



'STATE-OF-THE-PIPE' FOR BRAND NEW BURWOOD HOSPITAL WING

Canterbury's Burwood Hospital is a brand new facility which incorporates state-of-the-art medical technology to deliver the best outcomes for all patients who visit the centre. But, while perhaps less glamorous, just as important to the successful operation of Burwood Hospital is its plumbing and reticulation systems – and these are just as cutting-edge as the gear which powers the theatres. Incorporating aquatherm piping systems for potable domestic hot and cold, and chilled, water systems, the building's plumbing is designed to deliver high performance and low maintenance for the full life of the hospital.

According to Paul Eagleton, South Island manager of local importer and distributor aquatherm NZ, the piping systems selected for the hospital are reflective of the overall focus on future-proofing. "This is a building built for the new millennium. It incorporates every advantage the construction industry has to offer and that extends to the piping systems."

Burwood Hospital has long been recognised as one of New Zealand's centres of excellence for rehabilitation and elective orthopaedic surgery. As of June 2016, it became much more as site clearance began for the creation of state-of-the-art facilities linked to the 'old' Burwood Hospital. Innovative thinking and design has shaped these new facilities to deliver better, more efficient healthcare now and in years to come. These new buildings house over 32 thousand square metres of purpose-built facilities on three floors and provide a total of 230 new inpatient beds. Included are new ward blocks for medical, rehabilitation and mental health services for older people. There are also new outpatient areas, including radiology and pharmacy areas. Each 24 bed ward has three communal patient lounge areas plus a whanau room where patients can spend time with family members; the entire new build has beautifully landscaped courtyards throughout, designed to let in as much natural light as possible and help keep people connected to the outdoors.

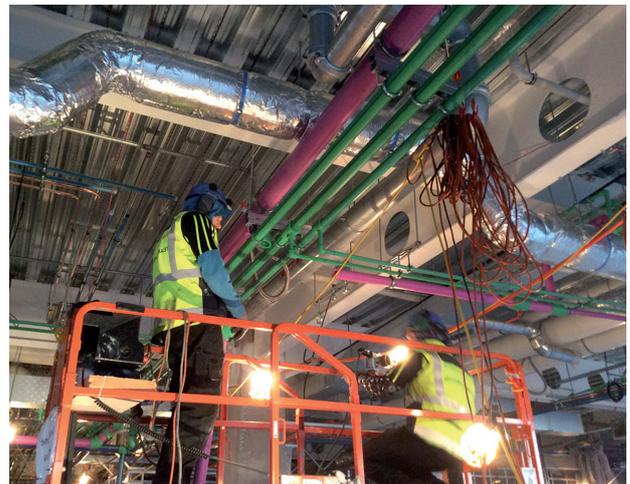
Unique properties for a lasting advantage

Continuing, Eagleton says engineering consultancy Beca had no hesitation in specifying aquatherm for this prestigious project. That's because there are distinct advantages associated with the unique construction of these piping systems. "aquatherm is a German-engineered product which is made from a proprietary raw material called Fusiolen PP-R," he explains.

PP-R is polypropylene-random, a chemically inert thermoplastic. Its advantages over the metal pipes used since antiquity are all directly linked to its base form: unlike metals, PP-R does not react with minerals or contaminants in the water. It doesn't break down (although it is fully recyclable) and delivers an extraordinarily long life. Because it is by nature flexible, it delivers a further advantage which has never been more relevant in Canterbury: it is earthquake resistant. "What's more," Eagleton points out, "The mineral-rich water in Canterbury lends itself more to the use of plastics rather than metallic pipe." Where metal pipes will scale and potentially clog over time, there is no such issue with aquatherm's products; where metal conducts heat, PP-R is a natural insulator, preserving the heat (or chill) of the liquid it transports and reducing the necessity for external cladding.



Dirk Rosenberg, aquatherm GmbH, and Warwick Muirhead, David Browne Contractors Burwood team leader, conducting a site inspection prior to completion.



The installation team installing high level pipe runs of reclaimed water (lilac pipe) and cold and hot aquatherm green pipe for potable water.



aquatherm

state of the pipe

Installers love aquatherm

While Eagleton says specifiers like Beca recognise the advantages of aquatherm in modern building projects ("We have piping systems going into a lot of projects in Christchurch and around the country," he notes) installers see a definite advantage too. With PP-R piping and fittings being a flexible material which is a fraction of the weight of old fashioned metal pipes, it is easier to get the job done.

Tim Browne, manager at mechanical and hydraulic services company David Browne Contractors which is responsible for the implementation of some 17 000 metres of aquatherm on site, provides further insight: "We had proven the success of aquatherm on many other recent projects in Christchurch and around the South Island. It delivers a real advantage with its 'cost versus time' ratio." He says the time saved installing PP-R over other products makes it a preferred material to work with. "It's light, easy to handle, quick to install and clean to use. Little wonder my installation teams enjoy working with this product." Browne explains how Fusiolen PP-R is worked. "The pipework is joined by fusion welding, where both ends of the pipe and fittings are heated to a set temperature, pushed together and held for a short time, allowing the product to fuse and bond. This method is far less stressful and takes much less time than other piped options."

Importantly, he notes that the risk of leaks is reduced if the task is completed correctly. "With projects like these, the ability to save time and effort while achieving an excellent outcome is like gold. We've used aquatherm successfully in New Zealand for 18 years now, and we've never looked back." Eagleton says the growing number of qualified installers and successful projects completed with aquatherm piping systems attest to the suitability of this world-proven product for the local market. "Importantly, we don't sell pipes and fittings, we sell the system and provide solutions. That means we make sure the product is accurately specified from the available range. Crucially, it means training and support for installers so they deploy it in accordance with applicable standards to get the job right. And finally, it means complete backing from aquatherm NZ from specification through to final pressure test. That provides the assurance to building owners – like the Canterbury DHB with Burwood Hospital – that their piping systems will stand the test of time."



A very well detailed domestic hot water plant room using aquatherm pipes.



The new wing at Burwood Hospital.



AQUATHERM BLUE PIPE: FORT HUACHUCA ARMY BASE

In its latest issue, US specialist magazine PHC news (plumbing + hydronic contractor) has published an article about the army base in Fort Huachuca. At the beginning of this year the modernization of the cooling and hot water pipelines was completed with our aquatherm blue pipe. Further details regarding this project can be found in the following report

Aquatherm pipes bring water protection to Fort Huachuca

SPECIAL TO PHC NEWS



In the late 1800s, the soldiers of Fort Huachuca were in hot pursuit of Geronimo and defending settlers from Apache raids. During World War I, the 10th Cavalry "Buffalo Soldiers," as the Cheyenne and Comanche referred to them, were assigned there to guard the U.S.-Mexico border and later followed Pancho Villa's trail to Mexico.

Today, Fort Huachuca is not

only a national landmark brimming with stories of the Old West, it is home to the U.S. Army Intelligence Center and Network Enterprise Technology Command. Its protect-and-defend legacy lives on today in the thousands of soldiers stationed there, whose chants echo across the Huachuca Mountains as they march across the grounds some 15 miles north of the Mexico border.

While they support our country,

it's important the southwest desert post supports them. A reliable infrastructure system is a fundamental way of doing that. Earlier this year, work was completed on a modernized piping system for chilled and hot water. Aquatherm polypropylene-random (PP-R) pipe was selected as a long-term solution that had reached the end of its life cycle.

Water is a precious resource in the arid climate, and Aquatherm's leak-free system helps ensure that it is not wasted. It also has no rust issues and a life expectancy of more than 60 years.

"The post wanted a product that would last a long time. Aquatherm was obviously the right choice," said Scott Harvey of Harvey Plumbing, a local sub-contractor on the job for SBBI, a federal infrastructure contractor.

Aquatherm Blue Pipe from 2" all the way up to 14" for the main line was installed in open trenches for chilled and hot water supply and



AQUATHERM BLUE PIPE: FORT HUACHUCA ARMY BASE



return lines to buildings throughout the Fort. Altogether, nearly six miles of pipe was installed.

Harvey was a relative newcomer to polypropylene pipe, having worked for years in the industry on traditional copper and steel plumbing systems. He was new to pipe fusion as well, which is the process that joins polypropylene pipe ends together using heat and pressure. The result is a seamless pipe system that greatly reduces the possibility of leaks and future maintenance costs.

"We're sold," Harvey said. "When we started talking about polypropylene five years ago, the engineers were not receptive to it. But it seems more and more governments are receptive to it, and

the engineers are more comfortable with it. We think we will continue to see it more often."

Harvey Plumbing rented fusion equipment from Ferguson, a Certified McElroy Rental supplier, which also was able to provide certified training for the new fusion operators. McElroy provided on-site technical support on the equipment which included a TracStar 618, a Rolling 412 and an Acrobat 160 and consulted on job site setup.

"Everyone who worked with the machines really liked them. Some guys who weren't on the project in the beginning got to work with them at the end because they were so jealous of the ones working on it. We got more of them certified so they would have a chance to

do it. For the guys, it's a lot of fun anytime they can work with large pipe and fusion machines," Harvey said.

As with any job, there were challenges to work through. They had limited outdoor work space with many sidewalks, buildings, landscaping and open trenches to work around. It was also an active base so they needed to avoid interrupting the soldiers' duties and continue to provide cooling and heating to all the barracks during construction.

A pipe-handling, productivity tool known as the PolyHorse helped in this effort. The crew could stock a day's worth of pipe on the PolyHorses which fed into the fusion machines, allowing for continuous work flow. As a joint was being fused on one machine, another joint was cooling on another machine and then fed down the trench, and vice versa. Harvey said this process helped get the job done in time. They started the project in October 2015 and were able to finish up in May 2016.

"We were able to do this without any shutdowns to any of the buildings," Harvey said. "We kept everything running through the coldest part of Arizona weather and had chilled water to all the buildings once the weather started to get warm. When it was time to turn the cooling on, we were ready."

Harvey found the fusion machines to be very easy to work with and was struck by the speed in which joints can be fused.

"We didn't have to deal with joint restraints and thrust blocks," he said. "With a lot of products you have to pour concrete blocks. You don't have to do that with this because it's all fused into one piece."

Harvey also found McElroy's DataLogger 5 to be well worth the investment. The handheld device keeps a record of each fusion so that operators can check to see that the correct pressure, heating and cooling times were followed which verifies the quality of the joint before the pipe is buried. This can prevent costly repairs down the line. As it turned out, all of the fusions were good, and there was not a single leak on a single joint.

"We needed to do it once and do it right," Harvey said. "It's really rewarding to feel like we're giving them a really good product. They're not going to have to worry about this for a long, long time." ●



AQUATHERM BLUE PIPE: UNIVERSITY OF FLORIDA

Another report about the University of Florida has been published in the current issue of HVAC/P magazine (HVAC & Plumbing Product News). In the oldest university of Florida our aquatherm blue pipe SDR 17.6 has been used to replace an existing cooling pipe. Further details on this project can be found in the following report:

New Life for Old Campus

University taps Aquatherm to solve steel chilled-water piping failure

The University of Florida is the oldest university in the state of Florida and — with more than 50,000 students — one of the largest universities in the U.S.

UF's 2,000-acre campus in Gainesville, Florida, consists of more than 900 buildings. The university was officially established in 1853 and part of the campus is listed as a historic district on the National Register of Historic Places, but UF is anything but mired in the past. In fact, an ongoing extensive capital improvement program has resulted in a large number of new or updated facilities positioned for 21st-century academics and research. Overall, the university's facilities have a book value of more than \$1 billion.

When the university experienced unexpected leaks in its existing 1960's chilled-water pipe serving the 488,000-square-foot Dental Science Building and 126,000-square-foot College of Veterinary Medicine Building, it turned to Ferguson Enterprises, a wholesale distributor of plumbing and mechanical supplies with 1,400 locations serving customers throughout the U.S., Puerto Rico, the Caribbean and Mexico.

Ferguson's Glen Drummond Jr., product manager, Florida and International, recommended that the university



After completing Aquatherm's factory certification training (necessary to enact Aquatherm's 10-year, multimillion dollar warranty, along with a thorough pressure test), the installation team moved the fusion process along quickly and smoothly using a McElroy PolyHorse pipe-handling system. The installation was completed within 24 hours.

replace its failing carbon-steel piping with Aquatherm polypropylene-random pipe not only to solve the immediate problem, but also as a new piping material for permanent replacements.

"I truly believe [PP-R pipe] is the way of the future for piping and something that will help put the University of Florida on the cutting edge of 21st-century energy efficiency," Drummond said.

To solve the immediate crisis of the failure in the existing 24-inch underground pre-insulated carbon-steel chilled-water-supply pipeline, the team from W.W. Gay Mechanical Contractor replaced about 700 feet of the system's supply and return carbon-steel pipe with 20-inch SDR 17.6 Aquatherm Blue Pipe Multi-Faser.

The team completed 11 individual 20-inch butt fusions to seamlessly join the pipe in less than eight hours with two men and one McElroy Trac-Star 500 fusion machine. The self-propelled, tracked machine features a strong hydraulic facer for fast and efficient facing of the pipe ends. To increase accountability on the job, the



In addition to offering the installer a system much lighter than metal, Aquatherm Blue Pipe also provided the University of Florida with a rust- and corrosion-resistant chilled water piping option.

team used a McElroy DataLogger to record all of the times, temperatures and pressures of every fusion weld.

"Although this was the first project I personally used Aquatherm on, I previously had seen it in training seminars and it had been recommended by Ferguson," Chris Stalnaker, superintendent of W.W. Gay Mechanical Contractor, said. Stalnaker was comfortable installing the Aquatherm pipe because "it was a very simple process" and "easy to handle and maneuver around."

The mechanical contractor team

also helped the fusion process proceed quickly and smoothly by using a McElroy PolyHorse pipe-handling system, which enabled the contractor to load up to six 19-foot pipe sections and have them ready to be loaded into the machine and fused.

The installation process was quick. It was completed within 24 hours, meaning the building experienced very little downtime. Additionally, the PP-R pipe was buried without insulation because it has a thermal conductivity k-factor of 0.15W/mK.

"Carbon-steel pipe must be insulated not only because of its lack of thermal efficiency, but also because it will corrode from the outside and deteriorate badly over time," Drummond said.

"Polypropylene pipe can be buried directly in the soil with no concerns about deterioration and will experience only nominal heat gain. Direct burial of the pipe without insulation represented a big labor and time savings for the contractor and a major cost savings for the university."

The PP-R pipe's thermal properties are evident in this application. According to field measurements, direct-buried Aquatherm pipe experienced less than a 0.5 F temperature rise in the sections replaced.

Additionally, direct-buried PP-R pipe will not leach into groundwater and has no negative environmental impact. Polypropylene also requires less energy for initial production than other piping materials and involves none of the environmental effects associated with mining operations.

Aquatherm pipe's life expectancy of over 60 years is more than three times the life expectancy of carbon steel. Fully recyclable and long lasting, the pipe will never scale, pit, corrode or rust; because it is hydrophobic, it will not suffer from microbial-induced corrosion, such as cryptosporidium.

Pleased with the results, the mechanical contractor team already has installed a 24-inch supply and return in the same facility. Stalnaker said he would definitely use Aquatherm pipe again in the future. **CIRCLE OR CHECK #100**

AQUATHERM ADVANTAGES:

- > Aquatherm's quick heat-fusion process enabled two installers to weld 11 individual 20-inch butt fusions in less than eight hours
- > Aquatherm pipe was buried without insulation because it has a thermal conductivity k-factor of 0.15W/mK
- > Perfect for environmentally conscious institutions, direct-buried Aquatherm PP-R pipe will not leach into groundwater