# Township Building Taps Renewable Energy

## Vertex Brings New Technology to "Old World" Facility

In rural Lancaster County, PA, the village of East Drumore invested in a new, 16,000 s.f. municipal building that includes office space, radiantly heated garage bays for township's heavy equipment fleet and a large wash bay.

Nearby Vertex Mechanical Inc. was tapped to do the geo-to-radiant mechanical installations.

"It's not often we get to do both geothermal and radiant on a project of this size," said Vince Youndt, president of Vertex. "The new facility couldn't afford downtime. In the winter, weather puts the test to any heating system, especially one where large, overhead doors open and close frequently," added Youndt.

Inside the mechanical area, two 10-ton water-to-water geothermal systems supply water to the 12,000 square foot garage slab. Other spaces were also conditioned by the hydronic system.

Taco's new variable-speed, web-enabled ECM Viridian pumps were chosen to perform a variety of different tasks. The largest pump, a VR20, serves the extensive geo-exchange system. Zone valves open and close each of the five underground loops so that the Taco iWorX controls can stage the geo field according to demand.

"When I'm on site, I can connect the Viridian pump to my laptop to change parameters and view performance data," continued Youndt. "If I'm back at the shop, I can connect via the web, and do the same from a remote location." The ECM motor uses up to 80% less energy than a comparable traditional pump.

The water-to-water systems' "thermal target" is a large buffer tank; heat moves from it to six large radiant zones. A Viridian pump easily handles all the circulation to the 12,000 lineal feet of tubing. As zones open and close, the pump ramps up and down to perfectly match the flow required. Six one-inch Taco Zone Sentry zone valves control water movement into the extensive garage slab.

**Brains of the operation**

"An outdoor reset is part of the new iWorX control system," added Youndt. "It ties everything together for the ultimate in energy efficiency and allows us to use the lowest possible water temperature."

iWorX is a web-based building control and monitoring system. "What makes iWorX different from other systems is that you don't need special tools or software to do the installation or commissioning," explained Youndt. "Programs are resident in the controller. By changing the control parameters for the specific HVAC equipment, engineering time is eliminated and installation costs drop."

"You can do just about anything with the iWorX system," added Youndt. "We're using an iWorX BLMC controller to separate the two, 10-ton geothermal units into four stages, so we're never using more capacity than we need at the time." Taco's iWorX also monitors the temperatures of individual geothermal ground loops. If all loops aren't needed to meet demand, the control system chooses circulation from the coolest loops in the summer or the warmest during winter months.

"From the beginning of the design process to project conclusion, we worked with the township to keep initial and operating costs as low as possible without compromising quality or comfort," said Youndt. "The township can certainly take pride in the new facility."