



HEAT PIPE TECHNOLOGY

CaseStudy

Universities

ENERGY RECOVERY HEAT PIPES ARE THE PRODUCT OF CHOICE AT A UNIVERSITY LABORATORY IN WASHINGTON, D.C.



OPPORTUNITY

A major university in Washington, DC recently began construction of a state-of-the-art laboratory building to help meet the growing demands for larger laboratory spaces seen across the science disciplines. During the design phase, engineers looked at energy recovery options that could utilize the lab's exhaust air to precool the outside air during summer and preheat the air during winter. As in all laboratory facilities, it is paramount that the recovery device prevents cross-contamination of the supply air by exhaust air and operates reliably without costly maintenance.



THE SOLUTION

Heat Pipe Technology's side-by-side Energy Recovery Modules (HRM) utilizes the phase change of a working fluid to passively precool the outdoor air in summer and preheat the air in winter. The temperature difference between the supply and exhaust airstreams induces the flow of refrigerant without the need for a pump or compressor. As a result, the HRM requires no moving parts and no maintenance other than typical cleaning. The HRM tubes are mechanically expanded into the mating holes of a partition separating the two airstreams, thereby preventing cross-contamination of the supply with the exhaust air. The partition can also be foam filled for added assurance in critical applications.

In this project, two stacked AHUs totaling 30,000 CFM were equipped with HPT's energy recovery modules. Each AHU received a 6-row heat pipe that was broken into 2 sections for ease of installation. The 6-row heat pipes had only 9" of coil depth, thus minimal impact on equipment footprint.



THE RESULTS

Energy recovery HRMs in both air handlers were able to precool 9°F at peak Summer design condition and preheat 41°F at peak Winter condition, reducing the cooling load by 87 MM BTU and the heating load by 617 MMBTU, allowing the design engineer to meet energy code along with net savings of over \$5000 annually. All this with no maintenance, since there are no moving parts, and more importantly no chance of contaminating the supply with exhaust air, making this product ideal for all laboratory facilities.

For more information, visit www.heatpipe.com