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Continuing Education Program

Course Outline: Design and Installation of Hydronic Snow & Ice Melting Systems to Optimize Performance and Efficiency

Winter precipitation is unpredictable and dangerous. Traditional methods of snow and ice removal include "mechanical" removal by snow blowers and plows, manual shoveling, and chemicals such as salt and sand. However, shoveling takes huge effort and can cause health issues. Snow blowers and plows are expensive pieces of equipment that consume much fuel and leave snowbanks behind, sometimes damaging landscaping. Salt and sand can damage both outdoor and indoor surfaces, while creating environmental issues during run-off.

Modern hydronic technology can provide responsive and efficient solutions to these problems through snow and ice melting (SIM) systems. These systems help to clear outdoor surfaces, melting and evaporating snow and ice, by circulating a heat transfer fluid, such as glycol and water, through flexible tubing installed outdoors. SIM systems have been used across North America for over 75 years; modern piping technology improves reliability and performance.

SIM systems are used in residential and commercial applications such as sidewalks, steps, driveways, ramps, parking lots, loading docks, carwashes, roadways, bridges, and even helicopter landing pads. They are used at hospitals, train stations, airports, hotels, and ski lodges.

These closed-loop systems include a heat source, circulating pumps, controls, devices such as manifolds and expansion tanks, and the outdoor piping loop. This course describes techniques to optimize the design of hydronic SIM systems to improve both performance and efficiency.

Learning Objectives: Upon successful completion of the course, learners will be able to:

1. Indicate the six typical benefits of SIM systems
2. Describe the three most common installation techniques
3. List a selection of ten typical applications
4. Introduce the five main design steps
5. Discuss the three most common control strategies
6. Comment on estimating operating costs

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