



# THE RISE OF KENTUCKY AEROSPACE



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# Think Kentucky. Think aerospace.

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In Kentucky, we know all about stereotypes. Whenever we travel anywhere outside the state, Kentucky is recognized for the same things: bourbon, horses and KFC. Now don't get me wrong; I am proud of these illustrious pieces of Kentucky lore and history, but as many of my fellow Kentuckians can attest, there is much more to our commonwealth. People are regularly surprised to learn of Kentucky's impact on the aerospace industry.

Something I tell everyone I meet is how blessed I am to be able to work in an industry I love, in the state I grew up in. As a pilot in the Marine Corps, I developed a tremendous love for flying and all things aviation and aerospace. When I left the Marines, I returned to Kentucky to find ways that I could produce a positive impact. Living in a world of rapidly growing technological capabilities that is always drastically shrinking in size has enabled and empowered people and companies of all different backgrounds and size to have a disruptive effect on global industries. For states like Kentucky, this allows us an opportunity to throw off the shackles of simply doing things how they have always been done and transform our commonwealth from a late adopter into a technological innovator.

Aerospace is an industry in which Kentucky has an opportunity to cement itself as a leader both nationally and internationally. This industry is poised to change our economic landscape, raise up the entire commonwealth, and provide opportunities for all Kentuckians. Join us in this special publication to explore how Kentucky is taking to the skies!



Semper Fi,

D. Stewart Ditto II

*Executive Director, Kentucky Aerospace Industry Consortium*

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# The Rise of Kentucky Aerospace

## TABLE OF CONTENTS

- |           |  |           |  |
|-----------|--|-----------|--|
| <b>4</b>  | <b>Sky-high potential</b><br>How state leaders realized Kentucky was poised to become an aerospace giant and took action to make it happen | <b>13</b> | <b>Aerospace companies in Kentucky</b><br>Nearly 80 aerospace companies provide products and services used globally and employ 18,500 Kentuckians                          |
| <b>6</b>  | <b>Kentucky Power</b><br>Robust economic development programs help bring industry to eastern Kentucky                                      | <b>14</b> | <b>Propelling Kentucky to new heights</b><br>State must build upon aerospace success, prepare for future growth by advancing education and sustainable workforce           |
| <b>8</b>  | <b>Unifying the aerospace community</b><br>KAIC members benefit from global promotion, partnerships, business development opportunities    | <b>15</b> | <b>Growing Kentucky's economy</b><br>Blue Grass Airport connects region to the world   |
| <b>10</b> | <b>Kentucky Aerospace Industry Consortium Premium Member Businesses</b>  | <b>16</b> | <b>Kentucky Aerospace Industry Consortium Executives</b>   |
| <b>11</b> | <b>The Space Science Center at Morehead State</b><br>Cutting-edge nanosatellite technologies attract aerospace companies to Kentucky       | <b>18</b> | <b>A pillar of Kentucky's economy</b><br>Fast facts about aerospace's impact and how the commonwealth is strengthening its reputation in the aerospace and defense sectors |
| <b>12</b> | <b>Aviation industry soars in Kentucky</b><br>A look at aerospace activities in the commonwealth   | <b>20</b> | <b>Global presence</b><br>KAIC promotes Kentucky's aerospace manufacturing prowess and seeks strategic partners for its members  |

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# Sky-high potential

How state leaders realized Kentucky was poised to become an aerospace giant and took action to make it happen

BY STEWART DITTO  
KAIC EXECUTIVE DIRECTOR

**N**EARLY every time I meet with individuals across the state, I get the same looks of surprise, wonder and confusion at the incredible things being done in Kentucky aerospace. In fact, Kentucky exports in aerospace are so large that not only is it currently the state's top export, but we are also third in the United States, behind only Washington state and California! Yes, you read that right. In 2017, Kentucky had \$11.7 billion in aviation and aerospace exports. We are even bigger than Florida and Texas; I guess everything isn't bigger there.

In 2015, data showed that Kentucky had \$8.7 billion in aerospace exports. At that time, our state government was just as surprised as anyone, but they didn't waste any time trying to figure it out. They passed House Joint Resolution 100, which mandated the Kentucky Transportation Cabinet, the Cabinet for Economic Development, and the Kentucky Commission on Military Affairs to study the who, what, and why of the aerospace industry, its economic impact, and the path forward for continued growth.

The study was completed in September 2017, and through it, we learned that this thriving industry consists of over 600 companies across Kentucky that employ 17,000 people. These companies range from airfield operators, service providers and approximately 120 manufacturers.

Many people hear this news and think, "Why Kentucky?"

My response is always quick and with a slight smile, "Why not?"

## **Kentucky is a logistical dream for aerospace companies**

We have three major shipping hubs that can ship any product anywhere in the world, while most states have zero. Our logistical hubs ship more than 2.1 million packages every single day.



We are a day's drive from 65 percent of the U.S. population, and we have numerous interstates and rails that send many tons of products and packages daily. This means that Kentucky is a logistical dream for companies looking to grow and expand their business.

Why can't Kentucky be not only a center for manufacturing excellence, but also a center for technology growth in aerospace? Why shouldn't Kentucky be the leading source for aerospace parts and products? Why wouldn't we strive to lead the nation in innovative technology for space exploration? Why shouldn't Kentucky be the experts in studying how microgravity may affect the treatment and possible cure of various diseases?

We have some of the major players in aerospace, including Raytheon, Lockheed Martin, Belcan, Safran, Meggitt and GE Aviation. We also have the UPS Worldport, DHL Express and Amazon Prime Air. Chances are good that whenever you fly in an aircraft and land anywhere in the world that the carbon brakepads were made right here in Kentucky. Just ask Philippe Garnier, president of Safran Landing Systems.

"A big part of the carbon disks sold by Safran Landing Systems is produced in Northern Kentucky at our Walton facility," Garnier said. "The site produces all the Boeing 767, 737 and 777 disks as well as fair part of the Airbus A320 disks. We also support the U.S. Air Force and the U.S. Navy for the following platforms: C17, KC135, E6 and P8. Every year, we produce and ship about 125,000 disks to support the airplanes mentioned above. With our current expansion, we will increase that number to 165,000 disks per year by 2020."

Aside from those larger manufacturers, we have more than 100 other small- to medium-sized businesses, some of them doing things that aren't being done anywhere else in the world.

Through the study, we found that there is a shift occurring in the U.S. aerospace industry off the West Coast and into the Midwest and South. This migration is similar to what the automobile industry did decades ago, decentralizing out of Detroit. Moves like Boeing to South Carolina, Airbus to Alabama, Gulfstream to Georgia, and others, demonstrate that these major companies are

looking for states with lower energy costs, business-friendly regulations and taxes, lower costs of living, and right-to-work legislation.

Because of our large export capability and geographical location, Kentucky has become a global aerospace leader. Many of our aerospace companies are also automobile suppliers who have diversified their business structure by gaining aerospace quality standard certifications and competing for business from aerospace companies. In Eastern Kentucky, American Metal Works (AMW) used to manufacture components for the coal industry. As coal declined, AMW gained their AS9100 quality certification and is now competing for business with Lockheed Martin. Highlands Diversified used to primarily manufacture



satellite dishes, but as that industry declined, they began to manufacture interior components for commercial aircraft. Kentucky companies are quickly recognizing the tremendous opportunities in aerospace and are scrambling to add capabilities within their business.

### Innovating, not just manufacturing

We are doing much more than just manufacturing. Take Space Tango for instance. They are one of a handful of entities in the entire world that has its own lab on the International Space Station (ISS). They house and conduct autonomous experiments in their lab on ISS, some from Kentucky, but many that are from companies and research institutions worldwide. As a new batch of experiments are launched, astronauts onboard communicate directly with Space Tango's president and CEO, Twyman Clements, in Lexington, Ky.

If these stories don't get you excited about the future, I am not sure what will. The best part is that it doesn't stop there. Kentucky's universities are also leading the way in many different fields in aviation and aerospace. The University of Kentucky, University of Louisville,

Eastern Kentucky University and Morehead State University all have well-known aviation and aerospace programs. Morehead State's program is even sending satellites into space. Dr. Ben Malphrus at MSU is about to send a satellite into orbit around the moon.

"We have the great fortune of being an early adopter of nanosatellite technologies at Morehead State University in Kentucky. Our R&D efforts have led to the launch of six small spacecraft that were built in the commonwealth," said Dr. Ben Malphrus. "The coolest thing, though, is that we are leading a NASA mission called Lunar IceCube that will make its way to orbit the moon to investigate the location and abundance of water ice. It will be launched on the maiden voyage of the most powerful rocket ever built (NASA's Space Launch System) in 2020. These missions represent incredible opportunities for young people to prepare for careers in aerospace."

Kentucky's aerospace workforce and research expertise is statewide and growing. The University of Kentucky has leading aerospace research in computational hypersonics, including atmospheric reentry, along with coordinated satellite control and autonomous sensing including unmanned aerial systems (UAS), drones. Two decades of UAS flight testing experience is valuable for public safety, acoustic signatures and policy making, while atmospheric sensing with UAS has demonstrated improved local-scale weather forecasting.

UK is also the lead for NASA's statewide aerospace workforce and research development programs, Space Grant and EPSCoR, directed by Dr. Suzanne Smith. Space Grant trains hundreds of higher-ed students across Kentucky through internships, fellowships, research and team projects, such as the Owensboro Community College robotics team. EPSCoR develops aerospace research talent and infrastructure in partnership with NASA and industry. Examples are also seen at the University of Louisville in their rocket design team, national champions of the NASA university launch competition in 2017, and in their microgravity 3D printing and materials research experiments on the International Space Station.

So, what's next? Where does Kentucky go from here? Clearly Kentucky's aerospace industry has all the pieces needed to continue to grow exponentially. This is only the beginning. We are just now beginning to realize the potential for this industry in our commonwealth. This is a time of rapidly growing technological capabilities where innovations are happening daily to alter the way we manufacture in the future. This opens up the door for innovations at every level, and paves the way for Kentucky to soar sky high worldwide in aerospace. ➔

*Stewart Ditto is a retired marine aviator and operations officer with the Department of Defense. He serves as KAIC's executive director.*



GE Aviation in Madisonville produces high-pressure turbine blades and nozzles for both military and commercial applications. Its products can be found in aircraft engines such as the T700, and in commercial products such as the GE90 turbofan engine, shown here, which powers the Boeing 777.

## KAIC: Making Kentucky a global aerospace standard

THE Kentucky Aerospace Industry Consortium (KAIC) is a community of Kentucky companies, entrepreneurs, engineers, students, pilots, veterans, policymakers, service providers, and anyone dedicated to making the aerospace industry in our commonwealth recognized for its capabilities around the world. KAIC is an initiative of the Kentucky Science and Technology Corp., a 501(c)3 nonprofit, seeking to advance and promote Kentucky's aerospace industry by providing leadership and creating collaborative partnerships that will ensure the industry has the resources it needs to succeed.

The consortium offers a multitude of business services to Kentucky companies, such as assistance with obtaining quality certifications (AS9100, ISO9001), cyber physical security assessments (NIST standardization), ITAR compliance, collaboration for various contract proposals, and staffing/talent acquisition. We work alongside stakeholders at the state level to represent the industry's interests, and work with students, veterans and other individuals to help fill the workforce needs of our aerospace and defense companies. Our partners at KSTC include the KYPTAC and KSTC advisory services, which are dedicated to assisting aerospace companies and manufacturers with any needs they may have. Learn more at [kyaerospace.org](http://kyaerospace.org).

KAIC's primary goals are to advance the knowledge of Kentucky's aerospace industry through the establishment of a strong brand; facilitate connections and partnerships with existing and future organizations within the industry to create a collaborative network; create a robust aerospace and defense supply chain; and maintain an environment that is conducive to the creation of a sustainable industry through education, workforce development and industry-led research and development.

# Robust economic development programs help bring industry to eastern Kentucky

**K**ENTUCKY Power is aggressively working to attract aerospace and aviation industry to American Electric Power's central Appalachia service region through economic development.

Fourteen counties served by Kentucky Power have been certified as AeroReady and independent consultants have declared the area as an AeroReady regional designation. The designation indicates the area has the necessary resources for aerospace businesses to thrive in the area. Kentucky already ranks as the No. 2 state for aerospace manufacturing exports, behind only Washington, home to aerospace giant Boeing.

A regional workforce analysis in AEP's Kentucky territory found that the region's coal mining and steel work history has left the area with an available workforce with highly desirable metal working skills sought by many aerospace companies. The study, funded in part with Kentucky Power economic development grants, concluded that eastern Kentucky has:

- eight times the U.S. average of workers with metal trim manufacturing skills;
- six times the U.S. average of plant and systems operators;
- five times the U.S. average of workers in motor vehicle body manufacturing;
- four times the U.S. average of workers in maintenance machinery;
- three times the U.S. average



of workers in metal machinery manufacturing;

- two times the U.S. average of welders, machine operators, truck drivers, metal motor manufacturing workers and pipelayers.

"Eastern Kentucky is primed for economic growth and Kentucky Power is committed to leading the effort in collaboration with our government and community partners," said Bob Shurtleff, a Kentucky Power external affairs manager leading the company's

**An employee at Logan Corporation's facility in Salyersville works on a custom dump truck. A Kentucky Power Economic Growth Grant allowed the company to move from a smaller facility in Martin County to its larger facility in Magoffin County, retaining and adding jobs.**

economic development efforts.

"Economic development is at the core of our vision at Kentucky Power for a strong eastern Kentucky."

In recent years, Kentucky Power has strategically invested nearly \$6 million in economic development with its Kentucky Power Economic Growth Grant Program (K-PEGG). Business customers contribute \$12 a year to the program through their monthly electric bills. Those dollars are matched dollar-for-dollar by company stockholders to generate nearly \$800,000 annually for investment at the local and regional levels.

For more information, contact Shurtleff at [rsshurtleff@aep.com](mailto:rsshurtleff@aep.com) and visit our website at [kentuckypower.com/development](http://kentuckypower.com/development).



**Kentucky Power's Bob Shurtleff, center, presents a grant for \$64,481 to the Big Sandy Regional Airport Board. The grant will fund a feasibility study for the construction of a 10,000-foot runway at the facility in Debord, Martin County.**

A large red and silver biplane is being worked on inside a hangar. The plane is mounted on a wooden dolly. Two mechanics are visible: one is standing near the tail, and another is bent over working on the landing gear. A yellow tool chest is in the foreground. The hangar has a high wooden ceiling and large open doors.

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The logo for Kentucky Power, featuring the words "KENTUCKY" and "POWER" in a bold, sans-serif font, with "POWER" having a trademark symbol. The text is white and set against a red rectangular background that has a stylized, slightly irregular shape.

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# Unifying the aerospace community

KAIC members benefit from global promotion, partnerships, business development opportunities



**KAIC Executive Director Stewart Ditto and board member Dr. Ben Malphrus, director of Morehead State University's Space Science Center, signed a memorandum of understanding with AeroMontreal while attending the international aerospace event in 2018.**

BY WILL FORTUNE, DIRECTOR  
OF BUSINESS DEVELOPMENT

**O**VER the last decade, Kentucky experienced a significant rise in aerospace companies. However, until recently, many companies did not realize the size of the market and how fast it is expanding in the Midwest and South. They did not know how many companies, and potential strategic partners, support the aerospace industry here in Kentucky.

In 2016, the state recognized that, because of the economic importance of the aerospace industry to the commonwealth, there needed to be a non-governmental organization to unite, promote and further grow Kentucky's aerospace industry. State leaders directed the establishment of the Kentucky Aerospace Industry Consortium (KAIC). KAIC fulfills its charge from the state by helping its members in four major areas – advocacy, marketing, business development and partner building. Any business that works with the aviation, aerospace or defense market will benefit from membership in KAIC.

Though KAIC does not lobby, its

employees work hard to build relationships with government officials across the state and country. KAIC executives work with their government counterparts to build awareness of the aerospace industry and to be a voice for KAIC members. The KAIC team regularly discusses concerns with the government to make sure decision makers are aware of the issues the industry faces.

In January, with the Federal Aviation Administration shuttered from the government shutdown, one KAIC member called the organization in distress. A government-issued repair certificate, required for their business, was about to lapse, effectively stopping their international work. KAIC immediately reached out to U.S. Sen. Mitch McConnell's office. Within 48 hours, the FAA renewed the company's certificate, avoiding any impact to its business.

Not as dramatic, but equally as important, is KAIC's advocacy for its members. In a sea of small businesses, sometimes the hardest part of growing is getting noticed. Through KAIC executives' prior contacts with large defense companies and different government entities, the organization is able to meet with old colleagues and counterparts to raise

awareness. This exposure helps alert the government and larger defense companies of the products and talent available in our region, and gives KAIC members a competitive advantage over the field when they bid on the next contract.

This advocacy also expands internationally when KAIC executives accompany state officials to international trade shows. KAIC focuses on advancing Kentucky's aerospace industry and building relationships with foreign partners. A select few KAIC members travel with the organization. They are going not only as a small business, but as part of a delegation. They attend all meetings and events to build strategic relationships and promote Kentucky's aerospace industry.

John Zurborg, president and CEO of Skilcraft, an aerospace manufacturer in Burlington, Ky., attended an aerospace trade mission to Canada with KAIC.

"I have been to Montreal four years in a row. The trips have historically been good; however, I did not experience the receptiveness by OEMs in this region as I did on the trade mission [with KAIC]," he said. "Since the mission, we continue to experience a more positive reception through follow-up with the OEMs, which was not the case in the past."

In the last year, KAIC has attended international events in Canada, the UK and Japan. This year, the consortium will return to Quebec and will attend the Paris Airshow, the largest international aerospace event in world. Aerospace companies who would like to accompany KAIC on any of these trips can learn more by visiting [kyaerospace.org](http://kyaerospace.org). The state has a step-grant which can allow companies up to \$10,000 in reimbursements to attend these events.

Marketing budgets for small- and medium-sized companies are often limited. This is where a KAIC membership is an important yet inexpensive investment. KAIC helps members gain exposure both in and out of Kentucky. The organization participates in various air shows and trade events, and

always advocates for all of its members. KAIC looks for business opportunities and strategic partners for everyone.

Members are also promoted in KAIC's monthly newsletter, which is sent to more than 400 readers, including large companies and government officials. In addition to informing readers of Kentucky's latest aerospace news, KAIC includes a special interest piece on one or two member companies to highlight their capabilities and accomplishments. In an industry where partnerships are critical, it allows readers to learn more about specific members.

All members are featured on the KAIC website, which has more than 1,000 views a month. It is often one of the first places people go to learn more about Kentucky's aerospace industry. This spring, KAIC will add a searchable database to the website. Any aerospace or defense company in Kentucky is welcome to register in it, and it will be accessible to government officials and large aerospace and defense companies. It will also be accessible to KAIC members, allowing them to easily find partners and subcontractors when bidding on projects.

Advocacy and marketing only work if members are competing in the right market. Like many other markets, a company must have a well-developed plan when growing its business in the aerospace arena. All companies need a strategy to compete and

grow, and no two strategies will look the same. No matter how big or small, KAIC works with its members to develop strategic plans to compete in the aerospace market.

### **Benefits of membership go beyond promotion and networking**

Obtaining the right certifications is critical for a company to either subcontract or compete for aerospace and defense contracts. One such certification, the AS9100D, is a quality assurance certificate issued by the International Aerospace Quality Group (IAQG). Federal contracts usually require this certificate, but getting it is not cheap. It requires a company to work with a certifying body, can take up to six months to earn, and costs on average \$30,000 to \$40,000. KAIC helps its members navigate the process as efficiently as possible and pursues grants to help companies with the expense of earning the AS9100D certificate. Through a current grant, KAIC is able to help offset 80 percent of the cost for its members.

Enhancing cybersecurity is another way KAIC is able to help its members. Through another grant, the consortium helps members comply with the National Institute of Technology and Standards' (NIST) cybersecurity framework. The NIST framework is simply a set of guidelines and best practices to reduce a company's risk of a cybersecurity breach or attack. Cybersecurity is important to the federal government and

companies who support or manage sensitive programs. So far, KAIC has hosted over 300 attendees at its cybersecurity briefings.

Finally, and perhaps most importantly, KAIC helps its members build strategic partnerships. Regardless of the amount of advertising and market exposure, most business growth happens through strategic partnerships. From small businesses to large, Fortune 500 companies, finding good strategic partners is easier said than done. One of the essential, day-to-day roles of KAIC is to meet with everyone in or related to the aerospace and defense industry. KAIC executives find strategic partners or subcontractors to bid on federal contracts and help others with larger companies to mentor them in the industry.

Kentucky's aerospace industry will continue to grow over the next several decades. It is the industry of the future, an industry whose jobs are not exportable outside the United States, and an industry that rewards those in it. KAIC is at the nucleus, focused on all aspects of the aerospace industry. That is why all aerospace companies will greatly benefit from a KAIC membership, no matter its size or specialty, whether its manufacturing, maintenance, engineering, consulting, insurance, construction or logistics. Learn more by visiting [kyaerospace.org/membership-1/](http://kyaerospace.org/membership-1/). ➔

*Will Fortune is a former Navy pilot and program manager with the Department of Defense. He leads KAIC's business development.*

## **Puzzled by the Maze of Cybersecurity?**

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Stewart Ditto, executive director of the Kentucky Aerospace Industry Consortium, and Kentucky Lt. Gov. Jenean Hampton tour MAZAK Corp., a manufacturing facility in Florence, Ky., that is a member of the consortium.

## Kentucky Aerospace Industry Consortium Premium Member Businesses

MEMBER	LOCATION	ABOUT
AeroMontreal	Montreal, Canada	International aerospace event
American Metal Works	Paintsville, Ky.	Manufacturing
AutoChem (MEICO)	Lancaster, Ky.	Industrial maintenance
Belcan	Lexington, Ky.	Engineering
B&H Tool Works Inc.	Mt. Vernon, Ky.	Manufacturing
Blum-Novotest	Erlanger, Ky.	Manufacturing
Boeing	Chicago	Designs, manufactures and sells airplanes, rotorcraft, rockets, satellites and missiles
eKentucky Advanced Manufacturing Institute	Paintsville, Ky.	Educational program
Ellison Surface Technologies	Hebron, Ky.	Manufacturing
Ensign and Bickford (EBAD)	Graham, Ky.	Manufacturing
First Class Air Support	Louisville, Ky.	Aftermarket aerospace parts
Foam Design	Lexington, Ky.	Manufacturing
HySky	Savannah, Ga.	Digital high-frequency technology
IMR Test Labs Louisville	Louisville, Ky.	Materials testing laboratory
Indy Honeycomb	Covington, Ky.	Industrial honeycomb products manufacturing
JC Tec	Annnville, Ky.	Manufacturing
K-Tec Systems Inc.	Pleasant Ridge, Mich.	Engineering and manufacturing
Kentucky Aviation Association	Lexington, Ky.	Aviation promotion organization
Kentucky Department of Aviation	Frankfort, Ky.	State organization
Kentucky Procurement Technical Assistance Center	Lexington, Ky.	Small business development
Kentucky Touchstone Energy Coop	Winchester, Ky.	Electric cooperative
Ken-Tron Manufacturing	Owensboro, Ky.	Manufacturing
Legion	Florence, Ky.	Logistics
M&S Machining	Winchester, Ky.	Manufacturing
Machine and Components Industries, Inc.	Louisville, Ky.	Manufacturing
MAZAK	Florence, Ky.	Machine manufacturing
Michael T. Jones and Co.	Lexington, Ky.	Industrial control panels
Middletown Composites	Berea, Ky.	Manufacturing
Morehead State Space Science Center	Morehead, Ky.	Educational program
Meggitt	Danville, Ky.	Manufacturing
Outdoor Venture Corp.	Stearns, Ky.	Manufacturing
Phoenix Products	McKee, Ky.	Design and manufacturing
Plymouth Tube Company	Elkton, Ky.	Manufacturing
RAJANT	Malvern, Penn.	Mobile private wireless networks
Safran	Walton, Ky.	Landing gear and brake systems
Shelton Machinery	Fishers, Ind.	Machine tool distributor
Star Aviation	Goshen, Ky.	Testing and maintenance of Electronic Wire Interconnect Systems (EWIS)
Voestalpine RFC Aerospace	Shelbyville, Ky.	Roll forming corporation
Wrigley Media Group	Lexington, Ky.	Full-production marketing



# Cutting-edge nanosatellite technologies attract aerospace companies to Kentucky

**T**HE Space Science Center at Morehead State University has played a role in establishing aerospace as the number one export industry in Kentucky through workforce development and through its contributions to research and development (R&D) in astronautics. In addition to producing graduates with exceptional skills to support the aerospace and defense workforce, Morehead State is internationally recognized for developing some of the world's most cutting-edge nanosatellite technologies. These small satellites range from the size of loaf of bread to a small suitcase and orbit Earth in formations. Morehead State University is at the forefront of this emerging industry.

Morehead State faculty and students have built and launched six satellites since 2006 (KySat-2, CXBN, Eagle-1, Eagle-2, UniSat-5 and CXBN-2). These missions have ranged from technology demonstrations to astrophysics research and have been very successful, gaining international attention. The Lunar IceCube mission, a NASA mission led by Morehead State and currently in



development, was selected for launch on Exploration Mission One (EM-1), the maiden voyage of the Space Launch System (SLS). When SLS launches in 2020, it will be the most powerful rocket ever created. Lunar IceCube is designed to prospect for water ice and other lunar volatiles from lunar orbit.

The Space Science Center has attracted aerospace and telecommunications companies to create subsidiaries in Eastern Kentucky

**Students and staff assemble the Cosmic X-Ray Background Nanosatellite-2 in the Spacecraft Assembly and Integration Facility at Morehead State University.**

and has inspired small aerospace start-ups. Additionally, the 21-meter antenna system is set to become the first non-NASA affiliated node on the NASA Deep Space Network (DSN), providing services for NASA and commercial space ventures.

## MAJOR IN YOUR PASSION FOR THE STARS.

The Space Science Center at Morehead State University (Morehead, Kentucky) is a research and education center that focuses on the design, development and operation of small satellites and on providing hands-on training to the next generation of aerospace engineers through three degree programs.

### SPACE SCIENCE PROGRAMS

- Master of Science in Space Systems Engineering
- Bachelor of Science in Astrophysics
- Bachelor of Science in Space Science

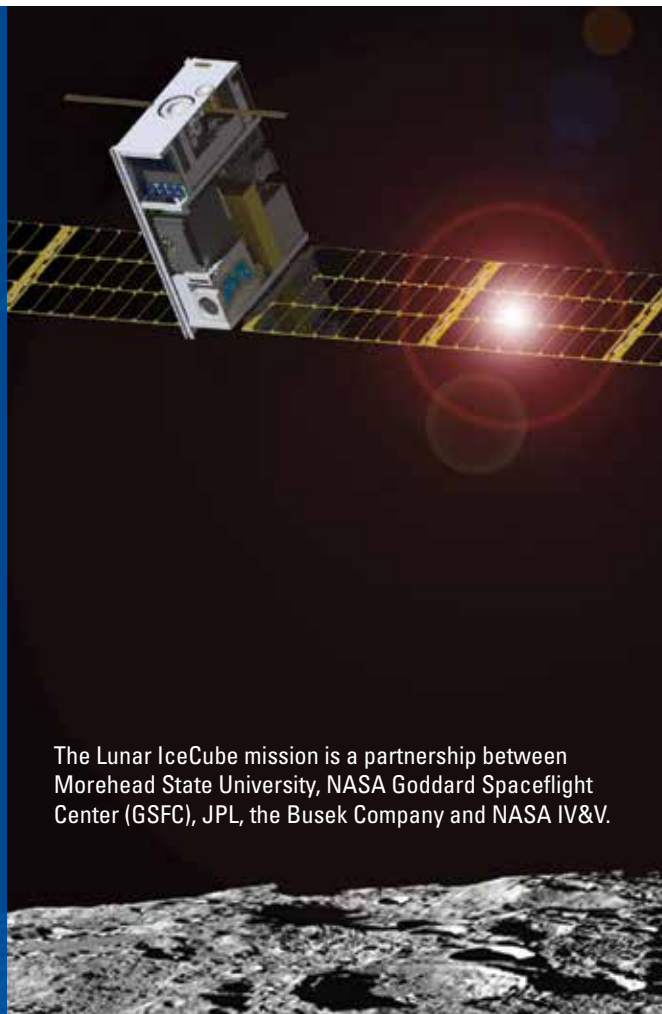


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MSU is an affirmative action, equal opportunity, educational institution.



The Lunar IceCube mission is a partnership between Morehead State University, NASA Goddard Spaceflight Center (GSFC), JPL, the Busek Company and NASA IV&V.

# Aviation industry soars in Kentucky



Above: The only program of its kind in Kentucky, Eastern Kentucky University Aviation's Bachelor of Science degree has concentrations in professional flight, aerospace management or aerospace technology. EKU Aviation is located in the Ralph W. Whalin Technology Complex, which includes approximately 100,000 s.f. of classroom and laboratory space plus a simulator facility.

Right: Kentucky Gov. Matt Bevin, at left, with Kentucky Aerospace Industry Consortium (KAIC) Executive Director Stewart Ditto, proclaimed the last Thursday of every February as Kentucky Aerospace Day. The third annual Kentucky Aerospace Day, Feb. 28 at the State Capitol Rotunda, allowed small business experts from tier-one aerospace companies to speak to government leaders and make strategic connections with others in the industry. More than 35 exhibitors and 300 visitors attended.



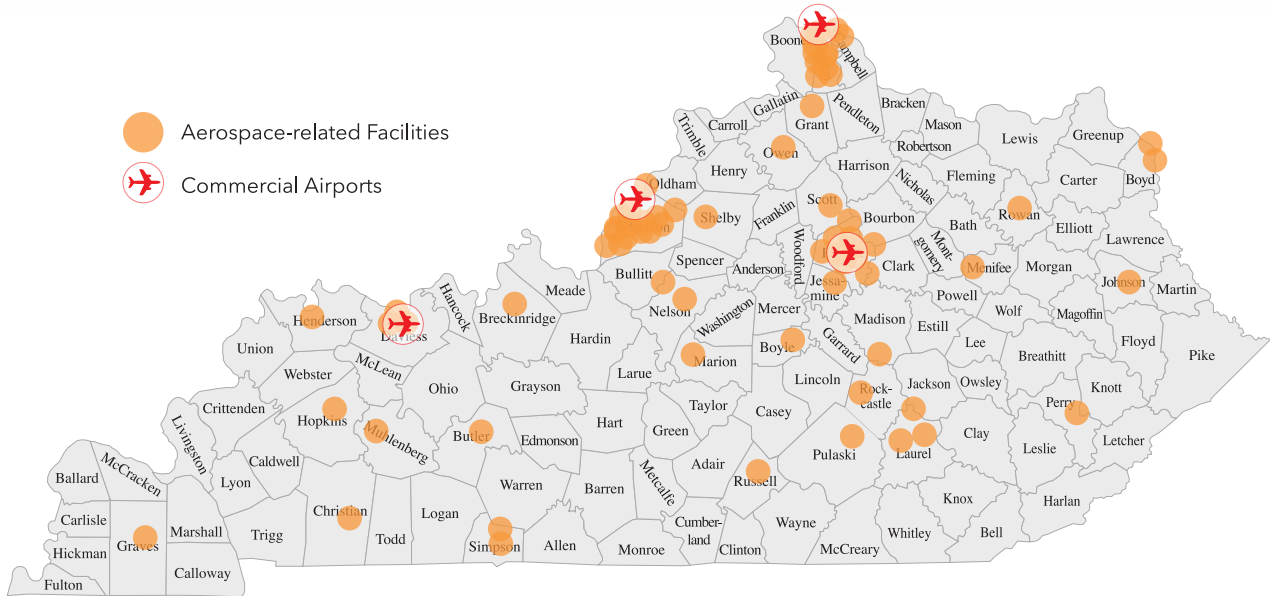
Below: GE Aviation in Madisonville, which employs over 1,000 workers, produces high-pressure turbine blades and nozzles for both military and commercial applications.



Above: Stewart Ditto, KAIC executive director, and Griffin Melzer, the organization's networking and brand development leader, joined Kentucky Lt. Gov. Jenean Hampton on a facility tour of Skilcraft LLC in Burlington, Ky. Hampton was presented with a Kentucky plaque manufactured by the employees there.

# Aerospace companies in Kentucky

Nearly 80 aerospace companies provide products and services used globally and employ 18,500 Kentuckians.



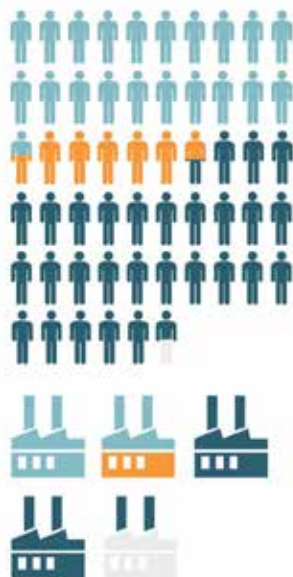
## Industries supporting aerospace/defense

■ **Aluminum**  
20,600 employees  
200 facilities

■ **Steel + Iron**  
6,400 employees  
45 facilities

■ **Rubber + plastics**  
28,600 employees  
225 facilities

• Employees in thousands  
• Facilities in ten hundreds



Kentucky offers abundant resources for aerospace manufacturers. Its aluminum reserves are among the greatest in the region, and the 180+ aluminum-related facilities in Kentucky stand ready to make products of all types. In addition, Kentucky offers a variety of other primary metal manufacturers, as well as hundreds of plastics, rubber and composites makers.

Companies such as Safran Landing Systems, GE Aviation, Lockheed Martin and Mazak, plus worldwide shippers DHL and UPS, have found a home here, due in large part to Kentucky's expertise, which includes:

- Aircraft brakes and brake components
- Jet engine manufacturing
- Satellite production
- Control systems
- Composites manufacturing
- Panel fabrication
- Aerospace engineering
- Starting systems
- Aerospace composite manufacturing
- Plastics manufacturing
- Powder coatings
- Blades
- Maintenance and ground support
- Aerostructure components
- Engineered thermal spray coating
- Turbines
- Phosphor coatings
- Weapons systems
- GPS systems
- Helicopter repair
- Systems wire harnesses
- Drone video and mapping support

# Propelling Kentucky to new heights



State must build upon aerospace success, prepare for future growth by advancing education and sustainable workforce

BY GRIFFIN MELZER, KAIC  
NETWORK & BRAND DEVELOPMENT

**T**HE global aerospace industry, valued last year at \$800 billion, continues to see positive growth. The need for more rapid and effective transportation to support commerce and tourism has grown the aerospace industry at such a rate that forecasters are predicting significant gaps in pilots, aftermarket aircraft parts and production rates. The airline industry predicts that over the next 30 years, the demand for pilots will grow by 400,000 to 800,000; analysts predict the demand for aftermarket parts to increase 6 percent annually, and large aircraft manufacturers expect to build more than 38,000 new aircraft over the next two decades.

To meet these growing demands, the industry needs new players to step in, and that's just what Kentucky plans to do. By taking advantage of the state's advanced manufacturing capabilities, existing aerospace market, and emerging public-private partnerships, Kentucky will become a leader in the aerospace industry.

During the last few decades, Kentucky has become a logistical hub for the country. This is partly because of major logistical companies such as UPS, DHL, and Amazon Prime Air establishing major air hubs in Kentucky, but

it is also because of the state's proximity to many of the country's major cities. Just as it helped the automotive industry prosper in the commonwealth, being centrally located affords Kentucky the opportunity to capitalize on the aerospace boom.

Kentucky's aerospace foundation is solid, but state leaders must continue to analyze how Kentucky can effectively capitalize on this dynamic and expanding market.

In 2017, Kentucky had \$11.7 billion in aerospace export, and had more than 600 companies and 17,000 jobs statewide that support the aerospace market. Kentucky needs to build on this momentum by showcasing itself as a stable, long-term player with the supply chain and infrastructure to sustain industry growth.

Several key factors will shape Kentucky's aerospace industry. Some of these include preparedness for economic development, advancing the state's sustainable workforce, developing a connected supply chain, promoting educational opportunities and more. Kentucky must be ready for the rapid change in technological innovation this industry currently requires.

How prepared is Kentucky for the growth of urban air mobility (UAM)? UAM consists of technology such as unmanned aerial vehicles (UAVs), better known as drones, as well as

EDAC Technologies invested more than \$32 million in 2015 in an expansion project at its Erlanger facility for long-term manufacturing contracts with Safran to support development and production of CFM International's LEAP-1A and LEAP-1B aircraft engines.

vertical-takeoff flying-taxis, a possible backbone of daily transportation that could be unveiled and implemented within the next 10 years.

How educated is the state's industry on the advances in manufacturing processes and techniques? These include 3D printing or additive manufacturing, and the greater usage of newer and lighter-weight materials like fibers, alloys and composites.

Although Kentucky's presence in the logistics market is becoming well-known, is it prepared to take the lead role when it comes to the trending growth in centralized logistics ports?

These are only some of the trending and emerging markets that the aerospace industry has forecasted, but the message it sends to a state like Kentucky is that it must not sit back and let this innovation pass it by. The commonwealth is ripe with opportunity, support and a strong foundation to study, collaborate, cooperate and propel the aerospace industry to new heights. ➔

*Griffin Melzer is a 2017 graduate of Salisbury University Perdue School of Business. He leads KAIC's networking and brand development.*



# Growing Kentucky's economy

## Blue Grass Airport connects region to the world

LEXINGTON is the home of Blue Grass Airport, which serves more than 1.3 million passengers each year. With an annual economic impact of \$370 million and 3,478 jobs for Lexington, Blue Grass Airport is an important component of Kentucky's economy. The airport is the primary air service provider for not only central Kentucky, but also for much of eastern and southern Kentucky.

Traveling for business or leisure continues to get easier when flying to and from central Kentucky. With 17 non-stop destinations, Blue Grass Airport offers more air service than many communities of similar size.

Because of the airport, residents of the region can more conveniently access the national air transportation system, allowing them to conduct business in all parts of the U.S. and internationally, to visit family and friends, and to enjoy vacation destinations.

Corporate and private aviation also continue to play a significant

role. With more than 75 hangars and approximately 48,500 private flights annually, the airport can accommodate business jet traffic as well as leisure and private aircraft. As part of a \$5 million investment to support private aviation, the airport opened WestLEX, a facility designed to provide support services to local aircraft owners.

Inside and out, Blue Grass Airport makes a beautiful first impression for travelers who fly to Lexington. The airport's runway approach is considerably one of America's most picture-perfect landscapes, and the modern, comfortable terminal ensures an accessible facility for travelers that continues to meet the region's growing air service needs.

**Passengers at LEX enjoy an array of amenities that make flying quick and easy. A record number of passengers – 1.36 million – traveled through Lexington's Blue Grass Airport in 2018.**



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Two new daily non-stops to Washington Dulles, and two more reasons to love the most convenient airport around.

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 **Blue Grass Airport**  
LEXINGTON, KENTUCKY



# Kentucky Aerospace Industry Consortium Executives



## Stewart Ditto

Stewart Ditto is the executive director of the Kentucky Aerospace Industry Consortium. In this role, Stewart has developed relationships with key aerospace and defense manufacturers around the world. He has helped Kentucky to unite, promote and grow its aerospace and defense manufacturing assets, which boasted \$11.7 billion in exports in 2017. Additionally, he brings in a wide array of experience from his time as a pilot and officer in the United States Marine Corps flying the MV-22 Osprey. Following his time in the Marines, Stewart led four statewide economic projects dealing with military impact, UAVs (drones), cyber security, and aerospace and defense.

Following those projects, Stewart was requested by state legislators to lead the recently formed Kentucky Aerospace Industry Consortium. Stewart has been involved in aviation and aerospace for the last 10 years and has been an integral part of its development and promotion in Kentucky both nationally and internationally. His leadership within

the industry has been key in ensuring that Kentucky has a clear pathway for growth in this important economic area. Stewart is a graduate of Texas A&M University with a degree in business finance.



## Will Fortune

Will Fortune is a seventh generation Lexingtonian who brings a diverse management and well-traveled military background in support of KAIC's mission to advance and expand Kentucky's aerospace industry. Prior to joining KAIC, he served as commander, U.S. Special Air Operations for North and West Africa from Germany. Will also recently worked as interim CEO for the National Air and Space Education Institute in Louisville and director of project management for the office of the mayor of Lexington.

Will earned a bachelor's degree in history from Davidson College and a master's degree in national security and strategic studies from the Naval War College. He is a member of the U.S. Defense Acquisition Professional Corps and a Lean Six Sigma Black Belt.



## Griffin Melzer

Griffin Melzer joined the KAIC team in February of 2018 as its network and brand development associate, bringing his enthusiasm, passion and commitment for the

aerospace and defense industries. His focus has been to promote KAIC's mission by enhancing the marketing presence and expanding networking efforts that underscore the goals of the consortium.

Griffin graduated from Salisbury University in Maryland in 2017 with a bachelor's degree in business administration. After completing an internship in logistics in his home state of Florida, Griffin relocated to Lexington, Ky., and began pursuing networking avenues to gain entry into the growing aerospace sector in Kentucky. This same approach to building meaningful partnerships is part of the strategic approach he uses in his role as an ambassador of KAIC.

For over a year now, Griffin and the KAIC team have traveled all over the globe to build strategic partnerships on behalf of the Kentucky industry. He looks forward to continuing his support of the KAIC mission of uniting, promoting and growing the aerospace industry in Kentucky. ➔

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"Aerospace is flourishing in Kentucky. Under the Bevin administration, we have welcomed more than \$2.2 billion in aluminum-related projects alone. That growth has helped contribute to aerospace becoming our largest export, accounting for over \$10 billion annually. That's more than the next five export categories combined and positions us as the No. 2 exporter of aerospace products in the nation."

— SECRETARY TERRY GILL, KENTUCKY CABINET FOR ECONOMIC DEVELOPMENT



## A pillar of Kentucky's economy



Aerospace exports in 2017 totaled nearly \$11.7 billion, almost three times the size of the next-largest sector (motor vehicles), according to the Kentucky Cabinet for Economic Development.



Products manufactured here include: carbon brakes; jet engines and turbines; cockpit avionics; wiring and control systems; micro satellites; software development; data analytics; advanced materials R&D; micro-gravity research services; industry logistics and support services; and missile defense system manufacturing and overhauling.



Kentucky is part of the supply chain for the Virginia Class Submarine, the Patriot Missile System, the Super Hercules C130-J military transport aircraft, the Boeing KC-135 Stratotanker and the Minuteman II Missile System (the largest aerospace system in the Kentucky defense supply chain).



Companies such as Safran Landing Systems, GE Aviation, Lockheed Martin and MAZAK, plus worldwide shippers DHL, UPS and Amazon Prime Air have found a home in Kentucky, due in large part to Kentucky's expertise in aircraft brakes and brake components; jet engine manufacturing; satellite production; plastics manufacturing; aerospace engineering; turbines; aerospace composite manufacturing; GPS systems; weapons systems; and more.



Nearly 30 Kentucky high schools have offered aerospace training curriculum. Students in apprentice programs are offered access to engineering programs, as well as professional flight, aerospace management and aerospace technology degrees.

# Ready For Launch

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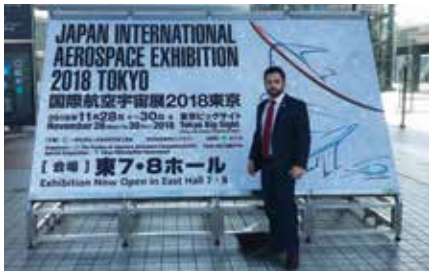
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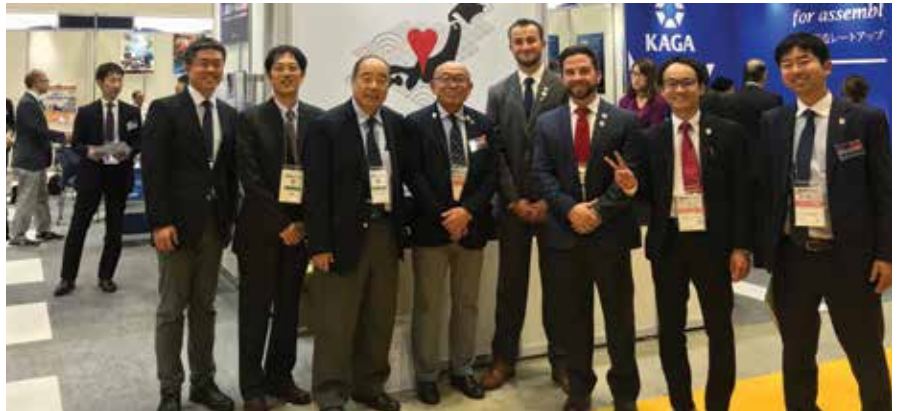
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# Global presence

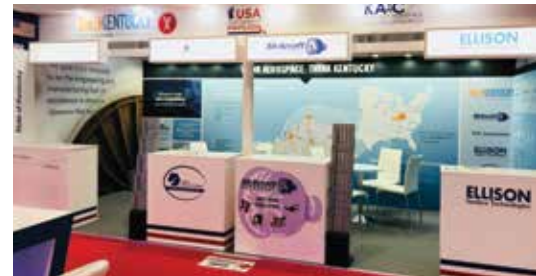
THE Kentucky Aerospace Industry Consortium assists its members in four major areas – advocacy, marketing, business development and partner building. To promote Kentucky's aerospace manufacturing prowess and seek strategic partners for its members, KAIC executives attend multiple international air and trade shows. This year, the consortium will return to Quebec and will attend the Paris Airshow, the largest international aerospace event in world. Select members attend these events as part of a delegation, which greatly increases their visibility and voice, especially at events with hundreds to thousands of participants.



Above: KAIC Executive Director Stewart Ditto attended the 2018 Japan International Aerospace Exhibition in Tokyo.



KAIC's Stewart Ditto, Mike Takahashi and Griffin Melzer take photos with officials of the Government of Aichi Nagoya after discussing future memorandum of understanding opportunities.



Above: The Kentucky Aerospace Delegation had a booth at the 2018 Farnborough International Airshow. The airshow featured numerous types of aircraft, like the shark plane at left.

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In 2018, nearly 4 million passengers used Louisville Muhammad Ali International Airport, an increase of over 11% from 2017 and the airports **2nd busiest** year ever. SDF has seen a 57% increase in nonstop destinations in the past two years.

## Economic Driver

- Generates over **\$8.1 billion** in total economic activity
- Supports nearly **70,000 jobs** in the local community
- Provides more than **\$2.6 billion** in total payroll
- Produces **\$348 million** in state and local tax revenue

## Los Angeles Nonstop

American Airlines begins nonstop flights from Louisville to Los Angeles on April 3rd. This service gets you to L.A. 2 hours faster than any connecting options and is Louisville's first nonstop flight to the west coast.

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