



Real world hydronic system technology for Green Building design.

Lois Hole Library

NEW CONSTRUCTION, EDMONTON, CANADA





Taco LoadMatch® Real world hydronic system technology for Green Building design.

Lois Hole Public Library

Taco's LoadMatch® System keeps Edmonton, Canada Library warm in winter and cool in summer

Project Snapshot: The city of Edmonton in Alberta Province, Canada, has a new community library named after a beloved Canadian author and politician that is a LEED Silver –certified building (Canadian GBC standard). The Lois Hole Library, named after the late Lieutenant Governor of Alberta who was also a successful businesswoman, author and passionate supporter of public libraries, is the city's 2nd largest library at over 25,000 sq. ft., and it comes with a Taco LoadMatch® single-pipe system to heat and cool the two and half story building that serves 30,000 community patrons a month.



Interior view of Lois Hole Library



David Foster, C.E.T. — Lead Designer, Williams Engineering Inc.



LoadMatch® Solution

Designed by Barr Ryder Architects of Edmonton, the award-winning Lois Hole Library is a striking building, adorned with a massive, upswept prow-like entrance that opens into a spacious interior that is bathed by natural light and accented by warm colors. The building's dominant forms are its sloping roofs and counter slopes, which give the building the sense of floating in place. The large amount of glass used provides not only an open vista into the library but also allows a tremendous amount of light out into the surrounding area. At night the library glows like a "beacon of light" to draw the community to it.

The facility employs sustainable technologies to limit the environmental footprint, including in-slab radiant heating, heat pipe heat exchanger loop, low-flow and ultra low-flow fixtures, plus a rainwater collection and grey water system that supplies the building's urinals, toilets and exterior hose bibbs. The library provides two outdoor reading areas surrounded by a natural, drought resistant landscape of prairie grasses.

Mechanical and electrical systems for the Lois Hole Library were designed by Williams Engineering Canada Inc., also of Edmonton. The city requested three options on mechanical equipment and the firm suggested a LoadMatch-fan coil option for heat/cooling distribution. City officials were at first skeptical of the unconventional LoadMatch single pipe system option because they had not encountered it before. Engineers at

Williams Engineering, however, had already used it successfully in a previous project in Edmonton several years before: an Islamic school on the city's northside, where it "worked from day one," says David Folster, C.E.T, Williams' lead designer for the Lois Hole project.

"LoadMatch® makes perfect sense"

— David Folster, C.E.T.
Lead Designer Canada, Inc.

Kehoe Equipment, Taco's rep agency in Alberta, had introduced LoadMatch and its dedicated design software program, Hydronic Systems Solution (HSS) to Williams Engineering in a hands-on training session held at the design firm's offices, and the firm decided to employ it in the Islamic school project. "Everything told us it was going to work," says Folster, who loves the HSS system design program from the piping side. "I trust HSS," he adds. "It's one of my main design tools today."

HSS allows design engineers to size pipe and equipment, automatically calculate total loads and flows, and select and schedule equipment. As design changes are made, the software automatically recalculates. Like others who have used HSS, Williams Engineering's staff discovered that the software saves them considerable man-hours and reduces calculation errors.

In addition to the radiant in-slab provided by Uponor, the Lois Hole Library contains a two-pipe, direct drive fan coil system consisting of 32 IEC fan coil units with LoadMatch circulators within the building's ceiling

space. Fan coils with small circulators was the preferred option for heating/cooling the library's interior space because of lesser material and labor requirements. LoadMatch systems eliminate the need for control valves and most balancing valves, and a single pipe distribution system reduces the amount of pipe needed.

The library has two mechanical rooms – a main room consisting of two Raypak gas-fired, condensing Hi Delta boilers along with Taco KV/KS and 1900 pumps, Multi-Purpose



Taco 1900 Series pump

Valves, Suction Diffusers and a 4900 Series Air/Dirt Separator, and a fan room in the attic space. Delta Controls-supplied DDC controls throughout the building vary temperature based on outdoor conditions and occupancy demands.

Opened to the public in September of 2008, temperature and humidity control in the library has never been a problem in a city that experiences plenty of -10 to -15°C (5 to 14°F) days and nights in winter. There have been no issues with the LoadMatch circulators, and change-outs to the filters in the fan coil units are handled routinely. "I like LoadMatch," says David Folster, "with its one pipe sized to carry the full flow throughout the building. For 2-½" pipe and above, LoadMatch makes perfect sense."

You'll be more comfortable.

LoadMatch[®] provides better comfort than all air-systems, as well as conventional hydronic systems. LoadMatch[®] is a self balancing system and assures the required flow to all heating and cooling units at all times. Your heating and air conditioning system will deliver BTU's where they're needed, and when they're needed.

You'll save energy.

With less pipe and the elimination of control valves and most balancing valves, lower pump head and less power is required to move the water.

You'll save money.

Fewer parts, about 40% less pipe and fittings, no control valves and almost no balancing valves reduce first costs. Lower pump head and operation of pumps to match the load reduce operating and maintenance costs. All this adds up to big savings on the system, typically up to 30% of life cycle costs.

Contact Us

Taco engineers are at the forefront of Green Building hydronics, designing components and systems to help you meet the challenges of environmentally sensitive – and budget conscious – design and build. Visit our web site at taco-hvac.com or e-mail greenteam@taco-hvac for more information or to talk to a Taco Green Building professional.

