



Real world hydronic system technology for Green Building design.

# hamilton stores offices

BUILDING RETROFIT, BOZEMAN, MT



**systems** made **easy**



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

# hamilton stores corporate offices

## **LoadMatch® System suits new office building retro fit.**

**Project Snapshot:** An original Variable Air Volume (VAV) heating system installed in a two-story office building over a decade ago was not providing sufficient comfort to all individual office areas – a real problem in a Montana winter environment. Rather than replacing the existing VAV boxes with new ones with larger heating coils, Taco proposed its wet rotor, maintenance free “00” circulator-based LoadMatch® system as an alternative retrofit solution. This would increase the heating water flow rate through the reheat coils and boost the system’s heating capacity. Since its installation, the Taco LoadMatch® system has provided better room-by-room temperature control and saved the gas-fired heating system considerable energy.

### **Hamilton Stores Retrofit Project:**

#### **Construction Management:**

Springer Group Architects, Bozeman, MT

#### **LoadMatch® System Engineering:**

Three Rivers Engineering, Bozeman, MT

#### **Installation:**

Bozeman Plumbing, Bozeman, MT

Electro Controls, Bozeman, MT

#### **Manufacturers Representative:**

VEMCO, Inc., Billings, MT



*Inadequacies in the original heating system left some corporate offices uninhabitable during the winter months.*



### **The Client:**

Hamilton Stores, Inc., of Bozeman, Montana, has been serving the needs of visitors to nearby Yellowstone National Park since its inception in 1915. Hamilton Stores operates general and specialty stores within the park, offering visitors everything from souvenirs and sundries to fishing tackle and food. The company is the oldest family-owned concessionaire under the jurisdiction of the National Park Service.

### **The Building:**

Corporate and administrative offices for Hamilton Stores are located in a 14,000 sq. foot building located in Bozeman, Montana. The building contains a total of 26 individual offices and common areas on two floors.

### **The Heating System:**

The building's heating system is a Variable Air Volume (VAV) system with individual room VAV boxes containing hydronic reheat coils supplied from gas-fired boilers.

### **The Heating Problem:**

According to Lowell Springer, a design/build architect retained to

fix the building's heating problems, there were "lots of problems with the reheat coils and valves," causing serious temperature fluctuations from room to room within the building during the winter months. Several rooms were uninhabitable. It was determined that the VAV system's reheat coils could not provide adequate heating capacity. A retrofit to the heating system was necessary to ensure adequate and uniform heating throughout the building.

### **The Challenge:**

The conventional retrofit approach would remove the VAV boxes and replace them with new units with larger heating coils. This change-out would have disrupted operations in the building while the work took place, and would be costly to install.

### **The Taco LoadMatch® Solution:**

Taco LoadMatch® provides better comfort than DX air systems, as well as conventional 4-pipe hydronic systems. It is self balancing and eliminates the need for most balancing valves and expensive, energy-consuming control valves by replacing them with small, energy-efficient Taco LoadMatch® circulators. The circulators direct water to where it needs to go, as opposed to forcing the water through the system's piping loop.

Architect Springer accepted Taco's proposal to install the LoadMatch®

system and directed its installation. Mechanical engineer John Tetrault of Three Rivers Engineering, designed the new system, adding a Taco LoadMatch® circulator to each VAV box. With the addition of 40 circulators, the heating water flow rate through each VAV box reheat coil was increased by nearly 100%.

### **Results:**

Lowell Springer reports that the LoadMatch® system has been a great success since it was installed in December, 2001 and that the owners are "really satisfied" with the results. He cites markedly improved room-by-room temperature control. Maintenance of the system has been reduced and fuel consumption savings of between 20-40% have been achieved.

### **Comments:**

"The LoadMatch® system is a great application, with significant dollar savings for the building owner over the life of the system," says John Tetrault of Three Rivers Engineering. "It's an especially good option for new construction."

"The single pipe approach embodied in the LoadMatch® system should have a great future," adds Lowell Springer. "When it comes to system simplicity, ease of maintenance and a definite reduction in energy costs, there should be no doubt that it's a better way."

## 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.

