



**EXTECH**  
EXTERIOR TECHNOLOGIES, INC.

## CASE STUDY



Address:

623 Radar Rd,  
Greensboro, NC 19104

Architect:

Ghafari Associates

General Contractor:  
BE&K Building Group

Installing Contractor - cellular polycarbonate glazing  
system: Exterior Technologies, Inc. (EXTECH)

Manufacturer - cellular polycarbonate glazing: Exterior  
Technologies, Inc. (EXTECH)

Photos - Triad Business Journal

“

Everything went very smoothly with EXTECH. I appreciate their efforts up-front and have high regard for their field personnel.”

**-ALEX MAZIEKAS**  
MANAGER, BE&K BUILDING GROUP



HAECO

A BENCHMARK IN HANGAR DESIGN

# HAECO AMERICA'S GREENSBORO, NC

## THE SITUATION

Certified LEED® Silver by the U.S. Green Building Council's rating system, HAECO America's new hangar at Piedmont Triad International (PTI) Airport in Greensboro, North Carolina, set a new standard in airport hangar design. Contributing to the project's aesthetic, performance and sustainability goals, Exterior Technologies, Inc. (EXTECH) engineered, fabricated and installed an energy-efficient, translucent, daylighting system on the hangar. Officially opened in April 2018, this is the fifth hangar at PTI operated by HAECO, one of the world's largest maintenance and repair companies, and one of PTI's largest employers.

## NEW BENCHMARK IN HANGAR DESIGN

To create its newest hangar, HAECO Americas partnered with Ghafari Associates on the conceptual design and contractor selection. To bring the project to life, the design-build team included BRPH as the architect of record and BE&K Building Group as the design-build contractor, working with EXTECH on the daylighting solution.

The design-build team's collaborative efforts began in Aug. 2016. "We're good partners. We brought our expertise in hangar design and BE&K brought its expertise in hangar (design-build) construction. Plus, BE&K had done previous work at PTI," said BRPH's regional director and principal, Francisco Alvarado, AIA, NCARB.

"HAECO wanted to create a new benchmark in hangar facility design," Alvarado emphasized. "From the earliest stages, we knew it was important that this would be a state-of-the-art showcase hangar. This was not the traditional, plain metal building. We broke that precedent and set a new one."

He continued, "On every project, aesthetics and performance must be balanced with cost. Too often, daylighting systems are value-engineered out of the final design. On this hangar, the owner made it a priority to bring natural light into the space."

After evaluating several product options, the design-build team selected EXTECH's LIGHTWALL 3440® interlocking polycarbonate translucent wall system. The hangar incorporates the system as part of the building envelope's upper portion as clerestory sections, at its corners and on its three massive doors.

## NATURAL LIGHT, ECONOMICAL SOLUTION

"EXTECH's LIGHTWALL provides high light transmission, thermal efficiency, fast-track installation and reliable operation. It's an attractive, modern appearance maintained with minimal effort," said EXTECH Director of Product Application and Development Kevin Smith, R.A. "As our most popular product, LIGHTWALL 3440 offers a beautiful, durable and economical solution for building envelopes. The flexibility of this system works especially well for the project's hangar doors."

The high light transmission of EXTECH's system allows HAECO to capitalize on naturally available daylight to reduce the demand, and associated costs, of electric lighting fixtures and use. The highly insulating LIGHTWALL 3440 system provides diffuse daylighting, while reducing solar heat gain to keep people comfortable within the building envelope. Thermal comfort and access to daylight has shown to positively affect the productivity, accuracy and job satisfaction of workers – important benefits for aircraft maintenance personnel.

Viewed from the exterior, the diffusing characteristics of the LIGHTWALL 3440 system's cellular polycarbonate glazing also reduce light pollution emanating from the building.

"Cellular polycarbonate glazing is more prevalent in Europe, and still relatively new in the U.S.," observed Smith. "Compared with the older, less pleasing look of fiberglass and metal systems seen on aging aircraft hangars, our system's polycarbonate material is co-extruded with a layer to resist nearly 99 percent of harmful UV radiation and eliminate yellowing."

## FUNCTIONAL, SUSTAINABLE

EXTECH engineered, fabricated and installed more than 26,600 square feet of the LIGHTWALL 3440 system. The 40mm, opal color, structural, cellular polycarbonate glazing panels are supported with aluminum framing. "Our LIGHTWALL 3440 does not require framing members within the field of the glazing, which allows for a clean, modern architectural aesthetic," added Smith.

The LIGHTWALL 3440 system meets demanding performance specifications, including high wind loads, impact resistance, fire rating, air infiltration, water penetration, thermal (0.25 U-Factor) and structural performance. Smith noted, "LIGHTWALL 3440 possesses some of the highest performance numbers in the industry due to its advanced framing. Because it is a dry-glazed system, VOC emissions also are reduced. These attributes support energy efficiency and sustainability goals, conforming to LEED requirements."

He continued, "Designed with high performance in mind, our LIGHTWALL system can extend up to 54 feet long and eliminate leak-prone horizontal joints. It also eliminates the thermal short-circuiting that exposed or internal framing can produce. The tongue-and-groove connections also contribute to smooth, quick and accurate installation, saving time and labor. Long-term, the system also helps building owners save on energy and maintenance costs. When future needs call for the HAECO hangar to be renovated or replaced, the cellular polycarbonate glazing and aluminum of EXTECH's system are 100 percent recyclable."

## EASE OF INSTALLATION

EXTECH engineers and manufactures its daylighting products at its facility in Pittsburgh to ensure performance as specified. Smith explained, "As part of our shop drawing and fabrication process, we ensure a weather-tight building envelope by pre-fabricating all the corner miters and sloped head/sill/jamb conditions to exact angles before shipping to the job site. This is a quality control measure to guarantee each piece fits precisely without the need for field measuring and cutting. This substantially accelerates the installation process for construction teams and provides greater peace-of-mind for building owners."



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Alvarado agreed and said, “Given how much of the LIGHTWALL product was being installed, ease of construction was very important to the overall project.”

Compared with a framed, insulated glass system, Smith estimated that EXTECH’s structural, cellular polycarbonate glazing system results in nearly one-fifth the weight of glass. “The reduced weight of our polycarbonate and aluminum system, in turn, reduces the structural load and hardware mechanisms needed to support and operate the doors.”

Working within a restricted space and schedule, EXTECH’s team completed installation on the HAECO hangar in five weeks. BE&K Building Group’s project manager, Alex Maziekas, complimented the teamwork saying, “Everything went very smoothly with EXTECH. I appreciate their efforts upfront and have high regard for their field personnel.”

Maziekas also noted that the entire hangar’s 10-month construction schedule was finished by the end of 2017, in time to support the owner’s operational needs. Completed on budget, total construction cost for the hangar is estimated at \$51 million.

## NEXT GENERATION SHOWCASE

A celebration for the grand opening was held in April 2018. The new hangar is the largest within HAECO Americas’ facilities and almost twice the size of each of the other four hangars that the company currently operates at PTI Airport. “It is the definitely one of the nicest hangars, and one of the largest MRO hangars, that I’ve ever been in,” praised Alvarado.

The 250,000-square-foot structure can accommodate up to eight next-generation narrow-body aircraft, or two next-generation wide-body aircraft and two next-generation narrow-body aircraft. Along with the large aircraft maintenance hangar, the facility supports mechanical and electrical systems, and fire protection equipment rooms; plus retail shops and administrative offices. At full capacity, the hangar is expected to employ 500 aircraft technicians and support staff bringing the total HAECO workforce at the airport to approximately 2,200 people.

“We are delighted to bring the new hangar online. This gives us capacity to maintain larger aircraft, such as the Boeing 777 and Airbus A-350,” said HAECO Americas CEO Richard Kendall. “Our business is rooted in Greensboro beginning more than 25 years ago. This grows our footprint in the Triad as a significant player in the rising aerospace sector here.” HAECO’s customer base includes commercial operators, freight carriers, aircraft leasing companies, private charter operators and government agencies from around the world.

“The Airport is extremely fortunate to have HAECO Americas as one of our major tenants and a major employer,” said Kevin Baker, executive director of Piedmont Triad Airport Authority. “This new hangar... represents a major commitment by HAECO to this airport and to the community as a whole.”



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EXTECH/Exterior Technologies, Inc. is an award-winning manufacturer and designer of wall, window, skylight, canopy, and custom façade systems. We deliver solutions for a variety of industries and applications, and are committed to collaboration, innovation, and exceptional engineering.