



## CASE STUDY

### Hospitality

#### Facility at a Glance

**Name**

Hotel Nikko San Francisco

**Location**

San Francisco, California USA

**Owner**

DATAM San Francisco LLC

**Building Size**

25 stories, 513 rooms

**Issue**

Unreliable, inefficient 25-year old chillers

**Solution**

Replace old chillers with new magnetic bearing chillers

**Result**

15.2% annual energy cost savings and dependable cooling

## Hotel Nikko Enhances Guest Comfort with a New Daikin McQuay Chiller System

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 McQuay 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, 513-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 in late 2009. "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 McQuay 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 San Francisco to select the energy efficiency of the Magnitude chillers, says Len Proc, district manager of McQuay Service in San Francisco who installed the chillers.



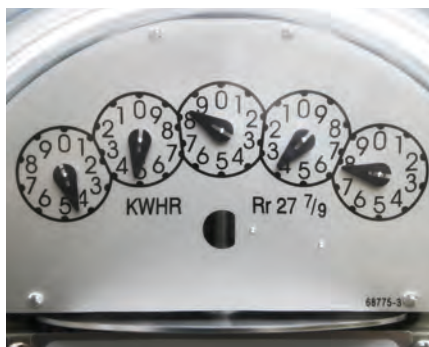
“We selected the Magnitude chillers for the hotel based on several innovative features: ultra-quiet operation, sustainable R-134a refrigerant and the fact that the frictionless magnetic-bearing compressors require less maintenance than traditional centrifugal compressors.”

*Nori Kanda – Project Manager, Takenaka Corporation (USA)*

### Award-winning Energy Management

As a member of the Nikko Hotels International group, which operates 52 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 McQuay 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.

### Energy Savings



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

Efficiency of old chillers 0.75 kW/ton full load

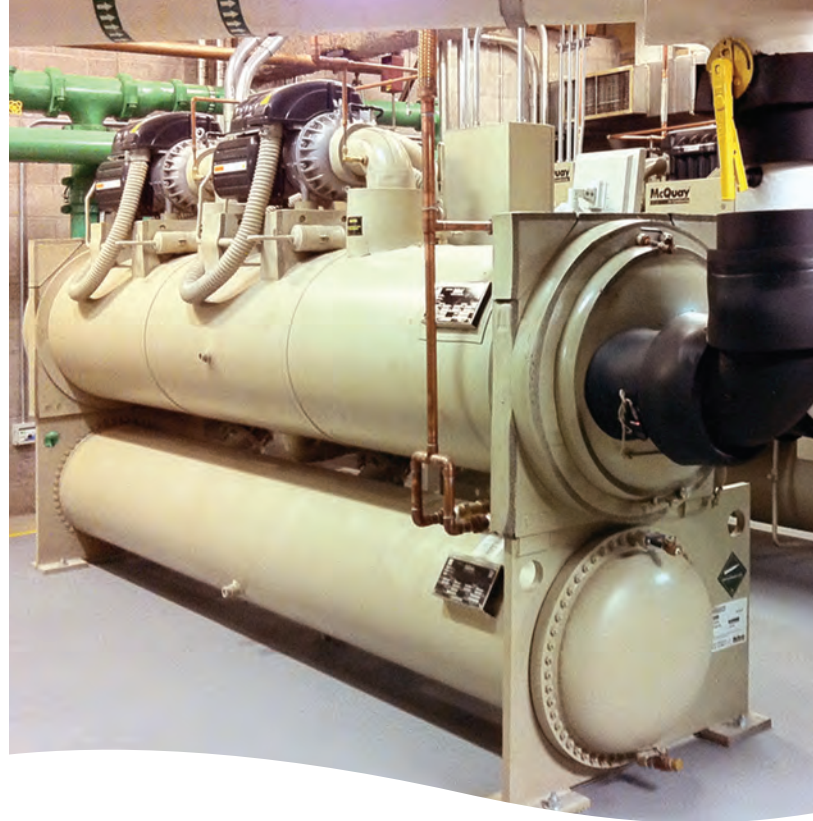
Energy savings after chiller replacement 15.2% annually

Utility rebate 5% of the total installation cost, based on energy saved

## Turnkey Project by Daikin McQuay

From start to finish, McQuay 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, McQuay 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 in November and December of 2009. The timing took advantage of cool weather in San Francisco to avoid disruption to hotel guests and employees.



### The Building Team



**Owner** Toru Iwai,  
DATAM San Francisco LLC

**Project Manager** Nori Kanda,  
Takenaka Corporation (USA)

**Facilities Manager** Russell Palacio,  
Chief Engineer, Hotel Nikko San Francisco

**Mechanical Engineer**  
MHC Engineers, Inc., San Francisco

**Mechanical Contractor**  
S&R Mechanical, Benicia, CA

**Electrical**  
Sierra Electric, San Francisco

**Chiller Supplier**  
McQuay International

**Installation Manager**  
McQuay Service, San Francisco

## Noticeably Quieter

The Hotel Nikko San Francisco 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 ARI Standard 575.

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

## Meeting Sustainability Goals

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 twofold—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 utility, PG&E, on the purchase of the two Daikin McQuay 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 in early 2010, 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.”

### Easy integration

Hotel Nikko San Francisco uses the Metasys® building automation system (BAS) by Johnson Controls. The Daikin McQuay 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, another energy-saving initiative by Hotel Nikko San Francisco that doesn’t compromise guest comfort.



### A System Showcase

“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 McQuay 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.