



National Sports Center



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Organization Background

The National Sports Center (NSC) in Blaine, MN is the world's largest amateur sports facility. It is home to 50 multi-use soccer fields, eight ice rinks, an 18-hole golf course, a stadium field, a sports exhibition facility, an indoor turf field, a 180-bed residence hall, and the Minnesota United soccer team's practice field. On any given day, there is an average of 12 different programs in progress and they receive over 4,000,000 visitors in a typical year.



"I am very happy to have had the opportunity to combine my two passions in my work with the National Sports Center and MnTAP: sports and sustainability. Through my experience, I have learned that this is a growing field and is taken seriously by many sports teams and venues in accordance with sustainability goals." ~ NM

Project Background

Given the NSC's size, two areas were focused on this summer: the Super Rink and Victory Links Golf Course.

The Super Rink, which houses the eight ice rinks, uses over seven million gallons of water annually. Half of the water is softened then heated before being used to resurface the ice rinks or wash down the ice resurfacers. Water used in resurfacing drains into a melt pit and is sent to sewer.

The golf course uses an average of 46,000,000 gallons of water per year for irrigation. Storm water from the campus parking lots drains into a retention pond, which feeds the irrigation system for the golf course. Makeup water comes from a well on site.

Incentives To Change

As a non-profit, the NSC is constantly considering how it can benefit the community. Reducing water and energy has the dual benefits of improving Minnesota's environment and saving money. Staff have set the ambitious goal of becoming a net zero facility and already have a 10MW solar initiative. By hosting a MnTAP intern, they hoped to further reduce their consumption.

SOLUTIONS

Melt Pit Water Recycling

Installation of a recycling system for the melt pit water would dramatically reduce the impact and consumption of the ice rinks. The snow dropped into the melt pit would be filtered, de-aerated, and stored before being reused. Approximately, 10,000 gallons of make-up water would be required for each system per year, a

"Niklas was an excellent asset to our National Sports Center team. His enthusiasm and ability to cater to the unique needs of our operation left us impressed and eager to implement his recommendations. We look forward to seeing real time results and building upon the foundation he laid."

*~ Karah Lodge, Associate Director,
National Sports Center*

Solutions

reduction of 99%. Additionally, because of the de-aeration, water would not need to be heated, which would save gas, decrease load on the refrigeration system, and allow for a possible elevation in brine temperature.

Because installing the recycling systems will take extensive planning, two additional solutions were recommended to conserve water in the interim.

Ice Resurfacers Operations Plumbing Retrofit

Both the refilling and washing down of the ice resurfacers are currently done by hand. Automating refilling with a timer will eliminate tank overflowing. Providing a separate high-pressure low-flow hose for washdown will retain the efficacy of the cleaning process while reducing water. These opportunities were combined into one plumbing retrofit that could be easily installed on the facility's hot water lines.

Integrated Auger Washout

An integrated auger washout system would automate the washdown process by channeling water remaining in the resurfacing tank after ice resurfacing over the ice resurfacer mechanisms. This automated cleaning device would be installed on the rear of the ice resurfacer machines to remove the snow that builds up underneath the ice resurfacer.

Victory Links Golf Course Sprinkler Head Conversion

Adjustments to the current irrigation patterns on Victory Links Golf Course could be made to reduce unnecessary watering. Currently, each sprinkler head has a 360° arc. Twenty percent of the sprinklers are located near fringe areas and pathways and could be reduced to a 210° arc. This would simultaneously preserve the quality of the course and annually conserve three to eight million gallons of water depending on rainfall.



Recommendation	Annual Reduction	Annual Savings	Status
Melt Pit Water Recycling	4,360,000 gal of water 57,200 lbs. of salt 36,400 therms of natural gas 620,000 kWh	\$80,800	Recommended
Ice Resurfacer Operations Plumbing Retrofit*	890,000 gallons 10,800 lbs. salt 7,400 therms	\$9,200	Planned
Zamboni Integrated Auger Washout*	824,000 gallons 8,700 lbs. salt 6,900 therms	\$8,400	Recommended
Sprinkler Head Conversion on Victory Links Golf Course	5,800,000 gallons 34,000 kWh	\$2,300	Recommended

*The annual reduction and savings for these recommendations are not additive. The maximum amount of savings is equal to the melt pit water recycling recommendations combined.

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