



RESTORING CHAMPIONSHIP-CALIBER IAQ TO A BIG TEN AQUATIC CENTER

PROJECT GOALS

- **Improve indoor air quality** by removing harmful chloramines and increasing air movement.
- **Create healthy environments** for swimmers, coaches, officials, and spectators.
- **Re-attract swim meets** the facility was losing due to environmental issues.



THE CHALLENGE

The indoor air quality (IAQ) issues during major swim meets at the Jean K. Freeman Aquatic Center were well-known. University of Minnesota Aquatics Director Linda McKee was frustrated. “This facility was built for championship swim meets, and we were starting to lose those meets because of the poor air quality.”

Air quality had gradually deteriorated in the facility built in the '90s. “We'd have swim meets with hundreds of athletes, maybe a thousand spectators, lasting from four to twelve hours a day.” By the end of those days, the air quality had diminished significantly to the point where swimmers were coughing. Eyes were red. Lots of respiratory issues. The pool flu, we call it.”





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THE INNOVENT SOLUTION

McKee, a determined marathon runner herself, set down a path to “fix what was wrong, have decent air, and bring championship swim meets back to the facility.”

McKee continues, “About four years ago we started to look into potential solutions. We looked into water chemistry, but our testing showed no issues there. We looked at different filtration. It really all just came down to air movement and the fact that we weren’t moving the volume of air we needed to move for a healthy space.”

Funding was procured and a team assembled, including the University’s facility group. Innovent Air Handling, headquartered within a few miles of the University of Minnesota campus, submitted a proposal for consideration.

Indoor pool HVAC systems are an Innovent core expertise. Innovent’s pool dehumidification systems leverage the beneficial properties of fresh air to provide both a healthy environment and economical climate control. Energy recovery technologies and intelligent dehumidification based on seasonal conditions reduce energy costs while providing up to three times as much fresh air as traditional systems.

The recommended solution for the University of Minnesota Aquatic Center, designed by Dunham Associates, included two Innovent units for the spectator areas, two Innovent units for the pool area, and updated air distribution that works in concert with the capabilities of the Innovent units to provide superior indoor air quality.

The old HVAC system had been delivering 80,000 cfm with 20% outdoor air. The new Innovent system dramatically increased this to 152,000 cfm (six air changes per hour) with up to 50% outdoor air.



One of four Innovent units installed at the University of Minnesota Aquatic Center

THE RESULTS

During the first two large swim meets, the newly-installed system faced tough tests of performance not unlike those an athlete undergoes. As McKee recalls, “The first major meet we had after the system update was during a particularly hot and humid stretch of weather.” In fact, the 80 degree dew point outdoors exceeded the new system’s design parameters. The team held their breath to see how the system would perform when pushed to or beyond its limits. McKee was relieved the reaction was favorable. “That wouldn’t have happened in the past. People realized right away, ‘Oh, it is hot, but my eyes aren’t bothered. I’m not breathing in that chlorine and the chloramines and that stagnant air. This is moving fresh air, and I can feel that.’”

Shortly afterwards came the second big meet. “This was our first time back on the national stage since the renovations and, really, I couldn’t have been happier with the performance,” said McKee. “It was a four-day meet, four full days of 700-plus athletes, a thousand people in the stands. By the end of the first day, we could already tell how much better the IAQ was. The air flow was noticeable, the deck temp was comfortable, my eyes were not burning, and I was not coughing.

“One of our officials reported she’s never felt better at the end of a four-day meet, and a USA Swimming official said the facility has set the standard for indoor pool air quality.”

Air quality tests back up these observations. Air samples analyzed by an independent testing laboratory showed a 73% reduction in trichloramine levels with the new system.

The University is busy planning a series of swim meets in the retrofitted facility, and McKee is full of optimism, saying, “This is really our chance to get back into the national spotlight. It’s almost like we’re a new facility.”



Linda McKee, University of Minnesota Aquatics Director

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PROJECT

**Jean K. Freeman Aquatic Center
University of Minnesota
Minneapolis Campus**

ENGINEER

Dunham Associates

MECHANICAL CONTRACTOR

Schadegg Mechanical

GENERAL CONTRACTOR

JE Dunn

INNOVENT REPRESENTATIVE

SVL



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LEARN MORE

Innovent Pools Website Page

www.innoventair.com/breathe

CDC: Chloramines and Pool Operation

Website by The Centers for Disease Control and Prevention

www.cdc.gov/healthywater/swimming/aquatics-professionals/chloramines.html

ASHRAE Journal Article

[Ventilation Requirements for Natatoriums](#). 2017. Gary Lochner, Innovent.

HPAC Engineering Webinar

[Indoor Pool Ventilation: A Fresh Perspective](#). 2017. Gary Lochner, Innovent.

Innovent Design Guides

[Energy efficiency in indoor aquatic facilities](#): Thoughtful choices yield significant energy savings.

[Ventilation and air distribution in indoor aquatic facilities](#): Optimize outdoor air to create healthy and durable pool spaces.

[Special operating modes](#): Strategies for maintaining IAQ and saving energy when pools are unoccupied, super-chlorinated, or hosting swim meets.



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