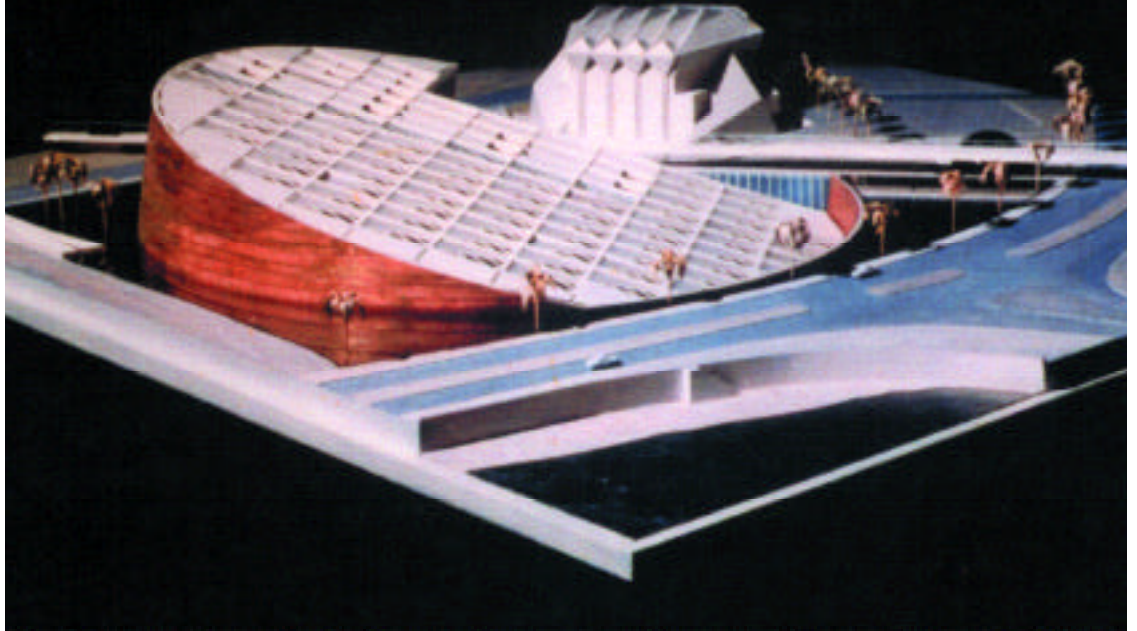




AIRSIDE / APPLIED / CONTROLS / SERVICE / SPECIAL SOLUTION / TOTAL SYSTEM / UNITARY

Case Study – Great Library of Alexandria

EDUCATION / HEALTH CARE / LODGING / MANUFACTURING / OFFICE BUILDING / RETAIL / SPECIAL



Carrier Keeps Millions of Books and Manuscripts Cool and Collected

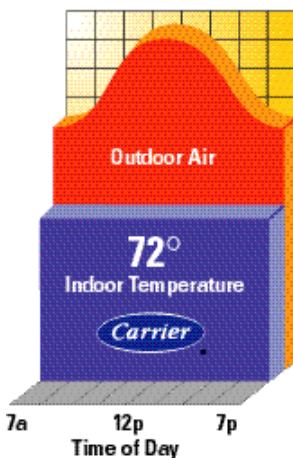
Project Objectives

Reviving Alexandria, Egypt's centuries-old tradition of scholarship and learning, the new Bibliotheca Alexandrina, or Great Library of Alexandria, was designed to house up to 8,000,000 volumes and thousands of manuscripts, many of them ancient and rare. The new HVAC system was key to preserving these historic artifacts for future generations. In addition to preservation cooling, the system needed to provide consistent, year-round comfort to visiting scholars, tourists and the library's staff of nearly 600 – and to the complex's conference center, museums, planetarium and calligraphy institute.

Solution

To effectively and efficiently cool the 743,000 sq. ft. Great Library complex, Carrier installed four Evergreen® chillers, providing 3,200 tons of high efficiency cooling, using the non-ozone depleting refrigerant HFC-134a. The units are brine chillers, which allow for much cooler temperatures leaving the machine. This can be particularly advantageous with very large cooling installations. The system also includes fan coil units, variable air volume (VAV) units and air handlers to deliver conditioned air where and when it is needed, and to maintain temperature consistency throughout the year – a critical consideration for rare books and manuscripts.

Temperature Comparison



Carrier's variable air volume (VAV) solution keeps indoor temperatures consistent throughout the day and year round, despite outdoor air temperature fluctuations – a critical factor in preservation cooling.



Case Study – Great Library of Alexandria

continued

EDUCATION / HEALTH CARE / LODGING / MANUFACTURING / OFFICEBUILDING / RETAIL / SPECIAL



“Carrier’s products and services provided for this project will continue to enhance the environment and vision of this magnificent complex for generations to come.”

Les Ball, sr. account representative, Carrier CSS Export Customer Service



The use of chlorine-free HFC-134a, not scheduled for phase-out, ensures a continuing supply of non-ozone depleting, environmentally-responsible refrigerant.

Project Synopsis

When it came to designing a state-of-the-art HVAC system to cool a sophisticated and complex structure and preserve its valuable historic contents, the new Bibliotheca Alexandrina turned to Carrier Corporation. Carrier’s extensive preservation experience – working on such landmark projects as the Sistine Chapel, the 500-year-old Peruvian Inca mummy and George Washington’s Mount Vernon mansion – was key to the future of the thousands of rare books and manuscripts housed in the new library, as well as several million other scholarly works used by researchers from all over the world.

The main objective was to provide an optimal and consistent indoor environment throughout the year, despite outdoor temperature variations, to protect the library’s vast collections as well as keep visitors and staff comfortable. The cooling system would also serve the rest of the complex, including the conference center, museums, planetarium, calligraphy institute and school of information studies. Project officials were particularly interested in the availability of service and replacement parts for the new system and Carrier provided an excellent, local organization for both.

Carrier selected high efficiency 19XR Evergreen® centrifugal chillers, which use HFC-134a, a chlorine-free, non-ozone depleting refrigerant. The four chillers provide approximately 3,500 tons of cooling. The units are brine chillers, which allow for much cooler temperatures leaving the machine. This can be particularly advantageous with very large cooling installations. The chillers, as well as the system’s 21 model 42VC fan coil units and 32 model 35DA variable air volume (VAV) units were manufactured by Carrier in North America. In addition, the system included 60 model 39FX air handlers manufactured by Carrier S.A. in France.

The original Bibliotheca Alexandrina, housing more than 700,000 manuscripts – all of them cataloged – was destroyed in a tragic fire more than 1,600 years ago. The new 743,000 sq. ft. building is circular in design, with part of the structure submerged in a pool of water. The inclined roof allows indirect daylight and a clear view of the sea. The building is surrounded by a wall clad with Aswan granite, engraved with calligraphic letters and representative inscriptions from the world civilizations. The architect’s simple circular shape was intended to evoke the Egyptian sun, shining on the seat of centuries of knowledge and enlightenment and illuminating human civilization. Here scholars can revive the ancient tradition of learning that is Alexandria’s heritage. And they will do it in comfort, thanks to Carrier’s leadership in preservation cooling and expertise in indoor climate control.

Project Summary

Location: Alexandria, Egypt

Project Type: New construction

Building Type/Size: 11-story, 743,000 sq. ft. complex

Building Usage: Library, conference center, science museum, planetarium, education and research center

Objectives: Consistent year-round temperature for preservation and comfort

Major Decision Drivers: Expertise in preservation cooling; readily available service and replacement parts

Design Considerations: Brine chillers selected due to extremely large installation

Total Cooling (tons): 3,200

HVAC Equipment: Four model 19XR Evergreen brine chillers; 21 model 42VC fan coil units; 32 model 35DA VAV units; 60 model 39FX air handlers

Unique Features: Book and manuscript preservation; extremely large complex

Project Cost Range: \$1 million to \$5 million

Installation Date: Initial installation 1999, completion 2001

For more information, contact your nearest Carrier Representative, call 1.800.CARRIER or visit our web site at www.carrier.com