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COMMERCIAL MRO

MRO TRENDS: GAME-CHANGING CHALLENGES ARE AHEAD

OEM dynamics, capacity conundrum and IT trends could shape the future of commercial aviation MRO

PAGE 16



WHAT'S AHEAD FOR AIRCRAFT MAINTENANCE?

Four key predictions for 2015: Commercialization of space and UAS innovations, manufacturing surge of commercial aircraft, and tight military budgets will foster MRO growth.

PAGE 42

ROTORCRAFT

BELL 525 RELENTLESS

The first commercially certified fly-by-wire helicopter

PAGE 24

INDUSTRY OUTLOOK

BREAK GROUND FOR AVIATION

Government and economic development agencies provide incentives to spur aviation growth

PAGE 32



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COVER FEATURES: WHAT'S AHEAD FOR AIRCRAFT MAINTENANCE



COMMERCIAL MRO

16 MRO TRENDS: GAME-CHANGING CHALLENGES ARE AHEAD

OEM dynamics, heightened quality and reliability, capacity conundrum, and IT are trends that could shape commercial aviation MRO over the years ahead

By Jerome Greer Chandler



24

ROTORCRAFT

24 BELL 525 RELENTLESS

The first commercially certified fly-by-wire helicopter is designed with maintainability in mind

By Ronald Donner

INDUSTRY OUTLOOK

32 BREAK GROUND FOR AVIATION

Governments and economic development agencies are working together with industry to provide incentives to help spur local growth in locations such as Puerto Rico and Rockford, IL

By Barb Zuehlke

INDUSTRY OUTLOOK

42 WHAT'S AHEAD FOR AEROSPACE IN 2015

Four key predictions for 2015: Widespread commercialization of space and UAS innovations, a manufacturing surge of commercial aircraft, and tight military budgets will foster MRO growth

By Steve Justice



32



BELL HELICOPTER
facility in Piney Flats, TN.
BELL HELICOPTER

COLUMNS

5 EDITOR'S VIEWPOINT
Take a Look Forward
By Ronald Donner

44 ATEC INSIGHT
Don't Find Fault, Find a Remedy
By Ryan Goertzen

48 ARSA INSIGHT
How to Improve Part 145 – Lather, Rinse, Repeat
By Brett Levanto

50 GAMA INSIGHT
Today's Students Are Tomorrow's Leaders
By Pete Bunce

51 INSURANCE INSIGHT
How to Save Your Business
By Jamie Benthussen

54 PUBLISHER'S VIEW
Take a Look Back at 2014: What Did You Accomplish?
By Brett Ryden

DEPARTMENTS

53 ADVERTISERS' INDEX

53 CLASSIFIED ADVERTISING



12

FEATURES

GENERAL AVIATION

6 BELL HELICOPTER "FINISHES" ROTORCRAFT IN TENNESSEE
Each helicopter is "finished" to the exact specs of the customer
By Ralph Hood

INDUSTRY OUTLOOK

12 ROTORCRAFT OUTREACH TO A&P SCHOOLS
Each of us with a stake in the future of the helicopter industry should think how he or she can work with local A&P schools to promote careers in helicopter maintenance
By Harold L. Summers

AMT SOCIETY UPDATE

46 NEW MEMBERSHIP PROGRAM
By Ronald Donner

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TAKE A LOOK FORWARD

Trends and predictions that may shape the years ahead

Last year in conjunction with the 25th anniversary of *Aircraft Maintenance Technology*, many of our feature articles reflected back on past events and activities in our industry. We had a great time putting these articles together and hope you enjoyed them.

In this issue, the first of 2015, we're putting the past behind us and taking a look at several trends, predictions, and technologies that may shape the future of aviation and aircraft maintenance.

Steve Justice, director of the Georgia Center of Innovation for Aerospace, provides four key predictions for 2015 in his article, "What's Ahead for Aerospace in 2015." Mr. Justice concludes by saying, "I firmly believe that this is an exciting time for the aerospace industry in the United States."

Barb Zuehlke, senior editor of *Aircraft Maintenance Technology*, has been following how some governments and economic development agencies have collaborated with industry to provide incentives to help spur local growth. In her feature, "Break Ground for Aviation" Barb looks into a few large-scale development programs in Puerto Rico and Rockford, IL.

In the commercial and MRO segments, Jerry Chandler provides us with trends and insight that could shape the future of commercial aviation. Jerry discusses topics like quality, reliability, and technology impact on capacity, and OEM impact on maintenance.

Beginning with this issue, we have expanded on the number of columns by industry organizations in order to raise the amount of insight into our dynamic industry. In addition to our regular columnists, we've added insights from General Aviation Manufacturers Association (GAMA) and Aviation Technician Education Council (ATEC).

Slated for entry into service in 2016, Bell Helicopter's 525 Relentless is the world's first fly-by-wire commercially certified helicopter. In this issue Bell Helicopter leaders describe the company's design philosophy toward improved maintainability and reliability, and the Bell 525 aircraft maintenance training program at the Bell Helicopter Training Academy (BTA).

Enjoy the issue, Ron



BELL HELICOPTER

BELL HELICOPTER “FINISHES” ROTORCRAFT IN TENNESSEE

Each helicopter is “finished” to the exact specs of the customer. Each customization is based upon what the customer plans to do with each aircraft and how the customer wants it equipped to do that job.

By Ralph Hood

As a fixed wing pilot, I’m no expert on helicopters, but I have developed a tremendous respect for the east Tennessee facility of Bell Helicopter. You didn’t realize Bell Helicopter had a facility in Tennessee? They do indeed, in Piney Flats, which you probably never heard of either.

My respect arises from several areas of the operation.

WHAT THEY DO

First, I have a great deal of respect for what they do.

This facility has a unique role. It doesn’t manufacture helicopters, but it does get them ready for customers. The helicopters are built in Mirabel, Canada and are then ferried to Piney Flats. Typically they are “green,” which means painted with primer, and equipped with only basic avionics.



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BELL HELICOPTER'S Piney Flats facility readies this aircraft for new avionics.
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What happens next is awesome. Each helicopter is "finished" to the exact specs of the customer. The interiors are installed, exteriors are painted, avionics and other special equipment are installed, and customers' logos are added. The engines are preserved, because they will be unused during the customizing process. Each customization is based upon what the customer plans to do with each aircraft and how the customer wants it equipped to do that job.

A police helicopter requires one set of equipment or configuration; an emergency medical service (EMS) helicopter requires another. For example, the EMS craft may require a winch to evacuate victims. That winch swings outward from the craft on an arm, and will influence weight and balance depending on whether the arm is in or out and the weight of the victim. All of that is part of the customization.

A VIP passenger aircraft is much more straightforward but still consists of what the customer wants. Inside the facility recently I saw a VIP Bell 429 that was absolutely beautiful, with diamond-pleated leather seats and a truly gorgeous paint job. If I ever win the Power Ball lottery, I just may buy one of those!

Bell Helicopter makes a great contribution to the economy of east Tennessee and the USA. The facility employs about 500 people, and over the past couple years has delivered some 250 finished helicopters of which roughly 80 percent go to customers outside of this country. They are definitely a primary industry, bringing money back into east Tennessee.

TRAINING NEVER ENDS

I also respect the facility's employee training.

Richard A. Blevins, training department manager, says that employees must be craftspeople, and he's serious about that. Recently, Bell Helicopter held a special program to show media folks and area VIPs



CUSTOMIZATION IS based upon what the customer plans to do with each aircraft and how the customer wants it equipped to do that job.
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BELL HELICOPTER

has delivered some 250 finished helicopters over the past several years of which 80 percent go to customers outside of this country. BELL HELICOPTER

the area's Tennessee Aviation Initiative (TAI). Bell Helicopter was one of the original leaders of TAI. Blevins was on the founding committee, still is, and still works hard for the TAI.

TAI is based in large part on the building of STEM (science, technology, engineering and math) skills. TAI

exactly what craftsmanship means. I participated and it was fascinating. Each of us was taught to prepare a wire with a connector at one end, and also taught to rivet two pieces of metal together. I still have my connector and riveted plates, and bet all the other visitors have theirs.

You can bet those VIPs left there with an expanded viewpoint about the type of people Bell Helicopter hires and trains.

Blevins and Dennis Carothers, manager of the Bell 429 Customizing Value Stream, explained to me that the facility completes a pre-hire assessment with the goal to find highly skilled potential employees to become finished craftspeople. A new hire gets five or six weeks of initial training, then continues to train throughout his/her career. Training never stops, because aircraft/avionics improve regularly, the FAA changes regulations, and the competition never sits still.

POSITIVE COMPANY CULTURE

I respect the relationship between management and other employees.

On several visits to the facility, I noticed that the employees are delighted and proud to be working for Bell Helicopter. They obviously enjoyed teaching us about making the connectors and riveting the metal plates.

Watching managers interact with employees was just as pleasant. As I walked with Blevins and Carothers, they introduced the employees to me as we passed. They knew them by name, told me what they were doing and — in some cases — what they were going to be doing in the future. One, for example, was soon going to be training other people himself.

Bell Helicopter cross-trains employees for many jobs so they can move around while remaining engaged and proud of their work.

COMMUNITY MINDED

Yet another thing I deeply respect about Bell Helicopter is their relationship with the community.

I first met Blevins when a group of community leaders began promoting

encourages STEM education in schools ranging from elementary through college, and — with a lot of help from Bell Helicopter — it really is happening. In fact, when a local community college adds special STEM classes next year, Bell Helicopter employees will be teaching many of those classes.

Make no mistake — TAI can change this area and Bell Helicopter is determined to make that happen.

To sum it all up: If I had kids working for Bell Helicopter, I'd be proud of them and happy for them. **AMT**



RALPH HOOD is an award-winning columnist (he writes for *Aircraft Business*), a salesman and sales manager (he sold airplanes, for crying out loud!), a teacher (he taught college-level aviation management) and a professional public speaker

who has entertained and enlightened audiences from Hawaii to Spain, and from Fairbanks to Puerto Rico.



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ROTORCRAFT OUTREACH TO A&P SCHOOLS

Each of us with a stake in the future of the helicopter industry should think how he or she can work with local A&P schools to promote careers in helicopter maintenance. *By Harold L. Summers*



HAROLD L. SUMMERS is HAI's director of flight operations and technical services. HELICOPTER ASSOCIATION INTERNATIONAL (HAI)

It's no secret that the helicopter industry around the world has a personnel problem: too many people are retiring and there are not enough new recruits coming in. The shrinking pilot population is a frequent topic of conversation.

Less common is discussion of the other major shortage in vertical aviation: aviation maintenance

technicians (AMTs) and, more specifically, certificated airframe and powerplant (A&P) mechanics. But that shortfall is just as critical to the continued health of our industry as the pilot shortage. After all, what good is a full roster of pilots if you can't keep the helicopters they're supposed to fly in the air?



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But we don't have to — we can't — just sit and wait for the A&Ps and AMTs to come to us. We need to proactively feed the system that feeds us.

What do I mean? First and foremost, we should help A&P schools make students aware of the helicopter industry as a viable and vibrant alternative to fixed-wing shops.

Here's the challenge. As we all know, the FAA makes no distinction between fixed- and rotary-wing aircraft when it comes to A&P mechanic certification. And because there are so many more fixed-wing aircraft out there for them to train on, most A&Ps graduate thinking fixed-wing is their only option.

But we can change that, and here's how.

PROVIDE ROTORCRAFT AND RELATED EQUIPMENT TO SCHOOLS

Introduce *all* maintenance students to rotary-wing aircraft early on. Sheet-metal work is sheet-metal work; engines are engines; hydraulics are hydraulics. You get the point. It doesn't matter if the airfoil spins or is fixed. So let's give students preparing for a career in aviation maintenance some rotorcraft to work on!

At a recent Helicopter Safety Advisory Conference meeting, I spoke about the A&P shortage with the owner of a maintenance and completion facility. He mentioned that his company has a number of accident airframes that will never fly again. At the same meeting, I also spoke to a representative from an airframe manufacturer who said his company had a number of older aircraft coming in as trade-ins. In each case, we talked about the possibility of lending or donating the airframes and systems to A&P schools as training aids.

Not long afterwards, I met with HAI board member David Bjellos, who relayed a similar conversation he'd had with another manufacturer. "We're working on getting some surplus OH-58s for an A&P school in Washington, D.C.," he told me. "Many municipalities have retired equipment that could be used in the training of these future A&Ps. If we just ask around, there are plenty of opportunities."

GET TO KNOW YOUR A&P SCHOOL — AND THE STUDENTS

If you're going to share, you first have to know who to share with. Do you know the aviation technical school or schools near you? Have you ever contacted them? Do you allow — or better yet, encourage — your maintenance techs to help out at the schools? Do you invite the schools to bring their students to your shop and see a real-world work environment? The Aviation Technician Education Council (ATEC — www.atec-amt.org) is an affiliate member of HAI and an excellent resource for identifying schools that could use your help.

Once you've established a relationship with local schools, consider: do you have any components that are beyond life limits or otherwise unflyable? It doesn't have to be anything as grand as a whole airframe, although if you've got one of those, I'll bet schools would love to get their hands on it. It could be an engine — piston or turbine — or a gearbox, rotor hub, or avionics stack. Really anything would be useful, including tooling and test equipment.

The point is, if we want to bring new A&Ps into the helicopter industry, we've got to first make them aware of the option and familiar with the work.

START AN APPRENTICE PROGRAM

We are aware of at least one HAI member with a sizeable maintenance operation who has gone a step farther: they've started an apprenticeship program. They're "growing their own," so to speak. This means that within 30 months, that apprentice may be eligible to test for an A&P certificate from the FAA. Our member could then hire a skilled technician who is also trained in the ways our member likes things done. I'll take a more in-depth

look at apprenticeship programs in a future issue of ROTOR.

EASE TRANSITION FOR MILITARY TECHS

Of course, there is one source of trained technicians we haven't mentioned: the military. HAI is

working with ATEC, some technical schools, the U.S. Department of Defense, the FAA, and veterans' groups to ensure that military aviation technicians who want to transition to the civilian industry can get the appropriate, maximum credit for their acquired skills. I'll also address these ongoing efforts in future issues.

HOW YOU CAN HELP

As you can see, addressing the A&P shortage is a complex issue. That's why we in HAI's Flight Operations and Technical Services department, along with our members on the HAI Technical Committee, are taking a multifaceted approach to addressing the challenge. We strongly believe that this issue directly affects the economic viability of our industry. Each of us with a stake in the future of the helicopter industry should think how he or she can work with local A&P schools to promote careers in helicopter maintenance.

Part 147 of the U.S. Federal Aviation Regulations, which governs our A&P schools, was developed to provide a rapidly expanding fixed-wing aircraft community with trained mechanics. But that doesn't mean we can't work within the system to turn out AMTs who recognize the opportunities in the helicopter industry. We just have to help them see the rotors. **AMT**

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MRO TRENDS: GAME-CHANGING CHALLENGES ARE AHEAD

OEM dynamics, heightened quality and reliability, capacity conundrum, and information technology are trends that could shape commercial aviation MRO over the years ahead.

By Jerome Greer Chandler



B737 AIRCRAFT in Hangar 1 at HAECO Americas.
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INSET: MRO WORKERS viewing tablet featuring AAR's™ proprietary StAAR MRO software which manages and tracks every step of airframe maintenance projects. AAR CORP.



With the 25th anniversary of *AMT* behind us, we thought a look at the trends that could shape commercial aviation MRO over the years ahead was in order — the management, markets, and technology of the near to mid-term future. Here goes:

ORBITAL DYNAMICS OF OEMS

If there's one overarching challenge to the make-up of MRO as we've known it it's "How do the [Part 121] airlines' maintenance and engineering divisions stay relevant in an increasingly OEM-centric world?," says Jonathan Berger, vice president of the consulting firm ICF International.

Berger says the "dominant position" already occupied by engine OEMs is only the beginning. Airframe work is falling their way, as are components. The reason?: Cost entry by would-be competitors. Tooling and expertise can be so costly that the airlines and MROs alike are saying, "We can't be bothered by that."

THE IMPLICATIONS OF HEIGHTENED QUALITY AND RELIABILITY

OEM product too tells the tale of what lies ahead. Berger says, “The quality of the products the OEMs are producing is such that the stay on wing is significantly longer than previous-generation aircraft and engines” — some two to three times longer than predecessor aircraft. For example, while a 767-300 might be scheduled for an airframe heavy check every 18 months, its 787 successor might have to undergo a similar inspection every 36 months. A checks which rolled around every 500 flight hours for a seven-six might be scheduled every 1,000 FH for the Dreamliner.

The upshot: fewer shop visits. Berger says that renders it even harder for airlines and MROs to “get in the business and ... maintain that equipment in-house. There’s not going to be enough volume.”

Nor, perhaps, enough expertise, expertise gained the old-fashioned way: by working the aircraft type again and again. Higher quality means fewer shop visits. Good. But how do maintenance personnel develop and grow needed component-expertise when fewer parts are failing? “when they used to in the past.”

Interestingly, the ICF vice president doesn’t look for a further shakeout among MROs as a result of fewer maintenance

visits. “I still think there will be enough work,” he says. “As newer aircraft come into the fleets, they are being offset by ... retirement and parting out of older equipment.”

All this said, the question still stands: how do carriers and MROs stay relevant given the inexorable gravitational pull of the OEMs? Berger sees the emergence of more licensing agreements by OEMs of independent service centers, perhaps more joint ventures. Collaboration is the key, not necessarily competition.

THE CAPACITY CONUNDRUM

Seen against a backdrop of improved product, fewer maintenance visits, and OEM collaboration is the ever-vexing issue of capacity — ensuring there’s enough hangar space, and the people to man it.

“We’re starting to see some signs of additional capacity coming on board that

maybe is getting a little ahead of where the market should be,” contends Jim Sokol. Having retired as Southwest Airlines’ vice president of maintenance operations, the long-time industry pro is now president of MRO Services at HAECO Americas.

He’s not saying the sky is falling, just keeping a weather eye out. Sokol notes in the past that the MRO industry “has been fast to overreact and add a lot of capacity irrationally.” Not this time. “What’s happened is that as the airlines have consolidated, MROs have been consolidating.” The upshot: “There’s been a better use of capacity in general by MRO providers, particularly on the airframe side.”

Whole fleet types — *en masse* — are being maintained by single, select MRO providers. This simplification of things means the ability to better plan, more meticulously map out, the meetings of empty bays and airplanes. While nailing the correct capacity will probably forever be an issue, “you’re not having peaks and valleys as much,” says Sokol.



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A B757 in Hangar 3 at HAECO Americas. HAECO AMERICAS

Still, folks are adding bunches of bays. Aviation Technical Services opened a newly renovated 607,000-square-foot facility at Kansas City International Airport last July. As this piece gets set to go to press AAR operates out of a half-dozen locations, with a seventh site in Rockford, IL, due to debut in about 18 to 24 months.

While AAR Group vice president, Repair and Engineering, Technology Products, Dany Kleiman believes the industry as a whole is still adding “way too much” capacity he contends the surplus is confined to the narrowbody arena. “[With] the narrowbodies,” he says, “usually you’re dealing with overcapacity. The strongest are surviving and the weakest disappearing.” That’s why his company is focusing on widebodies “in order to capture some of the work which is being off-shored to ... Asia-Pacific. We want to bring it back home.”

One way to control capacity, while accommodating growth in the same instant, is to become more efficient. Over the past four to five years Kleiman says AAR’s efficiency has skyrocketed. Five years ago, he says the MRO produced 3 million man-hours. Today it’s in the neighborhood of 5.5 million. Conceding AAR added a pair of plants over that time, Kleiman says, “The majority of the growth came through [then] existing facilities.”

THE TECHNOLOGY IMPERATIVE

Enabling that growth was information technology, the *homegrown* variety. And therein lies another trend. Kleiman contends, “The majority of the actually day-to-day tools which are supposed to

make our operation more efficient are going to be *self-developed* and *self-deployed*.” He’s a true believer in “each company working to enhance its own IT quality- and process-oriented tools.” AAR itself has a number of such self-made systems.

If custom-made managerial systems are trending, so too are ever more sophisticated sensors, the kind aimed at making life easier for the maintainer down on the hangar floor.

There are a slew of sensors in development, stuff that seems exotic today but could become commonplace before you blink. One such effort emanates from the National Institute for Aviation Research at Wichita State University. Working with the National

Aeronautics and Space Administration, as well as the National Institute of Aerospace, NIAR is birthing something called SansEC, or Sans Electrical Connection. This ‘Smart Skin’ sensor is designed for use on composite aircraft structures. The aim is to provide lightning damage protection and diagnosis. It does this by sensing changes in the electromagnetic impedance of materials it’s near.

“What makes this sensor so exciting,” says Paul Jonas, NIAR’s Environmental Test Labs director, “is that we can use it in conjunction with the existing copper material typically used for lightning strike protection.”

If it proves out, that application would be worth it in-of-itself. What really jazzes up Jonas is the notion that “The SansEC sensor has other implications as well.” Among the possibilities: “a fuel gauge that doesn’t have to be located inside the fuel tank.”

A prepared release from NIAR says the sensor works even outside the tank because it uses “electromagnetic property changes to sense the addition or removal of fuel from the tank.”

Such a system could save technicians a handful of headaches.

Jonas tells *AMT*, “I think it has a wealth of potential to be a game-changer in the aviation industry.”

Higher quality product from OEMs that lingers longer on-wing; home-grown high-tech; collaborative arrangements among OEMs, MROs, and airlines; and the never-ending search for that elusive capacity sweet spot. The game *is* changing indeed. Best buckle up for the ride. **AMT**



JEROME GREER CHANDLER is a two-time winner in the Aerospace Journalist of the Year competition’s Best Maintenance Submission category; he won in 2000 and 2008. His best-seller ‘Fire and Rain’ chronicles the wind shear crash of Delta Flight 191 at DFW. Chandler’s passion for aviation safety is more than professional. It’s personal. Two of his relatives have perished on commercial airliners, one of them in the infamous Braniff Electra crash of 1959.

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THE BELL Helicopter 525 Relentless on the production line. PHOTO PROVIDED BY BELL HELICOPTER

BELL 525 RELENTLESS

The first commercially certified fly-by-wire helicopter is designed with maintainability in mind

By Ronald Donner

SLATED FOR ENTRY INTO SERVICE IN 2016, company officials tout the Bell 525 Relentless as being ready to revolutionize the helicopter industry as the world's first fly-by-wire (FBW) commercial helicopter. The FBW system will use three flight control computers and triplex electro-hydraulic actuators in place of traditional mechanical control systems.

Matt Hasik, executive vice president, Commercial Business says, "The Bell 525 fly-by-wire flight control system represents the next generation of rotorcraft capability, a step-function change in both safety and aircraft performance. The 525 will be the first commercially certified fly-by-wire helicopter, providing tremendous situational awareness to

the pilot — for instance, enabling the pilot to keep his/her eyes outside the cockpit while the aircraft maintains steady operational control.”

Fly by wire represents a significant change in the pilot’s ability to maintain control over the aircraft, during such critical missions as offshore oil and gas or search and rescue. The pilot can place the aircraft in a hover over a given spot without having to keep his/her hands on the cyclic or initiate a turn and the helicopter will maintain the attitude, heading, altitude, and speed commanded.

USE OF COMPOSITE MATERIALS

As a general rule, the Bell 525 utilizes composite parts on the outer mold line (OML) of the aircraft (sidebodies, doors, skins, fairings) as well as for major structural components. This includes fuel tank enclosures, keel beams, bulkheads, floor panels, as well as most of the aft fuselage, tailboom, and empennage. Michael Deslatte, manager, IPT Engineering, 525 Relentless Airframe, says, “These decisions were based on design trade studies in preliminary design that helped determine the cost/weight trade for each configuration.”

Deslatte goes on to describe the largest composite parts are the cockpit and main cabin sidebodies, the one-piece composite boat hull, the roof deck, and the LH and RH tailboom skins. Deslatte says, “Because one of the design goals of the Bell 525 was a reduction in part count and removal of joints, many of our composite parts are larger than one might expect. We used unitized composite structures to lower overall cost as there are fewer parts to source and manage. This process also reduces the number of joints which, historically, has been a source of corrosion and premature failure in rotorcraft.”

The remaining metallic components in the airframe are typically used where major external loads are introduced such as roof beams, nose landing gear support keels, main landing gear spars and carry-through, nose windshield center post, tail rotor gearbox support fitting, and similar areas.

DESIGN PHILOSOPHY IMPROVES MAINTENANCE

One way Bell Helicopter drives improved maintenance is through its Maintenance Steering Group-3 (MSG-3). The MSG-3

process, used on the Bell 429, Bell 525, and Bell 505 aircraft, is a top-down methodology allowing Bell Helicopter product support engineers to determine the most appropriate scheduled main-

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ARTIST RENDERING cutaway view showing the Bell 525 Relentless interior in a corporate seating configuration. BELL HELICOPTER

tenance task(s) and interval(s) for the aircraft's major components and aircraft structure. MSG-3 based maintenance is designed to drive improvement in aircraft availability and to build in operational safety nets while optimizing cost of ownership.

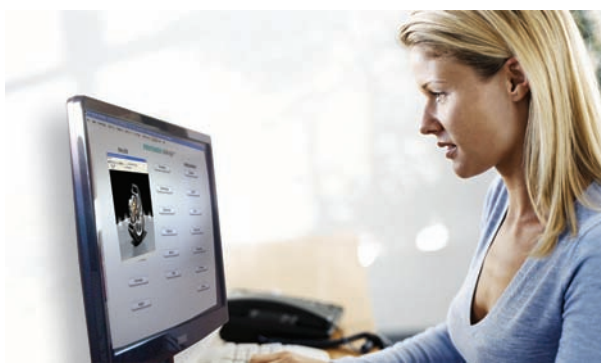
Through significant data analysis, MSG-3 develops a reliability-centered-maintenance (RCM) program. The RCM program helps determine failure modes which may cause functional failures and develops subsequent maintenance tasks to prevent them. This

approach differs from traditional maintenance processes, where all components are overhauled at a specified time, regardless of their current performance.

"MSG-3 isn't new to aviation, but is relatively new to the rotorcraft industry. Bell Helicopter was the first rotorcraft OEM to use the Maintenance Steering Group-3 (MSG-3) process; it was used on the Bell 429 and it is currently being used on the Bell 525 and Bell 505," says Margaret Triantafyllou, supervisor, Product Support Engineering. "This team-based

approach allows us to develop the Initial Maintenance Schedule for the aircraft." The MSG-3 analysis covers aircraft systems, structures, zonal inspections, enhanced zonal inspections, and L/HIRF.

The Bell 525 Relentless has some very robust design requirements for maintainability. All line replaceable units (LRUs) are replaceable within 30 minutes or less. The Bell 525 team accomplished this by developing a functional and simplified workspace with a limited list of common fasteners for designers to choose from, preventing annoy-



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ances like finding a Phillips-head screw next to a Torx-head screw. Similarly, fasteners within the same row are required to have the same grip length. Another example of simplified maintainability is the interchangeable panels and wind-screens.

The aircraft was designed to minimize the need to remove major structural access panels

All line replaceable units (LRUs) are replaceable within 30 minutes or less.

and unrelated system components to gain access to troubleshoot, remove, inspect, clean, and re-install LRUs. Placement of system components was considered to ensure they were readily accessible and easily removable. Additionally, human factors software was used to model various maintenance scenarios for the 20th percentile female and 95th percentile male mechanics to perform common maintenance procedures.

From a maintenance and reliability perspective, Bell Helicopter's Integrated Vehicle Health and Monitoring (IVHM) system allows considerably more complex data to be pulled from the aircraft than



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525 Relentless
on the
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what is available on today's aircraft. The IVHM system is a connected network allowing Bell Helicopter to gather critical fleet information for analysis. This data is then shared with operators and maintainers for more efficient aircraft management and operations. In addition, Bell Helicopter will work with its customers to facilitate the transfer of aircraft and maintenance data from operators to suppliers to improve customer support, supply chain, and product designs.

The Bell 525's design engineers were also put into the maintenance environment, allowing them to experience the results of all of their designs. The result was collaboration between design and maintenance that led to efficiencies in maintainability. The team also trained in Computer Aided 3-D Interactive Application (CATIA®) which gives them access to models in real time so they can promptly identify maintenance issues. This led to construction of numerous mockups for additional practice and diagnostics. Discoveries made using



THE BELL 525 utilizes composite parts on the outer mold line of the aircraft as well as for major structural components.
BELL HELICOPTER

these mockups led to suiting the components of the Bell 525 Relentless to a variety of body types so they are safely and easily accessed by a majority of maintainers.

Since inception of the Bell 525 program Bell Helicopter has worked closely with its Customer Advisory Panel (CAP) on the design of the aircraft to ensure produceability and maintainability. The CAP is made up of a cross-section of customers, including maintainers, who use a variety of Bell aircraft for various missions.

Maintenance is planned to be a mix of operator field maintenance, and Bell Helicopter Service

Centers and/or select Bell Helicopter Authorized Service Facilities capable of performing larger maintenance tasks that the customer may not have the capability to perform.

NEW AIRCRAFT NEW TRAINING

According to Charles Fisher, senior manager, Domestic Training Operations for the Bell Helicopter Training Academy (BTA), the Bell 525 aircraft maintenance training program expands on Bell Helicopter's history of supporting its aircraft to take advantage of the unique technology that makes the Bell 525 a very maintenance friendly aircraft. The technician's basic A&P mechanical and avionics skills are supplemented with training on how to read and act upon the unique diagnostic information being fed from the aircraft to the IVHM system. Understanding the robust monitoring and reporting resources of the Bell 525 simplifies both basic aircraft maintenance and advanced troubleshooting.

The BTA is using 3-D-rendered, high fidelity, interactive graphics to represent aircraft components and step-by-step maintenance actions, including nomenclature and special required tools. Fisher says, "These graphics have digital picture quality for an authentic representation of each component. As BTA instructors provide detailed instruction on system description, theory of operation, and component orientation, they can depict coordinating component representations and system assemblies at student stations. These media elements are interactive, via instructor smart-board manipulation and student workstation touch screens." The interactive, 3-D technology allows students to work at their own speed and to "play" with various components of the aircraft from their personal computer or tablet — enhancing student mastery of maintenance actions while reducing the time it takes to perform these actions once hands-on training begins.

The Bell 525 maintenance training will offer customers more geographical flexibility and customization. "We will increase the capability of our customers to access systems descriptions and theory of operation content remotely. Furthermore, we continue to develop our global training strategy to allow customers regional access to training," says Fisher.

More can be found by visiting www.bellhelicopter.com. **AMT**

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BREAK GROUND FOR AVIATION

Governments and economic development agencies are working together with industry to provide incentives to help spur local growth in locations such as Puerto Rico and Rockford, IL

By Barb Zuehlke

Innovative growth for aviation segments was a big part of 2014 and will influence the future of the industry. Governments and economic development agencies are working together to provide incentives to help spur growth.

Puerto Rico will soon be the site of Lufthansa Technik and Honeywell facilities focused on MRO services and research.

And the education-industry focus of Rockford Area Economic Development Council (RAEDC) has increased the impact of aviation in Rockford, IL, with the growth of Rock Valley College and AAR.

Build it and they will come.

PUERTO RICO

Puerto Rico is becoming an attractive location for the aerospace industry thanks to the efforts of Governor Alejandro Garcia Padilla and the Puerto Rico Industrial Development Company (PRIDCO). Companies such as Honeywell Aerospace, Infosys, and UTC Aerospace Services are looking at Puerto Rico (See related sidebar).

LUFTHANSA TECHNIK

facility in Puerto Rico will provide base maintenance services for the Airbus A320 family aircraft. Spirit Airlines will be the first customer in July 2015 and JetBlue will follow in November.

LUFTHANSA TECHNIK



PRIDCO has been committed to attracting investment and creating jobs for Puerto Rico since 1942. As a government owned economic development organization, it offers support to companies in areas such as aerospace, life sciences, IT, and electronics.

Puerto Rico has been chosen for aviation projects given its competitive work force, its compliance with all federal regulations related to defense activities, and the economic incentives.

Puerto Rico is also assisting companies with training support through the University of Puerto Rico. "The main criteria for a company looking for a place to set up operations are the quantity and quality of skilled workers. Puerto Rico excels in that area," says Garcia Padilla.

LUFTHANSA TECHNIK

Governor Padilla and Dr. Thomas Stueger, chief executive products, services and IT at Lufthansa Technik, turned the sod last November to mark the start of construction of the company's new overhaul facility, Lufthansa Technik Puerto Rico. Lufthansa Technik is strengthening its presence in the Americas, which are already home to Hawker Pacific Aerospace, BizJet, and Lufthansa Technik Component Services, by adding base maintenance services for Airbus A320 family aircraft.

"Lufthansa Technik Puerto Rico will enhance our access to the world's largest aviation market in many respects and bring us closer to both existing and potential customers," says Dr. Stueger. "In JetBlue and Spirit Airlines we have reliable partners and customers whose airframe maintenance needs and requirements can be optimally met by Lufthansa Technik Puerto Rico. The great support we experience from Governor Padilla and his administration team is much appreciated and crucial for moving our project forward."

PRIDCO has been committed to attracting investment and creating jobs for Puerto Rico since 1942. As a government owned economic development organization, it offers support to companies in areas such as aerospace, life sciences, IT, and electronics.

"Puerto Rico's partnership with Lufthansa Technik represents the cornerstone of the avia-

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GROUNDBREAKING FOR the Lufthansa Technik MRO facility: Charlie Rue, Spirit Airlines; Jeff Martin, JetBlue; Judy Rising Reinke, deputy director general of Global Markets and the U.S. and Foreign Commercial Service; Antonio Medina, PRIDCO; Dr. Thomas Stüger, Lufthansa Technik; Governor Alejandro Garcia Padilla; Elmar Lutter, Lufthansa Technik; Alberto Baco, Secretary of Economic Development, Ingrid Colberg, Ports Authority Director; and Sören Stark, Lufthansa Technik.

tion industry my administration is developing,” said Governor Padilla. “Lufthansa Technik’s investment elevates the Island’s presence in the aerospace industry and helps create highly skilled jobs in a fast-growing sector of the world economy.”

The new hangar will feature five overhaul lines across more than 215,000 square feet of space. With its state-of-the-art technologies, aircraft remain in a single line for painting following their overhauls saving time and money in the overall maintenance process.

The layout of the hangar is based on existing base maintenance operations of the Lufthansa Technik Group, where the knowledge in the overhaul of this short-haul aircraft type is bundled; rapid turnaround times and high overhaul quality at competitive prices ensure customer satisfaction.

“We are transferring this recipe for success to our new American facility,” explains Sören Stark, senior vice president Aircraft Base Maintenance Lufthansa Technik. Spirit Airlines will become Lufthansa Technik Puerto Rico’s first customer in July 2015 and JetBlue will follow in November.

“Through our practical training at established overhaul sites, we ensure that Lufthansa Technik’s quality proposition is fulfilled all over the world,” says Elmar Lutter, CEO of Lufthansa Technik Puerto Rico.

As part of the overall incentive package, Puerto Rico is offering educational resources as well. The Aviation Maintenance Institute in Ceiba will move to

Aguadilla near the new Lufthansa Technik Puerto Rico operation. The newly founded Aerospace and Aviation Institute of Puerto Rico (AAIPR) will play an important role in building up the Lufthansa Technik facility as well as other MRO operations at Rafael Hernández Airport (BQN) in Aguadilla. “With the Aviation Maintenance Institute, the University of Puerto Rico is supporting Lufthansa optimally through its offer of modular training courses and the combination of work experience and studies,” explains Prof. Wilmer Arroyo, executive director of the AAIPR.

HONEYWELL AEROSPACE

First announced in April of last year, Honeywell Aerospace executives held a ground breaking ceremony in December 2014 for its new research and development laboratory. Honeywell’s investment in construction, equipment, and training is estimated in \$35 million. The construction timeline and related permit process of the 73,000-square-foot facility has already been completed and construction is expected to be done by October 2015.

“This new state-of-the-art facility in Puerto Rico will enable Honeywell to expand our core competency in designing, developing, and testing a wide range of advanced aerospace avionics and electric power technologies,” says Bob Smith, vice president

Continued on page 38

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HOW TO ACCOMPLISH GROWTH PLANS

AMT spoke with Antonio Medina Comas, executive director of Puerto Rico Industrial Development Company (PRIDCO), on how it directed efforts for aviation growth in Puerto Rico.

AMT: When did the initiative to add aviation/aerospace companies to Puerto Rico start?

Since coming into office on January 2013, the administration of Governor Alejandro Garcia Padilla has been committed to diversifying the local economy with key initiatives in different economic segments. The focus on aerospace is one of those efforts. The Puerto Rico Industrial Development Company (PRIDCO) — a key component of the economic development cabinet of Governor Garcia Padilla — has structured an industrial development strategy that takes into consideration the strengths of Puerto Rico, such as its highly skilled human capital and the economic incentives provided for several economic activities. As part of the efforts to structure and implement this strategy, the aerospace segment has been identified as one of the emerging segments where Puerto Rico can effectively compete with other jurisdictions.

AMT: How was Puerto Rico promoted to companies?

Puerto Rico is attracting aerospace companies by a combination of business development efforts that include networking sessions, one on one visits and meetings, trade shows, and public relations initiatives, among others, that seek to highlight Puerto Rico's capabilities in this field. These capabilities include the availability of a large STEM talent pool, economic and tax incentives for manufacturing and export services activities, and the benefits of being a U.S. jurisdiction protected and regulated by federal law in many fields such as Intellectual Property and Defense.

AMT: What Puerto Rico resources were emphasized to companies?

Resources for aerospace companies in Puerto Rico include a strategic location in the Caribbean, FAA and other federal regulations applicability, world-class airport access, advanced telecommunications infrastructure, STEM-ready talent pool, and economic incentives.

AMT: What types of incentives are being offered to encourage development?

Puerto Rico offers a set of incentives that can help aerospace and other companies thrive and increase the economic benefit of doing business in the island. For instance, manufacturing activities, including those related to the maintenance, repair, and overhaul of aircraft, are

covered by Act No. 73, known as the Economic Incentives for the Development of Puerto Rico Act. This law provides attractive tax incentives, including a 4 percent tax rate as well as cash grants for job creation and the development or improvement of infrastructure. Also, Act No. 20, known as the Promotion of Export Services Act, provides a similar framework in terms of tax incentives — including a 4 percent tax rate — for companies that establish and expand their export services businesses in Puerto Rico.



ANTONIO MEDINA
Comas, executive director of Puerto Rico Industrial Development Company (PRIDCO).
PRIDCO

AMT: How long has it taken for a company that expresses interest to commit to building a facility?

This will depend on the complexity of the deal and the project. However, this administration has at the top of its priorities all projects related to economic development, particularly those initiatives related to the aerospace segment. We can take, for example, the investment of Lufthansa Technik. Talks with the company began early in 2013 and today, the construction process of its MRO facility is well-underway as a result of a negotiation that included public and private investment and economic incentives. Another great example is the new project of Honeywell Aerospace. Talks for this development began on July 2013 and today the construction is also underway, with an agreement that also includes public and private investment as well as incentives.

AMT: Since the initiative started how many companies have committed to locating in Puerto Rico?

Lufthansa Technik is developing a new aviation maintenance, repair and overhaul (MRO) facility in Puerto Rico. Honeywell Aerospace will expand its operations in Puerto Rico to establish an electromagnetic compatibility and environmental test laboratory at Las Américas Technology Park, in the municipality of Moca. UTC Aerospace Systems has created 200 new jobs over the last year to support its manufacturing capabilities in Santa Isabel, Puerto Rico. Infosys is making a \$9 million investment to develop a business outsourcing operation. Seaborne has relocated its corporate headquarters to San Juan, Puerto Rico.

INDUSTRY OUTLOOK



THE NEW 200,000-square-foot AAR hangar maintenance facility in Rockford, IL, will be its seventh and is expected to be operational in early 2016. AAR CORP.

of engineering and chief technology officer at Honeywell Aerospace. "This move is a clear demonstration of Honeywell's valued partnership with PRIDCO and the broader Puerto Rican community, and underscores our commitment to providing our customers with industry-leading aerospace solutions."

"This is an exciting time for Honeywell Aerospace and our employees," says Tim Mahoney, Honeywell Aerospace president and

CEO. "Honeywell's investment in the new lab will help us continue to design products that meet the increasingly complex needs of today's aircraft. It is clear that Puerto Rico is becoming an important part of the aerospace industry."

"We are thrilled with the results that the aerospace cluster strategy is driving to Puerto Rico in terms of economic development and growth," adds Antonio Medina Comas, executive director of PRIDCO. "This announcement

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comes just two weeks after Lufthansa Technik and the Commonwealth formalized an agreement to establish a major MRO operation in Aguiadilla.

“At PRIDCO we are proud and excited to see how important projects, that were once conceived as major economic drivers in our industrial development roadmap, begin to bear fruit,” adds Comas.

ROCKFORD

“The Rockford Region supports its long-term goals to have an comprehensive aerospace and aviation ecosystem by employing six major strategies, originally outlined by our regional industry leadership,” says Carrie Zethmayr, executive director, trade & investment for the Rockford Area Economic Development Council (RAEDC).

“To further define the long-term goal: a comprehensive aerospace and aviation

Rockford
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AEROSPACE

RAEDC

ecosystem will offer a complete aircraft manufacturing, assembly, and R&D supply-chain, led by our existing tier-one suppliers and ultimately an aircraft assembly operation,” Zethmayr says. “As well, the Chicago Rockford International Airport (RFD) will have a complete supply-chain of aviation services, from leading air cargo operations and logistics services in the nation by tonnage, to complete maintenance, repair, and overhaul of aircraft. As well, our education institutions are aligned to achieve ramp-up of these industries, lock-step with their growth.

“We have made significant strides toward achieving this comprehensive ecosystem, most notably in recent years through Woodward’s announced expansion in 2012, and AAR’s announced development of an MRO operation at RFD in 2014. And the expansion of Rock Valley College’s aircraft maintenance program announced in 2014 will ensure sustain-

ability of these programs.”

The six strategies employed to achieve RAEDC’s current success, and guide it toward its long-term vision are:

- Claiming the brand of the Rockford

region as the future of the aerospace and aviation industries

- Growing a 21st century work force to feed innovation, and power the manufacturing

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GROUNDBREAKING

OF the Honeywell research facility in Puerto Rico: Armando Franco; José Avilés, mayor of Moca; Antonio Medina Comas, director of PRIDCO; Gov. Alejandro Garcia Padilla; and Frank Holzer, Honeywell Aerospace. PRIDCO



- Elevate the existing supply chain through ongoing training and development activities
- Secure business opportunities for the existing supply chain
- Attract new companies to establish operations in the market
- Foster an environment of innovation and thought-leadership “These strategies operate in symbiosis with one another to

elevate the Rockford region in the international aerospace and aviation industry,” Zethmayr says, “and are fueled by the collaboration we are able to achieve between our private- and public-sector partners.” Success is seen in these numbers for 2014: 2,500 jobs created or restored; 2.2 million square feet of new/expanded business space; and \$295 million invested in the Rockford region.

AMT covered the efforts of Rockford Area Aerospace Network (RAAN) and RAEDC as a mecca for aerospace companies, in Fueling Your Career with JiET-A, August 2013.

Throughout 2013, representatives from Rockford attended major aviation shows such as Ebace, Paris Air Show, MRO Americas, EAA

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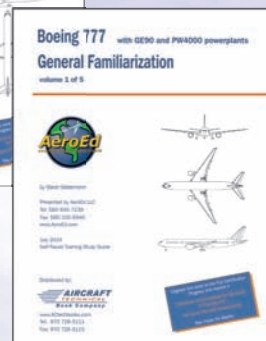
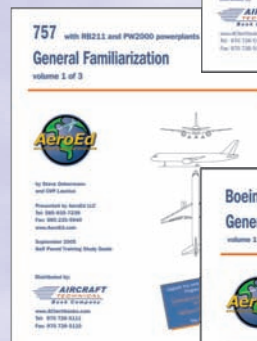
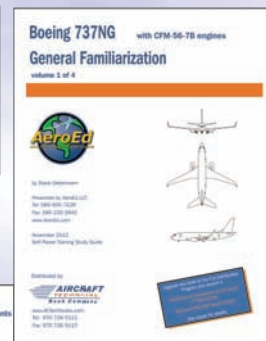
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AirVenture, and NBAA events to showcase the benefits of the area. And it has provided results.

The College of Aviation at Embry-Riddle Aeronautical University's Daytona Beach Campus partnered with Rockford Public Schools in 2013 to establish an Aerospace Institute at Jefferson High School. The program gives high school students a collegiate model of aviation education to introduce them to high-paying jobs in these career fields.

Embry-Riddle's program is offered free of charge to high school students, enabling them to earn both high school credit toward graduation and college credit for courses taught by Embry-Riddle professors in their own high school classrooms.

Another new company to add a Rockford location is AAR, the largest MRO provider in North America and the third largest in the world. The new 200,000-square-foot AAR hangar maintenance facility at the Rockford airport, will be its seventh. Expected to be operational in early 2016, it is expected to operate 24 hours a day and will service wide-body aircraft, both commercial and military.

Governor Pat Quinn announced a \$15 million state "investment" to build the new maintenance facility, an effort to create jobs and "drive Illinois' economy forward." The state Department of Commerce and Economic Opportunity will provide the company with \$600,000 toward training costs for its new employees.

AAR says it needs the facility because it expects "healthy demand for maintenance of next-generation aircraft in North America." David Storch, AAR's CEO says, "AAR's investment in Rockford would not be possible without the economic incentives provided by the state of Illinois, which we are proud to call home."

The Greater Rockford Airport Authority (GRAA) and Rock Valley College (RVC) broke ground on the new RVC aviation maintenance technology program facility in 2014. The 40,000-square-foot building will be located on the Chicago Rockford International Airport (RFD) grounds.

The new facility will be four times the size of the existing program facility with six classrooms, labs, and a larger hangar. The program will have the capacity for 150 students.

Build it and they will come. With the right mix of government support, training resources, and industry growth, aviation can thrive. **AMT**

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WHAT'S AHEAD FOR AEROSPACE IN 2015

Four key predictions for 2015: the widespread commercialization of space and UAS innovations, a manufacturing surge of commercial aircraft, and military budgets will foster MRO growth

THE GLOBAL AEROSPACE industry has experienced remarkable growth despite the slow recovery from the world-wide recession; a trend poised to proliferate into 2015 and beyond.

As the director of the Georgia Center of Innovation for Aerospace, I consult with companies and organizations on a wide range of projects and issues that face the industry. These discussions suggest that 2015 will mark the widespread commercialization of space and UAS innovations, and will also bear-witness to a manufacturing surge of commercial aircraft. My forecast for 2015 is as follows:

1. COMMERCIAL SPACE INNOVATIONS WILL HIT THE MAINSTREAM

It's a pivotal time for our nation with regards to space. With NASA shifting its focus from low earth orbit to deep space exploration, the agency has worked to breathe new life into space innovations and development through commercial partnerships. Private companies are already launching cargo to and from the International Space Station (ISS) and the transportation of astronauts is sure to follow. The small companies working in the industry will be the largest benefactors.

2015 looks to be a year of development and preparation leading toward a new round of first flights starting in 2016. Generation Orbit is developing an air-launch system specifically designed for small payloads, or nano-satellites and others

like Terminal Velocity Aerospace are working on reentry systems for returning experiments from the ISS. Further on the horizon is a potential commercial spaceport along the I-95 corridor in coastal Georgia

ports, current aircraft will be forced to stay in service for longer periods of time increasing the importance of maintenance, repair, and overhaul (MRO). Georgia is well positioned to capitalize on this business with

As defense budgets support fewer major programs, current aircraft will be forced to stay in service for longer periods of time increasing the importance of maintenance, repair, and overhaul (MRO).

which would bring a wave of interest in the space industry — from both industry and the public. Companies like Georgia-based SpaceWorks are already working on suspended animation technology for future treks to Mars. All these projects will require a technically skilled work force.

Programs like Georgia Tech's Center for Space Technology and Research (C-STAR), and NASA's center of excellence in robotic exploration and space science, the Jet Propulsion Laboratory (JPL), will spark a renewed interest in future space exploration initiatives and the opportunities that exist in deep space.

2. DEFENSE BUDGETS WILL CONTINUE TO FOSTER GROWTH OPPORTUNITIES

Defense budgets have plateaued, and this trend will continue through 2015. As this budget supports fewer major programs, such as the F-35 for fighters and the C-130J for trans-

assets like the Warner Robins Air Logistics Complex, one of the three main U.S. Air Force maintenance centers, which provides support for key U.S. military aircraft and Delta TechOps, one of the largest MRO facilities in the nation.

I forecast more companies will utilize available resources to determine market needs and make new industry connections. Defense contractors in the state of Georgia, for example, have found success in partnering with our Center of Innovation for Aerospace. The state has launched an initiative to identify aerospace and defense contractors in Georgia — all the way to fourth tier suppliers — to develop detailed strategies and identify unique avenues to drive their bottom lines.

3. UNMANNED AIRCRAFT SYSTEMS WILL BE THE NEXT GREAT FRONTIER

Technology for unmanned aircraft systems (UAS) is presenting new



R. STEVEN JUSTICE is the director of the Georgia Center of Innovation for Aerospace. Justice brings to this role more than 30 years experience in the aerospace industry with Lockheed-Martin, Gulfstream Aerospace, Northrop Grumman, Delta Air Lines, and The Ginn Group.

opportunities and challenges for the use of UAS in commercial applications. With the advancements in GPS, microavionics, microprocessors, and various sensor technologies for UAS, there will be a rise in the use of UAS. As the FAA begins to approve UAS commercial operations, the most likely initial applications will be in agriculture, film making, photographic services, and infrastructure inspections where UAS have proven benefits, and can be applied in the friendliest conditions. Large corporations like Google, Amazon, UPS, and DHL have all begun looking into how to take this technology into their own strategic business plans. The result of this technology and capability revolution will be realized in 2015, when the commercial UAS market will blossom.

Companies like Guided Systems Technologies have developed sensor and imaging technology to effectively help farmers increase crop yield, and they are also putting a plan in place to use the technology to deliver live-saving goods to third world countries. Another technology company, AREA-I, represents an alternative example of UAS technology used in a ben-

eficial commercial setting. Its researchers have developed a twin jet-powered vehicle used to test advanced aerodynamic technologies in the quest to make manned aircraft more efficient and safe. Rather than using full-sized aircraft, airliners will now be able to test new innovations on a fully functional scale model — saving time, money and avoiding putting human pilots into potentially dangerous situations.

The Center of Innovation for Aerospace is working with a wide range of companies and organizations to further establish this new market base for UAS in Georgia, where the annual Association for Unmanned Vehicle Systems International (AUVSI) conference will be held this May.

4. COMMERCIAL AVIATION MARKET WILL BE STRONG

A result of the economic recovery is an increase in airline traffic worldwide which is driving an increase in the commercial aircraft market. Led by Boeing and Airbus which alone have orders for more than 9,000 aircraft combined, 2015 will be the year we see significant increases in the global numbers of commercial airliners

being built. I believe that this trend will continue over the next several years with an anticipated 25,000 to 35,000 new commercial aircraft purchased over the next 20 years to replace the aging airliner fleet.

The current global surge in demand for commercial aircraft is a welcome change for U.S. manufacturers and suppliers. The number of orders for completed aircraft is unprecedented, driving up the exports from domestic manufacturers in the engines, avionics, and composites industry. As an example, Georgia's international aerospace exports have grown 75 percent in the last five years, better than the national average of 35 percent.

I firmly believe that this is an exciting time for the aerospace industry in the United States. Companies are experiencing growth, the idea of space becoming more accessible is strengthening, and the industry as a whole is enticing the public once again. The economic impact of the industry's continued growth in the commercial aircraft sector will be incredible, and we will continue to see a boom in private sector applications of UAS for many years to come. **AMT**

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DON'T FIND FAULT, FIND A REMEDY

Aviation Technician Education Council's syllabus for change

INDUSTRY HAS FACED A TOUGH WORKFORCE development challenge over the last few decades: keeping up with innovation while complying with decades-old curriculum requirements for aviation maintenance technician schools (AMTS). Industry, through the Aviation Technician Education Council (ATEC), has and will continue to provide encouragement, recommendations, and resources to ensure it is part of the solution.

A BRIEF HISTORY: STUCK IN TIME

AMTS curriculum requirements were originally established under the Civil Aviation Administration and re-codified into Title 14 Code of Federal Regulations in 1962. Since that time, the regulations mandating hours of instruction and curricula subject areas have not significantly changed.

During the same period of time, the design regulations mandating the standards to which a civil aviation article must be certificated and maintained have changed innumerable times (see regulatory history of parts 23, 25, 27, 29, 33, et. al.). These revisions have enhanced safety significantly; they also mandate more sophistication and knowledge in maintenance personnel (see §43.13 which requires maintenance personnel to return civil aviation articles to at least their original or properly altered condition in accordance with methods, techniques, and practices provided in manufacturer maintenance manuals).

OUTDATED CURRICULUM, UNEMPLOYED STUDENTS

Both industry and government agree that outdated Part 147 requirements inhibit maintenance technician schools from keeping up with changes in aircraft technology. Indeed, in a 2003 report to the House Transportation and Infrastructure Committee's ranking member, the U.S. Government Accountability Office called for updates to curriculum requirements: ... the required curriculum at aviation maintenance technician schools does not fully prepare A&P mechanics to work on commonly flown, technologically advanced commercial aircraft ... today's modern aircraft require A&P mechanics to have a different set of skills than those being taught at aviation maintenance technician schools. Since A&P mechanics that are newly graduated from aviation maintenance

technician schools lack the skills to work on modern aircraft, officials at some major airlines said they are reluctant to hire them directly from school.

SENDING THE REGS TO REFORM SCHOOL

In 2008 an Aviation Rulemaking Advisory Committee's Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group, consisting of industry and FAA representatives, issued a December report stating:

With changes in technology, it is believed that a static minimum curriculum does not meet broad industry needs. Approved training providers have the ability, within the current rule, to add additional hours

Both industry and government agree that outdated Part 147 requirements inhibit maintenance technician schools from keeping up with changes in aircraft technology.

and content beyond the minimum requirements. However, this can be an economic detriment and on occasion not been allowed by Principal Inspectors (PI)'s in the belief that the specified curriculum must be rigidly adhered to.

Thus, in its 2008 report the industry working group, chaired by past ATEC president Raymond Thompson, made 11 policy recommendations:

- Develop operations specifications for AMTS holding a Part 147 certificate.
- Update Part 147's curriculum requirements found in the rule's appendices A, B, C, and D.
- Create a maintenance training review board to ensure regular review of AMTS curriculum.
- Redistribute required training hours specified in 147.21(b).
- Include Part 147 institutions in FAA draft advisory circular (AC) "Alternatives to Classroom Training."
- Clarify terms, definitions, and processes in 147.31.
- Revise 147.35 so that the general curriculum written examination can be completed prior to



RYAN GOERTZEN is the president of Spartan College of Aeronautics and Technology in Tulsa, OK. He was named president of the Aviation Technician Education Council in April 2014. To learn more about ATEC, visit www.atec-amt.org.

commencement of airframe and/or powerplant curriculum.

- Create a Part 147 surveillance course for FAA inspectors.
- Review and update AC 147-3, Certification and Operations of Aviation Maintenance Technician Schools.
- Update the practical test standards and knowledge test.
- Update Order 8900.1 to ensure consistency with revised rules.

ATEC'S SYLLABUS FOR CHANGE

The last few months has brought a whirlwind of rulemaking activity, much in response to these 2008 recommendations.

The agency's first AMTS inspector academy course was held this past October. ATEC helped develop the content and was invited to participate in the course (read more in ATEC's November 2014 newsletter).

On Dec. 10, ATEC and the Aeronautical Repair Station Association (ARSA) jointly submitted a re-write of FAA draft Advisory Circular (AC) 65-30B, "Overview of the Aviation Maintenance Profession." The concerted effort will ensure an informational resource for the entire aviation maintenance industry and will always be available on ATEC's website, even if the agency does not adopt the re-write.

The agency is currently soliciting comment on draft AC 147-3B, Certification and Operation of Aviation Maintenance Technician Schools. The draft document adopts some of the working group's recommendations that can be implemented prior to formal rule change, including distance learning and operations specifications guidance. ATEC believes the AC doesn't go far enough in many areas and looks forward to providing extensive comment.

Finally, the agency has released a notice introducing operations specifications (OpSpecs) for AMTS which provides a standard OpSpecs template that will be used to control definitions and curriculum currently found in Part 147 appendices A, B, C, and D. ATEC has offered up its resources to ensure a smooth OpSpecs transition for industry and government alike.

ATEC expects the agency to issue a Part 147 notice of proposed rulemaking in the first quarter of 2015, shoring up the list of "to dos" provided by the industry working group. ATEC pledges to continue working with government and industry to ensure AMTS are able to provide qualified technicians to support the next generation of aviation innovation. Stay tuned! **AMT**

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To access the exam from *AviationPros.com*, select the Menu button near the upper right

of the home page, select IA Exam, fill out the information needed, and get started. You must have a score of 85 percent or better to receive credit. And you can retake the exam if you don't get a passing score. New this year, when you pass the exam an email will notify you and send you a link to the certificate

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Good Luck!





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AMTSOCIETY ANNOUNCES NEW MEMBERSHIP PROGRAM

OVER THE PAST YEAR AMTSOCIETY conducted surveys and spoke with many members to determine which benefits and offerings are most important to them. Overwhelmingly, the No. 1 reason people join AMTSociety is access to educational offerings; either the Online Inspection Authorization (IA) Refresher Training course or to attend the Live Education/IA Refresher Events held around the country.

Based on this feedback, we have changed the AMTSociety membership program. Now, any individual can register to become an AMTSociety member for free. Just sign-up, it's that easy! The AMTSociety website has been updated to reflect this new program.

Once registered you can then purchase either the Online IA Refresher Training course, or register to attend the Live Education/IA Refresher Events held across the country. These live events are generally held between the months of October and March. If you are already a registered member, just sign in with your username and password and choose the class you wish to attend.

You will see no increased cost as a result of this change when you consider the price of the previous \$49.00 annual membership dues. For example, the online/web-based training was a free benefit as part of the \$49.00 membership cost. With the free membership structure the online training can be purchased for \$49.00. No difference in price.

Similar to this, the price for 2014/2015 series LIVE training events was \$62.00 for current members, or \$111.00 for non-members which included a one-year membership. Under the new free membership program the cost of attending one

of the live training events will be \$111.00. Again, there is no difference in overall price.

As stated earlier, the vast majority of prior and current members join for the IA refresher training we offer. This new program will provide us the ability to focus on providing this type of training and to better place our efforts behind supporting already existing industry initiatives. For more information on this new program, visit www.amtsociety.org.

LIVE EDUCATION/IA REFRESHER TRAINING EVENT

The next AMTSociety IA refresher event is scheduled for March 9, 2015 at the Sands Expo and Convention Center, 201 Sands Avenue, Las



AMTSOCIETY LIVE IA Refresher events are held around the country between October and March.

Vegas, NV. Hear presentations from such companies as Michelin Aircraft Tires on tire maintenance and safety; Lee Aerospace on window care, maintenance, and inspection practices; Champion Aerospace on piston engine ignition systems; Concorde Battery Corporation on care and maintenance of aircraft batteries; Bell Helicopter on maintenance best practices; and from local FAA representatives. Additional speakers being confirmed. Some speakers may change. Visit with exhibitors and register for door prizes. Refreshments and lunch provided. Register to attend at www.amtsociety.org.



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HOW TO IMPROVE PART 145 – LATHER, RINSE, REPEAT

The best work requires repetition; aviation safety depends on it. When rules fall short in support of aviation maintenance providers and the flying public, ARSA will work to fix the problem or issue.

TO ENSURE REGULATORY COMPLIANCE, we invariably re-trace steps and face the same challenges many times. It is too easy to think that we never get anywhere. The truth is that managing the intersection of business and government isn't all that different from maintaining airworthiness.

Your business depends on performing an overhaul on the same component for the same customer over and over. The best work requires repetition; aviation safety depends on it. The same is true of perfecting regulatory language, interpretations, and application — every time we get a little better.

The repair station rule — Title 14 Code of Federal Regulations part 145 (14 CFR part 145) — is a perfect example. Time and again, the Aeronautical Repair Station Association (ARSA) has worked with the government to refine the rule that governs its regular members. In August 2014 that work began anew. Our regulatory team combed the updates for snags. The association then set about untangling threads.

First, there was the “serious” victory: replacing the word’s mistaken removal from the service difficulty reporting requirement. A coalition of aviation trade associations petitioned the agency to replace the seven letters. More than 40 industry members submitted supportive comments. The FAA promptly recognized its error and reinserted

the word “serious” before the rule became effective Nov. 10.

Next, ARSA led another coalition in petitioning the agency to reinstate a repair station’s ability to voluntarily surrender its certificate *without* affirmative acceptance by the FAA. Requiring an “acceptance for cancellation” of a repair station certificate bears no rational connection to the aim of

The best work requires repetition; aviation safety depends on it.

The same is true of perfecting regulatory language, interpretations, and application — every time we get a little better.

enhancing aviation safety through investigation and banishment of bad actors. The fact that no other certificate holder is required to wait for FAA action to surrender a certificate highlights the irrationality and disparity ... and should concern anyone who holds any kind of FAA certification.

There is more to come. When rules fall short in support of aviation maintenance providers and the flying public, ARSA will work to fix the problem or issue. ARSA always seeks the right answer, no matter the repetitions. **AMT**



BRETT LEVANTO is director of operations for the Aeronautical Repair Station Association (ARSA). He graduated from the George Washington University in 2004 and earned a Master of Public Policy from the College of William and Mary in 2009. For more information visit www.arsa.org.

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TODAY'S STUDENTS ARE TOMORROW'S LEADERS

The GAMA/Build A Plane Aviation Design Challenge is one way to attract more students to rewarding careers in general aviation manufacturing and maintenance

FEW EXPERIENCES ARE AS REWARDING as watching young people discover the joys of aviation firsthand. That's why I have been so privileged to spend part of my last two summers building airplanes with the U.S. high school student winners of the GAMA/Build A Plane Aviation Design Challenge. And based on my experience, I can say with confidence that the future of the aircraft industry looks very bright.

A WILLINGNESS TO LEARN

The students who won the Aviation Design Challenge — a science, technology, education, and math (STEM) competition — hailed from diverse backgrounds: rural Minnesota, a small city an hour outside of Detroit, and urban Las Vegas. Some had never flown in an airplane before traveling to Arlington, WA, for the build, and each had varying levels of familiarity with the tools needed to assemble a Glasair Sportsman airplane. But they all brought a desire to work hard and a willingness to learn and master the basics of aircraft assembly — from bucking rivets to sanding the airframe, fabricating and attaching fuel lines, and mounting the gear. As a result, after spending two weeks building an airplane — and then watching it take flight — nearly every student said he or she planned to pursue a career in aviation.

This kind of response is exactly the reason GAMA and Build A Plane initially teamed up to sponsor this competition in 2013, and why we are proud to be continuing the program for a third year. It also shows why it's critical that our industry continue to develop new, innovative ways to attract more students to rewarding careers in general aviation manufacturing and maintenance.

A quick look at the broader manufacturing industry illustrates the need to build our future workforce. The Accenture 2014 Manufacturing Skills and Training Study showed that more than 75 percent of manufacturers reported a moderate to severe shortage of skilled resources. What's more, U.S. manufacturers stand to see their earnings shrink up to 11 percent annually due to greater production costs and revenue losses stemming from a skills shortage.

EFFORTS TO CLOSE THE SKILLS-LABOR GAP

GAMA continues to be involved with other efforts to ensure today's students are tomorrow's aviation leaders. We are working with the National Aviation Consortium, a group of technical and community colleges that is collaborating with aerospace industry leaders to offer cutting-edge curriculum to close the skills-labor gap in the aerospace industry and provide more career opportunities in aviation manufacturing. And last September, GAMA helped to sponsor the launch of the Flying Classroom, an initiative led by aviator Barrington Irving to interest K-8 students in STEM through aviation.

As our industry continues to grow, so will our need for skilled, educated employees. Fortunately, our industry offers some of the most highly skilled and good-paying jobs available, allows our employees to play active roles in their communities, and manufactures products that typify the best in the human spirit. Ensuring that today's students know about and are prepared for these opportunities is critical. As we've found at GAMA, it's a very worthwhile investment — and a lot of fun, too. **AMT**



PETE BUNCE is president and CEO of the General Aviation Manufacturers Association (GAMA), which represents more than 85 of the world's leading manufacturers of general aviation airplanes and rotorcraft, engines, avionics, components, and related services. GAMA's members also operate repair stations, FBOs, pilot and maintenance training facilities and manage fleets of aircraft. For more info: www.gama.aero.

HOW TO PROTECT YOUR BUSINESS

A look back at the insurance articles of 2014 and a look ahead to coverage of cyber liability

AS WE GET OUR FEET UNDER US HERE in 2015, I want to review some of the topics I wrote about in 2014 and offer some insight into more commercial policies you should consider for protecting your business. In my new role as a commercial insurance producer, I am now working with risks and coverages I had not concentrated on in the past being solely focused on aviation.

First, let's review what I wrote about last year for a moment. In May I wrote about choosing the right broker. Having the right representative still remains one of the key pieces to the puzzle when it comes to your insurance coverage. Find a broker who under-

For 2015 I will write about the many different commercial insurance policies available. In the next issue of *AMT* I will go into detail about cyber liability.

stands what you do and is able to communicate that to the insurance companies. It will provide you with the best coverage and premiums. By understanding exactly what you do the broker can suggest coverages a less sophisticated broker may omit.

In July I moved on to contracts and insurance. The big issue with contracts is to be sure that you submit all contracts to your insurance company so they can be reviewed and cleared for coverage. Failure to send contracts to the insurance company within the time frame outlined in your policy could result in loss of coverage if you should have a claim involving that contract. It is always good to review the insurance portion of your contract with your broker to see how it affects your coverage.

In August I wrote about how to strengthen your supply chain. This again involves contracts

and setting vendor requirements. Just like you ensure your vendors and subcontractors have a proper quality system in place you must ensure your vendors, suppliers, and subcontractors have the proper insurance coverage in place. You are only as strong as your weakest link.

In September I wrote about the aviation insurance market being separate from the commercial insurance market and the benefits of working with aviation insurance brokers. Having a broker that understands your business is key to making sure all of your specific risks are covered. Your broker is also your advocate with the insurance companies. They have to understand your risk in order to properly represent it to the insurers and that means getting involved as a business partner.

My last article in 2014 was advice on what to do at renewal. The highlight of this article is to ensure that your broker provides you with options at renewal.

They should be asking you what has changed for your business over that insurance period. Did you enter into any new contracts? Did your business grow or shrink over that period. They should also ask what your goals are over the next renewal period so you can come up with a strategy and be sure you're with a carrier that will fit those plans.

For 2015 I will write about the many different commercial policies available. In the next issue of *AMT* I will go into detail about cyber liability, what you can do to mitigate your risks and what coverage is available. Every day in the news we hear stories of companies' files being hacked and customer information or company secrets being stolen. The overall feeling is that things are going to get worse before they are going to get better. This is an area of your business you really need to keep an eye on. **AMT**



JAMIE BENTHUSEN is a commercial insurance producer for FGМК Insurance based in Bannockburn, IL. He draws on his 16 years in the aviation industry to tailor insurance programs for the aviation industry. For more information: Jbenthusen@fgmkinsurance.com.

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- Integrative Initiatives: Streamlining System Maintenance
- Avionics Obsolescence
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 Alberth Aviation 52
 AMT Bookstore 40
 Aviall 2, 9
 Champion Aerospace 47
 Continental Motors 33
 Elliott Aviation 13
 Flightdocs 21, 56
 Global Parts 7, 55
 Gradient Lens Corporation 19, 52
 Lycoming 28-29
 Miraj 41
 Pentagon 2000 26-27, 52
 Proto 11
 Rotorcraft 43
 Rousseau Metal 25
 Spika 35
 Survival Products 52
 Textron Aviation 22-23
 Wag-Aero 38

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I am proud of what we accomplished in 2014 and am actually more excited with what we have in store for 2015 and beyond.

TAKE A LOOK BACK AT 2014: WHAT DID YOU ACCOMPLISH?

Sitting at my desk this week I was working and my phone kept dinging. Figured someone really wanted to get ahold of me ... opened the phone to learn I was getting messages on my LinkedIn one-year anniversary as Publisher, Aviation Group at Cygnus Business Media. This prompted me to reflect on where we are and what we have accomplished in 2014. Now, what can we do even better in 2015?

First I have to say how incredible the AviationPros staff is putting out cutting-edge print and digital products to support you and to help your business grow. Our editors are second to none bringing you thought-provoking content. I especially want to thank all the incredible marketing partners (advertisers) that share their products and services in our print and digital products to help support all our readers.

The first major project in 2014 we completed was launching a responsive design (automatically sizes message to your electronic devices screen) website: www.AviationPros.com.

We have improved our print products based on research and discussions with our readers and industry leaders to deliver what you and your colleagues need and want.

How did all this happen ... we invested financially and countless man-hours to improve our products for you. As I have said for many years ... "Leaders Lead" which we obviously have done and will continue to do. What has this investment led to ... the biggest news of all!

AviationPros Group and all of Cygnus Business Media was purchased by SouthComm Inc.

SouthComm is a publishing and communications company, based in Nashville, TN. The transaction, finalized at the end of 2014, included all assets including our building so the AviationPros headquarters will still be in Fort Atkinson, WI.

"From the start, we were impressed with Cygnus as both a media and technology company,"

said SouthComm founder and CEO Chris Ferrell. "The business' technical strength and integrated properties combine to support future growth and lend itself to the SouthComm portfolio of businesses. Further, we're pleased to continue primary operations of Cygnus Business Media in Fort Atkinson, WI, making the transition in ownership seamless to our audience and advertisers."

SouthComm is the nation's second largest publisher of alternative weeklies, one of the largest publishing companies serving chambers of commerce, and with the Cygnus purchase,



SouthComm

a significant player in the B-to-B publishing world. The company now owns more than 30 titles targeting B-to-B and consumer audiences around the country. For more information, visit www.southcomm.com.

We are excited to move into 2015 under the new corporate ownership of SouthComm and will continue to do business under the Cygnus brand. Our clients, subscribers, and partners can continue to expect the same level of service from AviationPros brands. The future is extremely bright and we look forward to strengthening our brands even further.

I am proud of what we accomplished in 2014 and am actually more excited with what we have in store for 2015 and beyond. We will continue to invest in our properties to bring you the best print and digital products in aviation. Please contact me any time with ideas, suggestions, or comments on how we are doing or what we can do to help support you and the industry:

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