton Daikin Magnitude® chillers for the hotel based on several innovative features: ultra-quiet operation, sustainable R-134a refrigerant, and the fact that the frictionless magnetic bearing compressors require less maintenance than traditional centrifugal compressors."

Reduced operating costs, especially in lower electric bills, were another key reason for Hotel Nikko to select the energy efficiency of the Magnitude chillers, says Len Proc, district manager of Daikin Service in San Francisco who installed the chillers.

As a member of the Nikko Hotels' International group, which operates 62 premium hotels around the world, the San Francisco facility also had a corporate goal of continually looking for ways to reduce its carbon footprint. The efficient performance of the Magnitude chillers contributed to the hotel's impressive track record in receiving the U.S. EPA Energy Star® Award which honors businesses that demonstrate superior energy management. Hotel Nikko San Francisco is a seven-time recipient of the Energy Star Award for the hospitality industry segment. "The low-maintenance Daikin chillers fit our sustainability strategy of maximizing what we can do in house. This includes energy-efficient lighting and vigilance with preventative maintenance and calibration of our equipment," says Russell Palacio, chief engineer at Hotel Nikko San Francisco.



NAME:

Hotel Nikko San Francisco

LOCATION:

San Francisco, CA, USA



FACILITY SIZE:

25 stories, 533 rooms



ISSUE:

Unreliable and inefficient
25-year-old chillers



SOLUTION:

(2) Daikin Magnitude®
magnetic bearing chillers

SOLUTION:

From start to finish, Daikin Service managed the chiller replacement project. "This was our first turnkey project in downtown San Francisco where we not only supplied the equipment, but also orchestrated the installation, startup, and commissioning of the system," Proc says. In addition to the Magnitude chillers, Daikin supplied primary chilled water pumps and condenser water pumps with the new chillers, as well as a tower fan motor for the hotel's two cooling towers which operate as a single unit.

The removal of the old equipment and installation of the equipment in the hotel's basement-level mechanical room located off the parking garage occurred during a six-week period. The timing took advantage of cool weather in San Francisco to avoid disruption to hotel guests and employees.

Hotel Nikko staff immediately noticed the ultra-quiet operation of the Magnitude chillers. "We appreciate the quiet of the new chillers. You couldn't even have a conversation next to the old chillers," Kanda says. The magnetic bearing compressor technology eliminates the metal-to-metal contact noise of conventional bearings. As a result, the Magnitude chiller has the quietest sound levels in the industry for a chiller in its size range, with sound pressure ratings as low as 76 dBA per AHRI Standard 575.

Along with other businesses in the city of San Francisco, Hotel Nikko uses district energy for steam heat. Additional HVAC equipment in the original penthouse mechanical room includes a Daikin air-cooled water chiller which provides pre-heated domestic water to the building.

In addition, Hotel Nikko uses the Metasys® building automation system (BAS)

by Johnson Controls. The Daikin chillers were integrated into that BAS through the MicroTech® II unit controller with its Open Choices™ feature. "The MicroTech chiller controller controls the pumps and our cooling tower to optimize the efficiency and performance of the chiller," Palacio says.

Guest rooms use a stand-alone energy management system which automatically shuts off when the room is no longer occupied. This is another energy-saving initiative by Hotel Nikko San Francisco that doesn't compromise guest comfort.



Lowering electric bills was a key reason for Hotel Nikko San Francisco to select the Magnitude chillers that draw less power to produce superior energy efficiencies.

OUTCOME:

Palacio credits the San Francisco Energy Watch program in furthering the hotel's sustainability initiatives. The Program is a joint effort of Pacific Gas & Electric Company (PG&E) and the San Francisco Department of the Environment. Its goal is two-fold—help businesses lower their energy bills through energy efficiency and help the city reduce its environmental footprint. SF Energy Watch offers free on-site energy assessments, makes recommendations for energy efficient equipment, provides financial incentives and points out ways to lower utility bills. Through the SF Energy Watch program, lighting retrofits were performed in the entire building resulting in significant energy savings.

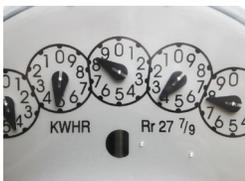
"SF Energy Watch staff also helped us arrange the energy rebate with our PG&E utility on the purchase of the two Daikin chillers," Palacio says. The PG&E utility rebate was significant, which returned a portion of the hotel's cost of purchasing and installing the chillers under a program for business retrofits.

The electric savings calculated for the rebate, following installation of the chillers, represents 15.2 percent of the baseline electric usage.

Further energy savings resulted from the variable frequency drives (VFDs) which are integral to the compressor on the Magnitude chillers. "In San Francisco we have a peak season from May 1 to October 31 with off peak, partial peak, and peak durations during the day," says Chris Reyes, assistant chief engineer at Hotel Nikko San Francisco. "With the new chillers' VFDs and their soft start capability, they don't draw a lot of amps, so we can turn them on at any time and not be penalized by the utility for starting them."

"To date, the units are performing very well. In fact, we show them to other facilities managers as a sort of showcase," Palacio says. Overall, the chiller replacement at Hotel Nikko San Francisco exemplifies how the Daikin Magnitude chiller solution raises the bar for hotel guest comfort and efficient operation, all the while contributing to a sustainable environment for employees, guests, and the community of San Francisco.

Energy Savings Summary



Efficiency of Daikin replacement chillers:
0.591 kW/ton full load

Efficiency of old chillers:
0.75 kW/ton full load

Energy savings after chiller replacement:
15.2% annually

"The low-maintenance Daikin chillers fit our sustainability strategy of maximizing what we can do in house."

– Russel Palacio, Chief Engineer,
Hotel Nikko San Francisco