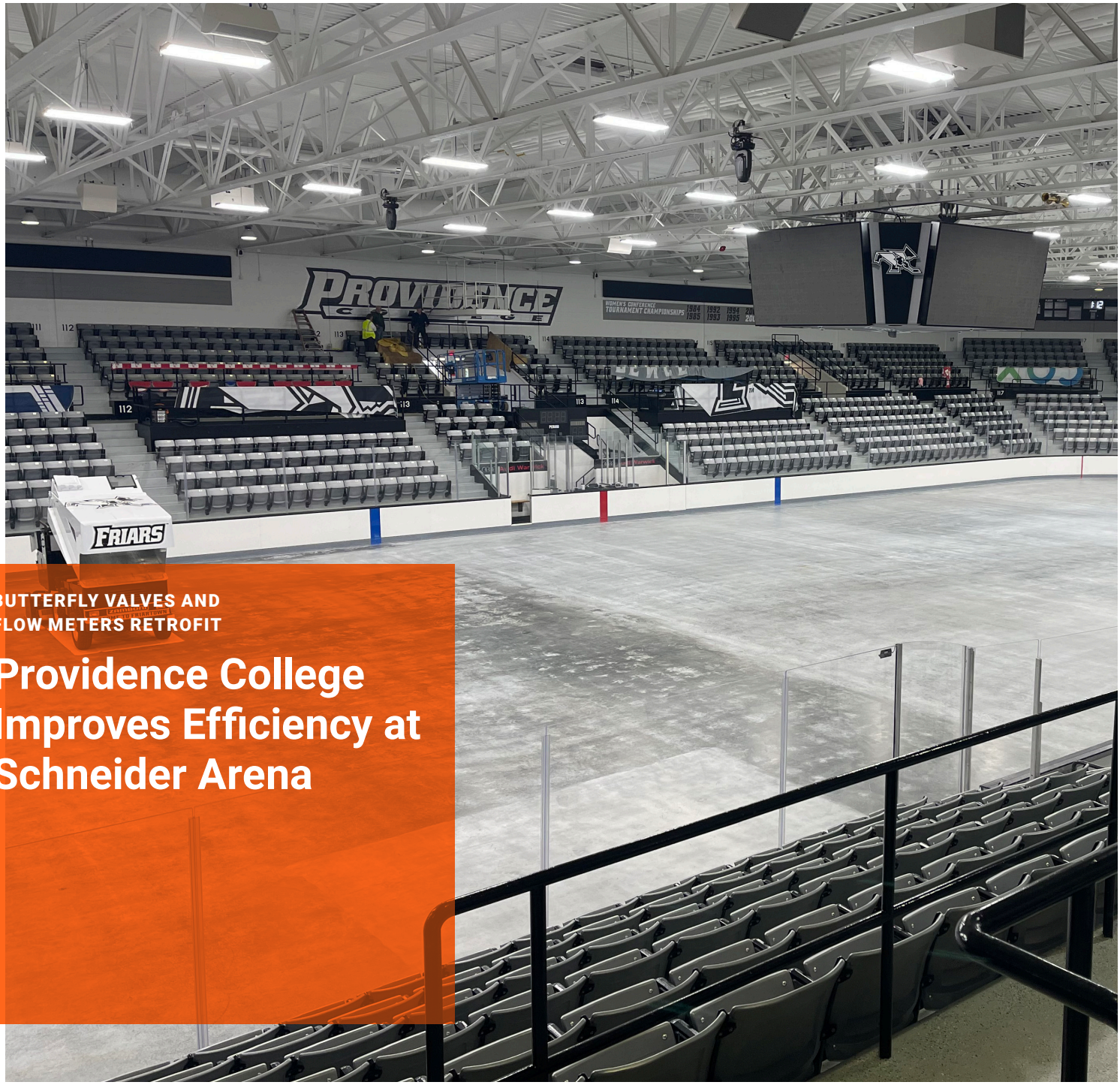


BUTTERFLY VALVES AND
FLOW METERS RETROFIT

Providence College Improves Efficiency at Schneider Arena

Belimo Butterfly Valves and Flow Meters provide Enhanced Visibility and Precise Control

Located on the northern end of Providence College's illustrious campus in Rhode Island, Schneider Arena is an athletic facility that is in almost constant use. The building serves the needs of the men's and women's Division I hockey programs, as well as the men's lacrosse program. The club hockey team and intramurals also use the ice rink, as do many of Rhode Island's youth and high school hockey teams.

Over its nearly 50-year history, the 3,000+ seat arena has undergone several renovations to ensure that its facilities are state-of-the-art. One of the more recent upgrade projects was aimed at improving the efficiency of the chiller system responsible for maintaining the temperature of the ice. The scope of work involved a complete overhaul of the chiller plant. Belimo played a critical role in the project – supplying ultrasonic flow meters and butterfly valves, which enabled enhanced visibility and accurate flow control.

TYPE OF BUILDING
Athletic Facility

PROJECT
Retrofit

SECTOR
Education

PRODUCTS
Belimo Butterfly Valves and Flow Meters

Increase Efficiency and Reduce Chilled Water Consumption

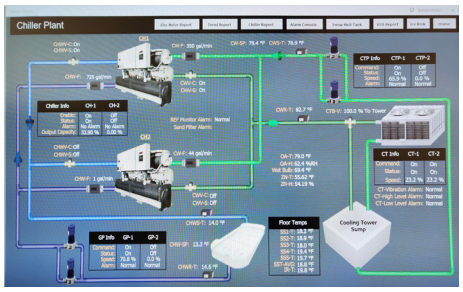
Project Overview

Providence College's primary motivation for revamping the Schneider Arena chiller plant was to: 1) increase system efficiency and reduce chilled water consumption and 2) improve the ability to control ice temperature.

To accomplish these objectives, facilities personnel at the college worked collaboratively with Arden Engineering Constructors and Earthwise Energy Technologies to redesign the entire chilled water system. In addition to many key components and equipment assets approaching the end of their useful life, the existing system was plagued by several issues, including over pumping and poor response time to ice temperature fluctuations.

The revamp consisted of replacing two 140-ton chillers and associated water and glycol pumps, along with all controls and valving. As part of the project, four pneumatically-driven valves (two for condenser water and two for glycol) were placed with brand new Belimo butterfly valves and associated flow meters.

"We've had a long and successful history of using Belimo products across the campus, including Energy Valves" said Steve Basile, Supervisor of Engineering at Providence College. "The Energy Valves are all connected to the Belimo cloud and have drastically improved the efficiency of our central chiller plant. We were 100% confident that the butterfly valves and flow meters would perform to the same standard and did not hesitate to specify them for the Schneider Arena project."



"Belimo's ability to provide the 3D files of valves and flow meters for the virtual model was a key advantage."

Matt Basile, Mechanical Engineer
Arden Engineering

Solution and Savings

The advanced butterfly valves assemblies facilitated simplified installation and commissioning. The patented brushless direct current motor technology reduces energy consumption by up to 80% when compared to similar products on the market and ensures longevity and optimal system performance. Unique features like NFC, software, and available super capacitor technology also enables user selection of fail position (0-100%) and delays unnecessary actuator movements during short brown out conditions, thus avoiding changes in the HVAC and building automation system. The patent-pending self-adjusting end stop algorithm also ensures zero leakage at 200 psi close-off.

To streamline construction and installation, Arden Engineering used advanced scanning technologies and virtual design and construction (VDC) software to develop a complete 3D model of the new chiller plant room at Schneider Arena. Belimo provided REVIT files, which included all relevant physical characteristics and technical data for the butterfly valves and flow meters.

"Belimo's ability to provide the 3D files of valves and flow meters for the virtual model was a key advantage," said Matt Basile, a mechanical engineer at Arden Engineering who worked on the project. "We were able to simply drag and drop the files into the software program. This eliminated the need to take physical measurements and really just simplified the process of building the model."

With the new system, the outputs of four temperature sensors embedded in the ice are averaged. That data is then transmitted to the control system, which maintains the temperature of the ice within 1-2°F of its 20°F setpoint. A large display with read-only capability visualizes all data collected by the system. Alarms are integrated so that personnel can take quick and decisive action in the event that ice temperature begins to drift outside its nominal range. This same information is also available to individuals in the control room at the campus' central plant.

Overall, the installation of Belimo butterfly valves and flow meters, along with other system modifications have generated measurable savings for Providence College. The new system is currently pumping about half the gallons per minute (GPM) that was seen prior to the upgrade. Almost 10% of the total project cost was covered by a rebate provided by the utility provider (National Grid).

BELIMO BUTTERFLY VALVES

– Saves energy with up to 80% less power consumption than currently available solutions.

– Zero leakage improves system performance with self-adjusting actuator close-off, and unique seat and disc design ensure positive valve sealing.

– BACnet and NFC provide simplified setup and diagnostics, as well as superior application data access.

BELIMO FLOW METERS

– Multi-point wet calibrated to ensure accuracy and repeatability.

– Patented glycol compensation logic eliminates manual calibration.

– ±2% accuracy of reading and ±0.5% repeatability ensure accurate and precise flow measurement.

Customer Satisfaction

"Belimo's track record of providing superior products and service has fortified our professional relationship and made them a preferred supplier to the college," added Steve Basile from Providence College. "The upgrade at Schneider Arena is just one of many instances where they have contributed to a successful project by making sure all of our needs were met in a timely manner. We look forward to using Belimo products in the future as we drive to continuously improve the efficiency of our facilities across campus."

CUSTOMER BENEFITS

– **Reduced Energy Consumption**
The installation of Belimo butterfly valves and flow meters, and other system modifications have generated measurable savings. The new system is currently pumping about half the gallons per minute (GPM).

– **Increased Performance**
The butterfly valve assemblies and flow meters provide longevity and optimal system performance.

– **Measurable Savings**
A rebate by the utility provider (National Grid) covered 10% of the total project cost. The flow meters provide low power consumption of 0.5 W saving energy and transformer capacity, and the butterfly valve assemblies save energy with up to 80% less power consumption than currently available solutions.

CS_22 – 09.2021 – Subject to technical modifications

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