

PRESERVING AVIATION HISTORY

COLLEGE PARK AVIATION MUSEUM

“This project was not about lowest cost but rather best-in-class value for a system providing precision humidity and temperature control.”

– M.Haneef, CEO, Hot and Cold Corporation

Overview:

An affiliate of the Smithsonian Institution, the College Park Aviation Museum is located on the grounds of College Park Airport. It is the world’s oldest continually operated airport and is a destination for history buffs and aviation enthusiasts. In 1977, it was added to the National Register of Historic Places.

Maintaining humidity in museums is often critical because it has a direct effect on artifact preservation. The aviation museum’s existing direct expansion (DX) system was increasingly unreliable and approaching the end of its service life. It was putting the museum’s ability to curate the valuable displays at risk and by extension, the museum’s affiliation with the Smithsonian. Museum personnel decided that a solution was needed quickly and only the best equipment and system would serve its needs.



LOCATION:

College Park Aviation Museum

College Park, MD, USA



AREA SERVED:

27,000 square feet



CHALLENGE:

Preserve historic aviation artifacts with precision humidity control while ensuring safety and reliability through redundancy



SOLUTION:

Daikin TrailBlazer® chillers and Vision® air handling units

COLLEGE PARK AVIATION MUSEUM



Solution:

To help solve the challenge, the museum contacted M. Haneef, the owner of Hot and Cold Corporation.

Hot and Cold Corporation is located in Clinton, MD. Part of the Building Equipment Contractors Industry group, the firm had a reputation for solving complicated HVAC challenges, and had a proven relationship with museum personnel and with Daikin Applied's local distributor, Havtech.

Hot and Cold Corporation determined that the best solution would be a chilled water system with hot water reheat to ensure precise control of humidity. Daikin's Trailblazer® air-cooled scroll chillers and Vision® air-handling units were central to the solution.

To help accommodate installation and redundancy parameters, the job included one 25-ton, dual compressor, single-circuit Trailblazer AMZ chiller and one 35-ton, dual compressor, dual circuit Trailblazer AGZ chiller. Another 35-ton Trailblazer AGZ chiller provides further redundancy. With the dual compressors, the units offer modulation for precise chilled water temperature at all loads.

The air-cooled scroll chillers have reliable scroll compressors that offer high full-load and part-load efficiency for reduced maintenance and low lifetime operating costs. Teflon® impregnated bearings on the chillers promote longevity. These chillers combine advanced and mature chiller technology, leveraging environment-friendly refrigerant.

The Trailblazer's compact footprint allows for smaller mounting pads or support structures that are tailor-made for retrofit or replacement applications as they provide easier installation. The Trailblazer line offers the best overall value in air-cooled packaged chillers available today given its high efficiency. The low sound levels also help provide a high-quality customer experience.

Finally, the chillers feature RapidRestore® which makes them ideal for mission critical buildings such as museums, data centers, healthcare, and manufacturing facilities. Following an outage, RapidRestore allows the chillers to start in as fast as 20 seconds after power is restored, and can restore up to 80% capacity in as little as 75 seconds.

The integrated system solution also included Daikin Vision® indoor air handlers that condition and circulate large volumes of air throughout a space via ductwork. The Vision® product line is founded on a modular construction platform, featuring two-inch incremental dimensioning — this feature made it an optimal fit for the museum project and lent itself to quick shipping.

The modular design and customized dimensioning offered the installation team the flexibility it needed to place the Vision air handlers into the existing HVAC space. If necessary, they can be broken down into other manageable dimensions, shipped in pieces, and assembled on site quickly. Unlike competitive offerings, the modular design allows quick customization, reducing design and fabrication time.

Also important to the customer, Vision's patented construction provides high thermal efficiencies and low leak rates — and the equipment is quiet. The latter enhances the visitors' experience at the museum. Moreover, the variable frequency drives, chilled water and hot water reheat coils combine to enhance humidity control in tandem with the chillers. For museums, humidity control is the primary goal and concern.

Outcome:

While the customer was primarily concerned with performance, Hot and Cold Corporation and Havtech were able to leverage world-class engineering and technology to deliver both precision and value with the Trailblazer chiller and Vision air handler combination. Most important is the peace of mind that the museum's priceless artifacts and displays are housed in a tightly controlled, optimal environment and there is redundancy in case of emergencies, or system service and maintenance.



Left: Vision® air handler

Right: 20- and 30-ton Trailblazer® chillers