

# THE RRRINK DRAMATICALLY IMPROVED EFFICIENCY WITH A SWITCH TO HONEYWELL SOLSTICE® N40 (R-448A) REFRIGERANT

## Case Study

The ice rink improved system performance while reducing its environmental impact

### JUST SKATING BY

Built in 1997 in Medford, Oregon, The RRRink is the area's only year-round site for ice skating and hockey. Temperatures in the area can top 100 degrees, and over time the strain on the facility's refrigeration system had begun to show. "The compressors always ran," said Ellen Eggelston, manager of The RRRink. "I seriously don't remember them ever shutting off."

"Leaks had formed at many of the valves and the refrigerant level was way down," added Ben Jamison, Senior Technician for Northwest Mechanical Group. "It was going to cost a lot to add new R-22 and they'd still have an inefficient system. We researched the R-448A and it was clearly a cost-effective way to go to improve performance. Plus, they liked the low GWP."

"Since we did the Solstice® N40 retrofit, the ice freezes faster and the compressors no longer run non-stop. So we're very happy."

— ELLEN EGGELSTON, MANAGER, THE RRRINK

### THE OPPORTUNITY

After operating for 20 years, The RRRink's refrigeration system had developed leaks and needed more refrigerant. Management recognized the opportunity to not only improve the efficiency of the system, but to also help achieve its goal of being better for the environment whenever possible.

### THE SOLUTION

The contractor, Northwest Mechanical Group, recommended replacing the old R-22 refrigerant with Honeywell Solstice® N40 (R-448A). The switch required no equipment changes, increased the system's performance, and significantly lowered The RRRink's environmental impact.



**Honeywell**

# SPINE-CHILLING ENERGY BILLS

Like every business, The RRRink looks for ways to reduce expenses wherever possible. “We like to find ways to lower our bills without doing anything that might hurt the customer experience,” said Eggelston. “For example, a few years ago, we switched to energy-efficient lighting. Customers think it’s great, and we saved energy.”

Making and maintaining the ice is a major expense for The RRRink. “We just had to accept those costs, because the ice is no place to cut corners. It’s central to every experience here, from hockey and figure skating to lessons and general skating. It’s our business.”

The switch to Solstice N40 refrigerant delivered efficiencies that The RRRink

had never known before. “They have one chiller with two parallel racks totaling 90 horsepower of compressor power,” said Jamison. “With the old system and the R-22, those compressors ran and ran and ran. Once we performed the retrofit, the compressors started performing much more efficiently.”

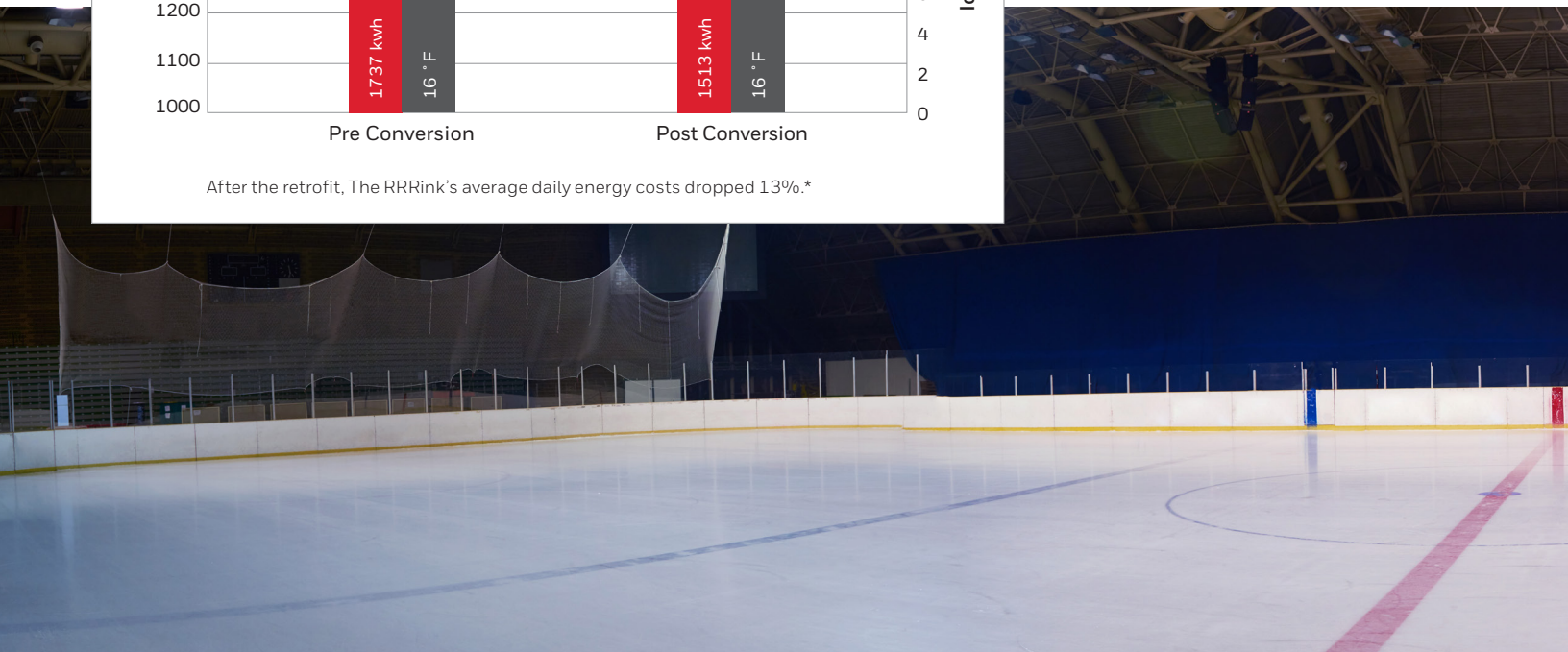
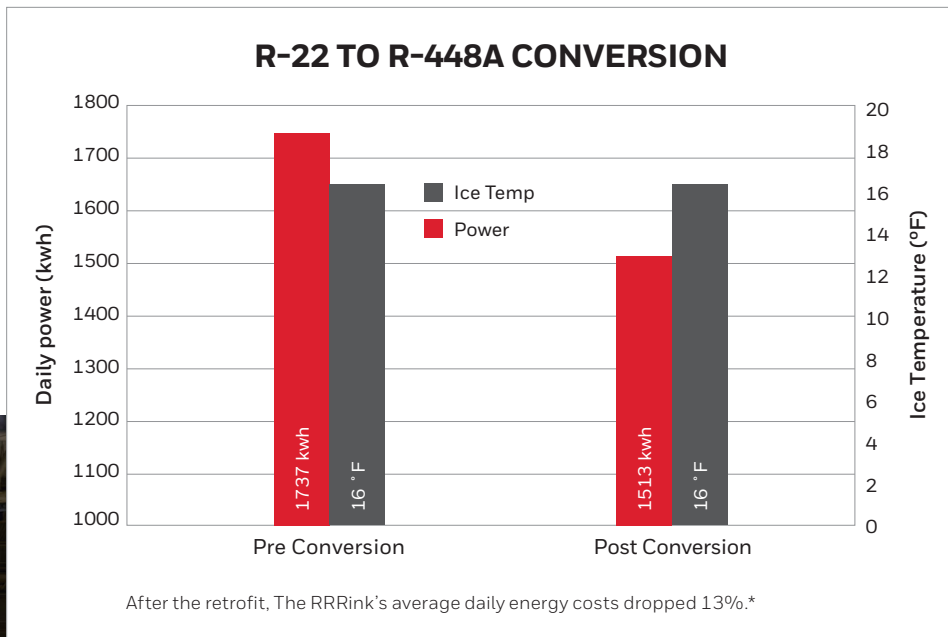
“I thought something was wrong when the compressors turned off,” laughed Eggelston. “Then I realized they were actually working like they’re supposed to.” The change was quickly noticeable on the energy bills as well, with the retrofit delivering a 13% reduction in the average daily energy used. “Savings like that add up in a hurry,” added Eggelston.

## No Downtime

“In 2014, we had some upgrades done to our facility that required us to close for two weeks,” said Eggelston. “I hoped the refrigeration upgrade wouldn’t be nearly that long. As it turned out, we never had to close at all.”

“You can keep downtime to a minimum with good planning,” notes Jamison. “In this case, we worked first with Honeywell to monitor the system for 30 days, then we worked out a retrofit plan that allowed The RRRink to stay open for customers.”

First, Jamison and another technician repaired the system’s leaks by replacing old or damaged valves. Then it was time to remove the old R-22 and charge the system with Solstice N40. “With the parallel rack setup, each side holds 400 pounds of gas. We removed the gas from one side and replaced it with the R-448A while the other side kept working. After testing it for a couple days to make sure all was well, we then did the same to the other side.”





## HONEYWELL SOLSTICE N40 REFRIGERANT (R-448A)

Solstice N40 is an HFO blend ideal for ice rink refrigeration retrofits and new systems.

- Performance similar to R-22
- Lower GWP than R-22 for long-term regulatory compliance
- Nonflammable (ASHRAE A1) for safer, seamless integration
- Non-ozone-depleting
- No thermal expansion valve changes, eliminating most retrofit costs

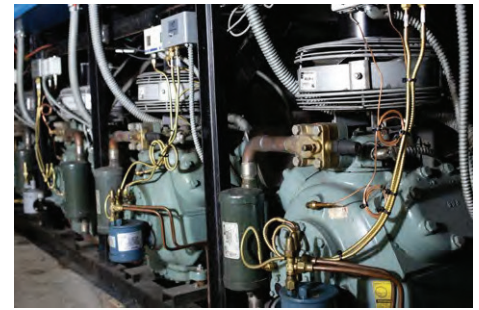
One reason that the installation time was short is that Solstice N40 worked seamlessly with the existing equipment. “The only equipment change was the valves we would have had to replace anyway,” said Jamison. “We also saved time because the adjustments were quick. Even with the older equipment, we didn’t have any issues with the oil return. It was really easy to work with. The boiling point is great, and the glide adjustments were simple to set.”

### Skating On Solid Ice

The switch to Solstice N40 refrigerant has been nothing but positive for The RRRink. “The ice freezes faster,” notes Eggelston, “and we’ve had quite a few of the hockey players comment on the good quality of the ice.”

The 13% drop in energy usage stands out as well. “They’ll be enjoying the energy savings for a long time,” adds Jamison. “The switch to R-448A calmed down the compressor cycling and was really impressive.”

In addition to the increased efficiency, everyone at The RRRink is happy with the reduced impact on the environment. “Our owner, Dorothy Smith, believes very strongly in doing our part for the environment,” said Eggelston. “To think we improved our system as much as we did while also using a refrigerant with a much lower GWP, well, it just makes us all feel good.”



*The RRRink’s two parallel compressor racks*



*Ice at The RRRink now freezes faster*

“The switch to R-448A calmed down the compressor cycling and was really impressive.”

– BEN JAMISON, SENIOR TECHNICIAN,  
NORTHWEST MECHANICAL GROUP





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