

Edmonton Oilers improve home ice by humidifying their arena

IMPROVEMENTS IN BOTH ICE AND AIR

- Improved ice quality from "three out of ten," according to 2016 Oilers player, to second-best the league according to a 2018 vote by players on all NHL teams.
- Improved thermal comfort. Orange Blue Ice Crew remarked that they felt warmer after air moisture—not temperature—was increased in the arena.

NEW BUILDING, HIGH EXPECTATIONS

The Edmonton Oilers moved to a new downtown arena for the 2016-17 hockey season amid high expectations. Their soon-to-be captain was healthy again after missing 37 games from injury, average ticket sales were sellouts, and the team would be skating in front of even larger crowds on the high-quality ice that both home and visiting players had come to expect in Edmonton.



One of 70 atomizing nozzles at the catwalk level of the Rogers Place

LOW RELATIVE HUMIDITY, ROUGH ICE

Upgrades from the old arena to the more spacious Rogers Place made events easier to schedule; more attractive to the talent; and more enjoyable for hockey, music, and wrestling fans. Visitors are first treated to Ford Hall, a 24,000-square-foot atrium with no wall between it and the arena. While beautiful, Ford Hall has a huge impact on the HVAC systems. In the words of Jason Rimmer, Rogers Place director of engineering and ice operations, "it was like having a hole in the side of our arena. We had to compensate in terms of air movement and temperatures."

When the first winter set in, a phenomenon called sublimation, or evaporation of the ice, began to take place. Winter air below zero °C that was pulled into the building through four air handlers and heated to 20 °C contained barely enough moisture to be measurable, causing indoor relative humidity (RH) as low as single digits. In fact, the ice was turning directly to gas without first becoming water. The result was rough, brittle ice that became even worse when skated on, causing the puck to bounce and skate blades to chatter.

While it is not a mystery that the cause of ice sublimation is dry air, most arena ice crews do not encounter air as dry as Rimmer and his crew were seeing. Rimmer knew who to call.

HIGH-PRESSURE ATOMIZING SYSTEM THE OBVIOUS SOLUTION

Rimmer called Darren McPherson, his connection at Kehoe Equipment Ltd. Kehoe had provided chillers and pumps during earlier phases of the building construction, and Rimmer remembered that Kehoe was also a humidification system manufacturer's rep.

The HVAC system as finalized for commissioning features an air handler in each corner of the building. The air handlers have no room for steam dispersion grids, "and getting gas, water, and venting to each location was not a valid option," recalls McPherson. "Atomizing was the obvious solution



Rogers Place in Edmonton's Ice District



Mechanical room where water is purified and pressurized before it is pumped to the dispersion nozzles near the Rogers Place ceiling

RESOURCES

To find your local DriSteem representative, go to [Find a rep](https://www.dristeem.com) at [dristeem.com](https://www.dristeem.com).

For more about DriSteem's High-pressure System, go to [High-pressure System](https://www.dristeem.com) at [dristeem.com](https://www.dristeem.com).

For more about Rogers Place and the Edmonton Ice District, go to RogersPlace.com/About.

1. Jones, Terry "Rogers Place ice crew climb to No. 2 in NHL in two years." Edmonton Sun, November 1, 2018: <https://edmontonsun.com/sports/hockey/nhl/edmonton-oilers/jones-rogers-place-ice-crew-climb-to-no-2-in-nhl-in-two-years>

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for such a large, open space from an economic standpoint. So we designed a DriSteem High-pressure System for the arena."

McPherson first recommended a Model 1000, which can add moisture to the air at a rate of 450 kilograms per hour. Upon learning more about the volume and extreme dryness of the outside air, he decided the design was cutting it too close with no room for expansion or even more extreme winters.

"So we went with the Model 1750 at almost 800 kilograms per hour."

The system was installed in time for the 2018-19 hockey season and kept the air humidified all winter long to the ASHRAE-recommended 40 percent RH for hockey arenas. While RH is the operative parameter, the mechanical contractor for Rogers Place, Taylor Layton from Priority Mechanical, recommended using dew point to determine the humidifier set point. This ensures the humidifier will maintain desired output regardless of temperature fluctuations in the arena bowl.

NHL PLAYERS AND FANS APPRECIATE THE DIFFERENCE

Not only did sublimation stop, but the humidified air slowed the evaporation of moisture from building occupants' skin, which left them feeling warmer without the arena needing more heat pumped in. Rogers Place staff and guests no longer commented about how cold they felt during winter events.

How much better is the ice quality compared to the Oilers' first season in Rogers Place? The only arena voted higher by NHL players in 2018 was perennial winner Bell Centre in Montreal. Achieving second place in votes by players who compete in all 31 (soon to be 32) arenas puts first place within reach.

"We're shooting for number one," said Rimmer. "There's no doubt about that. It's a lofty goal. Montreal knows what they are doing."¹



Taylor Layton (left) and Jason Rimmer prowl the catwalks 40 meters above the ice where the atomizing dispersion nozzles are arrayed