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## Eight Is Enough

California university  
embraces tankless  
water heaters.

P2S Engineering's James Valiensi, P.E., LEED GA,  
at California State University, Northridge.

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## OUR COVER THIS MONTH



California State University, Northridge faced a dilemma in several of its student-housing facilities. The old boilers no longer had the ability to handle hot water loads in an energy-efficient manner and could not meet rigorous local control standards. **Bob Hitchner** explains how the university turned to tankless water heaters as a solution and is now enjoying impressive energy efficiencies. On the cover this month is Long Beach, Calif.-based P2S Engineering's **James Valiensi, P.E.**, LEED GA. Cover photo by **Daniel Sofer**.

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# Eight Is Enough

Tankless water heaters lower energy consumption and reduce carbon footprint at a California university.

The installation of tankless water heaters in several student living complexes at Cal State Northridge has reduced energy costs by 60% in those buildings.



The original tankless water heater installation at Northridge took six weeks. More tankless installations at the university are currently in the works.

**B**everly Watson can easily laugh about the idea today now that her recent tankless water heater retrofit project is complete and is fully meeting her requirements.

But Watson, the associate director of operations for California State University, Northridge, admits to wondering last summer while the work proceeded whether eight — as in eight tankless water heaters — were truly enough for her particular application.

"Frankly, to accommodate the water needs of each of our students, I thought we were going to need more than that number at each of the four residence halls we were upgrading," she says. "So I kept asking the lead engineer on the project: 'Are you sure we don't need another tankless water heater or two?'"

Photos by Daniel Sofer



Completed last August, the CSUN project entailed the complete removal and replacement of the original atmospheric boilers and storage equipment installed in the four 20-year-old student-apartment buildings. These rooftop systems provided not only domestic hot water to the residents of all four structures, but also space heating through a fan coil in each apartment.

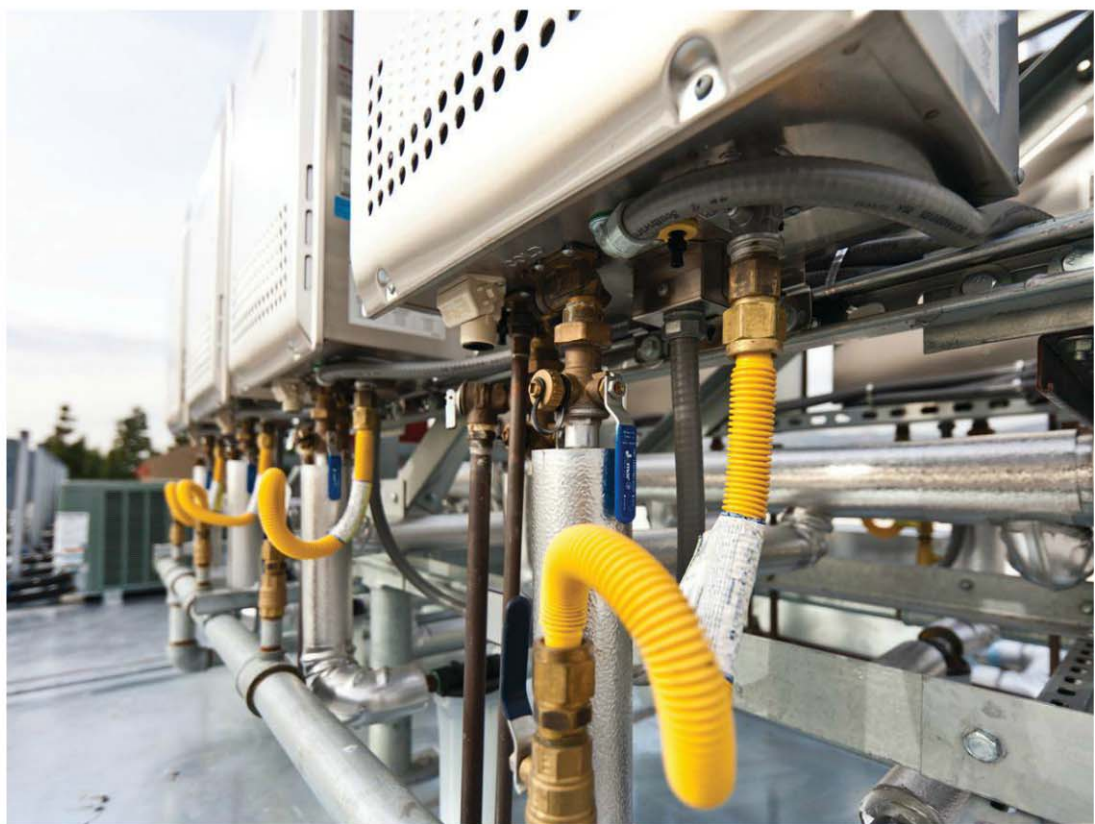
The old boilers no longer had the ability to handle the hot water loads in an energy-efficient manner and could not meet the rigorous control standards of the South Coast Air Quality Management District.

In short, it was time for a new solution at the four buildings, each of which span three or four floors and house 37 to 52 individual living areas for two to four students apiece. The solution specified by Long Beach, Calif.-based P2S Engineering's **James Valiensi**, P.E., LEED GA, called for each apartment building to have its own multiple-unit Nortiz America tankless water heater system. The eight units per building would furnish domestic hot water only, with a new and separate heat pump system handling the space heating.

During the design and installation process, Valiensi reassured his client that the proper sizing and engineering of the four new tankless systems would meet the demands of her intended application.

"I liked working for Beverly," Valiensi says. "She's very thorough, does a lot of research and asks a lot of questions because she wants things done right. She demands not only answers, but also documentation to support those answers. But like a lot of people, Beverly and her maintenance staff didn't realize at first just how much hot water these tankless water heaters can deliver over a given time span."

Two other individuals who did their homework on the CSUN project were **Bryan Suttles**, president of Suttles Plumbing and Mechanical Corp., and his project manager **Dan Boulais**, who quarterbacked the installation. The final rooftop assembly at each building consists of four pairs of Nortiz NCC199 condensing tankless water heaters mounted back-to-back in two rows onto a custom-made steel rack.



The gas and water connections on one of the prefabricated tankless racks are shown. The racks were assembled offsite and then lifted to the rooftop by crane. Installation labor time was cut in half since materials did not have to be carried piecemeal up the roof for assembly.

Ruud series 14PJM split system 14 SEER heat pumps and RRHSLHM fan coils in capacities from 1.5 tons to 3 tons are in the dorm rooms and 4- and 5-ton Ruud Series RRPLB rooftop gas pack heating and cooling systems are used in hallways and public spaces.

Designed by the P2S Engineering team, including Pasadena, Calif.-based Wheeler & Gray Consulting Engineers, the racks can handle the required static loads and seismic forces in accordance with the California Building Code.

"Suttles Plumbing subsequently enhanced our design in the process of making it easier to build," Valiensi notes.

The installer also decided against erecting these rack structures from scratch on the four rooftops. Instead, the Suttles Plumbing team chose to prefabricate them at its shop in Chatsworth, located just a mile-and-a-half from CSUN.

"Our proximity to the jobsite made this an ideal approach," Suttles states. "We built the racks, fixed the water heaters to them,

loaded the racks onto flatbed trailers and shipped them to the four jobsites. Once there, a crane hoisted the assemblies to the roof. All we had to do was fasten them onto the same rooftop platforms where the old boilers used to sit and connect them to the main piping. It all went very smoothly."

This strategy significantly trimmed installation time.

"By avoiding the time and trouble of lugging all that material piecemeal up to the roof for assembly — water heaters, racking, piping, valves and fittings — we were able to cut our overall labor time in half," Boulais says.

### Clear-Cut Choice

The CSUN project started in July of 2009 when Watson commissioned P2S Engineering to do a feasibility study. Could the university simply replace the four existing boilers with up-to-date and more efficient models, thereby generating all the hot water the apartments needed, while also fully complying with SCAQMD restrictions?