

Comparative Performance Testing Reveals Reduced Energy and Greenhouse Gas Emissions for Frio’s IoT Heat Trace Controller



Challenge

Frio requested NYSP21’s assistance to provide an independent 3rd party comparative evaluation of the performance of Frio’s S1 controller to a “state of the art” commercially available controller.

Solution

NYSP21 conducted performance testing on the green roof of Rochester Institute of Technology’s Golisano Institute for Sustainability during the 2020-2021 winter season.

Results

The S1 controller demonstrated a 63-71% reduction in both energy use and corresponding greenhouse gas (GHG) emissions during testing.

Frio

Frio (AEF Ice Systems dba Frio) is developing and commercializing Internet of Things (IoT) based heat trace control systems as an energy-efficient upgrade for ice melt, snowmelt, and freeze protection systems. Frio has developed a product, the S1 heat trace controller that can interface with Frio’s cloud platform, enabling improved efficiency, advanced fault detection, and easy fault notification. Frio claims to reduce energy use, greenhouse gas (GHG), and associated operating costs of snowmelt and freeze protection systems by using the Frio smart controller to operate systems more accurately and efficiently as compared to commercially available systems providing the same function.

“The team at NYSP21 was great to work with. They designed a well-thought-out experiment, using their wealth of expertise and experience to address issues upfront during the proposal stage. The resulting months-long test went very smoothly and gave us clear results.”

Travis Kuster
CEO, Frio

Challenge

Frio requested New York State Pollution Prevention Institute (NYSP21) to provide a third-party evaluation of the performance of their S1 controller versus a “state of the art” commercially available ice and snowmelt controller.

Solution

NYSP2I conducted comparative performance testing on the green roof of Rochester Institute of Technology's Golisano Institute for Sustainability during the winter of 2020-2021. Two identical small-scale snowmelt systems were constructed and operated side by side to characterize the performance of the S1 controller vs. the commercially available controller.

Results

The results of the performance testing shows:

- Frio's S1 heat trace controller was able to reduce the energy used for snow melting by 63-71% as compared to a commercially available system during the evaluation period.
- Frio's S1 heat trace controller demonstrated the potential to reduce energy costs and GHG emissions by up to 71% when replacing a controller similar to the commercially available baseline as tested.



Pictured: Comparative performance testing in progress on the green roof at RIT's Golisano Institute for Sustainability.



Pictured: Frio S1 - Single Circuit IoT Heat Trace Controller for use in snowmelting, freeze protection and temperature maintenance applications.

- Frio's S1 controller used between 1.99kWh and 5.75 kWh per storm.
- The commercially available baseline controller used between 5.65 kWh and 19.91 kWh per storm.

Partners



@ info@frio.co
www.frio.co/
Brooklyn, New York

For more information please contact us:

585-475-2512
nysp2i@rit.edu
rit.edu/nysp2i
111 Lomb Memorial Drive, Bldg 78
Rochester, NY 14623