



OVERVIEW

Alabama's aerospace industry has been integral to U.S. Space and Defense programs for more than 50 years.

Today, Alabama is home to hundreds of aerospace, aviation, and defense-related companies supporting both government and commercial markets and has attracted investment from companies around the globe.



50
YEARS IN
AEROSPACE AND
DEFENSE

HIGHLIGHTS

- Aerospace, aviation, and defense in Alabama encompasses original equipment manufacturers (OEMs), material and component manufacturers, engineering and technical service providers, research and development, maintenance, repair & overhaul (MRO), and other services.
- Aircraft, Spacecraft and Parts exports were valued at over \$867 million in 2015.
- Alabama earned more than \$8.4 billion from the Department of Defense in award contracts in fiscal year 2015.
- Alabama is home to more than 300 companies engaged in the aerospace and defense sectors including more than 50 manufacturers of Aerospace Products and Parts (NAICS 336400). In 2014, private employment in Aerospace Products and Parts Manufacturing averaged 12,295.
- NASA's Marshall Space Flight Center and companies like Boeing and Lockheed Martin have operated in Alabama for more than 50 years.
- Alabama is home to Airbus' first American jetliner production facility. Final assembly and production on the Airbus A320 family of aircraft began in 2015. Airbus delivered the first Alabama-assembled A321 airliner in 2016.

12,341
MANUFACTURING JOBS

\$867M
IN EXPORTS



COMMERCIAL AIRCRAFT PRODUCTION



Airbus Assembly Line View

In 2012, Airbus announced that it would build the company's first American jetliner production facility in Mobile.

Final assembly and production on the Airbus A320 family of aircraft began in 2015. Airbus began delivering aircraft to customers in early 2016.



FAST FACTS

Location:	Mobile, Alabama
Announced:	July 2, 2012
Production Start:	2015
Products:	A319, A320, and A321 aircraft
Investment:	\$600 million
Job Creation:	1,000 direct jobs

ALABAMA : PART OF A GROWING SOUTHEAST INDUSTRY

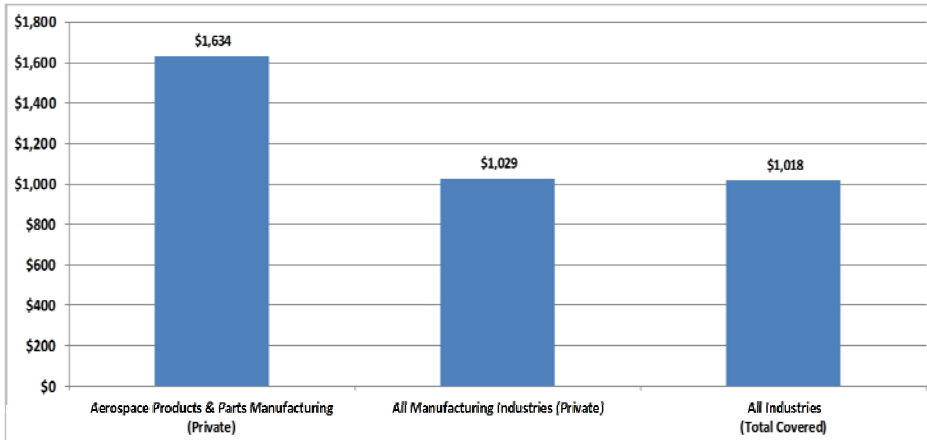


Airbus and Alabama are part of a well-established and growing Southeast industry in aircraft manufacturing.



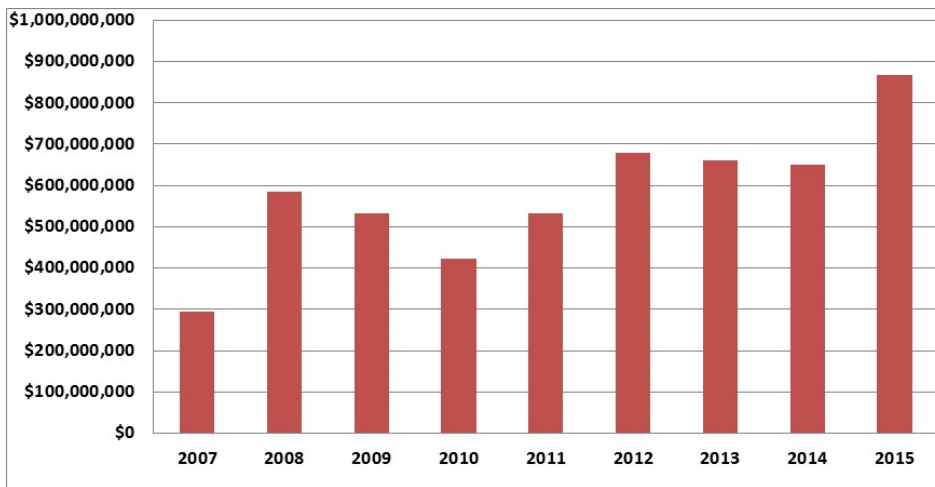
AEROSPACE, AVIATION, DEFENSE

Alabama Average Weekly Wage: Annual 2015



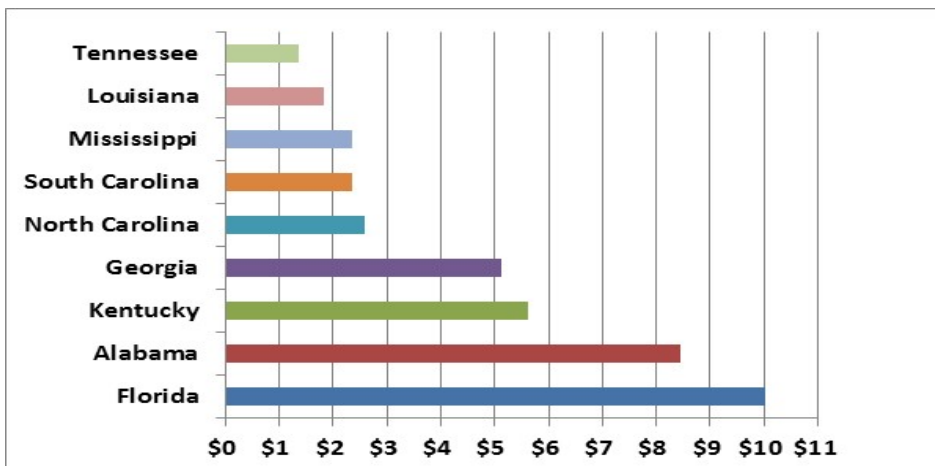
Source: U.S. Bureau of Labor Statistics www.bls.gov. 2015 data

Alabama Exports: Aircraft, Spacecraft and Parts 2015



Source: Alabama Department of Commerce, International Trade Division, 2015

Southern States—Department of Defense Dollars by Place of Performance (\$Billions), FY 2015



Source: USA Spending.gov. Prime award contracts data feed from the Federal Procurement Data System - Next Generation.



United Launch Alliance



Airbus Engineering Center



GE Aviation jet engine components factory



AVIATION, AEROSPACE AND DEFENSE AROUND THE STATE

Huntsville and North Alabama

- Huntsville is one of the country's principal centers for space and defense technology.
- Huntsville is home to **Redstone Arsenal** and NASA's **Marshall Space Flight Center** where the Saturn V rocket was designed and the next-generation Space Launch System is being developed.
- **Cummings Research Park** (Huntsville) is one of the world's leading science and technology business parks.
- **Boeing** and **Lockheed Martin** have made major contributions to the space and defense industry advancement in Huntsville for over 50 years.
- In 2015, GE Aviation announced that it will invest more than \$200 million to produce advanced materials to support the aerospace industry.
- In 2015, Hexcel announced a \$150 million expansion at its facility in Decatur.
- Other notable companies in the Huntsville area include **Aegis Technologies**, **SAIC**, **SES**, **Raytheon**, **COLSA Corporation**, **Teledyne Brown Engineering** and **United Launch Alliance** (Decatur).

Montgomery and Central Alabama

- **Maxwell-Gunter Air Force Base** (Montgomery) sits on the original site of the 1910 Wright Brother's flying school. Today, Maxwell is the home of Air University and is the U.S. Air Force's center for Joint Professional Military Education.
- In 2014, **GE Aviation** (Auburn) announced that it would spend \$50 million on a new 3-D printing initiative, a first-of-its-kind project that will mass produce fuel nozzles for jet engines.
- In 2014, **GKN Aerospace** (Tallassee) unveiled a new \$16 million composite design engineering center at the Tallassee advanced composite structures facility.

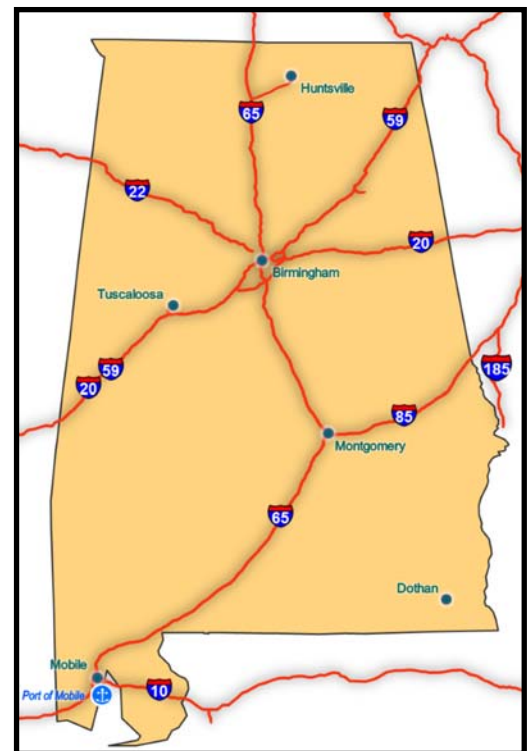
Mobile and Southwest Alabama

- Mobile's **Brookley Aeroplex** is one the largest industrial complexes on the Gulf Coast and is home to a number of aviation and aerospace companies including **Airbus Americas Engineering**, **Star Aviation**, **VTMAE**, **Continental Motors**, and **Safran**.
- Brookley Aeroplex was selected as the location for **Airbus'** first American jetliner production facility. Production on its A320 family of aircraft began in 2015 and the first Alabama-assembled jetliner, a A321, was delivered in 2016.
- In 2015, Airbus Defense and Space selected Mobile-based **Airbus DS Military Aircraft Inc.** as its new worldwide support center for the C212 aircraft series.
- In 2015, MAAS Aviation announced a \$39 million twin-bay paint facility and Paris-based **Hutchinson Corporation** announced a \$2 million aerospace manufacturing center of excellence in Mobile and 100 jobs.
- Other notable aerospace companies in the area include **UTC Aerospace Systems** (Foley) and **Segers Aero** (Fairhope).

Dothan and Southeast Alabama

- **Enterprise Community College** (avionics and aviation mechanics training) and **Fort Rucker** - the Army Aviation Center of the United States - play a strong role in the development of aviation jobs in southeast Alabama.
- In 2014, Lockheed Martin (near Troy) broke ground for its Long Range Strike Systems cruise missile production. In 2015, the company announced the addition of 240 employees at the facility by 2020.
- In 2014, Alabama Aircraft Support (Enterprise) broke ground on a \$12 million aircraft maintenance hangar facility at Enterprise Municipal Airport.

- **Commercial Jet**, an MRO (maintenance, repair, and overhaul) services provider recently began operations at the Dothan Regional Airport in a 400,000 sq. ft. aircraft servicing and maintenance facility.
- Other notable companies in southeast Alabama include **Vector Aerospace** (Andalusia), **DRS Technologies** (Andalusia) and **Sikorsky Aircraft** (Troy).



Alabama's Aerospace and Defense companies are located throughout the state and are part of a growing Aerospace infrastructure in the Southeast U.S.



RECENT EXPANSIONS AND NEW PROJECTS (PARTIAL LIST)

Company	County	Product	Jobs Created	Investment (Millions)
2015				
Lockheed Martin Missiles/Space	Madison	Missiles & Space Vehicles	100	N/A (Expansion)
Hutchison Aerospace	Mobile	Acoustic Insulation	100	\$2.0 (New)
DIEHL Aerospace Inc.	Shelby	Aircraft Product Support & Maintenance	4	\$3.5 (Expansion)
GE Aviation	Madison	Aerospace Composites	300	\$200.0 (New)
MAAS Aviation Aircraft Services	Mobile	MRO Paint Facility	80	\$39.0 (New)
Continental Motors	Mobile	MRO for Aerospace Engines	25	\$1.0 (Expansion)
2014				
GE Aviation	Lee	Additive Components for Jet Propulsion	N/A	\$50.0 (Expansion)
GKN Aerospace	Elmore	Advanced Composite Structures	30	\$16.0 (Expansion)
Aerojet Rocketdyne	Madison	Rocket Propulsion Development Office	100	N/A (Expansion)
MAAS Aviation Aircraft Services	Mobile	Paint Shop for Airbus	34	\$13.0 (New)
Science and Engineering Services (SES)	Madison	MRO of Helicopters, Airplanes	450	\$70.0 (Expansion)
2013				
Alabama Aircraft Support (AAS)	Coffee	Helicopter MRO	200	\$12.0 (Expansion)
DIEHL Aerospace Inc.	Shelby	Aircraft Product Support & Maintenance	10	\$2.7 (Expansion)
Commercial Jet Inc.	Houston	Aircraft Maintenance and Repair	500	\$21.0 (New)
Vector Aerospace	Covington	Helicopter Maintenance and Repair	75	\$3.0 (Expansion)
2012				
Airbus	Mobile	A320 Aircraft Assembly	1000	\$600.0 (New)
DRS Technologies	Covington	Aircraft Maintenance and Upgrades	75	N/A (New)
Safran Engineering Services	Mobile	Engineering Center	50	\$2.0 (New)
United Launch Alliance (ULA)	Morgan	Rocket Manufacturing, Assembly	75	N/A (Expansion)
2011				
Aero-Mark, LLC	Baldwin	Aerospace Maintenance and Repair	25	\$2.1 (New)
Continental Motors Inc.	Mobile	Aircraft Piston Engines	25	\$4.0 (Expansion)
Terma North America	Madison	Defense Industry Products	35	N/A (New)
United Launch Alliance (ULA)	Morgan	Rockets Manufacturing/Assembly	50	N/A (Expansion)
2010				
Northrop Grumman	Madison	Integrated Air/Missile Defense Command System	300	N/A (Expansion)
Vector Aerospace	Covington	Helicopter Maintenance and Repair	100	\$3.0 (Expansion)
Dynetics	Madison	Hardware Integration, Specialty Item Production and Space Systems Work	350	N/A (Expansion)
GE Aviation	Lee	Environmental Coatings for Advanced Military Jet Engine Components	400	\$50.0 (New)
Raytheon Missile Systems	Madison	Missile Production	200	\$75.0 (New)



WORKFORCE TRAINING AND EDUCATION

- **Alabama Industrial Development Training (AIDT)** was established to help new and expanding Alabama companies recruit and train an outstanding workforce. AIDT is consistently recognized for its excellence.
- **Institutions of higher education** across the state work closely with aerospace and defense companies to align programs with industry needs. 31 four-year colleges and universities and 26 two-year community and technical colleges - strategically located throughout the state- provide Alabamians with educational opportunities to meet the emerging needs of industry.
- Seven colleges in Alabama offer **degrees in Engineering**. Over the last 5 years, Alabama's engineering colleges have graduated 11,700 engineers in fields such as Aerospace, Chemical, Electrical, Mechanical, and Materials Engineering.
- Four universities—Auburn University, University of Alabama, Tuskegee University, and University of Alabama—Huntsville, offer **degrees in Aerospace Engineering**.



Top 5 -

U.S. Training Agency



The Alabama Aviation Training Center, operated by AIDT, is preparing workers for the Airbus A320 Family Assembly Line (FAL).

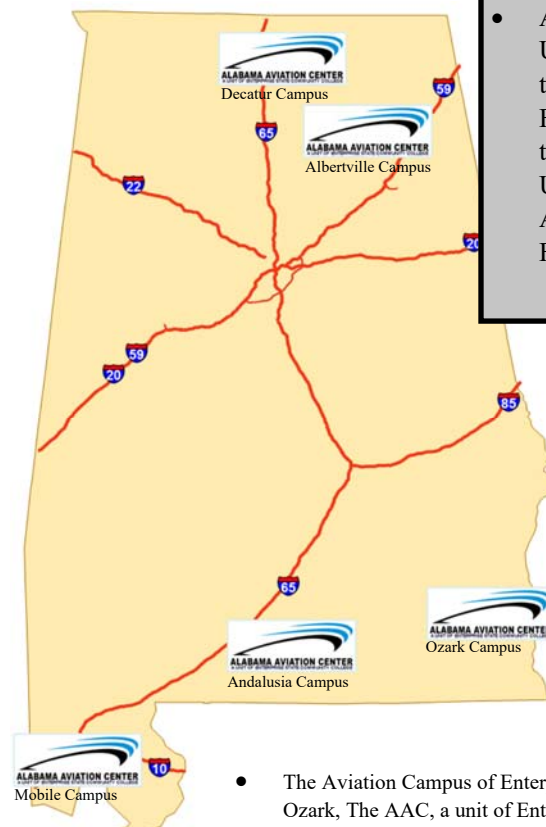
Colleges with Engineering Degrees



Engineering Education in Alabama

- Degrees are offered at 7 universities.
- Over 12,552 graduates from 2010-2015.
- 14,904 enrolled in university engineering degree programs in Fall 2015.

Alabama Aviation



Recent News

- Alabama's Auburn University receives the nation's first FAA authorization to operate an Unmanned Aircraft Systems Flight School.

- The Aviation Campus of Enterprise Community in Ozark, The AAC, a unit of Enterprise State Community College, is the only Federal Aviation Administration (FAA) approved provider of aviation maintenance training in Alabama. AAC also offers avionics, which focuses on the electrical systems in the aviation field.

Source: Alabama Commission on Higher Education & American Society for Engineering Education



MAJOR MILESTONES

1930s

- Maxwell Air Force Base became the designated home of the U.S. Army Air Force Tactical School for professional military education.

1940s

- Redstone Arsenal was established in Huntsville.

1950s

- Werner Von Braun came to Huntsville.



Werner Von Braun

1960s

- Marshall Space Flight Center (MSFC) opened at Redstone Arsenal, making Huntsville a major center for the future development of rockets and space exploration.
- Apollo 4 launched using the Saturn V rocket developed at MSFC.



1970s

- The Alabama Space and Rocket Center opened in Huntsville, becoming the future site of the U.S. Space Camp and Space Academy.
- The Lunar Roving Vehicle, built in Huntsville, was driven on the moon.

1980s

- The first Space Shuttle mission was powered into orbit by the main engine and solid rocket boosters developed by the Marshall Space Flight Center.
- Lockheed Martin moved its smart missile operations from Orlando, Florida to Troy, Alabama.

1990s

- The Army's Aviation and Missile Command moved to Huntsville.

1998

- Boeing announced that the Delta IV rocket would be built in Decatur.

2003

- Boeing Delta IV rockets were consolidated to Alabama for production. The facility is now part of the United Launch Alliance joint venture between Boeing and Lockheed-Martin.

2006

- NASA Marshall Space Flight Center in Huntsville was named as a key Center for the development of Ares I and Ares V Rockets.

2007

- Airbus North America Engineering opened a premier engineering center in Mobile's Brookley Aeroplex.

2009

- Headquarters U.S. Army Space and Missile Defense Command moved to Redstone Arsenal, Huntsville.

2012

- Alabama was chosen as home of Airbus' U.S. A320 family final assembly line - the company's first-ever production of jetliners on American soil.

2015

- The Airbus U.S. Manufacturing Facility commenced aircraft assembly in Mobile.



2016

- Airbus celebrated delivery of its first Alabama-assembled commercial jetliner, an A321, to U.S. customer JetBlue.

Sources:

Alabama Department of Commerce, Business Development and International Trade divisions

US Bureau of Labor Statistics

Alabama Aerospace Industry Association

USA spending.gov

Alabama Commission on Higher Education

NASA

Redstone Arsenal

Marshall Space Flight Center

Miscellaneous news articles/ announcements

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