



Pima Community College is one of the largest multi-campus community colleges in the country and continues to grow.

MCP Delivers Cost Savings and Classroom Space

ISSUE:

Given busy year-round school schedules, timelines are important for educational institutions when considering HVAC equipment replacement projects. Such was the case at the Desert Vista campus of the growing Pima Community College system of Tucson, AZ, one of the largest multi-campus community college systems in the country. The 60-acre campus in southwest Tucson serves 4,000 students in a number of disciplines including aviation, computers, culinary arts and early education.

After 35+ years of operation, the two chillers and the boiler system on the campus were inefficient. And, they were also starting to develop reliability problems and rising maintenance costs, an unacceptable situation in a college that operates year-round in a desert climate.

SOLUTION:

Following a long discovery process, the decision to go with Daikin's Modular Central Plant (MCP) to serve two main buildings across approximately 128,998 ft² of classroom and facilities space became the clear choice. "The project was approved on the basis of the advantages of a packaged central plant versus a site-built central plant for installation cost savings and minimal disruption to the facility while maintaining a fast-track schedule. Daikin demonstrated extraordinary cost savings over other solutions," says William Ward, assistant vice chancellor for facilities at Pima Community College in Tucson, adding, "While the Pima Community College system always strives for energy efficiency, the biggest criteria for this project was timing."

Another bonus of the packaged central plant configuration is its external placement, which freed up valuable classroom space at Desert Vista. The Daikin Modular Central Plant (MCP), including cooling towers are located in an enclosed service yard just off the northwest corner of the Pueblo building, is the larger of the two buildings on campus. Ward says: "The elimination of the chiller and boiler rooms in the Pueblo building allows us to expand our science lab and classroom space by about 1,850 square feet."



NAME:

Pima Community College

LOCATION:

Tucson, AZ, USA



FACILITY SIZE:

128,998 ft²



ISSUE:

Inefficient 35+ year old chillers and boiler system



SOLUTION:

Daikin Modular Central Plant (MCP) with Magnitude® chillers

SOLUTION (CONTINUED):

The Daikin MCP was delivered to the campus in pre-engineered, pre-assembled modules. Two of the modules included two magnetic bearing 300-ton capacity Daikin Magnitude® chillers and two cooling towers to replace the chilled water central plant. The third module included energy-efficient sealed combustion boilers to provide both heating and domestic hot water. The unique design of the system also incorporates solar panels to supplement the heating of the domestic water at the campus. The solar panels are located on top of the domestic and heating water's module. Project owner William Ward first learned about Daikin's Magnitude® chiller technology a few years prior in a trade magazine and was highly interested to learn more. The magnetic-bearing frictionless centrifugal compressors of Magnitude, which operate efficiently at a variety of load capacities, impressed him. Ward was also impressed by the elimination of an oil handling system offering reduced maintenance and repair costs compared to traditional centrifugal compressor chillers.

Ward credits the success of the project to the skillful orchestration of the Daikin team, installing contractor, engineering, and architectural services firms. Pima Community College selected architectural firm NTD in Tucson to oversee the entire project including designing the expanded classroom space and other building modifications. Michael Harris, architect with NTD Architecture says:

"The main challenge was the tight timeframe under a qualification-based procurement system. The project needed to prove it wasn't just the lowest price but the best solution. Daikin really went the extra steps to keep the project moving."



Two 300-ton Daikin Magnitude chillers and cooling towers replaced Pima's outdated chilled water central plant.

OUTCOME:

Desert Vista Pima Community College's upgrade to high efficiency chiller technology qualified for an incentive program from Tucson Electric Power, reducing the college investment in the new equipment, in addition to the operating cost savings. All told, energy savings from the new Daikin plant versus a traditional central plant are significant. For starters, the new MCP reaps a significant reduction in electrical power costs over the college's traditional central plant. Natural gas costs are also reduced from the energy-efficient boilers inside the MCP, aided by the use of the solar panels for domestic hot water. "The Daikin MCP runs great at low loads or high

loads. I'm expecting our overall energy costs associated with heating and cooling will be greatly reduced, up to 40 percent or more," Ward says.

Ward says the Daikin chiller technology and hot-water heating contained in one MCP is a win-win for the Pima Community College system and the college will definitely consider the technology for future replacement projects. "It has been a great partnership with Daikin. From the design group to the sales group and the contractor and the product itself, it was all phenomenal."



The Modular Central Plant includes solar panels used to heat domestic water, further increasing energy costs savings.

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– William Ward, Facilities Assistant Vice Chancellor, Pima Community College