

---

**CASE HISTORY PROJECT SUMMARY**  
**Charleston Air Force Base Buildings**  
**Charleston, SC**



**PROBLEM:** Commanding General of the AFB directed that the central heating plant be shut down after the winter heating season was over. Unfortunately this resulted in the loss of hot water being used to provide reheat for dehumidification during the cooling season.

**SOLUTION:** Carolina Heat Pipe, Inc. was authorized to incorporate controllable Thermosyphon Run Around Heat Pipe (TRAHP™) systems into the air handlers serving the following buildings:

Collocated Clubs	Building 532 Hanger Cubicle
Aero Med Facility	VOQ Building 362
Several Barracks Buildings	Building 548 AGE Equipment Shop
Several Dorm Buildings	C-17 Life Support System Building
Squadron Ops Facility	AMU Buildings #3 & #4

**RESULTS:** These passive energy efficient systems reduced the central plant chiller energy load while providing free reheat for dehumidification during the cooling season.

**PAYBACK PERIOD:** 2.45 years

**RETURN ON INVESTMENT (ROI):** 41%

---

**CASE HISTORY PROJECT SUMMARY**  
**White House Visitor Center**  
**Washington, D.C.**



**PROBLEM:** US National Park Service reported a mold and mildew problem in the Visitor's Center.

**SOLUTION:** Carolina Heat Pipe, Inc. provided and installed four (4) CHP ST MACH 1 Thermosyphon Run Around Heat Pipe (TRAHP™) systems that provide 320,500 BTUH of precooling and reheat.

**RESULTS:** Annual electrical energy saved from operating the chiller: \$16,900.  
Annual natural gas energy saved from avoiding other form of reheat to control relative humidity during cooling season: \$17,500.

**PAYBACK PERIOD:** 2 years.

**RETURN ON INVESTMENT (ROI):** 50%

**CHP#:** 01-082

---

**CASE HISTORY PROJECT SUMMARY**  
**Strom Thurmond Fitness Center, University of South Carolina**  
**Columbia, SC**



**PROBLEM:** Incorporate an energy efficient dehumidification system into the 24 hour continuous operating fitness center.

**SOLUTION:** Carolina Heat Pipe, Inc. provided and installed a five (5) row vertical Thermosyphon Run Around Heat Pipe (TRAHP™) system. One end was placed in the exhaust air stream and the other end was placed in the supply air stream.

**RESULTS:** The cooling load was reduced by 26 tons and the natural gas requirement was reduced 3 Therms per hour.

**PAYBACK PERIOD:** 1.41 years

**RETURN ON INVESTMENT (ROI):** 71%

**CHP#: 00-074**



**CASE HISTORY PROJECT SUMMARY**  
**Novartis USFCC Vaccines & Diagnostics Facility**  
**Holly Springs, NC**



**PROBLEM:** Customer required certain air handlers be fitted with Carolina Heat Pipe provided ST MACH-1 Controllable Thermosyphon Run Around Heat Pipe (TRAHP™) Heat Exchangers for energy efficient dehumidification.

**SOLUTION:** Carolina Heat Pipe designed and provided their TRAHP™ system into the specified air handlers for all phases of construction. Most work was done at the air handler manufacturer's facility so the complete air handler could be tested before being sent to the job site.

**RESULTS:** By precooling the incoming air, the cooling load was reduced while free reheat was provided to raise the supply air temperature and thus lower the relative humidity during the cooling process. In February 2012 the last of the installed systems were certified to be operating properly by the commissioning authority.

**PAYBACK PERIOD:** 3.24 years

**RETURN ON INVESTMENT (ROI):** 31%

**CHP#:** 11-0210

**CASE HISTORY PROJECT SUMMARY**  
**Medical University of South Carolina**  
**Charleston, SC**



**PROBLEM:** Provide energy efficient dehumidification while providing precise humidity control to a laboratory at the Basic Science Building.

**SOLUTION:** Carolina Heat Pipe, Inc. provided and installed a two (2) row controllable Thermospyphon Run Around Heat Pipe (TRAHP™) system in two air handlers totaling 44,000 CFM of outside air serving the animal care facilities in the Basic Science Building.

**RESULTS:** By preheating the outside air, free reheat was provided for humidity control.

**PAYBACK PERIOD:** 1.7 years.

**RETURN ON INVESTMENT (ROI):** 59%

**CHP#:** 97-054

---

**CASE HISTORY PROJECT SUMMARY**  
**Miami Univ. Farmer School of Business**  
**Oxford, OH**



**PROBLEM:** Incorporate heat recovery into seven (7) new air handlers being provided for this building.

**SOLUTION:** Carolina Heat Pipe, Inc. provided and installed a Thermosyphon Run Around Heat Pipe (TRAHP™) system for seven (7) air handlers (15,000 to 27,000) with approximately 5,600 to 9,100 CFM outside and relief air. Seven (7) six-row controllable energy recovery TRAHP™ heat exchangers systems fit within seven (7) HAAKON air handlers. CHP provided the air handler manufacturer with coil assemblies for placement in their air handlers. After the air handlers were delivered to the job site, CHP completed the TRAHP™ installation.

**RESULTS:** Annual gas energy saved: 83,633 Therms

**PAYBACK PERIOD:** 1.4 years

**RETURN ON INVESTMENT (ROI):** 71.2%

**CHP#: 06-0408**

**CASE HISTORY PROJECT SUMMARY**  
**Eurand Research & Development Lab**  
**Dayton, OH**



**PROBLEM:** Customer required that heat recovery be incorporated into an expansion of their production facility.

**SOLUTION:** Carolina Heat Pipe, Inc. provided and installed their Thermosyphon Run Around Heat Pipe (TRAHP™) system for heat recovery. The 10,000 CFM system included two (2) sections of four (4) row copper finned coils, one in the supply air stream and one in the exhaust air stream, both interconnected to modulate the heat transfer between sections.

**PAYBACK PERIOD:** 2.9 years

**RETURN ON INVESTMENT (ROI):** 34.7%

**CHP#: 07-1003**

---

**CASE HISTORY PROJECT SUMMARY**  
**Daniel Library, The Citadel**  
**Charleston, SC**



**PROBLEM:** Librarian reported high relative humidity levels that were damaging valuable archive materials.

**SOLUTION:** Carolina Heat Pipe, Inc. retrofitted a two (2) row Thermosyphon Run Around Heat Pipe (TRAHP™) system into a 14840 CFM Carrier Air Handler, 39W12749R Multizone Central Station with chilled water and steam coils.

**RESULTS:** This installation, along with the addition of a variable frequency drive, changed the specific heat ratio so that the library would maintain 50% relative humidity and prevent further damage to the materials, all without additional energy consumption.

**CHP#: 03-035**