

Advanced Coating Technologies

Primary Service: Engineering
Type: Industrial
Owner/Client: Advanced Coating Technologies
Location: Middletown, New York
Cost: \$18,700,000
Square Footage: 21,500 sf
Completion Date: February 2008
Contact: Mr. Robert Radcliffe
General Manager
(845) 692 - 6613
Project Manager: James Diana, AIA, LEED® AP
Project Number: 2.3251.2

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View of the new electric beam coater pit.



View of the new electric control cabinets at pit.



View of the new electric beam coater chambers.

Project Scope:

LAN Associates was commissioned to provide architectural and engineering services to Advanced Coating Technologies (ACT), a partnership between Chromalloy and Pratt & Whitney, which provides specialty coating services applied to turbine blades for jet engines. The joint venture provides an expansion of coating technology services by ACT for turbine blades, which will require a new Electron Beam Coater. Modifications to the existing 21,500 SF facility required the construction of a new pit to accommodate the installation of the new equipment. The Electron Beam Coater was manufactured in Germany and assembled on-site. The coating process remains environmentally friendly, using intense electricity to transform ceramic grit into a vapor, which coats the hot section of jet engine parts.

Due to the complexity of the project, the construction was divided into two phases of work. Phase one consisted of performing a series of pre-pit construction work - building renovations to relocate existing workspaces, offices, utilities and construct a new 2,000 sf mezzanine used for storage and offices. Phase two work consisted of modifications to the existing structural foundation system, steel building columns, the excavation and construction of the pit. Modifications to the existing mechanical and electrical building systems were performed, including the installation of a new 4,000 amp primary electrical service. Meeting life safety and egress requirements were a priority. To address building safety concerns, a sprinkler system, fire alarm detection system, oxygen depletion system, FM-200 suppression system, and a pit ventilation system were installed. Also, part of the work included the design and installation of a new 2-1/2 ton overhead crane, hoist way and rail beams supported on independent steel columns which span the new pit. The installation of the new equipment has doubled the capacity for the coating of components and has provided additional jobs within the community. The construction of the pit, within an existing occupied building proved challenging, but the resulting expansion has provided a premier coating facility, housing the largest Electron Beam Coater in the world.

Services Performed:

- Architectural, Structural, Mechanical & Electrical Engineering
- Building Department Submissions & Approvals
- Construction Drawings
- Construction Observation & Special Inspections

Program Highlights:

- Installation of the Largest Electron Beam Coater in the World
- ACEC New York - Silver Award for Engineering Excellence, April 2009