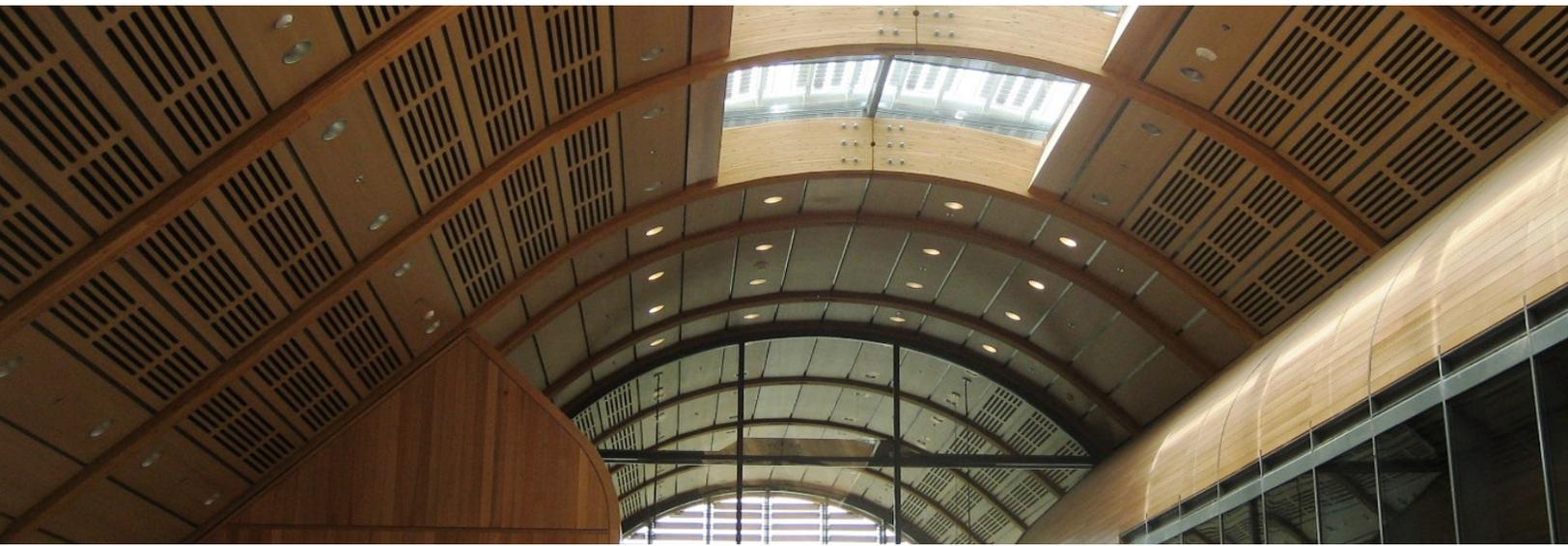


Actuator Retrofit at Yale University's Kroon Hall Demonstrates Nothing is Greener Than Reliability



Consistently failing actuators were getting in the way of Yale University's high aspirations for energy efficiency at the new Kroon School of Forestry and Environmental Studies. The LEED registered facility, completed in 2008, was designed to use 50% less energy than a comparably sized modern building. A natural ventilation system, a twelve inch thick concrete envelope, high performance insulation, and window glazing help keep heating and cooling loads to a minimum. When all this isn't enough to provide adequate comfort, a water source geothermal heat pump system goes into action, transferring heat between the building and four 1500 ft deep water wells. Because of the acidic nature of the well water, PVC piping and PVC ball valves were selected for all of the geothermal piping. With the exception of these particular valves, nearly all other valves and actuators were supplied by Belimo per the engineer's specification.

"Belimo doesn't offer a PVC ball valve, so even though there was a preference for our valves, and we were flat spec'd, we couldn't supply a product for the geothermal loop," said Joe Carcare Product Manager for Belimo's retrofit solutions division. "We supplied everything else, including damper actuators and a variety of control valves."

Included in these other product applications were Belimo's Pressure Independent Characterized Control Valves known as PICCVs. These particular valves deliver specific flow through heating and cooling coils regardless of system pressure fluctuations. This made them a perfect match for the building's high performance variable speed pumping design and energy saving endeavors.

Another brand of valve was selected for controlling flow to and from the geothermal wells—PVC ball valves with electronic actuators for modulating and

2-position control. However, shortly after start-up, the actuators began to fail. Very pricey replacement actuators were provided from the supplier, but these also failed and overall product support was lacking.

No Weak Links!

Hoping to avoid an entire valve replacement, which would involve a total system shutdown, John Beaton, Product Manager for RCMS Controls, contacted Rick Smith of Belimo to see if he might be able to help with a replacement actuator.

"Belimo has always been very supportive any time we've needed them. Rick was at the site immediately, taking measurements to see if they could do the retrofit."

Fortunately for Yale, Belimo had just introduced a new line of retrofit kits for industrial ball valves. The new "UBSP" Universal Ball Valve Special Linkage Kits make it possible to put a new Belimo



actuator on a PVC or any other type of valve. Traditionally control valves are metal, however with Belimo's new linkages, PVC was not a determining factor. Although Belimo has supplied special linkage kits for globe and butterfly valves for several years, this was the first ball valve retrofit kit. In fact, Kroon Hall, would become only the 3rd facility to use the ball valve retrofit kit.

"Replacing the actuators was a matter of taking the old one off and putting the new one on. It took about one hour per valve

and the system was up and running again," said Mr. Beauton. This means less down time and less repair costs.

That was good news for everyone involved in this unique building, which is a showcase of all types of environmentally friendly technologies, from photovoltaic panels that provide 25% of needed electricity to onsite energy and carbon emissions monitoring. With geothermal heating and cooling as the centerpiece of the mechanical hvac system, it was important that there be no weak links in piping.

Belimo reliability helped keep the project a success despite these early glitches that might have been quite problematic and costly to address otherwise.

"This project is a good example of how important ancillary equipment is in the big picture green design," said Rick Smith. "You can have all sorts of renewable energy, but if the control devices aren't reliable, all that effort and all that money is wasted. We are glad we could help keep this project on track for LEED Platinum certification."

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