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Ice arena's energy upgrade to trim costs, warm seats

As Dave Black walked through Bielenberg Sports Center's refrigeration room, he was awed by the many crisscrossing pipes and gauges.

By: **Scott Wente**, Woodbury Bulletin

As Dave Black walked through Bielenberg Sports Center's refrigeration room, he was awed by the many crisscrossing pipes and gauges.

"At some point, I want to get a statistic of how many cut-off valves there are," he said. "It's just amazing."

Black, the Bielenberg manager, is understandably impressed by a new geothermal energy system that will cool the ice rinks, heat the building and save city tax dollars.

But hockey moms and dads may just like the fact that their buns should be warmer when they sit to watch a game.

Looking for energy savings and capitalizing on federal incentives, the city decided last summer to replace the traditional heating and cooling system at Bielenberg.

Six months later, workers are wrapping up the \$2.36 million energy upgrade to the 14-year-old facility. They replaced most of the natural gas-fired boilers that refrigerated the two ice sheets and heated the arenas with a system that relies on underground heat to do the same for less money.

Warmer arena

The indoor heating and cooling project started outside last summer. A contractor dug 60 wells 150 feet deep in Bielenberg's east parking lot. Pipe was installed in each well to circulate the coolant propylene glycol underground, where it reaches about 50 degrees. The well holes were filled and paved.

From the well field, the liquid coolant is transferred into the sports center, where one heat-pump system chills propylene glycol to 12 to 18 degrees before distributing it through 9 miles of pipe beneath each of the two ice sheets. Separate heat pumps produce hot water for vented space heat and domestic hot water in the building.

The project also included new insulation tiles on the arena ceiling. The tiles will help to keep heat from escaping in the winter and from entering in the summer.

Most noticeable to arena spectators, though, might be warmer confines in the west rink. The space beneath the west rink seating area was enclosed as part of the project, and warm air will circulate

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beneath the bleachers. That could keep the seating at about 55 degrees.

"It's not drastic," Black said of the change. "It's almost as if you go, 'Hmm, I'm not cold and I'm at an ice arena.'"

The new system should not affect the ice quality.

Bob Klatt, city parks and recreation director, said Woodbury expects \$3.9 million in energy savings over 20 years. That should be achieved by eliminating the use of natural gas, reducing electricity use and cutting back operational costs because the new system is automated.

The city is paying for the project with \$1.67 million in bonding, a \$500,000 federal energy grant and tax dollars from other city funds.

Harris Companies, the contractor that completed much of the work, guarantees an estimated level of energy savings and will reimburse the city the difference if that is not achieved.

"This project just made sense from start to finish," Black said.

'New baby' needs care

Geothermal heating and cooling is rare in Minnesota ice arenas, in part because outdoor space needed for the wells and well-drilling is an additional cost, Klatt said. However, the technology is used elsewhere in the U.S. and Canada, he added.

"It's not unusual and I think we'll be seeing more of this," Klatt said.

Bielenberg employees are being trained to operate the system, but their work should be minimal because the system is automated and controlled digitally.

Plus, if a malfunction occurs, a Harris Companies service technician should be on the scene before city employees realize there is a problem.

Crews will tweak the heating and cooling system over several weeks, increasingly relying on the new system and steadily cutting back use of a temporary chilling system.

"This is a new baby," Black said. "It's going to require attention."

Tags: local news, bielenberg sports center, geothermal energy, woodbury

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