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# INNOVATIVE A/C MANUFACTURER INTEGRATES CUTTING-EDGE PIPE SYSTEM IN TRAINING FACILITY

PROJECT INFORMATION

PROJECT	PRODUCTS USED	LOCATION / DATE
Daikin AC, HVAC Piping	Climatherm®	Irvine, CA Spring 2011

## AQUATHERM ADVANTAGES

- Quick and easy installation despite the installers' lack of experience with PP-R
- Natural R-value of 1 eliminated need for insulation
- No leaks experienced in initial pressure test



## THE CHALLENGE

Daikin AC staff sought a leak-free alternative to PVC

## THE SOLUTION

With Aquatherm, they found a product perfectly suited for the project -- and easy to install

Daikin is the largest HVAC manufacturer in the world, with sales of \$12 billion, and the company is making a dramatic impact in the HVAC market throughout North America. While the company does a lot of training at local independent distributors and online, they also have two U.S. physical training facilities.

"Training on the proper methods of application, installation and commissioning of our products is of vital importance for the success of Daikin in North America," explained National Service Manager – Residential Solutions, Stephen Meurs.

So when Meurs and VRV Senior Technician, Mark Harte, began working on the plans and designs for a new training facility just south of Los Angeles in Irvine, CA, they wanted to make sure everything was just right. "At Daikin, we don't rush things. We aim for perfection. It is important for the installation to not only function as designed, but also display well," Meurs said.

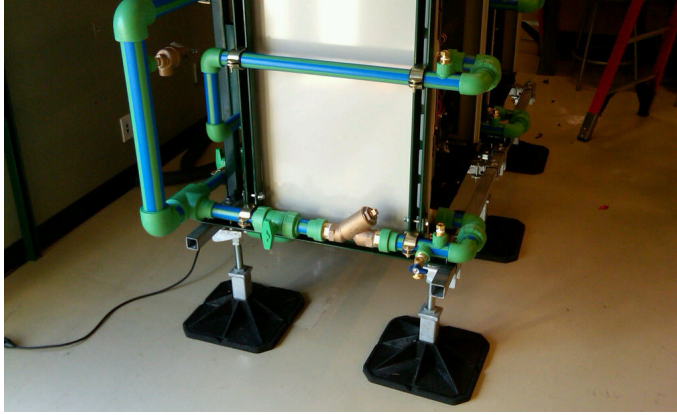
## A CUTTING-EDGE SHOWCASE

Meurs was handling the water side of the installation while



While the Irvine training lab installation doesn't have a large amount of pipe, it does have several connections to valves, pumps and equipment. And the installation didn't have a single leak.

Harte focused on the refrigeration side, and both were striving to put together an efficient, functional, long lasting, and aesthetically pleasing demonstration. The newest addition to the training facility and also the centerpieces of the laboratory,



are two Daikin VRV-WIII water-cooled condensers.

These variable refrigerant volume (VRV) units offer an energy-saving alternative to traditional centralized equipment and are used extensively worldwide in skyscrapers where the use of cooling towers and boilers is necessary. Their compact and lightweight structure makes installation of VRV technology in large buildings possible.

VRV-WIII systems are equivalent to 4-pipe chilled water systems, but also offer a viable alternative to Water-Source Heat Pump solutions. Each connected indoor unit can provide heating and cooling independently to suit zone requirements, making these systems suitable for both open plan and cellular applications with different operational requirements.

Meurs and Harte searched extensively for non-competing, complementary equipment to use with the Daikin units, including economizers, pumps, and a radiant display. "The installed equipment is primarily used for hands-on service training. All of the equipment is fully operational so that the attendee can perform troubleshooting techniques during class," Meurs explained.

As many as 1,500 people a year will attend training classes at the Irvine location and contractors, architects, distributors, sales reps, and the Daikin sales force will also use it as a showroom. At the same time a fair amount of service training will also be conducted at the facility where three 300-square-foot training rooms, two theory rooms, and one dedicated hands-on training facility, are located within the 13,000-square-foot regional sales/training office.

## A COMPLEMENTARY COUNTERPART

The project has two main piping networks, refrigerant and water. Meurs said that typically Schedule 80 PVC would have been used, but that an installation in another training center had recently failed using that pipe. "We were looking for another option and when we were at the 2010 AHR Expo in Chicago, we saw Aquatherm's polypropylene piping and thought it would complement our equipment well," Meurs recalled.

Aquatherm's polypropylene-random (PP-R) piping has been used in more than 70 countries for nearly four decades, but is relatively new to North America. Aquatherm's Climatherm® is specifically designed for chilled water, condensing water, radiant heating, and industrial applications.

The company's faster composite, a fiberglass impregnated layer, provides exceptional strength and resistance to thermal expansion — by up to 75% compared to plastic piping, ensuring that it hangs rigidly even in operating temperatures up to 200°F. The corrosion-resistant PP-R pipe also has natural insulation properties: an R-value of 1, but the heat fusion connection is the key to the product and one of the main reasons Meurs wanted to use it at the Irvine center.



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--STEPHEN MEURS, NATIONAL SERVICE  
MANAGER RESIDENTIAL SOLUTIONS

Heat fusion bonds both sides of a joint into a single, homogenous material, without the use of flames, chemicals, or mechanical connections. Once fused, pipes and fittings



have the same physical properties, thus eliminating systematic weaknesses that can be caused by introducing different materials into the joint in other types of piping systems.

Meurs worked with Marty Hayes, the local Aquatherm

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manufacturer’s representative, with Sustainable Building Products, to learn more about the product and receive basic heat fusion training. Since he was not going to be installing Aquatherm in the field, Meurs opted to forego the full Aquatherm factory training certification that allows the installer to offer a multimillion dollar 10-year warranty covering product liability, personal injury, and property damage. Instead he received some basic fusion training, bought a welding iron that fuses pipe up to two inches, and got started.

Meurs installed approximately:

- 60 feet of 2-inch Climatherm
- 50 feet of 1 ¼-inch Climatherm
- 15 feet of both ½-inch and ¾-inch Climatherm


While it’s not a large installation there’s plenty of equipment integrated between the VRV-WIII units, AHUs, fancoils, controllers and the Climatherm and the Aquatherm fittings and PP-R ball valves. Piping differential flow switches, balance valves, main pumps, pressure gauges, temperature sensors, and flow meters are all incorporated.

## A GOOD GRASP

Meurs, a third generation HVAC and plumbing contractor prior to joining Daikin, had a good grasp of the fusion connection concept and said that he can see the large labor savings achievable using fusion. “For us, having the right product for the job was the key factor, but if I was a contractor in the field, I could see where you would have labor savings,” he said, adding that a contractor who was recently at their facility had just finished up a successful Aquatherm job just like this one.

“I did all the fitting myself and it was very easy to work with. There is a short learning curve, and there were a few connections where I went back later and replaced them just to make them look cleaner, but once I learned it and understood it, I just ran with it,” Meurs recalled.

The Aquatherm aspect of the installation went extremely smooth and “the initial pressure test showed no leaks on the Aquatherm piping,” according to Meurs. The VRV-WIII demonstration has been operational and is basically ready for action, he added.

Finally, Meurs said that Aquatherm will likely be used in the Dallas training facility’s upcoming renovation. “Daikin always tries to stay on the cutting edge of HVAC, and Aquatherm is right there with us.” 

ABOUT AQUATHERM

The German-manufactured pipe has been one of the world’s most durable and greenest piping systems for nearly four decades and proven successful in 70-plus countries. Aquatherm piping systems offer many performance and environmental benefits, such as:

- Eliminating toxic materials, glues and resins, and open flames from the piping installation equation
- An R-value of 1 or greater depending on pipe size and SDR
- The fusion welding process, which creates seamless connections that last a lifetime without leaking or failing
- An optional faser-composite layer in the pipe reduces linear expansion of the pipe by up to 75% compared to plastic piping

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