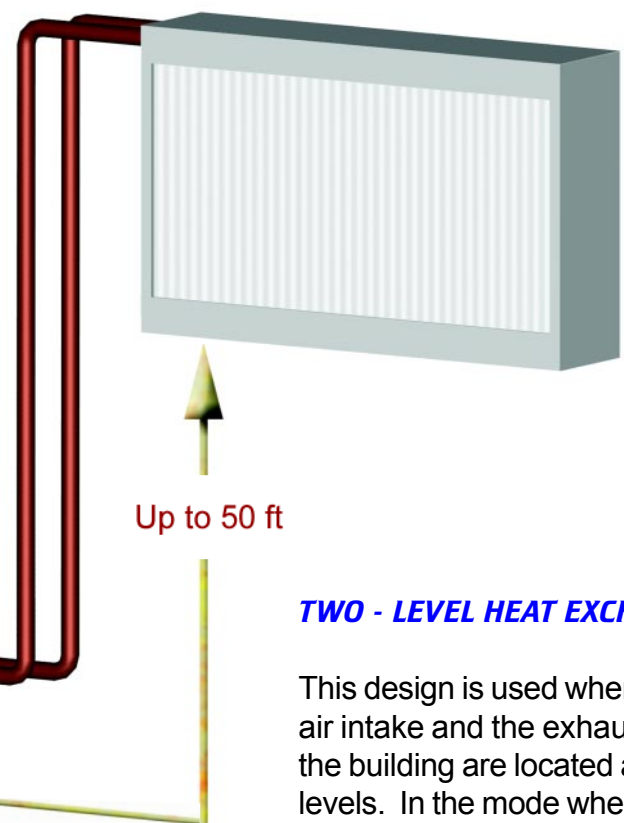


Scale Split Heat Pipes



TWO - LEVEL HEAT EXCHANGE

This design is used when the fresh air intake and the exhaust air from the building are located at different levels. In the mode where the cold air stream is going through the bottom heat pipe, a fluid pump is used to circulate the working fluid to the top heat pipe. In the mode where the cold air stream is at the top, fluid is circulated by gravity. To obtain the cleanest air for the building, it is recommended to take fresh air from as high on the building as possible and away from any contamination sources.

3-D with Double Separation Wall,

Dual Drain Pans

For Zero Cross Contamination



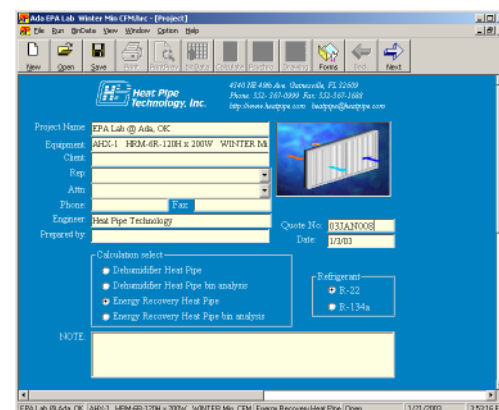
Options

- Anti-corrosion coatings
- Filter racks, directional louvers
- Fresh air by-pass dampers with actuator
- All or half copper fins with stainless steel end plates and drain pan

A must for hospitals, laboratories, and other Indoor Air Quality sensitive applications. The two sides of the heat pipes are isolated by a double wall filled with closed-cell foam to prevent any cross-contamination between the air streams. The condensate drain pans are also totally separated to prevent cross-contamination by the condensed moisture. Fin surfaces can be coated for corrosion resistance. Fungicidal and antibacterial coatings can also be applied.

Computer Support for Custom Jobs

To assist you with your particular application, the engineering staff at Heat Pipe Technology has developed powerful software packages to provide performance prediction and economic analysis. Custom designs are turned into products in record time using the most modern CAD/CAM machinery.



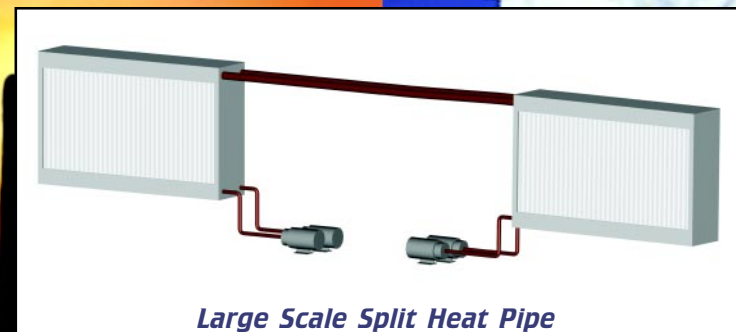
Application Examples



Advanced Heat Pipes For Energy Recovery Ventilation

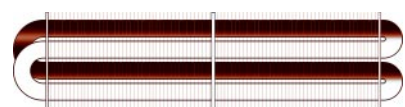


Double Separation Wall, Dual Drain Pans
For Zero Cross Contamination



Large Scale Split Heat Pipe

The 3-D Heat Loop



U.S. Patent 5,921,315

- No Tilting - No Moving Parts
- High Effectiveness
- Low Blower Energy
- No Cross Contamination
- The Install and Forget Heat Exchanger



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An Indoor Air Quality Product



**Heat Pipe
Technology, Inc.**

The 3-D Heat Loop™ by HPT

The new static (non-tilting) heat pipes from Heat Pipe Technology

HPT's new generation of heat exchangers based on the 3-D Heat Loop™ opens doors to new applications with low air pressure drop, compact design, high effectiveness and trouble-free static installation.

The 3-D Heat loop (Patent# 5,921,315) is a breakthrough in multi-row heat pipe design, where the "pumping" of the working fluid is achieved not only by the difference in temperature between the two air streams, but also by the ΔT between rows in the **same air stream**. By using the pumping forces from side to side and from front to back of the finned packs, the 3-D Heat Loop can transfer three times **more** working fluid while using the same tubing diameter.

3-D because the Heat Loop is 3-Dimensional, transferring heat both side to side and front to back

- Results:**
- More capacity
 - Lower air pressure drop
 - Save the cost of the whole tilt mechanism
 - Less space
 - Lower cost

Basic Comparison

Many types of heat exchangers are available to perform heat recovery. However, each type of heat exchanger has certain advantages and drawbacks.

- **Run-around loops** are fairly inexpensive, but require large pumps with inherent problems such as leakage and air bubbles in the line. Run-around loops used in cold climates must be filled with costly antifreeze and require an expansion tank. The energy to run the pumps can be considerable, and can negate any savings in mild climates.
- **Plate-to-plate** heat exchangers are quite effective, but are bulky, expensive, and difficult to clean. They trap condensate resulting in the growth of mold. They also require high blower energy.
- **Heat recovery wheels** are maintenance-intensive, prone to cross-contamination, have high pressure drop, and are not effective in draining condensation. Of all heat-exchangers, heat wheels require the most repair and have the shortest life.

Heat pipes offer the best combination of features with none of the drawbacks found in other systems: no moving parts, high effectiveness, low air pressure drop, easy drainage of condensation, no energy requirement, and zero cross-contamination. Being totally passive, Heat Pipes are proven to be long-lasting and virtually maintenance free!

Introducing The Large Scale Split Heat Pipes

For Whole Building Ventilation Energy Recovery

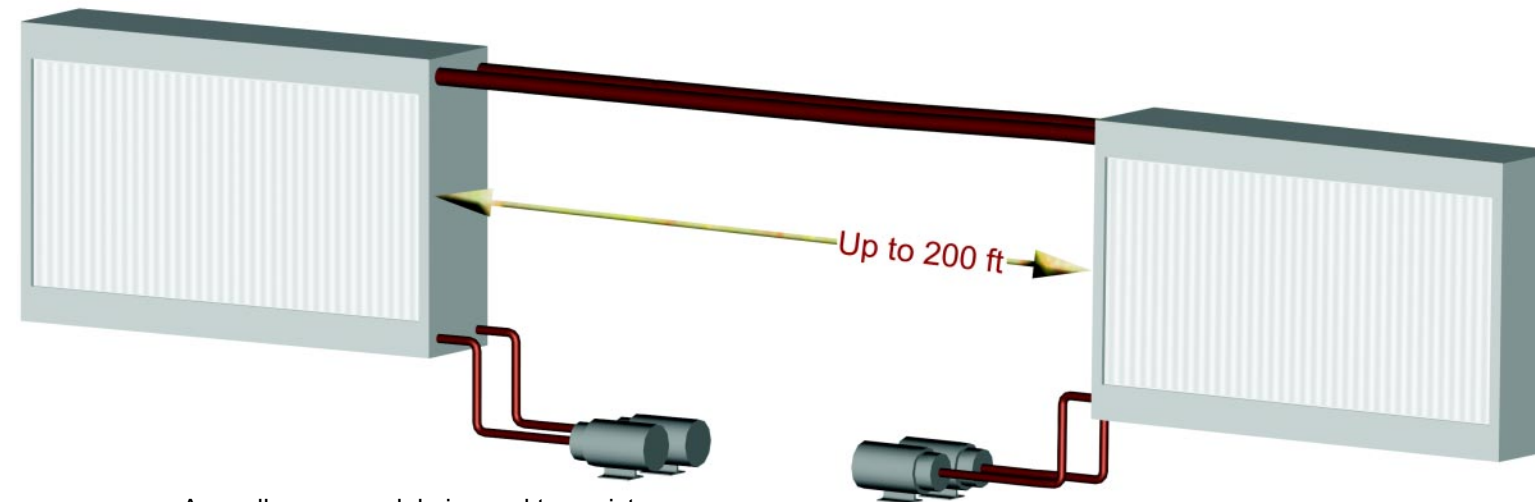
Newest technology for large scale, long distance heat transfer (Patent Pending).

The new Split Heat Pipes from HPT allow for whole building ventilation with up to 60% energy savings.

Available for systems up to 100,000 CFM for all climate applications. The new HPT Split Heat Pipes recover energy in both winter and summer.

SAME - LEVEL

Quite often make-up air and exhaust air are kept apart to avoid cross-contamination. Installations with up to 200 feet distance between the make-up air inlet and the exhaust air outlet are possible using two small pump modules to assist the flow of the working fluid. This system can also be used to transfer heat from the sunny side of a glass building to the shaded side, in order to save heating energy.

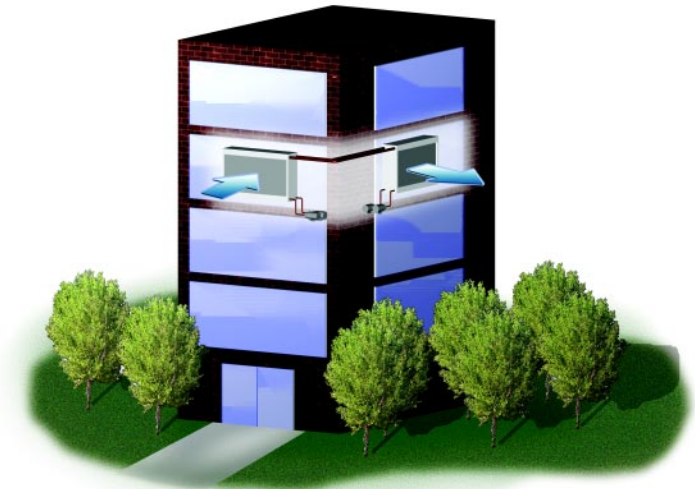


A small pump module is used to assist fluid circulation in our proprietary "Even Flow" system.

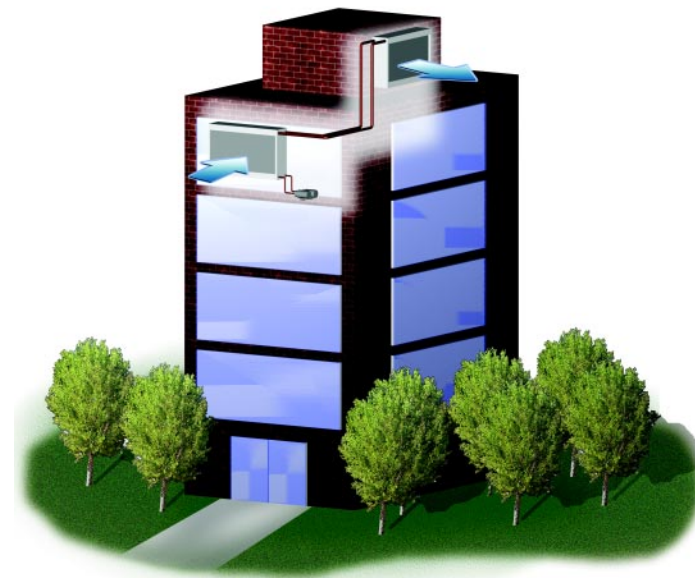
TWO - LEVEL

Heat transfer can be achieved from basement to penthouse, and anywhere in between. The maximum height recommended does not exceed 50 feet, with single-stage pump modules. However, a higher difference of levels can be obtained with multistage pumping.

New Flexibility in Design



SAME LEVEL

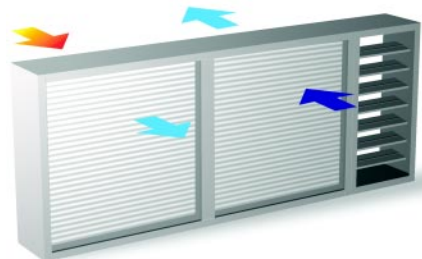


TWO LEVELS

MULTIPLE AIR STREAMS

When more than two air streams are used, the Split Heat Pipes can be divided into multiple sections. For example, heat exchange can be effected from one common exhaust to many fresh air intakes to serve each floor of a high rise building.

Winter Heat Recovery Using Air By-Pass for Defrost



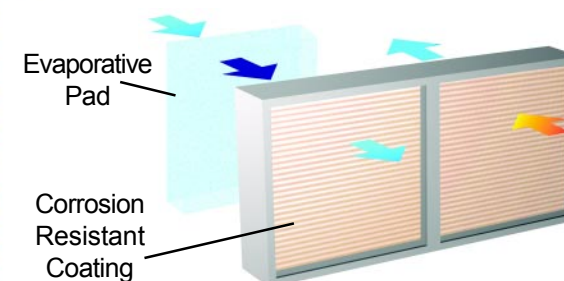
Using air by-pass combined with controlled reduced air flow rather than tilting, defrosting can be done with more precision, and only as needed. In defrost mode, the 3-D Heat Loop stops short of 32 F to allow for ice melting! This new method of defrosting dramatically extends the effective working hours.

For Moderate Seasons... Economizer Cycles



Air by-pass dampers also allow for "economizer" cycles when outdoor air is appropriate for direct cooling and high ventilation rates. This simple feature brings many hours of free air conditioning in moderate weather, while naturally improving IAQ.

Summer Cooling Recovery



With corrosion resistant coating, evaporation of condensate can be used to reach higher effectiveness in cooling recovery. Condensate re-evaporation can be achieved by spray or by an evaporative pad. This option allows for operation in the hottest part of summer and extends operating hours.