



company overview

Albany Engineered Composites, Inc. (AEC) designs, develops, and manufactures advanced-composite components. Our core strength is our ability to produce highly tailored, complex composite parts, with a focus on AEC's unique 3D reinforced composite technology.

Our products often enable our customers to use lightweight, high-performance composites in applications where they previously have been unable to because of complex performance or geometry needs. For example, we help customers in aerospace and transportation replace heavier metallic components with highly durable, lightweight composite components to reduce weight and improve fuel efficiency.

AEC is a subsidiary of Albany International Corp. (NYSE:AIN) and shares its mission to deliver differentiating products and service with the highest quality and reliability. AEC is headquartered in Rochester, New Hampshire, home to AEC's Research & Technology Center as well as LEAP and other production facilities. The company has additional fabrication and assembly facilities in Boerne, Texas, and a new manufacturing plant that is currently under construction in Commercy, France.

AEC technology

AEC's composite products use a number of technologies including:

- 3D woven composites
- resin transfer molding (RTM)
- X-COR™, K-COR™, and Ceramic Truss Core (CTC™) sandwich panels
- contour and steered weaving
- discrete through-thickness reinforcement, including Z-FIBER®
- traditional and non-traditional 2D laminated composites
- press and autoclave curing

Together, these technologies allow AEC to produce composite parts that are challenging to produce with traditional, 2D laminated composites or metals. AEC designs components for the needs at hand and works closely with customers to tailor each part for its final application.





aerospace, defense & diversification

Our customers primarily include aerospace and defense OEMs, prime contractors, and Tier 1 suppliers. Currently, AEC's largest development program is based on its exclusive, decade-long relationship with Snecma (Safran group) through which AEC develops and manufactures 3D woven resin-transfer-molded composite fan blades, fan cases, and other components for the CFM* LEAP™ aircraft engine. Other recent project work has included design and/or development for:

- Rolls-Royce LiftFan® components for the F-35 Lightning II Aircraft
- Ceramic matrix composite substrate for Boeing's FAA CLEEN engine nozzle
- Fan blade for Snecma's open-rotor engine concept
- Ceramic matrix composite low-pressure turbine blade for possible application on future versions of the LEAP engine

Leveraging the technology and production capacity initially developed for these and other aerospace products, AEC is exploring the application of these technologies to other performance-driven industries, such as automotive.

*CFM International is a 50/50 joint venture between Snecma (Safran group) and GE.



LEAP engine project & ramp to production

AEC is the sole source supplier for composite blades, spacers, platforms and fan cases for the LEAP aircraft engine. The LEAP engine is a product of CFM International, which is the world's leading supplier of commercial aircraft engines and a 50/50 joint company between Snecma (Safran group) and GE. Each of the LEAP components provided by AEC utilizes AEC's 3D composite and resin transfer molding technologies. Each component also contributes to enabling the LEAP engine to provide up to 15 percent better fuel consumption and an equivalent reduction in CO² emissions compared to today's best CFM engine.

The LEAP program provides significant growth opportunities for AEC. To date, LEAP orders and commitments total more than 5,400 engines. In addition to the LEAP being one of two engines options on the Airbus A320neo, LEAP engines are the exclusive powerplants for the Boeing 737 MAX and COMAC 919. According to CFM, LEAP development is progressing on schedule and ground testing began on September 4, 2013. The engine is on track for entry into service in 2016 on the A320neo and C919, and in 2017 on the Boeing 737 MAX.

AEC has expanded its production facilities to support the LEAP program. This expansion includes new production plants in Rochester, New Hampshire (USA) and Commercy, France. AEC and Safran Aerospace Composites will be co-located in both facilities. Construction of the Rochester plant— a 353,000-square-foot facility— is complete and initial low-rate production is underway. The second LEAP plant, located in Commercy, will begin operation in early to mid-2014.

AEC began joint development with Snecma (Safran group) of the composite components for the fan module of what is now the LEAP engine more than a decade ago, early in the product development cycle. The success of this joint effort illustrates AEC's capabilities in rapid concept development, analytical design and simulation tools, production evaluation, and the ability to ramp to full-scale production.

- 1998** Albany International Corp. purchases Techniweave, Inc. and merges it with the Albany International Research Company's Engineered Products Group, consolidating the companies' advanced composite textile capabilities into Albany International Techniweave, Inc.
- 2006** Albany International Techniweave, Inc. acquires Texas Composites, Inc.
- 2006** Albany International, Inc. acquires Aztex, Inc. assets, including IP associated with Z-FIBER, X-COR, and K-COR.
- 2006** Albany International Techniweave, Inc. enters into exclusive relationship with Snecma to develop and commercialize advanced 3D composite components for landing gear and future jet engine applications (including LEAP).
- 2007** Albany International Techniweave, Inc. is renamed Albany Engineered Composites, Inc. (AEC).
- 2009** LEAP engine (which uses AEC 3D composite fan components) is selected as the sole western-sourced engine by COMAC (Commercial Aircraft Corporation of China, Ltd.) for its new 150-seat aircraft, the C919.
- 2010** Boeing selects AEC as the supplier of a ceramic matrix composite substrate (based on AEC's reinforced platform technology) for its CLEEN engine nozzle program.
- 2010** Boeing selects AEC as the supplier of a ceramic matrix composite substrate (based on AEC's reinforced platform technology) for its CLEEN engine nozzle program.
- 2011** Boeing selects the LEAP engine (which uses AEC 3D composite fan components) as the exclusive powerplant for its new family of re-engined Boeing 737 MAX aircraft.
- 2012** Groundbreaking for new high-volume LEAP production facility in Rochester, NH, takes place.
- 2013** 45,000-square-foot Research & Technology Center opens in Rochester, NH.
- 2013** Construction of high-volume LEAP production facility in Commercy, France, begins.
- 2013** Initial low-rate production in new LEAP manufacturing facility in Rochester, NH, begins in September.
- 2013** Albany International Corp. and Safran S.A. enter into an agreement to create Albany Safran Composites, LLC, a subsidiary of Albany Engineered Composites, Inc.



Ralph Polumbo, President

Ralph Polumbo was named President of Albany Engineered Composites, in November 2013, following three years as Chief Operational Officer. Mr. Polumbo joined Albany International Corp. in 2006 as Senior Vice President-Global Human Resources, and he was subsequently named Chief Administrative Officer of Albany International in 2009.

Before joining Albany, Mr. Polumbo served as Head of Human Capital for Deephaven Capital Management, and from 1999 to 2004, he was Vice President–Human Resources and Business Integration for MedSource Technologies, participating as a leader with the successful start-up in the Class 3 medical device market space. Mr. Polumbo joined MedSource following his role as Vice President – Integration for Rubbermaid; he was located in Waterloo, Belgium, with responsibility for the pan-European integration of acquired housewares businesses. Prior to joining Rubbermaid, from 1974 to 1994, he held various Senior Human Resource and Operations positions for The Stanley Works.

Mr. Polumbo received a B.S. in Economics from the University of Pennsylvania Wharton School and an M.S. in Labor and Industrial Relations from Michigan State University.



Diane Loudon, Senior Vice President Operations and Albany Safran Composites General Manager

Diane Loudon joined Albany Engineered Composites in November 2011, as SVP Operations for the growing division, and assumed the additional role of General Manager for Albany Safran Composites in November 2013. Her background includes over 30 years, largely in operational roles including accountability for multiple facilities, change management, creation of lean-based cultures, and development of effective operations organizations. Ms. Loudon has worked extensively in contract manufacturing, most recently producing medical devices. Her teams have won multiple awards for achievement of targeted metrics, continuous improvement activities, and speeding the development to market cycle.

Prior to joining AEC, Ms. Loudon was with Accellent, Inc. for over 15 years. Accellent is a medical device contract manufacturer where Ms. Loudon led manufacturing facilities and developed an extensive and global customer operations team. Before that, she consulted with Boeing Commercial Aircraft Group, McDonnell Douglas, General Motors, IBM-Canada, Emerson Electric, Harris Corporation, and others to establish greater levels of manufacturing and organization effectiveness. Ms. Loudon also worked directly for Pitney-Bowes in operations and staff leadership roles. Earlier years with Norton Company and Creative Output helped to shape her thinking along continuous improvement paths as an Industrial Engineer.

Ms. Loudon has an MBA in Organization Development from Syracuse University and undergraduate degrees in Industrial Engineering and Accounting from Central New England College.



Brian Coffenberry, Senior Vice President - Business Development, Research and Technology

Mr. Coffenberry's background includes more than 25 years in the composites industry, many of which have focused on management and business development. Mr. Coffenberry has been with Albany International since 1994 and Albany Engineered Composites (previously Albany International Techniweave, Inc.) since its acquisition in 1998. His roles with both companies have included Manager of Business Development, Director of Aerospace Products, and VP/General Manager.

Prior to joining Albany International, Mr. Coffenberry worked for various aerospace companies, including Automated Dynamics Corporation, ICI Composite Structures, McDonnell Douglas Corporation, Materials Sciences Corporation, and General Electric Company. Mr. Coffenberry holds a Master of Science from Rensselaer Polytechnic Institute and a Bachelor of Science from Rose-Hulman Institute of Technology.



Jon Goering, Divisional Chief Technology Officer

Jonathan Goering has been with Albany Engineered Composites since 1998 and currently holds the position of Divisional Chief Technology Officer. In this role, he is responsible for defining the technical direction of the Division's Research and Technology group and provides input on the strategic initiatives for the Company. He has been instrumental in the development of technologies that led to the production of advanced composite components including 3D woven, resin-transfer-molded fan blades and fan cases for commercial jet engines, and 3D woven preforms for composite landing gear braces.

Mr. Goering holds Bachelor of Science and Master of Science degrees in Mechanical Engineering from Kansas State University. He has been active in the field of advanced composite structures for over thirty years, and held positions with The Boeing Company (formerly McDonnell Douglas Aerospace), Materials Sciences Corporation, and The Trane Company prior to joining AEC. His areas of expertise include the design of fiber preforms and composite components, computational mechanics, and advanced textile manufacturing processes.

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