



Real world hydronic system technology for Green Building design.

dolwick business center

BUILDING RENOVATION, ERLANGER, KY



systems made **easy**



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

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LoadMatch® System suits new office building just fine.

Project Snapshot: A former single-story warehouse, across the Ohio River just south of Cincinnati, has been reborn as a new two-story Class A office building. The Dolwick Business Center, 1360 Dolwick Drive, is a 230,000 sq. ft. office building in Erlanger, Kentucky. The renovated building is within three minutes' drive to the Cincinnati/Northern Kentucky International Airport, making it an ideal location for new office space.

After a total gutting of the structure's interior and the addition of a second floor, renovation work was completed in two stages: April 1st 2005 for the initial tenant move-in, and June 1st for the remainder of the building. For indoor comfort, the building relies on an innovative Taco LoadMatch® system to deliver hydronic heat and cooling.

Dolwick Business Center Project:

Developer/Owner:

Corporex, Covington, KY

Design/Build Contractor:

Commercial HVAC, Cincinnati, OH

HVAC Equipment Supplier:

Weber-Huff, Inc., Hamilton, OH



For indoor comfort the renovated building utilizes LoadMatch® hydronic heat and cooling.



The Building & Client:

Commercial HVAC of Cincinnati was the design-build contractor for the project. One of the major considerations in the selection of the building's HVAC system was the fact that the new structure would have a central interior courtyard with a roof atrium to allow for natural light during the day. With the addition of the second floor, deck-to-deck heights were very low, since the existing roof structure was not raised to accommodate the added floor. The low roof, modified for addition of the atrium, raised concerns that the existing warehouse metal roof was not capable of accommodating roof mounted HVAC equipment. The low ceiling height made installation of an all-air system with large trunk ducts problematic. An HVAC system using smaller hydronic piping was deemed a better solution, although it might come with a higher first cost for the developer, Corporex, a multi-disciplined investment builder headquartered in Covington, Kentucky. Several HVAC systems were explored including DX/VAV, chilled water and water-source heat pumps. Based on the developer's desire to maintain flexibility in the layout to accommodate future tenant changes and provide the best zoning possible, the water-source heat pump system approach made the most sense.

The Challenge: Corporex signed its first tenant – the retailer GAP – just as the design team began work on the construction documents. GAP wanted 50,000 sq. ft. of the building with occupancy within 12 weeks' time. As a result, design and construction schedules had to be severely com-

pressed, and the entire hydronic system – piping, boilers, cooling towers and controls along with the make-up air systems – needed to be fully functional to accommodate the first tenants. Because design of a water-source heat pump system doesn't allow much in the way of shortcuts, as compared to other systems, a creative solution was needed.

LoadMatch® Solution:

The builder was introduced to the LoadMatch® single pipe system by area sales rep. firm Weber-Huff just prior to the start of the Dolwick project. Using Taco Hydronic System Solutions® (HSS) software, Commercial HVAC was able to design the system very quickly and discovered that LoadMatch® was by far the best solution. The reasons for choosing LoadMatch® were threefold: 1) less pipe was needed than conventional two-pipe systems, which meant less first-cost; 2) the roof structure of the building couldn't handle the weight of the extra piping mains required in a two pipe system without major modifications, and 3) the Taco LoadMatch® system offered significant energy savings over the life of the building. Dolwick's LoadMatch® system consists of 150 Taco LoadMatch®-configured circulators linked to heat pumps. The building's mechanical room contains two Parker boilers plus Taco KS vertical in-line pumps and a heat exchanger. The indirect-fired WH Series Parker boilers virtually eliminate any problems with rust and corrosion, as well as scaling, because the colder heat pump loop water doesn't come into contact with the high temperature furnace or with flue gas. The primary side of the boiler remains at a steady temperature, which

results in high combustion efficiency and lower fuel consumption, and also provides excellent system temperature control, preventing nuisance cold water lock-outs of the heat pump units.

Results:

With LoadMatch®, Commercial HVAC was able to eliminate almost half of the piping and reduce the imposed weight to the structure by approximately 50%, which made the project's structural engineer "very comfortable," according to Bob Stiens, Commercial HVAC's president.

Comments:

System start-up went smoothly with no problems and the GAP employees moved into their new offices on time on April 1, 2005. There have been no complaints regarding heating, cooling or indoor comfort variations during the building's initial operating season. Commercial HVAC submitted the Dolwick Business Center project to the Ohio Valley Chapter of ABC – Associated Builders and Contractors, Inc. – for its Contractors Excellence in Construction Award and received an "award of merit" last year.

Commercial HVAC president Bob Stiens reports that LoadMatch® brings two major advantages to today's cost-conscious building projects – the simple system is cost effective in terms of materials needed and installation savings, and energy efficient in operation. Since the completion of the Dolwick Business Center, one of the largest spec Class A office buildings in the Greater Cincinnati Tri-State area, his firm has completed two additional office buildings – both are LoadMatch® installations.

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.

