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CASE STUDY

Recreation

Facility at a glance

Name

Jorgensen YMCA

Location

Fort Wayne, IN USA

Facility size

78,000 ft² facility

Issue

System that meets HVAC requirements of many different spaces with low impact on budget, maintenance and environment

Solution

(47) Daikin Enfinity water source heat pumps, geexchange system

Geexchange system has low impact on budget, maintenance at new Jorgensen YMCA

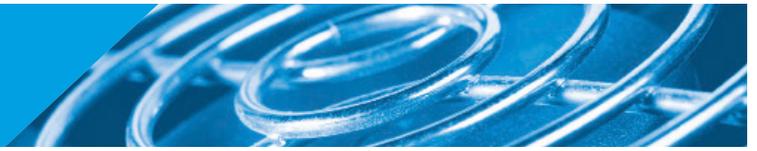
The new Jorgensen YMCA in Fort Wayne, Indiana, boasts some high impact-and highly desired-sports and community amenities: a four-lane swimming pool, a double gymnasium, indoor running track, fitness center, dance, yoga and aerobics studios, steam rooms, saunas, whirlpools, youth activity center, childcare center, and offices and meeting rooms. Partially funded by a community gifts campaign, this high-use facility required an HVAC system that could meet the air conditioning requirements of many different spaces and have a low impact on the budget, maintenance time and the environment.

The natural choice was a geexchange water source heat pump system, including Enfinity™ water source heat pumps from Daikin. "In terms of providing individually-zoned air conditioning, a geexchange system is simply the best that money can buy because of its high efficiency, reduced maintenance and reduced effect on the environment," said Bob Koschka, senior applications engineer, Daikin. "Geothermal systems can reduce energy consumption-and corresponding emissions-by over 40 percent compared to electric resistance heating and standard air conditioning equipment. That's a huge budget savings for Jorgenson YMCA and other community facilities."

Plus, the simplicity of a geothermal system further reduces costs. "These systems do not require chillers, cooling towers, or boilers, and the circulating water loop system requires very little maintenance," said Koschka. "For Jorgenson, it was the most prudent and practical way to provide healthy, conditioned air to so many different spaces."

Named for Ove W. Jorgenson, a generous donor, the Jorgensen YMCA is a new 78,000-square-foot, eightmillion dollar facility that opened in September 2004. With more than 3,000 members, it is the third-largest YMCA branch in greater Fort Wayne, and already a gathering place and social hub for the southwest Indiana community.

The geexchange system at Jorgensen YMCA uses a series of bundled polyethylene tubes that are submersed in a pond adjacent to the building. The tubes circulate fluid, which dissipates heat to the pond when cooling is required, and absorbs heat from the pond when heating is required. The 47 Daikin Enfinity water source heat pumps located in the building use this heat exchange to distribute cool (or warm) air to individual areas, such as the gym, exercise room, locker rooms and common areas. Each unit responds only to the heating or cooling load of the individual zone it services. "This provides excellent comfort levels for occupants, better control of energy use for building owners, and lower seasonal operating costs," said Koschka.



The water source heat pumps will energize on demand, drawing from the main loop as heating or cooling is required. If the pumps are not energized, flow through the heat pump will simply be shut off and the water source heat pump will be de-energized. As heating or cooling is needed, the valve opens and begins circulating fluid through the pump.

To save on energy consumption, the Enfinity water source heat pumps are designed with high energy efficiency ratios (EER), a measure of cooling efficiency. To reduce environmental impact, Enfinity water source heat pumps use R-410A refrigerant, which does not deplete the ozone layer.

While the new Jorgensen YMCA has a high impact on the community, the geothermal system is having a low impact on the budget, maintenance, and the environment.

Geoexchange system reduces stress on HVAC operations

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Finished site with pond



Site in progress



Geoexchange tubes

One of the Daikin Enfinity™ water source heat pump



Geoexchange tubes manifold