

CONTRACTOR

THE NEWSMAGAZINE OF MECHANICAL CONTRACTING

Reprint from May 1994

Use fresh memories of bad winter to sell snow melting

BY JOE FIEDRICH
Hydronic heating authority

DOES HYDRONIC SNOW and ice melting or, as Europeans call it, "exterior surface heating", make sense? Commercially definitely yes, residentially it can be an expensive luxury.

Now is the time to sell commercial snow and ice melting systems while people still remember the horrible winter we had.

In considering any snow or ice removal system, the savings from reducing the costs of snow removal are not the only factor to be considered. Far more important are the consequential cost reductions - no more costs to buy salt or sand. There are no more building *cleaning* costs from salt or sand. Commercial carpeting replacement is half or one third as frequent.

Above all, the liability issue around the exterior of the building is dramatically reduced. On loading docks, ramps, parking areas, helicopter pads and truck scales the installation of a snow and ice melting system is simply a safety and snow removal accessibility issue.

For soccer fields, football stadiums and greyhound parks, the payback could be achieved by saving just a

few events that might have been snowed out.

Design parameters

The boiler sizing is based on Btuh/sq. ft. of snow melt area, depending on the geographic location of the system. Snowfall, design temperature, and wind velocity are all factors. ASHRAE tables and experience values show output requirements can range from 150 to 300 Btuh/sq. ft., depending on location.

It is most important that the heat source is not undersized for the system. If the needed Btu's are not available during design conditions, the system will not work when needed most.

Insulation beneath the snow melt pipe should be used whenever possible; 1" foam board is sufficient.

The tubing should be a suitable thermoplastic material which will stand up to the extreme fluctuations of water temperature cycling and weather conditions. The safest tubing material is polyethylene cross-linked either electronically or by the Engel method. The tubing size for most applications is 5/8" nominal i.d. with circuits not exceeding 300 ft. One inch tubing diameters are only used when longer circuits are required.

Anti-freeze solution of 30%-50%, depending on design temperatures, is mandatory. The non-toxic type is recommended to avoid any potential environmental liabilities.

Anti-freeze solution of 30%-50%, depending on design temperatures, is mandatory. The non-toxic type is recommended to avoid any potential environmental liabilities.

Manual system activation and deactivation, however, can be the best method, since snowfall anticipation is the method for overcoming the system's lag time. This allows the exterior surface temperature to be ready for the first snowflakes. If 2"-3" of snow accumulates before the surface temperature reaches 38°F-40°F, it becomes difficult or impossible for the system to catch up. Even with sufficient boiler horsepower it becomes a losing proposition, especially if you're fighting a wind chill factor.

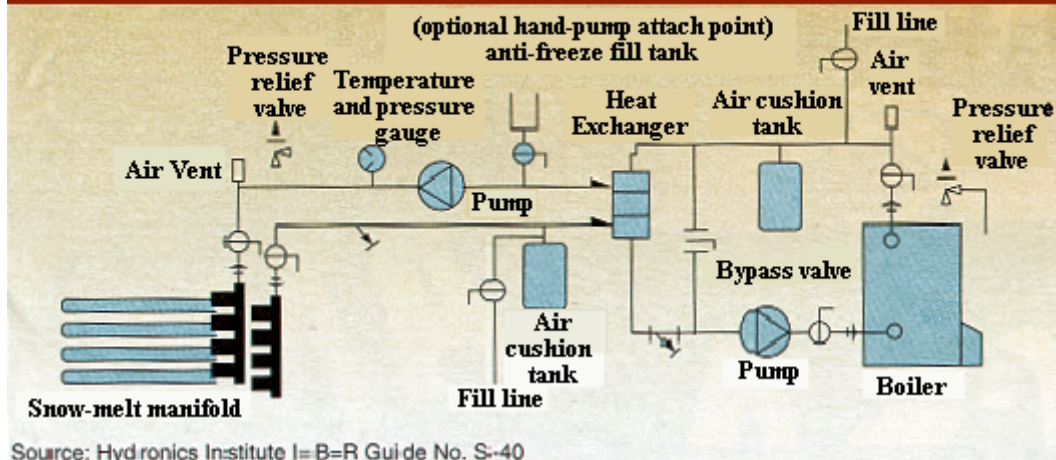
Proper system supply (140°F) and return temperatures are crucial to protect both the exterior surface radiator and the boiler. A variety of boiler room piping options and controls are available using mixing or diverting valves and heat exchangers.

Stainless steel plate heat exchangers are used with conventional steel and cast iron boilers for system separation. Low temperature copper and condensing boilers can be directly installed in the system.

However, a boiler bypass or 3- or 4-way mixing valve is still recom-

mended in most instances to avoid 0°F anti-freeze solution from returning to a hot boiler after a cold start. Even the sturdiest boiler won't be able to withstand the thermal shock.

Suggested Piping Arrangement for Dedicated Snow Melt Boiler



A properly designed and installed snow and ice melting system, can eliminate many headaches for building owners and provide years of snow free, trouble free winters.

An updated I=B=R Manual for snow melting calculations and installations (Guide No. S-40) is under development and should be available shortly through the Hydronics Institute.

The author is president of Stadler Corp. (tel. 781/275-3122), a Bedford, Mass.-based supplier of hydronic heating equipment