DAIKIN

The multi-building Regatta facility received $12 million in improvements including upgrades to HVAC equipment, roofing, facade waterproofing, insulation, vapor barriers, mechanical, electrical, and plumbing.

CASE STUDY

Museum Warehouse

Facility at a glance

Name
UC Berkeley
Regatta Museum Collections Facility (Phase 2)

Location
Richmond, CA, USA

Facility size
21,000 ft² (Phase 2)

Issue
Careful climate control during commissioning and for treasures in art collection facility

Solution
Daikin Building Controls on two 10-ton Daikin Rebel® rooftop units

Daikin Building Controls puts precision at fingertips of engineers during commissioning of art-filled warehouse

Issue

Protecting treasured artwork and artifacts demands tight tolerances for humidity and temperature control. Stringent standards for climate control were required during a major renovation of warehouse space for the Regatta Museum Collections by UC Berkeley. Tolerances were set at 68 degrees F, within +/- 2 degrees and 50 percent relative humidity (RH), +/- 5 percent.

The 121,000 ft² facility contains thousands of historic artifacts that require an HVAC conditioned environment to preserve the integrity of the collection.

Totaling 121,000 ft², the Regatta art warehouse in Richmond, CA spans across multiple storage facilities and accommodates UC Berkeley's campus-wide art collections and other related materials. A chilled-water desiccant-based system was used in the Phase 1 renovation, which began in 2010 on the largest section of the space, 100,000 ft².

Under Phase 2 of the project, in 2014, UC Berkeley requested bids on a system upgrade to the remaining 21,000 ft² space to include new mechanical, electrical, and plumbing systems.

Solution

Two 10-ton Daikin Rebel commercial rooftop systems were specified for Phase 2 (a different manufacturer supplied the system used in Phase 1) with a standard at 500 cfm of peak design dehumidification conditions, with 90 percent of the load as outside air.

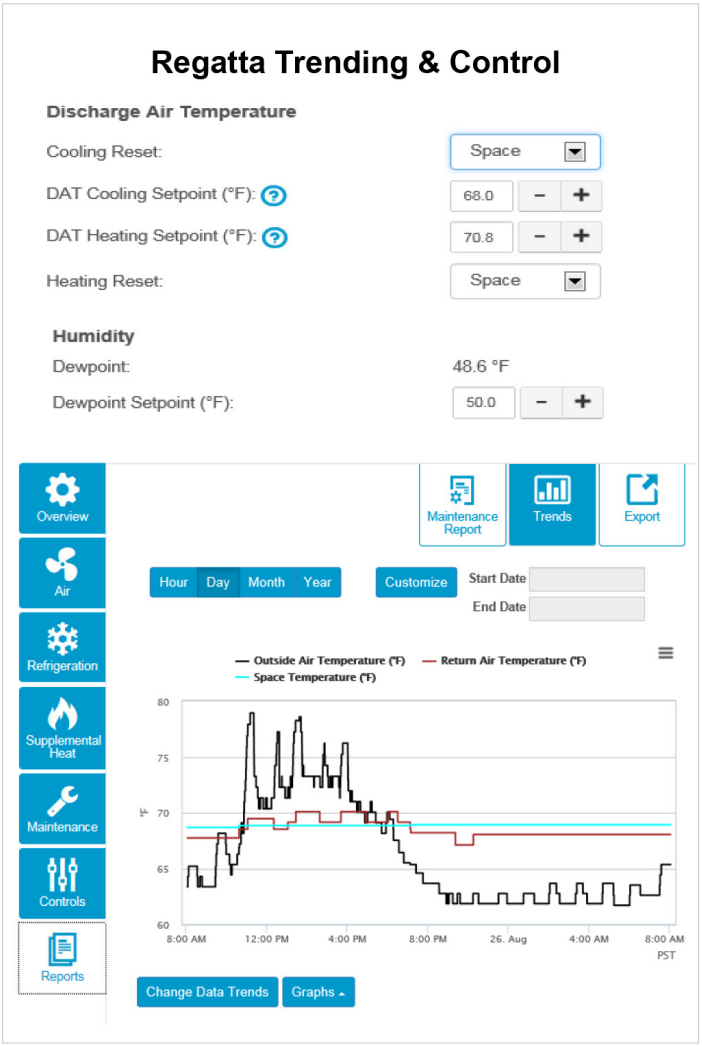
"The variable speed compressors on the Rebel units have the capability to provide temperature and humidity control at significantly less cost than the installed price of an air-cooled chiller desiccant system with storage tank," said Daikin representative Steve Dobberstein, senior

Two 10-ton Rebel rooftop systems with variable speed compressors and EC fan motors were specified for Phase 2 of the Regatta project.

sales engineer with Norman S. Wright Mechanical Equipment Co. in Brisbane, CA.

Each Rebel rooftop unit is connected to the Daikin Building Controls solution that provides real-time data to anticipate and respond to operational needs. At the Regatta climate-control warehouse, Daikin Building Controls was used to calibrate the rooftop equipment during the commissioning process. "The customer trusted the idea of using the Rebel rooftops and Daikin Building Controls in this climate-control application. The fact that a Daikin applications engineer half-way across the country can be virtually hands-on with the controls allowed us to sell the job," Dobberstein said, noting the Rebel units were installed in February 2015 and the start-up process began in summer.

Daikin Building Controls allows 24/7 remote monitoring from anywhere via a laptop, mobile phone, or tablet.



Daikin Building Controls provided real-time, remote access to diagnostic points that the facility's building automation system (BAS) could not provide.

"Daikin Building Controls provides a window into basic trending information on base temperature and humidity, and other control points such as compressor speed, fan speed, and unit state, giving engineers the ability to adjust the settings and troubleshoot," said Matt Dodds, Daikin application engineer for commercial rooftop units. "On a remote basis, you can go into the data for a deeper level of insight than you would by talking to a service technician standing by a unit on the roof."

Authorized parties access Daikin Building Controls for rooftop performance and operating conditions on either a highly secure Ethernet LAN connection, or a 3G-high security cellular network that connects directly to the cloud, which prevents unauthorized users from compromising the system or accessing other networks.

Outcome

"Daikin Building Controls gave access to diagnostic points unobtainable from the facility's building automation system (BAS). Daikin Building Controls is also a helpful application because of the high cost of technician services," Dobberstein said, noting the platform's remote troubleshooting capability eliminated several service calls (truck rolls) during commissioning.

The bottom line? Daikin Building Controls saved time and money during the 6-week-long start–up and commissioning process of a critical-control application where rooftop package units are seldom used. "With some fine tuning, Daikin was able to optimize the control of the Rebel units to meet the required tolerances of +/- 2 degrees and +/- 5 percent RH," Dodds said.