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Sweetwater Spectrum

Quiet, efficient radiant heating and cooling system creates peaceful environment at residential community for adults with autism.

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Radiant heating and cooling offer comfort to residents while delivering on energy efficiency goals

Recognizing a need for housing support as their children with autism advanced into adulthood, a group of Northern California families combined forces to conceptualize the Sweetwater Spectrum community for adults with autism. The residential community was designed to help residents establish a familiar, comfortable and manageable setting that would nurture independence and provide a comprehensive long-term living environment for residents.

"Controlling all sensory aspects of the living environment to the best of our ability was key to this project," said Mark Jackson, president of Sweetwater Spectrum. "Including quiet, efficient HVAC systems in the residents' living spaces and recreation area was part of the way in which we sought to achieve this goal."

The design called for 9-ton hybrid heating and cooling systems with RAUPEX O₂ Barrier crosslinked polyethylene (PEXa) pipe from REHAU, as well as REHAU INSULPEX energy transfer pipe for the distribution of heated and chilled fluid generated from two air-to-water heat pumps installed in each individual home and in the community center. The project was also designed with actuators that would facilitate customized, zoned climate control, providing heating or cooling only when a pre-programmed thermostat in each zone senses its need.

Mechanical contractor Reid Heating & Energy installed a total of 18,312 ft of 1/2-in RAUPEX pipe in the four 3,250 ft² residences, along with eight REHAU PRO-BALANCE manifolds to accurately balance circuit flow rates and facilitate the zoned control of each system. The firm additionally installed a total of 3,515 ft of 1/2-in O₂ Barrier RAUPEX pipe and seven PRO-BALANCE manifolds in the 2,290 ft² community center.

"While this was not our first experience with installing a hybrid radiant heating and cooling system, it was our first time integrating it with an air-to-water heat pump energy source," said Bob Reid, president of Reid Heating.



"We were glad to be able to rely on a foundation of nearly two decades using REHAU products and services. REHAU provided a piping circuit layout that ensured the accurate and timely installation of the radiant piping system, and the company's exceptional support on this project was consistent with all of our experiences to date."

"This has been a very rewarding project for several reasons," said Roger Neelson, president of Mid State Construction, the general contracting firm on the project. "Not only are we employing some of the most energy-efficient HVAC equipment available today, we are also maximizing this equipment's capabilities by incorporating REHAU high-efficiency radiant heating and cooling systems."

Designed to the U.S. Green Building Council's (USGBC) LEED® Gold standards, the community at-large is expected to consume 30% less energy than Title 24 requirements once it is up and running. In addition, Sweetwater Spectrum has been selected by PGE as a pilot community for its Net Zero Energy program.

Project: Sweetwater Spectrum Sonoma, CA
Construction type: Residential, opened in 2012
Project scope: 21,827 ft (6,653 m) of RAUPEX pipe
Architect: Leddy Maytum Stacy (LMS) Architects
General contractor: Mid State Construction
Mechanical contractor: Reid Heating & Energy
REHAU systems used: Radiant heating and cooling (RAUPEX® pipe, PRO-BALANCE® manifolds), Energy transfer piping (INSULPEX®)

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