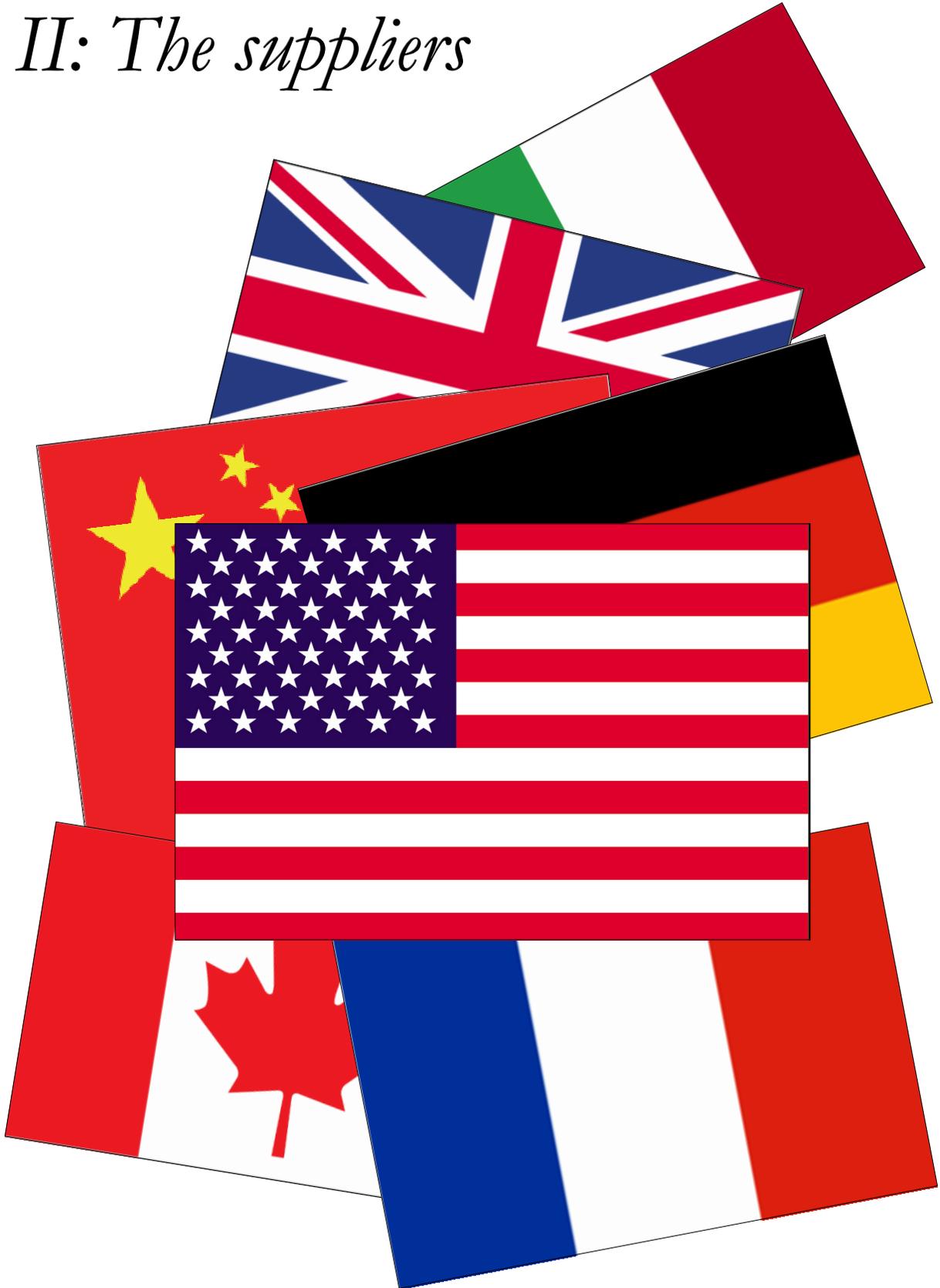


II: The suppliers



Unique opportunity at hand

Although the Gulf Coast will eventually see suppliers follow Airbus to the region, it will take longer than some had thought...

Airbus' final assembly line in Mobile, Ala., represents the ultimate opportunity for companies hoping to deliver parts and services to the new plant, scheduled to begin production in 2015.

The \$600 million project is the first major aircraft assembly plant to locate on the Gulf Coast, and suppliers who get in on the ground floor could win lucrative orders for decades to come.

The potential is huge: Airbus is the number one export customer for U.S. aerospace products, purchasing more than \$13 billion each year. And the European plane-maker is looking to double that over the next 10 years.

But the Mobile plant, initially slated to assemble A320 passenger jets for commercial carriers, isn't without risks. Airbus has never produced jets on American soil before, and it will do so with an untested work force in a new factory.

The project will stretch Airbus' global supply chain like never before. The hope is that, in time, many suppliers will choose to establish operations in and around the new plant being built at the Mobile Aeroplex.

But for the time being, many of those tier one suppliers are taking a cautious approach, waiting to see if the plant can make a smooth transition into production and that Alabama workers are

Chapter at a glance

- *Plant in Mobile offers unique chance for companies to become Airbus suppliers*
 - *Entire Interstate 10 region and beyond competing to land suppliers*
 - *Suppliers taking a wait-and-see approach before opting to move*
 - *U.S. South becoming a low-cost leader among developed nations*
 - *Airbus is the No. 1 export customer for U.S. aerospace products*
-

up to the task. But if the experience Northrop Grumman had in Mississippi is any indication, it will likely turn out just fine. In 2006 Northrop gambled that Mississippi workers would be able to do the final assembly for the high-tech Fire Scout unmanned helicopter. They passed with flying colors, beating the expected learning curve by a wide margin.¹

Still, the decision of Airbus to put down roots on the Gulf Coast is a huge step for Airbus' European and Asian suppliers, many of whom have never established operations in the United States. Even American aerospace suppliers are exercising caution.

But projects like Airbus in Mobile, Embraer in Jacksonville, Fla., Gulfstream Aerospace in Savannah, Ga., and Boeing in Charleston, S.C., may help reshape the aerospace map. Indeed, GE Aviation began opening some engine part plants in Mississippi and Alabama over the past few years.

Aviation Week and Space Technology noted that aerospace supply chains are morphing. In the past decade it appeared the future of original

By George Talbot

Chapter II: The suppliers

Organization for International Investment members in Alabama insourcing jobs in state: 86,600; percentage of jobs: 5.7%		
ABB Inc.	GlaxoSmithKline	SABIC Innovative Plastics
Air Liquide USA	Hanson North America	Samsung
Airbus North America Holdings	Holcim (US) Inc.	Sanofi US
Akzo Nobel Inc.	Honda North America	Shell Oil Company
Alcatel-Lucent	Huhtamaki	Sumitomo Corp. of America
BAE Systems	Hyundai Motor America	Thales USA, Inc.
BASF Corporation	InterContinental Hotels Group	The Tata Group
Bimbo Foods, Inc.	John Hancock Life Insurance Co.	ThyssenKrupp USA, Inc.
BOSCH	LaFarge North America	T-Mobile USA
Bridgestone Americas Holding	Maersk Inc.	TOTAL Holdings USA, Inc.
Bunge Ltd.	Magna International	Toyota Motor North America
Daimler	Michelin North America, Inc.	Transamerica
EADS, Inc. (now Airbus Group)	Nestlé USA, Inc.	Tyco
Ericsson	Novartis Corporation	UBS
Evonik Degussa Corporation	Oldcastle, Inc.	Umicore USA
France Telecom North America	Pearson Inc.	Voith Holding Inc.
FUJIFILM Holdings America	QBE the Americas	Wolseley
GDF SUEZ Energy North America, Inc.	Randstad North America	Zurich Insurance Group
GKN America Corp.	Reed Elsevier Inc.	
	Rolls-Royce North America Inc.	

Source: Organization for International Investment, May 2014

equipment manufacturing was in low-cost countries, but today the hottest new aerospace cluster is in the U.S. Southeast. Boeing, Embraer, Airbus, Rolls-Royce and Airbus Helicopters have or will have established final assembly facilities in the region, and dozens of sub-tier suppliers are following.²

Currently, the list of Airbus tier one suppliers in America is topped by California (96), New York (30), Washington state (25), Florida (25) and Texas (22). Remove Florida, where suppliers are concentrated along the state's Space Coast, and the Southeast states of Alabama, Arkansas, Georgia, Kentucky, Louisiana, Tennessee and South Carolina collectively are home to just 20 tier one suppliers.³

The challenge for Southern economic developers is to convince suppliers both at home and abroad that there's no better place to do business than the Gulf Coast.

'A long term strategy'

The momentum is building.

Four Southern states are among the top 10 in aerospace job growth between 2007 and 2012, led by South Carolina. Aerospace jobs in the Palmetto State, where Boeing is building 787 jetliners, jumped by more than 600 percent over the past five years, from 865 workers to 5,685 workers. By contrast, California lost more than 8,000 aerospace jobs over the past decade, according to a recent study published by the Pew Charitable Trusts.⁴

Experts say the trend is driven by the South's lower cost of living, innovative workforce development programs and right-to-work laws that make it hard for unions to organize. There are also the generous tax incentive packages that Southern states have offered to lure companies, among them:

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Organization for International Investment members in Florida insourcing jobs in state: 238,600; percentage of jobs: 3.8%		
ABB Inc.	Experian	Rolls-Royce North America Inc.
ACE Group	Food Lion, LLC	Samsung
Air Liquide USA	France Telecom North America	Sanofi US
Airbus North America Holdings	FUJIFILM Holdings America	SAP America
Alcatel-Lucent	Generali USA	Siemens Corporation
ALSTOM	GlaxoSmithKline	Smith & Nephew, Inc.
Anheuser-Busch	Hanson North America	Sony Corporation of America
APL Limited	HSBC North America Holdings	Sumitomo Corp. of America
BAE Systems	Hyundai Motor America	Swiss Re America Holding Corp.
Balfour Beatty	ING America Insurance Holdings	Syngenta Corporation
Barclays Capital	InterContinental Hotels Group	TD Bank
BASF Corporation	John Hancock Life Insurance Co.	Teva Pharmaceuticals USA
BIC Corp.	Kia Motor Corporation	Thales USA, Inc.
Bimbo Foods, Inc.	LaFarge North America	The Tata Group
bioMérieux, Inc.	Logitech Inc	Thomson Reuters
Blackberry	Louis Dreyfus Commodities	ThyssenKrupp USA, Inc.
BMW of North America	LVMH Moët Hennessy Louis Vuitton	T-Mobile USA
BNP Paribas	Maersk Inc.	TOTAL Holdings USA, Inc.
Bombardier Inc.	Nestlé USA, Inc.	Transamerica
BOSCH	Nissan	Tyco
BP	Nomura Holding America, Inc.	UBS
Bridgestone Americas Holding	Novartis Corporation	Unilever
Bunzl USA	Oldcastle, Inc.	Voith Holding Inc.
Case New Holland	Panasonic Corp. of North America	Volkswagen of America, Inc.
Cobham	Pearson Inc.	Westfield LLC
Covidien	Philips Electronics North America	Wolseley
Credit Suisse Securities (USA)	QBE the Americas	Wolters Kluwer U.S. Corporation
Daimler	Randstad North America	WPP Group USA, Inc.
Dassault Falcon Jet Corp.	Reed Elsevier Inc.	XL Global Services
Electrolux North America	Rexam Inc.	Zurich Insurance Group
Ericsson	Rio Tinto America	

Source: Organization for International Investment, May 2014

- Alabama promised \$158 million to Airbus in 2012 to land the Mobile assembly plant.
- North Carolina landed Spirit AeroSystems in 2008 with a \$250 million package of incentives.
- South Carolina won the Boeing 787 project in 2009 on the strength of a \$900 million package of tax breaks and other incentives to be paid out over 30 years.
- Georgia recruited Gulfstream to Savannah with a \$30 million package of incentives.

Experts said competition for high-paying aerospace jobs is especially fierce as the U.S. economy slowly recovers from the recession.

“These are crown jewel industries. States are not wrong to value them inordinately,” Mark Muro, a senior fellow and policy director at the Brookings Institution in Washington, D.C., told USA Today. “The South has been turning itself upside down to create effective systems to attract these companies.”

Other top aerospace states are taking notice. Washington Gov. Jay Inslee, whose state is the

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Organization for International Investment members in Louisiana insourcing jobs in state: 57,600; percentage of jobs: 3.6%		
ABB Inc.	Hanson North America	Schlumberger
ACE Group	Hyundai Motor America	Shell Oil Company
Air Liquide USA	InterContinental Hotels Group	Siemens Corporation
Akzo Nobel Inc.	John Hancock Life Insurance Co.	Solvay America
Alcatel-Lucent	LaFarge North America	Sumitomo Corp. of America
APL Limited	Louis Dreyfus Commodities	Syngenta Corporation
Balfour Beatty	Magna International	The Tata Group
BASF Corporation	Novartis Corporation	T-Mobile USA
BG	Oldcastle, Inc.	TOTAL Holdings USA, Inc.
BHP Billiton	Pearson Inc.	Transamerica
BOSCH	Philips Electronics North America	Tyco
BP	QBE the Americas	UBS
Bunge Ltd.	Randstad North America	Voith Holding Inc.
Bunzl USA	Reed Elsevier Inc.	Wolseley
Ericsson	Rolls-Royce North America Inc.	WPP Group USA, Inc.
Evonik Degussa Corporation	Samsung	Zurich Insurance Group
FUJIFILM Holdings America	Sanofi US	
GlaxoSmithKline	Sasol	

Source: Organization for International Investment, May 2014

longtime production home of Boeing, shocked many observers last year when he paid a recruiting visit to arch rival Airbus.

Alex Pietsch, top aerospace adviser to Inslee, said the talks with Airbus were not an attempt to replace Boeing. But a new relationship with another industry player would help diversify the state's aerospace economy and provide new opportunities for suppliers that are largely dependent on Boeing, he told the Associated Press.

"Just because we have had a near 100-year history with the Boeing Co. doesn't mean we can't work with others," Pietsch said.

Delegations from across the Gulf Coast, meanwhile, are racking up frequent flier miles as they chase Airbus suppliers around the world.

Mobile Mayor Sandy Stimpson was in office less than a month when he made a recruiting trip to Hamburg, Germany, where he delivered a keynote speech at the Aviation Forum 2013 conference.

"I'm here today to bring you a simple message: Mobile is open for business," Stimpson told an audience of more than 300 aviation ex-

ecutives from around the world. "The best way for you to meet Airbus' needs will be to establish a presence in Mobile."

In neighboring Northwest Florida, regional leaders formed the Gulf Coast Aerospace Coalition, which is aimed at attracting European-based aerospace supplier companies to Bay, Escambia, Okaloosa, Santa Rosa and Walton counties. Members of the coalition have made multiple trips to Europe in recent months to position the region as a strong candidate for aerospace jobs.

But officials close to the Airbus project caution that it will take time to develop the necessary infrastructure around the new plant.

"This is a long-term strategy," said Alabama Secretary of Commerce Greg Canfield. "We expect to be involved in the growth of the Airbus supply chain for the next two years, or even longer."

Expanding the U.S. footprint

Dave Williams, vice president of procurement for Airbus Americas, is the man charged with

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Organization for International Investment members in Mississippi insourcing jobs in state: 27,400; percentage of jobs: 3.1%		
ABB Inc.	Holcim (US) Inc.	Sanofi US
Air Liquide USA	Hyundai Motor America	Schneider Electric USA
Akzo Nobel Inc.	InterContinental Hotels Group	Siemens Corporation
Alcatel-Lucent	John Hancock Life Insurance Co.	Solvay America
Balfour Beatty	LaFarge North America	Sumitomo Corp. of America
BASF Corporation	Logitech Inc	The Tata Group
Bimbo Foods, Inc.	Nestlé USA, Inc.	ThyssenKrupp USA, Inc.
BMW of North America	Nissan	T-Mobile USA
Boehringer Ingelheim Corp.	Novartis Corporation	Toyota Motor North America
BP	Oldcastle, Inc.	Transamerica
Bunge Ltd.	Pearson Inc.	Tyco
Bunzl USA	Philips Electronics North America	UBS
EADS, Inc. (now Airbus Group)	Randstad North America	Voith Holding Inc.
Ericsson	Reed Elsevier Inc.	Wolseley
France Telecom North America	Rexam Inc.	XL Global Services
FUJIFILM Holdings America	Rio Tinto America	Zurich Insurance Group
GlaxoSmithKline	Rolls-Royce North America Inc.	
Hanson North America	SABIC Innovative Plastics	

Source: Organization for International Investment, May 2014

managing the company’s U.S. supply chain. He described the Mobile assembly plant as a “huge strategic step” for Airbus.

“Twenty years ago we were primarily focused on aircraft sales and service. That has grown to procurement, engineering and very soon to production,” Williams said. “The scope of our organization is changing significantly.”

The new plant, he said, will put Airbus closer to its U.S. airline customers and allow it to broaden its network of American suppliers.

“Globalization is such a key element for us. We want to be a global player. We want to sell airplanes around the world,” Williams said.

“From a procurement point of view, the opportunity to work more closely with our U.S. suppliers is just tremendous.”

The relationship is mutually beneficial, according to other Airbus executives.

Klaus Richter, executive vice president for Airbus global procurement, stressed the importance of Airbus’ relationship with its suppliers as it continually upgrades and improves its entire product line.

“We are in a long-term marriage with many of our suppliers and we typically work on everything together,” Richter said. “Our partners are very strong technology companies that comprise the most innovative supplier portfolio in the aerospace industry.”

Airbus Americas currently draws on more than 400 tier one suppliers spread across 40 states. Williams said Airbus is looking to expand procurement in the U.S. and other areas outside of Europe, where the company traditionally sources the majority of its parts. The company is projecting to double its annual U.S. procurement by 2020.

Williams said Airbus wants to help lead an effort to revitalize American manufacturing.

“We’ve heard the call to improve the U.S. competitive standing with regard to Asia,” Williams said. “We’ve heard the call to reshore manufacturing. The U.S. has a real competitive advantage in technology, and has to drive the competitive advantage and lead.”

Airbus, said Williams, has spent more than \$140 billion in the U.S. since 1990, with more

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than half of that total coming in the last seven years. The future for Mobile, he said, is incredibly bright.

“The Mobile (final assembly line) has a really healthy future ahead of it,” he said. “We have an 8-year backlog for the (A320). That’s incredible demand. I can’t think of any other industry that can project that far out.”

The opportunity, said Williams, extends even beyond the assembly line.

“What’s really exciting about the project is the non-flying parts - the landscapers, the hotels, the jigs and tools and everything else it takes to make a plant operate,” he said.

The Airbus way

Every 2.5 seconds, day and night, an A320 aircraft takes off somewhere in the world.

That’s a remarkable statistic for one of the world’s best-selling jets. Airbus has received orders for more than 10,000 of the narrow-body planes since launching the aircraft in 1988. The company has delivered more than 6,000 to date, with another 4,200 on backorder.

Airbus continues to rack up A320 sales faster than it can fill them. The company currently is cranking the aircraft out of plants in Hamburg, Toulouse and Tianjin, China, at a record pace of 42 per month.

Over the past five years, Airbus has steadily increased A320 family production, going from 36 per month at the end of 2010 to 38 in August 2011, then 40 in early 2012 and 42 per month in early 2013. The Mobile plant will help Airbus push production to 46 per month by early 2016.

“Based on the healthy market outlook and following a comprehensive assessment of our supply chain’s readiness to ramp-up, we are ready to go to rate 46 by the second quarter of 2016,” said Tom Williams, Executive Vice President - Programs for Airbus. “With a record backlog and the growing success of the A320 (New Engine Option), we have a solid case to increase our monthly output to satisfy our cus-

tomers’ requirement for more of our fuel efficient aircraft.”

The “Airbus way” of manufacturing aircraft involves producing large components - wings, fuselage, engines and tails - and then shipping those parts for final assembly at a central location. In Europe the shipping method is primarily by air, via the specialized Beluga aircraft and with purpose-built ships.

In Mobile all the components will be shipped to the port city via container ships since Alabama is beyond the Beluga’s range. (see page 29 about where the sections will be built.)

“Our industrial focus is still in Europe, where most of the plants that produce the big components are located. Now we’ve added Asia, and Mobile will become the third pillar of our industrial strategy,” said Ulrich Weber, vice president - final assembly line USA.

Weber said Airbus will use the experience gained at its existing plants to make Mobile the most modern aircraft factory in the world.

“Our goal is to set a new benchmark for the most efficient assembly line,” Weber said. “We will bring our best practices to Mobile.”

The plant is slated to begin production in 2015, with a smooth ramp-up to four aircraft a month by 2018. If all goes well, production could eventually be expanded to eight per month.

“With such a complex project, that is almost tomorrow,” Weber said.

Since breaking ground in April 2013, Airbus is making good progress in Mobile. The main buildings are taking shape and the first employees have started their on-the-job training at Airbus Hamburg in Germany.

The steelwork on the final assembly line hangar was completed in February, and the entire steel “skeleton” of the building can now be seen rising above the Aeroplex.

In parallel to construction, employees for the assembly line are also being recruited. The first manufacturing engineering employees started initial training in November 2013 in Mobile be-

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fore beginning their on-the-job training in Hamburg, Germany in mid-January this year.

Over the past few months, manufacturing engineers, station managers and quality managers have been working alongside their counterparts in Germany to become familiar with production tools and processes.

Building relationships

Executives from many of the aerospace industry's top manufacturers and suppliers descended on Mobile in April, when aviation trade publication *SpeedNews* hosted its 2nd annual Global Aerospace Manufacturing Conference.

Representatives from more than 225 aerospace firms attended the two-day conference, which gave participants a first-hand look at the Mobile Aeroplex and an on-site tour of Mobile's ST Aerospace and UTC Aerospace in Foley.

Attendees also heard presentations from Airbus, ATI, Deloitte, GKN Aerospace and other industry players, as well as panel discussions involving executives, researchers and engineers from top companies.

Conference organizer Joanna Speed said *SpeedNews* hosted its first aerospace manufacturing conference last year in Charleston, S.C., where the Boeing 787 assembly line was built. The company was planning on returning there in 2014, but switched to Mobile when Airbus announced its plans for the A320 assembly plant.

"We felt it was a good opportunity for us to alternate this conference since the event focuses on the aerospace manufacturing supply chains for OEMs," said Speed, managing director of aerospace and defense events for Los Angeles-based Penton Media, which owns *SpeedNews* and *Aviation Week*.

Speed said the Southeastern U.S. is poised to become one of the world's next major aerospace clusters.

"This represents a tremendous growth opportunity for Alabama and the Southeast, new infrastructures, an abundance of job opportunities and economic growth within the counties," she

said. "Alabama and the Southeast have the space, and if everyone works together and plays their cards right, the region could grow into one of the largest aerospace clusters in the U.S."

According to Stateline.org, other aerospace firms that have recently expanded or relocated to the South include:

- Honda Aircraft Co. expects by the end of 2015 to add more than 400 new jobs at its R&D facility in Greensboro, N.C., which currently employs more than 750.
- Rolls-Royce created a new aircraft parts manufacturing facility in Crosspointe Centre, Va., in 2012, creating 140 jobs.
- Dassault Falcon Jet Corp. announced in 2013 plans to expand its "completion" center in Little Rock, Ark., that could add 300 jobs to the estimated 1,800 workers there.
- Embraer, the Brazilian aerospace conglomerate, broke ground in Melbourne, Fla., in 2012 for a new technology center to employ 200 engineers and added 50 manufacturing jobs last year with a new hanger manufacturing facility at Florida's Jacksonville International Airport.

Top aerospace executives said many more such announcements could follow in the months and years ahead.

"The decision to construct a plant in Mobile represents the most significant, game-changing event in U.S. aerospace in decades," said Allan McArtor, longtime chairman of Airbus Americas.

McArtor, 71, assumed a new role in March when he replaced Sean O'Keefe as chairman and CEO of Airbus Group, the company's North American business unit.

McArtor described the \$600 million Mobile project as a "positive step-change" in relationship between Airbus and the U.S. aerospace industry.

"I use the word 'relationship' intentionally," said McArtor, a former fighter pilot who later

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South Alabama aerospace

Aerospace highlights: Home of a major aerospace park that includes an Airbus assembly line; commercial airport with several aerospace companies and aviation activities of the U.S. Coast Guard.

Counties: Mobile; Baldwin

Key cities: Mobile; Foley; Bay Minette; Gulf Shores; Orange Beach; Daphne; Fairhope

Population (est. 2013): 609,619

Private nonfarm employment (2011): 200,419

Local economic development:

- Baldwin Economic Development Alliance (251) 947-2445
- Mobile Area Chamber of Commerce (251) 433-6951

Regional economic development:

- Alabama Power (800) 718-2726

State economic development:

- Alabama Department of Commerce (334) 242-0400
- Economic Development Partnership of Alabama (205) 943-4700

flew with the Air Force’s famed Thunderbirds demonstration team.

“Our industry is built on relationships. Airplanes are not impulse buys, with their multimillion-dollar price tags. Sure, Airbus makes great, high-quality, technologically advanced products. But what is just as important to carriers is that

we build longstanding, trustworthy relationships.”

McArtor said Airbus’ relationships with officials in Alabama, forged during the competition to build a refueling tanker for the U.S. Air Force, played a major role in the decision to green-light the Mobile assembly plant.

“A differentiator for Alabama was the unity and supportive purpose shown by every entity in the state supporting Mobile,” McArtor said. “We knew what we needed, and Mobile and Alabama are the ones who convinced us they would stand with us.”

Infrastructure was another key factor, he said.

“The site was perfect, with an airport and ocean port, and adequate land at Brookley Aeroplex. Workforce was also vital,” McArtor said. “We were encouraged by the auto industry’s success in Alabama because its manufacturing aspect is a trained skill similar to that of aircraft assembly.”

He said the Mobile plant is a “shining example” of what can happen when people work together.

“The state already has so much to offer our current and future employees, and as Airbus grows, and more companies and people move in to support the assembly line, those offerings will grow,” McArtor said. “I look forward to working together with the people of Alabama to build a great future for all.”

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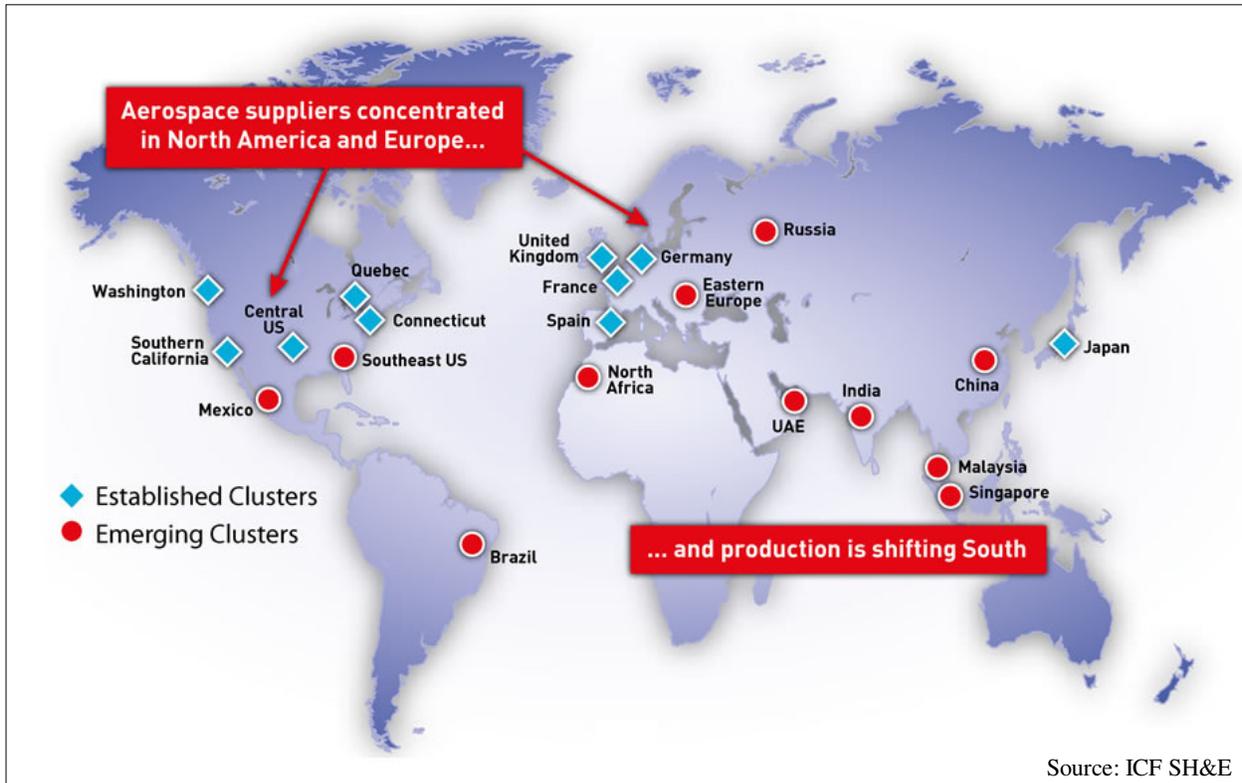
¹ “Knocking their socks off,” pages 1-3, Alliance Insight, April 2008, David Tortorano.

² “New Horizons for Aerospace Suppliers,” Aviation Week and Space Technology, Feb 2014, Kevin Michaels.

³ Ibid, Michaels.

⁴ “Aerospace Manufacturing Takes Off in Southern States,” Stateline, April 2, 2014, Pamela Prah.

S.E. an emerging aerospace cluster



For the Gulf Coast I-10 region and the rest of the Southeast, there's a fortunate convergence of trends that should bode well for the region's aerospace manufacturing focus.

According to ICF SH&E, one of the hottest new aerospace clusters is the U.S. Southeast. Airbus, Boeing, Embraer, and Rolls-Royce all set up final assembly plants in the region, and sub-tier suppliers are following.

It's a change that few could have predicted was coming. In the past decade it appeared the future of original equipment manufacturing was in low-cost countries. But labor costs increased in those countries, and new technologies, including nanotechnology and 3D printing, have started to make aerospace manufacturing less labor-intensive.

Still, cost is a factor, and the Southeast has a lot going for it in that regard. The attractions of the Southeast include lower energy costs, pro-

business state and local governments, and right-to-work laws that are considered less than friendly towards unions.

To the southwest Mexico is another emerging aerospace manufacturing cluster. Recent investors include Safran, Bombardier and Cessna.

Asia also has a new manufacturing cluster that's competing with China. Singapore, the city-state known for its maintenance, repair and overhaul activities, sees manufacturing as the key to fuel its next wave of aerospace development.

The prediction is that more labor-intensive manufacturing activities will favor low-cost regions, while high-technology fabrication and final assembly will remain primarily in advanced economies.

□□□

Condensed from Aviation Week & Space Technology column by Kevin Michaels, vice president, ICF SHE&E, Ann Arbor, Mich.