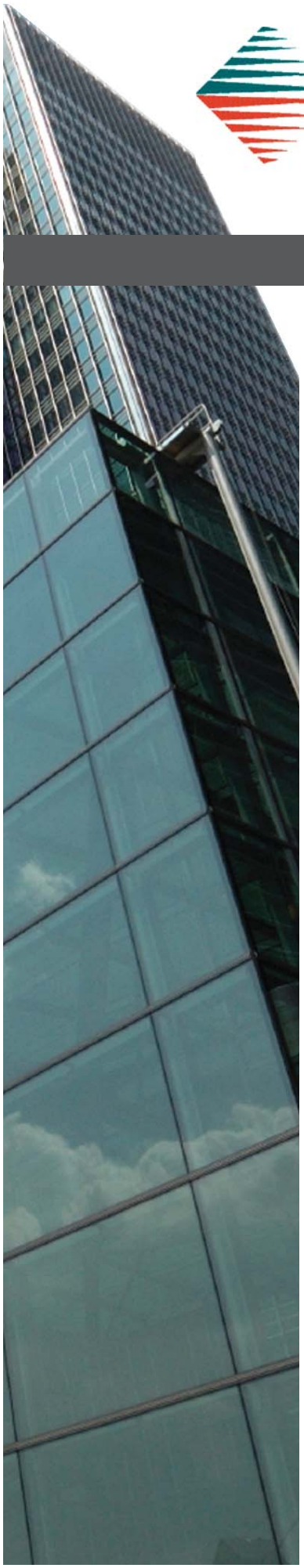


Innergy tech inc.

THERMOGAIN HEAT PIPES

The most reliable air-to-air energy recovery component

ARI certified product

With their long life expectancy, individually charged and sealed tube construction with integrally turned fins and no moving parts, the Thermogains are known to be the most reliable air-to-air energy recovery components. Very easy to clean, the Thermogain can also withstand the highest operating temperatures of all energy recovery components, making them ideal for applications with very hot exhaust air streams. With their compact sizes and rectangular shape, their incorporation to HVAC systems is often greatly simplified.

Features and benefits:

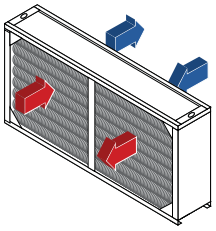
- High effectiveness for rapid payback
- Tough and easy to clean product
- **Most compact energy recovery component**
- Up to 450˚F operating temperature
- Certified no cross contamination product
- No moving parts for virtually maintenance free operation
- No external power required
- U-shaped Thermogain available (dehumidification applications)
- Integral fin technology for long lasting, reliable performances
- **ARI certified performances; Bears the ARI Standard 1060-2005 certified seal**

Options:

- Stainless steel casings
- Heresite phenolic coating
- Other corrosion protection coatings

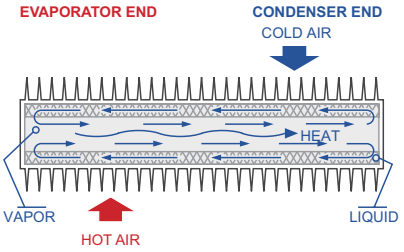
Operating Principle:

The Thermogain heat exchanger recovers heat from the hot air stream and transfers it to the cold air stream in a counter flow arrangement. It is a very simple, yet effective way to transfer energy and save costs while meeting the industry's indoor air quality requirements. Also, Thermogain heat pipes do not require complicated tilt mechanisms and are fully reversible which means they'll save you money both in the summer and winter months.

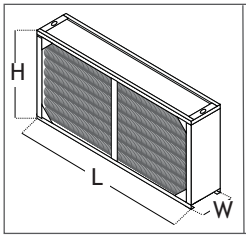


Base theory:

In each individual tube, evaporation occurring on the Evaporator End creates a pressure gradient that forces the vapor to a remote area called the Condenser End. The vapor, now on the Condenser End and subject to much colder temperatures, condensates on the inner tube surface and returns, with the help of capillary pumping forces within the wick structure, to the Evaporator End to complete the cycle. The result is a perpetual motion machine without moving parts and requiring no energy of its own.



Dimensional data



Maximum height for one unit (H):
72" (For applications requiring higher heat pipes, two or more units can be used together).

Maximum standard length (L):
240".

Width (W):
From 5.9"(2 rows) to 17.1"(8 rows).

Thermogain heat pipe Specifications

Specifications:

1. General specifications:

1.1 Furnish and install the Thermogain heat recovery units of the heat pipe air-to-air type, as shown in the schedule, to be manufactured by Innergy tech inc., Drummondville, Quebec, Canada.

1.2 Thermogain heat recovery units shall transfer heat between outgoing and incoming air streams in counter flow arrangement.

1.3 Thermogain heat recovery units must be installed with ¼ inch/ft (21 mm/m) exhaust end down when used for heating and ventilating.

1.4 Thermogain heat recovery units shall be labeled for direction of air flow, exhausts inlets and outlets and supply inlets and outlets.

1.5 Performance data derived from laboratory testing on heat exchanger conditions shall be in accordance with ASHRAE Standard 84-1991 "method of testing air-to-air heat exchangers". Performance shall be rated in accordance with ARI testing procedures.

1.6 Manufacturers of alternate equipment must be approved to bid via addendum, in writing by the specifying engineer, at least two weeks prior to bid time in order for their bid to be accepted by the contractor. If the equipment is not pre-approved then under no circumstances shall the contractor invest time or money in receiving submittals or considering the equipment. Costs associated with dimensional, performance, or other deviations from the specified equipment, including engineering costs to evaluate such deviations, shall be paid by the contractor.

1.7 The manufacturer must be ISO-9001 certified to insure a quality management system which includes the design, manufacture and service of its energy recovery components.

1.8 The heat pipe must be manufactured in North America.

1.9 Unit performances shall be certified under ARI Standard 1060 and bear the ARI certified seal.

2. Heat pipeheat exchanger specifications:

2.1 Tube core shall be 1 inch (25.4 mm) ID seamless, integrally finned aluminum 1050 tube with .166 inch (4.2 mm) wall thickness. Tubes shall use heights increments of 2-1/8 inches (54 mm) maximum and the spacing between rows shall be no more than 1 7/8 inch (48 mm).

2.2 Fin surface shall be integral to the tube wall and shall have a minimum of .017 inch (.043 mm) between fins. Heat pipes using different materials for the fins and tubes are not acceptable.

2.3 Acceptable Fin densities are 11, 9, 7 or 5 fins per inch. Fin height from root to tip shall be .437 inch (11 mm) minimum.

2.4 Circumferential capillary wick structure shall be integral to the inside of the tube wall.

2.4 Working fluids used shall be selected on the basis of the heat pipe operating temperatures and compatibility with tube and wick materials.

2.5 Tubes shall be individually processed, charged, hermetically sealed and factory tested for leakage.

2.6 The exchanger frame shall be fabricated from minimum of 14 gauge galvanized steel. The frame shall be supplied with minimum 2 inches (51 mm) flanges on all four sides. Intermediate tube supports shall be furnished as required.

2.7 A partition shall be provided to isolate the outgoing and incoming air streams; there shall be no cross contamination. The partition shall be located in the center of the heat pipe unless otherwise specified. Partition shall be fabricated from a minimum of 14 gauge galvanized steel and shall be extended beyond the finned surface with the help of 4 inches (102 mm) flanges on both the supply and exhaust sides. Both front and back flanges to be flush with the frame.

2.8 End covers shall be provided to protect tube ends. Covers shall be fabricated in 16 gauge galvanized steel.

2.9 When protective coating is required, a baked phenolic coating to protect against corrosion must be applied. Coating to be factory applied to supply and/or exhaust sides.

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