

Gulf Coast Reporters' League

Louisiana

Mississippi

Alabama

Florida



Vol. IV, Issue II

A bi-monthly update of aerospace activities in the Gulf Coast I-10 region

October 2016



Overall rank: 39
Tax: 12
Opex: 20
Industry: 43
Education: 43

Overall rank: 13
Tax: 22
Opex: 14
Industry: 12
Education: 35

Overall rank: 12
Tax: 15
Opex: 6
Industry: 21
Education: 39

Overall rank: 2
Tax: 4
Opex: 29
Industry: 5
Education: 13

Economic development

How attractive are we?

The U.S. is the No. 1 nation and Florida second among states in their appeal to aerospace manufacturers, but the study sheds no light on the appeal of the Gulf Coast...

Florida is ranked No. 2 in the nation in its appeal to aerospace manufacturers in the most recent PwC Aerospace Manufacturing Attractiveness rankings, while Louisiana is ranked 12, Alabama 13 and Mississippi 39.

By David Tortorano

The latest report, the third year for the ranking, was released July 2016 and shows the United States remains the No. 1 nation as an attractive location for aerospace manufacturers.

According to PwC, part of the reason for the U.S. ranking is the breadth of its aerospace industry - seven times greater than the United Kingdom, which is second in industry size. Nos. 2-5 in the overall ranking is Canada, the United Kingdom, Singapore and Switzerland.

Among the states, Arizona is No. 1 and Georgia No. 3, followed by Utah and Missouri. PwC determines the overall rank

based on a state's tax burden, operating expense, industry size and educational attainment. For Louisiana, Alabama and Mississippi, education dragged down their overall rank.

The PwC ranking does little to show the attractiveness of an economic region like the Gulf Coast I-10 corridor. And because the numbers compiled for the PwC report are for an entire state, they do not reflect the numbers for a specific area of a state.

But if the number of aerospace products that are made in an area is any reflection of its attractiveness, then the Gulf Coast I-10 region would certainly seem to be a contender.

Two years ago the *Gulf Coast Aerospace Corridor 2014-2015*, published by the Gulf Coast Reporters' League, had a chapter on aerospace products from in the region between New Orleans and Northwest Florida, and it's considerable. Satellite propulsion systems, rocket engines, spacecraft, aircraft, aerostructures, high-tech sensors and more are made in the region. And since PwC pointed out that the United States ranks high in large part because of the size and diversity of its industry, it's instructive to point out the diversity in the corridor.

Here's a rundown:

In New Orleans, Michoud Assembly Facility, one of the world's largest manufacturing centers with 43 acres under one roof, is where Boeing is building the 212-foot long core stage of NASA's Space Launch System. It's also where Lockheed Martin builds NASA's Orion Multi-Purpose Crew Vehicle and composite structures for Sierra Nevada's Dream Chaser.

At Stennis Space Center (SSC), Miss., Lockheed Martin Mississippi Space and Technology Center builds the core propulsion system for the A2100 family of satellites, as well as the multi-layer blankets that protect the sensitive equipment.

Also at SSC, Aerojet Rocketdyne assembles and tests the RS-68, used on



GCRL photo by Michelle R. Thomas

Jetliners are just one of the aerospace products made in the Gulf Coast I-10 region.

the Delta IV rocket, and RS-25 that will power the SLS core stage. As part of the buildup for testing, Aerojet is locating its RS-25 low pressure turbopump assembly at SSC. Aerojet also announced in July that it will be assembling and testing the AR1 rocket at SSC. That engine is designed to eliminate U.S. reliance on Russian RD-180s.

In the nearby town of Kiln, Miss., Teledyne's Optech builds an airborne bathymetric mapping system called the Coastal Zone Mapping and Imaging Lidar at Stennis International Airport.

Near Hattiesburg, Miss., GE Aviation makes composite parts for GE aircraft engines and systems, including LEAP engine fan platforms, A320neo transcowls, and Passport 20 inlets, used on the business jet engines.

In Moss Point, Miss., Northrop Grumman's Unmanned Systems Center does final assembly work on the Fire Scout unmanned helicopter and central fuselage work on all variants of the Global Hawk surveillance aircraft.

Across the state line in Mobile, Ala., the most high-profile aerospace manufacturer is Airbus and the A320 jetliner plant. Ten have been delivered so far. Mobile is also where Continental Motors has been building small engines for private aircraft since 1929, and where Star Aviation makes structural,

electrical, in-flight entertainment installation kits and more, for business and commercial jets. The company also assembles wire harnesses, wire bundles, cable and electrical subassembly, and equipment rack wiring.

Across the bay in Foley, Ala., Baldwin County's largest manufacturing employer is UTC Aerospace Systems, which, in addition to maintenance, repair and overhaul services, is an original equipment manufacturer. It builds nacelle systems for commercial and military aircraft engines, thrust reverser assembly for nacelle systems for the Airbus A320 series aircraft and assembles the engine pod for Mobile's Airbus A320 assembly plant. It also does assembly of inlets and fan cowls for the A320neo and Boeing 737NG, along with pylons and nacelle components for the Air Force C-5M.

AMRO of Fairhope, Ala., is a precision machining and engineering company that recently received its first 3D printer and will use that along with its traditional machining techniques.

In Cantonment, Fla., Marianna Air-motive overhauls, remanufacturers and fabricates parts for the C-5 Galaxy, and to the west in the town of Marianna, CHR International produces the Safari 400 helicopter, which can be bought as a kit or assembled.

In Crestview, Fla., L-3 Aerospace Crestview makes major and minor airframe structures for the commercial and defense industries, including tail booms, cargo sections as well as cabins.

General Dynamics Ordnance and Tactical Systems, Niceville, Fla., does warhead and alternative payload design, development, testing and production for air-to-air, air-to-surface and surface-to-surface weapons, including shaped charge and fragmenting warheads, fragmenting bombs, penetrators and flight termination systems.

Multiple companies in Northwest Florida focus on avionics systems, including transponders, instrument displays and more. In Gulf Breeze, Avalex makes flat panel displays, digital mapping systems, digital video recorders, and other customized systems.

Micro Systems of Fort Walton Beach, Fla., makes tracking transponders, GPS-tracking pods, real-time micro processor-based control systems, unmanned vehicle control stations, IFF products, test sets, scoring systems, and flight termination systems. In the same city, BAE Systems produces instrumentation radar, electro optics, system upgrades and enhancements, and training and launch range instrumentation.

Fort Walton Machining makes custom designed precision machined parts, and in the same city Herco Sheet Metal does sheet metal and machining services to electronic, defense and aerospace industries and Crane Aerospace manufactures low and high voltage power products, TWT amplifier and radar transmitters.

In Holt, Certified Manufacturing produces cables and harnesses, circuit guard assembly, harness over braiding, electro-mechanical assembly, and laser wire marking. In Bonifay, Manown Engineering does machining of shafts and subassemblies.

In Panama City, Maritech Machine Inc. does precision machining and fabrication, and Chenega Manufacturing Services LLC makes electro-mechanical wire harness assembly, craft control units, power panels, instrument panels, and auxiliary power units.

Also in Panama City, Exelis makes mine detection equipment, like the MK-105 Minesweeping System and Airborne Mine Neutralization System, and in Tallahassee, Capital Avionics manufactures test equipment.

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How will world events impact aerospace?

The aerospace summit returns to the Interstate 10 corridor in November when Gulfport hosts the fifth iteration of the event that will focus on the impact of world events on aerospace...

Gulfport, Miss.

This coastal Mississippi city known as the financial and transportation center of South Mississippi will host the fifth summit of the four-state Aerospace Alliance next month.

It's the first time the gathering will be held in Mississippi. Previous summits were in Alabama, Florida and Louisiana.

The summit, a primary outreach for the non-profit, four-state aerospace group, will be held Nov. 3-4 at the

By David Tortorano



Island View Towers Hotel. As with the past gatherings, this one is expected to attract between 175 to 200 participants, including leaders from the Southeast and beyond.

The industry-focused summit attracts leading aerospace companies, economic development professionals, and elected officials from communities that focus on developing their aerospace activities. It also draws university and workforce professionals with programs specializing in the aerospace and aviation sector.

“Navigating Change: How Will World Decisions Impact the Aerospace Industry?” is the title of this year’s summit.

According to the Alliance, those decisions include but are in no way limited to the United Kingdom’s exit from the European Union and the upcoming U.S. presidential election between Democrat Hillary Clinton and Republican Donald Trump. The election is the Tuesday after the summit.

Summit speakers and panelists will look at a variety of factors shaping the industry, including global economic influences, opportunities around innovation, and geo-political and defense issues.

The public/private Aerospace Alliance was formed in 2009 and announced at an event in Bay Minette, Ala. It originally included Alabama, Louisiana, Mississippi and a regional group, Florida’s Great Northwest. At the first summit in 2011 it was announced that the state of Florida would join.

Its original purpose was to join forces to help secure the aerial tanker program for Mobile, Ala. But at the time it was established leaders said it would remain long-term and would focus on activities that would promote the region and the aerospace sector.

The most high-profile activity of the Alliance might well be the pre-event galas it holds before the air shows in London and Paris. Invitations to the event are considered hot tickets. But

closer to home, the annual summit are the most noticeable events for the group. The inaugural event was at Sandestin Resort in Miramar Beach, Fla., in September 2011. Subsequent summits were held in New Orleans in October 2012, Huntsville, Ala., in October 2013, and Daytona Beach, Fla., in April 2015, the only time it was held in the spring.

Gulfport is the site of the upcoming summit because it’s Mississippi’s turn to host the event and the state chose Gulfport, said the Alliance’s Melissa Medley.

She said Gulfport is one of the more central locations, sitting in the middle of the four-state I-10 aerospace region. The corridor is the one region where all four states have a presence.

Gulfport is the central location for South Mississippi’s considerable aerospace activities. On the eastern end in Jackson County Northrop Grumman builds the central fuselage for all variants of the unmanned Global Hawk, and also does final assembly of the Fire Scout unmanned helicopter.

To the west of Gulfport is John C. Stennis Space Center, NASA’s rocket engine test facility that’s also used by commercial companies.

Gulfport itself is home to one of the region’s commercial airports, Gulfport-Biloxi International Airport, which also hosts the Air National Guard Combat Readiness Training Center, one of four operated by the Air National Guard. It provides the military with a year-round training environment, including airspace and ranges.

In any given year, thousands of pilots come to Gulfport to engage in mock combat and hone their skills. It’s an airborne schoolhouse equipped with a state-of-the-art, multimillion-dollar combat training system that keeps track of every move.

Gulfport is also part of the larger Gulf Coast aerospace corridor that spans a four-state region along Interstate 10. It includes NASA’s Michoud Assembly Facility in New Orleans, the

Airbus U.S. Manufacturing Facility in Mobile, Ala., and multiple aviation-focused military bases, including the base that develops aerial weapons for the U.S. military.

The region is also a top military pilot training location. Eglin Air Force Base, Fla., trains F-35 pilots and maintainers, and Tyndall Air Force Base, Fla., trains F-22 pilots and hosts an operational squadron.

Navy, Marine and Coast Guard pilots are trained in part at Naval Air Station Pensacola and Naval Air Station Whiting Field, Fla. Army helicopter pilots are training at Fort Rucker, Ala., just across the state line near Dothan, Ala., and the Coast Guard a training facility in Mobile transitions pilots to the aircraft they will be using.

But the four-state alliances has far more than the activities in the Gulf Coast region. Two of the best know are far from the I-10 region. Florida’s Space Coast is well-known internationally, and Huntsville, Ala., is home to the Army’s missile activity and NASA’s Marshall Space Flight Center.

Medley expects about 200 participants, adding that the summits attract a smaller but focused group involved in aerospace.

The reception Nov. 3 is hosted by the secretaries of commerce for the member states, and the keynote speaker will be Haley Barbour, former Mississippi governor. He’ll discuss what the U.S. election and other world decisions might mean for the aerospace industry.

Speakers Nov. 4 include Richard Aboulafia of The Teal Group, who will talk about innovations and trends as it pertains to the future of aerospace., and Elizabeth Coffin with United Technologies Corp., among others. There also will be a panel discussion on what’s ahead for unmanned aerial systems and congressional and defense priorities for aerospace.

Research/applied technologies

SSC, I2R develop unique camera

As part of its rocket testing program, engineers at Stennis Space Center came up with a unique camera that can capture never before seen detail...

Stennis Space Center, Miss.

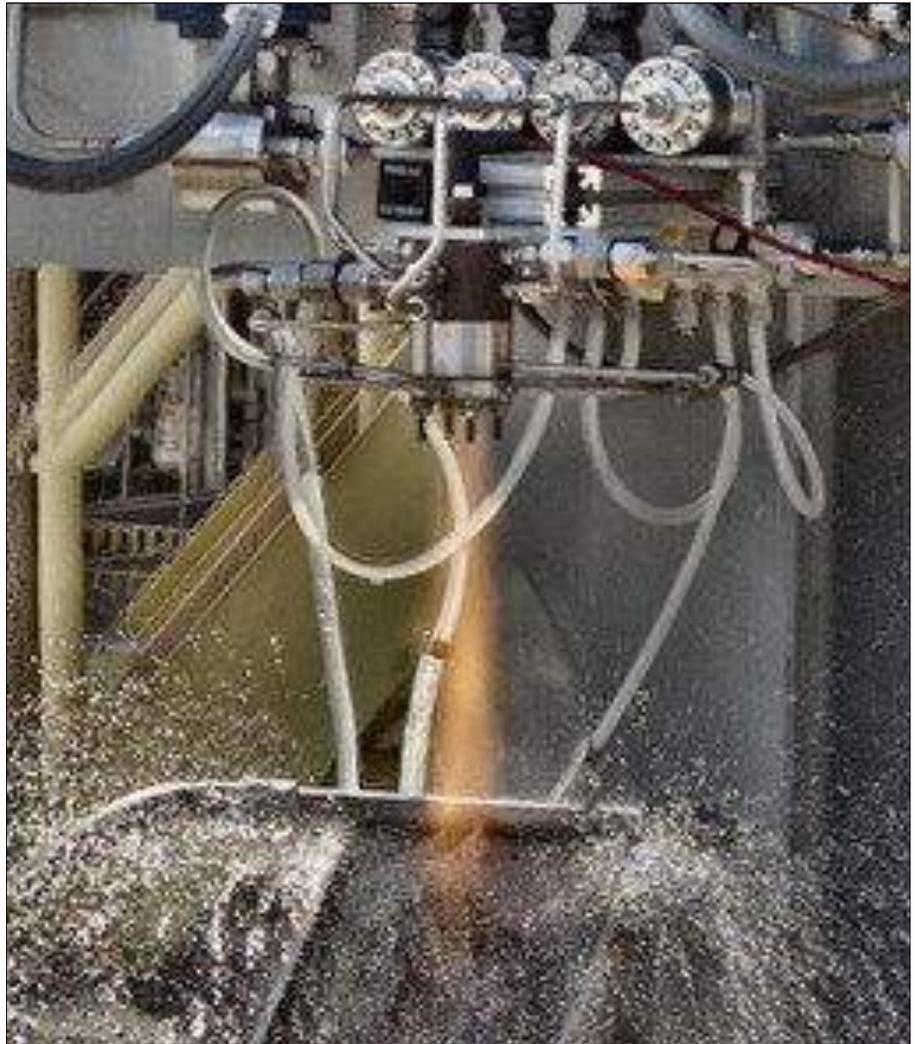
NASA has been using high-speed video to record rocket test firings and launches since the early days of the space program. The cameras, however, cannot capture the extremely bright plume exhaust alongside the relatively dark test structures and hardware without washing out the plume or leaving everything but the plume in a dark shadow.

Today, while NASA is developing the Space Launch System, the most powerful rocket ever designed, testing is underway on a ground-breaking camera system that can capture multiple properly exposed images at the same time and play them back in slow motion. The resulting video shows all areas around the rocket firing in unprecedented quality.

Called the High Dynamic Range Stereo X, or HiDyRS-X, the system is being developed at NASA's Stennis Space Center through a partnership between NASA and Innovative Imaging and Research (I2R) Corp.

I2R, founded in 2007 by Mary Pagnutti and Bob Ryan, specializes in remote sensing, geospatial, and optics-based products and services to industry and government customers. While the company focuses on R&D, they also provide engineering services to improve geospatial products such as calibrating instruments and developing custom algorithms to enhance and improve image quality.

By Lisa Monti



NASA photo

The HiDyRS-X camera shows detail never before seen in rocket engines tests.

“Our company has been working on different varieties of high dynamic range imaging for several years” said Ryan. The new technology captures light and dark images simultaneously without being saturated.

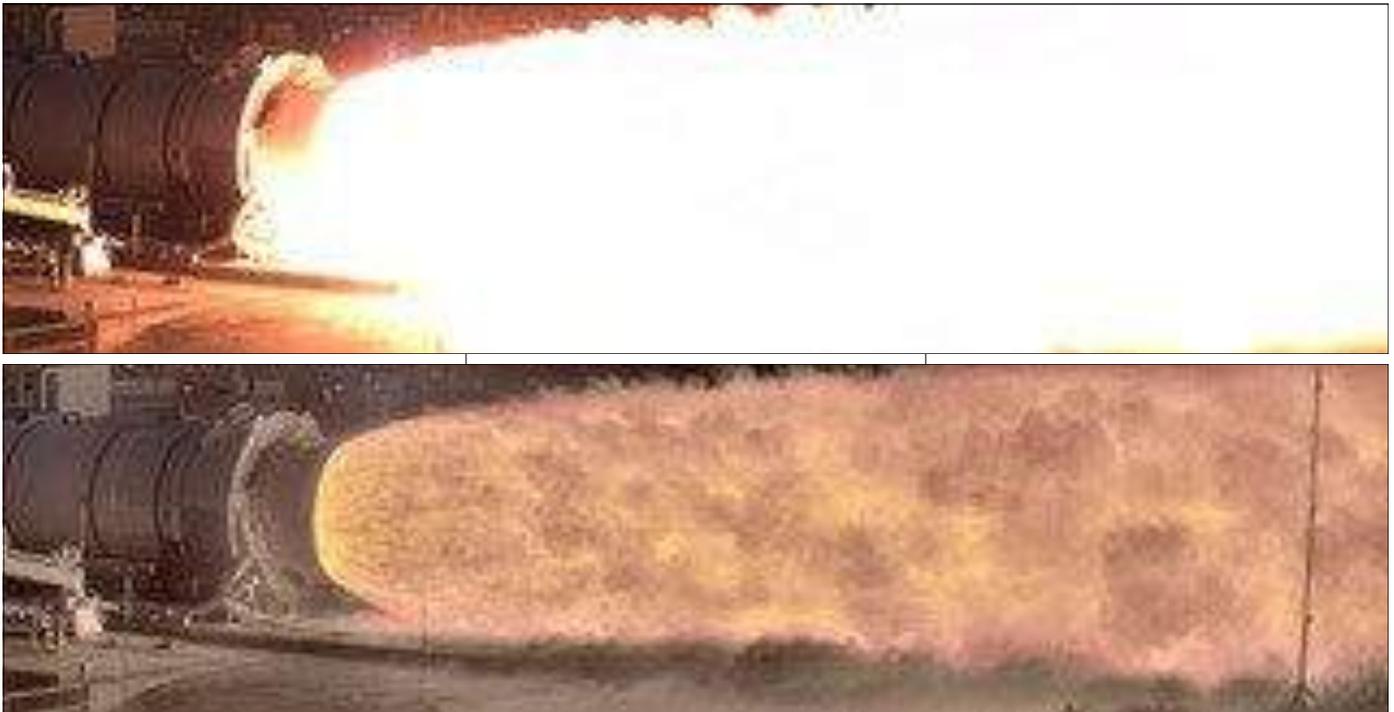
Ryan said I2R has worked with HDR imaging for the Department of Homeland Security, among other customers.

HDR imagery is available on iPhones and other devices but the I2R-NASA joint project is in a category of its own.

“The HDR imagery we have is high speed, and has extreme dynamic range,” he said. “The signal levels may vary by a million to one or more.”

Also, he said, the data that is gathered is far superior to other processes.

“Our data is scientific, it’s not just a pretty picture. The digital numbers that describe the brightness of the data can be related directly to a radiometric standard.” The data can be used to estimate temperatures and look at en-



NASA photos

Tests of an Orbital rocket shows the difference between the standard camera, above, and one using the HiDyRS-X

engine performance fluctuations and any instabilities that may be a sign of a potential problem.

The video is in color and is calibrated so the processed data is of the highest engineering quality. "That is very valuable when you're trying to do quantitative work," Ryan said.

The system can also record high speed data for tens of minutes, not just seconds like previous systems. "So we can record long events at HD quality imagery video standards."

Ryan said the HiDyRS-X project began as part of NASA's Space Technology Mission Directorate's Early Career Initiative, designed to give young engineers the opportunity to lead projects and develop hardware alongside leading innovators in industry. "We successfully competed for the early career initiative where NASA works with private sector companies to mentor young engineers and scientists. We're an imaging company and NASA is the rocket experts so we sort of cross-pollinated to create this type of technology."

The HiDyRS-X project eventually was added to NASA's Game Changing Development program to produce its first prototype. The equipment was used to record exhaust plumes on test firings at Stennis Space Center.

During a full-scale SLS booster test firing in June, NASA performed simultaneous testing of HiDyRS-X to record images of the booster's plume. Though the camera test suffered some setbacks, officials called the results revolutionary for the detail it provided.

When the camera footage was reviewed, NASA officials said they saw elements that were never caught on film during an engine test.

"I was amazed to see the ground support mirror bracket tumbling and the vortices shedding in the plume," Howard Conyers, a structural dynamist at Stennis Space Center and NASA's principal investigator on the project, said in a NASA press release following the test. Speeding up the playback provided at least one surprise.

"I was able to clearly see the exhaust plume, nozzle and the nozzle fabric go

through its gimbaling patterns, which is an expected condition, but usually unobservable in slow motion or normal playback rates," said Conyers.

Ryan said the HiDyRS-X system has also been used for some experimental plume deflection technology that NASA is developing at Stennis and NASA is considering installing the equipment on test stands to record routine rocket engine tests at Stennis.

Future versions of the HiDyRS-X system could have stereo "so you could have a three-dimensional look at objects." That 3D capability would be invaluable in finding what went wrong if an engine exploded.

There also are possible practical applications for drivers when bright sunlight interferes with the backup camera or boat operators when bright sunlight impairs their vision. "Our technology could work in those types of circumstances," Ryan said.

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Economic development

VT MAE, MAAS join for new service

The new MAAS paint shop will enable VT MAE to diversify its lineup of maintenance, repair and overhaul services, and opens up a fresh set of opportunities for the Mobile Aeroplex...

Mobile, Ala.

In the first quarter of 2017, the second of two MAAS Aviation paint shops is scheduled to come online at the Mobile Aeroplex at Brookley, opening the door to new business for VT Mobile Aerospace Engineering (VT MAE) and pointing to a new era of prosperity for the 1,700-acre industrial complex.

"It's fast and furious right now," says Mobile Airport Authority (MAA) Executive Director Roger Wehner.

Around the MAA executive offices, the shops are known as MAAS 1 and MAAS 2.

MAAS 1, which holds a long-term contract with Airbus to provide paint services for its A320 aircraft rolling off the line at the new \$600-million final assembly plant, has operated for about one year now.

MAAS 2 was originally expected to open this month, but, as with many projects of this scope, that has been pushed to December or January 2017. Dublin, Ireland-based MAAS stuck closely to its budget of \$39 million, however.

"They were very diligent about that," Wehner says.

Like many European companies, MAAS is also very diligent about tak-



Photo by Kaija Wilkinson

Roger Wehner of the Mobile Airport Authority, says it's "fast and furious" now.

ing care of the environment. The new facility has a thorough process for properly handling its emissions.

It involves a 4x4 foot tunnel system through which paint-tainted air passes before entering chambers where it is scrubbed, "repeatedly," before being released into the atmosphere.

"The genius is in the air-handling system," Wehner says. "I jokingly say that, that building is a big box around an air-handling system."

Of similar size and with similar

environmentally friendly features, the new facility will have about 80 workers. MAAS has been "very aggressive in its outreach" to prospective employees, who are hired through AIDT.

The airport authority has lost several employees to MAAS already, which Wehner says is a good thing.

"It's always very flattering when someone takes your employees because it shows they think a lot of them and the jobs they've done."

Not only that, he says, but MAAS provides an opportunity for people to shine professionally.

"To see these young men who painted cars in their previous lives get turned on to the possibilities of careers in aviation is really cool," Wehner says, adding that he has written several letters of recommendation for these individuals.

Partnerships with Bishop State Community College and Mobile County Public Schools (which has an aviation academy at B.C. Rain High School) promise to yield passionate employees in the future.

In such programs, young people learn that aviation is "not just about turning a wrench on an airplane." There is an array of career possibilities not immediately obvious.

"When you lay out a livery (aircraft paint scheme), for example, that is

"It's always very flattering when someone takes your employees because it shows they think a lot of them and the jobs they've done."

-Roger Wehner
Mobile Airport Authority

By Kaija Wilkinson



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F-35 like nothing else

It's been one of the most covered weapons system, and certainly the most expensive, ever. There have been countless stories about the problems with the fighter.

But the F-35 Joint Strike Fighter is now beginning to show that it's in a league of its own, a sophisticated weapons with capabilities heretofore unseen.

One of the most interesting criticisms of the fighter has been whether it would do well in a dog fight, and there have been ample indications that it would not do well in that scenario.

But that entirely misses the point. The F-35 is designed to take out potential dogfight opponents before they get close enough for that kind of fight, and to work with other aircraft to take on any enemy.

With any new weapons system, there will be problems along the way. But it's what comes out at the end that counts.

*David Tortorano
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done on a computer, so it is essentially the job of a graphic designer," he says.

"There are so many options. A lot of young ladies are enrolled in the aviation program at B.C. Rain," he says.

Wehner says he hopes such efforts lead to an increase in women in aviation. Another focus, he says, is military veterans.

"It's a highly regulated industry, and veterans typically have great soft skills associated with that," he notes.

Employment at MAAS' new paint facility may not stop at 80. That's because VT MAE can now pursue work on leased aircraft, which Wehner calls "retail" rather than fleet. He elaborates:

"A leased aircraft may end up getting painted three or four times. So when a plane goes off a lease she goes in to be painted white, then into prospective livery, then back into white if that deal doesn't work out and then into the next customer's livery. Right now, VT MAE can't pursue a lot of that lease work because, for all of those paint jobs, you have to fly the aircraft elsewhere to get it painted, and each flight can cost up to \$20,000-\$30,000.

"So now, having what we call a 'nose-to-tail' solution, they can pursue more work than they ever have before. It's kind of a synergy thing. (MAAS and VT MAE) can do more together than could ever do without each other."

MAAS 2 is a twin-bay facility that can accommodate larger aircraft up to a Boeing 757. In addition, Wehner envisions the facility painting large aircraft parts from tenants joining the Aeroplex fold.

"If they need something painted to aerospace quality, which is very high, we now have a shop that can do that for not just airplanes but big parts," he says. "They don't have to build their own paint shop and can save money, so everybody wins. There is potential for partnerships to evolve as more suppliers come to the campus since (MAAS 2) is now a solution."

Wehner arrived at Brookley three years ago after working as a site-selection specialist based in Washington, D.C.; Birmingham, Ala.; and Orlando, Fla. Since then, he has seen employment at the Aeroplex grow

from around 3,700 to nearly 5,000. He projects the upward trajectory to continue, anticipating the complex to have 8,000-10,000 employees within 10 years.

There are about 300 available acres at the Aeroplex, and MAA has been rearranging tenants from the complex's core to its periphery to make the most efficient use of its land. Inefficient older buildings could also be demolished and parcels of land reassembled as leases expire.

Says Wehner: "I think you will see us move into bigger elements in the value chain. We're really seeing a growth in aircraft interiors and structures right now, for example. I think we have room for one or two additional, very large projects here."

It's logical to assume such growth will lead to more retail and service offerings, such as the new Dunkin Donuts and credit union, at the Aeroplex. Wehner says a recent survey of workers showed they want a gym, dry cleaner, child-care center and dental office.

While some of these may be built on the Aeroplex proper, Wehner says a better strategy is to attract new retail and services outside the confines of the complex. In the meantime, employment growth has been good news for local food-truck operators.

As for permanent business, Wehner envisions a scenario similar to when Brookley was a thriving military operation during World War II and the area surrounding it bustled with shops. This approach, he says, could help revitalize thoroughfares that have been struggling, such as Dauphin Island Parkway.

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Spirit gets Mobile-built A321

Spirit Airlines took delivery Sept. 19 of its first A321 made at the Airbus U.S. Manufacturing Facility. Executives from Spirit and Airbus, 140 Spirit and 350 Airbus employees turned out for the event. Airbus anticipates delivering four planes a month out of Mobile by the end of 2017.