Taco Canada

NEW CONSTRUCTION, MILTON, ONTARIO

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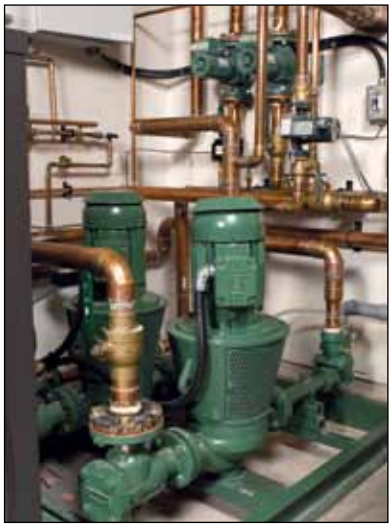
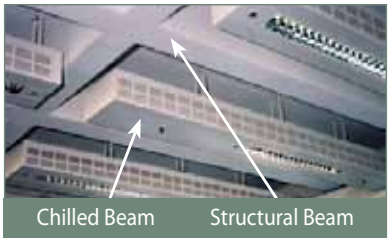
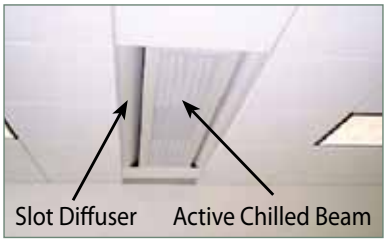
When Taco Canada relocated its sales and distribution facility from Mississauga to Milton, Ontario in 2008, the move presented a perfect opportunity to install a new prototype radiant cooling and heating system in the new office build-out. At the time of the relocation, Taco had embarked on development of a unique system of radiant cooling/heating, utilizing a mix of innovative products. The new Milton headquarters then became a logical choice to install such a system in order to test its operational efficacy.

Jim Garrett of Taco Canada Ltd. is shown here next to the prototype of the LOFlo.

Actual prodution version of the LOFlo shown on the opposite page.







The Taco system - called the **LOFlo™ Radiant Cooling System** - employs a mix of products, including fan coils, heat pumps, chilled ceiling panels, active and passive chilled beams, along with the company's single pipe circulation system called LoadMatch® and a modified radiant cooling injection pump version of its popular Radiant Mixing Block (RMB). The LOFlo Radiant Cooling System works in conjunction with the radiant chilled ceiling panels and passive/active chilled beams along with a 100 percent dedicated outside air system (DOAS) to supply latent cooling. Active chilled beams were used in the building's training areas as well as general office areas. Chilled ceilings were used to supplement the training area chilled beams.

The LOFlo system was designed not only for an operational role but for training and display

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purposes; for example, all of the system components and piping were mounted exposed on the demising wall between the office area and the manufacturing/warehouse space. Taco thermostats feed into a BAS to regulate the indoor temperature. A rooftop chiller and a Taco heat exchanger provide water at 42° for cooling.

The modified RMB, called the LOFlo Mixing Block (LMB), circulates water to the terminal units. The LMB consists of a zone circulator for water flow through the secondary circuit to the terminal units, and a variable injection pump that takes a signal from the BAS to inject cold water to always maintain the above dew point system temperature.

Because the chilled water supply temperature provided to a radiant chilled ceiling is above dew point, radiant chilled panels alone cannot provide sufficient latent cooling capacity. Providing a 100 percent DOAS to accomplish latent cooling allows the combination decoupled system to provide both sensible and latent capacity. Dedicated outside latent load air is pretreated and delivered to the terminal units as sensible cooling. The system delivers just enough treated, dehumidified outdoor air to slightly pressurize the building, negating natural infiltration of humid outside air.

The system utilizes Taco's highly successful LoadMatch circulator, which eliminates control valves and most balancing valves and greatly reduces pipe. The system delivers heating and cooling energy to a variety of terminal units all in the same piping distribution system despite the requirement for different temperatures at different terminal units.

"LOFlo™ Radiant Cooling System uses one-third of the energy and materials"

In general, hydronic systems use approximately half the horsepower and half the materials to move heating and cooling around a building compared to air systems. In contrast, Taco's LOFlo Radiant Cooling System uses only one-third of the energy and materials to move heating and cooling energy. This savings can approach one-quarter of the total HVAC energy in a building over a VAV system. The LOFlo system savings will approach one-third of the total HVAC energy. In the Milton, Canada Taco building, for example, the chilled beams and chilled ceilings reduce fan energy by a factor of 10, since the only air circulation required is from the 100 percent DOAS

The LOFlo Radiant Cooling System in the Taco Canada building is the first installation of its kind and was the second operational installation of any form of radiant cooling in North America at that time. As radiant cooling technology advances, the Taco system promises to be one of the most efficient HVAC system offerings to become available to the North American market. As more systems are installed, chilled beam technology will develop into a cost-effective and energy efficient alternative to conventional variable air volume systems.

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Taco Advanced Hydronic Systems

Taco is a leader in the development and manufacture of advanced hydronic equipment and systems for today and tomorrow's leading edge commercial and institutional building projects.

From a wide range of pumps, heat exchangers, air-dirt separators, expansion tanks and valves, to systems like LoadMatch® and LOFlo™ Injection Pumping, Taco offers the products and systems, backed by advanced software programs and solid technical expertise, that consulting-specifying engineers, design-build mechanical firms, and building owners are looking for.

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