



Real world hydronic system technology for Green Building design.

# maxim medical center

NEW CONSTRUCTION, BUFFALO, NY





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

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## Medical Center equipped with LoadMatch® Heating and Cooling System

**Project Snapshot:** A new medical building outside downtown Buffalo features a Taco Load-Match® heating and cooling system. MJ Mechanical, a local design-build firm, won the project by proposing a LoadMatch system as an affordable alternative to the budget-breaking conventional 4-pipe fan coil system originally proposed. Taco's single pipe LoadMatch system requires less pipe, eliminates control valves and reduces balancing valves to a minimum.

The three-story, 65,000 sq. ft. Maxim Medical Center is an outpatient clinic facility focusing on cancer care, urology and imaging. It features state-of-the-art linear accelerators for advanced cancer treatment.



*Drew Nowak, MJ Mechanical's Design Project Coordinator*



*Installation employs just over 100 LoadMatch circulators*



## LoadMatch® Solution

At the heart of the LoadMatch system are small, low kW LoadMatch circulators. Loads operate separately from one another, and the secondary flow that circulates through each terminal unit is independent of the system's primary distribution pumps. LoadMatch eliminates all control valves and up to 40% of piping, thus reducing first costs.

Drew first encountered the LoadMatch system at a Taco-sponsored gathering of design and project engineers held in Montana. The LoadMatch concept was introduced and system design was explored using the proprietary Taco Hydronic System Solutions (HSS) software. HSS enables engineers to quickly lay out a complete hydronic system, make equipment selections and component positioning and sizing. Calculations and schedules are automatically generated by the software, saving engineers hours of design time when compared to more traditional CAD drawing means.

The Maxim Medical project, Drew felt, would be an ideal LoadMatch application that would still include fan coils but cut the installation costs associated with a conventional 4-pipe system. As an added benefit, choosing LoadMatch would help qualify for energy grants under New York State's Energy Research & Development Authority (NYSERDA) utility program.

LoadMatch specialist Jeff Pitcairn prepared an initial system design for Drew using the HSS software. Drew then finalized the design, employing

just over 100 LoadMatch circulators and McQuay fan coils, and adding a thermal ice storage system to save additional energy. Drew reports that the HSS design tool saved him almost 80 work hours – or the equivalent of 2-3 weeks of design time on the Maxim Medical building project alone!

The Maxim Medical HVAC system consists of a primary LoadMatch loop and multiple secondary loops

**"Design-build projects typically go back and forth between the owners and the design firm, with multiple revisions and additions. With HSS, making those changes and recalculations is quick and easy!" – Drew Nowak**

for the chillers, thermal storage banks and a fluid cooler. The main mechanical room is adjacent to the medical building and consists of two non-condensing Teledyne Lars million BTU gas boilers, a LiquiChill cooled liquid chiller, Taco-supplied FI and KV pumps, 4900 Air Separators and two expansion tanks – one for heating, the other for cooling.

Outside the mechanical room are five Calmac thermal ice storage tanks holding a 40-60 percent glycol/water mix that is cooled to freezing temperatures by the chiller overnight when electric rates are lowest, eliminating the need to run the chiller during the day. The HVAC system's fluid cooler provides free cooling to the building when the outdoor ambient temperature is below 48°F; this saves additional energy. The fluid cooler actually works double-duty by not only supplying cooling to the building but also by

cooling the condenser water from the chiller.



The building's chilled water system is supplied during the day by the stored BTUs in the storage tanks. Drew says that the thermal ice storage systems pairs well with the LoadMatch pumping system.

Buffalo's rugged winter weather called for a snowmelt radiant system in the immediate front entrance area, as well as radiant floor heating in the main lobby. A separate mechanical room inside the main building houses Munchkin boilers and related Taco equipment for the Watts-supplied radiant system.

Building construction, managed by Burgio & Campofelice Inc. from Cheektowaga, NY, commenced in January 2008. Construction and mechanical crews worked straight through the winter to bring the building online and ready for occupancy last June. The chilled water side of the HVAC system was commissioned last June and the heating side in October.

Drew is sold on the LoadMatch system for future project applications. Being a young engineer he did not have to jettison a mindset averse to trying an unconventional system like LoadMatch. "Everything's new to me," he says. "There's always a degree of skepticism, for sure, with something you haven't used before, he adds, "but if it works, and LoadMatch does, then why not use it?"

## You'll be more comfortable.

LoadMatch<sup>®</sup> provides better comfort than all air-systems, as well as conventional hydronic systems. LoadMatch<sup>®</sup> 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](http://taco-hvac.com) or e-mail [greenteam@taco-hvac](mailto:greenteam@taco-hvac) for more information or to talk to a Taco Green Building professional.

