Gmail

Robert Barmore

Emailing Insulation and Energy offset letter 6-10-20.pdf

Denis Murray Fri, Jul 17, 2020 at 6:23 PM

Robert,

The City of Aspen will accept the installation of the Therma-HEXX snowmelt system product as proposed in the letter dated 6/10/2020.

Thanks

CITY OF ASPEN

Denis Murray

Plans Examination Manager

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To Whom it may concern,

The Therma-HEXX ThermaPANEL modular radiant heating and cooling system is designed and system engineered for four primary purposes in exterior applications and shall have the following insulation specification in order to meet the spirit of the Aspen energy code while allowing the ThermaPANEL system to perform as designed and engineered.

1) Heating and cooling of pedestal supported surfaces.
2) Heating and cooling of ground supported surfaces.
3) Heating and cooling of permeable surfaces.
4) Thermal solar energy collection for heating of pools and domestic water.

Pedestal mounted surfaces have small gaps between the paver units to allow for snow melt and rain drainage to the rooftop drainage system. The air space between the underside of the ThermaPANEL units and the roof surface (the plenum) is purposely heated by the interconnect tubing between the panels, the supply and return tubes from the manifolds, residual heat emanating from the bottom of the panels and in some installations, the manifolds. The heated plenum prevents re-freezing of the melt water before it reaches the drains or scuppers.

The 1" R-5 fire retarded EPS insulation system that is bonded to the underside of the ThermaPANEL units is engineered to provide enough resistance to the flow of energy toward the cold plenum side and direct the heat energy upward into the paver surface so that a fast and efficient response occurs when heat is called for while the uninsulated interconnect tubing provides ancillary heat to the plenum area.

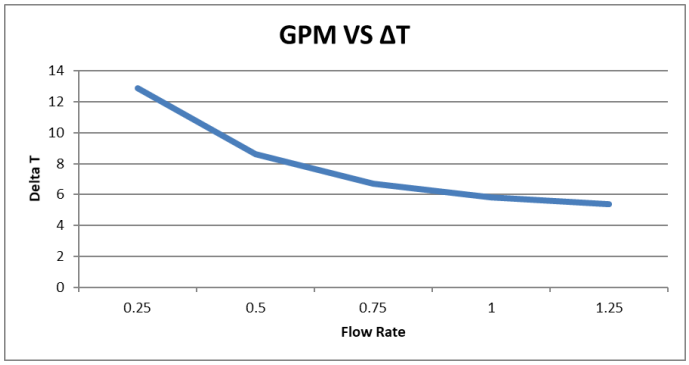
When installed beneath a concrete slab, additional insulation of at least R-5 and of the appropriate density can be placed beneath the ThermaPANEL system if required as drainage is not a concern in this type of installation however, the loss to the ground is only 10-15 Btu/hr/square foot, or 1/10th the total energy required.

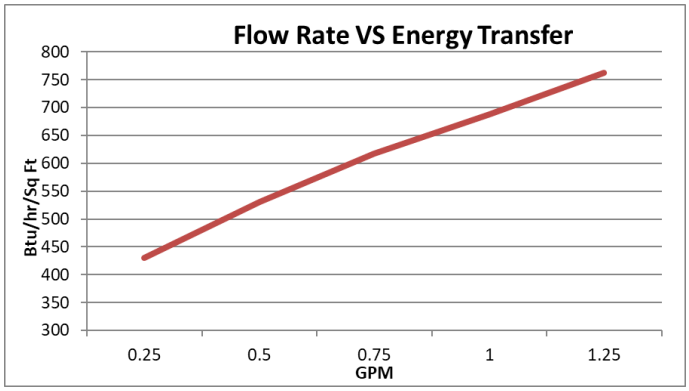
The ThermaPANEL system has nearly 100% surface coverage vs tube type systems that have 1 /10th of the surface coverage resulting in fast heat up time and less overall operating time to obtain the same results.

All ThermaPANEL systems can be used as invisible solar collectors. Thermal solar energy can be harvested from any surface for use in heating pools or domestic water, while cooling the surface thus reducing the urban heat island effect. This savings can then be applied to offset snow melt energy usage. The amount of energy collected can be calculated for a specific installation by Therma-HEXX engineers utilizing our proprietary system analyzer program which utilizes NREL weather data for the system location.

The following data and graphs document a controlled heat transfer test of a single 2' x 2' ThermaPANEL unit that would represent typical snowmelt conditions. Systems are designed for temperature and flow rate based on the project requirements for a class I, II or III system.

GPM	ΔT	Btu/hr/sq ft
0.25	12.9	430
0.5	8.6	530
0.75	6.7	617.5
1	5.8	687.5
1.25	5.4	762.5
Test Conditions		
Surface Temperature	30 Degrees F	
Supply Temperature	110 Degrees F	





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