LIFT WA

Fall 2017

SUMMIT ISSUE

Inside

Driving forces of M&As in aerospace

Women in the captain's seat

Protect your business from a cyberattack

Training a highly qualified workforce

AFA

The Washington Aerospace Partnership

EDITOR'S NOTE

Welcome to LIFT WA's Fall 2017 Summit issue!

AEROSPACE is one of the leading growth indicators in the world, and Washington state's aerospace businesses—small, medium, and large—are part of a global industrial infrastructure going through transformative change in every way possible.

That's why we asked the leaders of many of our hometown aerospace companies to speak from their perspectives at our 12th Annual Governor's Aerospace Summit. They will inform us about what they are doing, seeing, hearing, and projecting for the industry over the upcoming year and into the next decade.

Our Keynote Fireside Chat is with Mike Delaney, Boeing vice president and general manager of Airplane Development. Also joining us is the iconic Ray Conner, vice chairman of The Boeing Company and former president and CEO of Boeing Commercial Airplanes. Ray is our first-ever TITAN OF INDUSTRY award recipient, presented by Brad Tilden, president and CEO of Alaska Air Group and Alaska Airlines.

Complementing this robust daylong event are the articles in this issue of LIFT WA, all of which reflect the happenings within the aerospace industry. A prime example is the trend toward mergers and acquisitions, covered in a first-hand account by Brian Murphy of Meridian Capital. These consolidations are leaving an indelible mark on the skyways of the industry.

Other big changes—some that have occurred over decades and against societal norms—are also covered. Women executives in aerospace are becoming the norm. Though still largely outnumbered, leaders such as Rosemary Brester, owner of Hobart Machined Products, and Debbie Lee, CEO of Tool Gauge, have lifted off and are running highly successful businesses in what were once positions for men only.

With the preponderance of ever-increasing security issues around the globe and in business, aerospace companies need to take precautionary measures to prevent cyberattacks. Our article on this topic provides you with much of the information you need to know about how to prevent or reduce the impact of such threats. Be on the watch for more information from AFA in the next several months geared toward keeping your business' IP and your employees' privacy safe and secure.

Because we want our workers to be successful, we always circle back to workforce development and training. In this issue, the Washington Aerospace Training and Research Center explains their approach to training in "a different way," while Everett Community College explains how they train "the aviation technicians of tomorrow."

We hope you enjoy this issue of LIFT WA!

Sincerely,

Kelly Maloney
LIFT WA editor
AFA president and CEO

AFA
The Washington Aerospace Partnership

11th Annual Governor's Aerospace Summit - Seattle, WA 2016

LIFT WA

Your Complimentary Copy

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Editor Kelly Maloney

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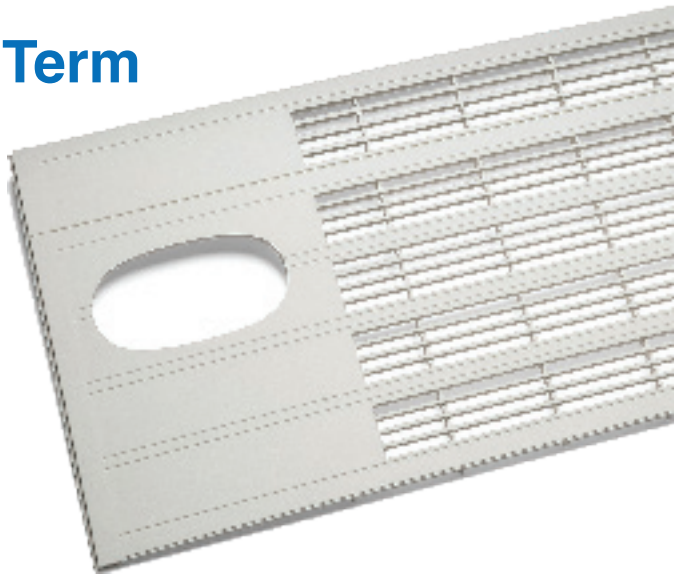
Empower Employees for Long-Term Business Success



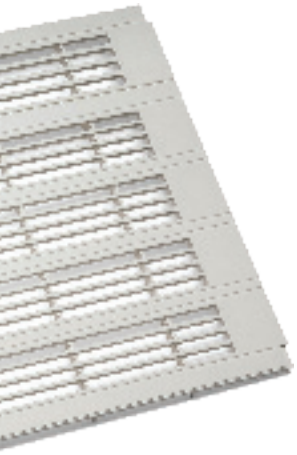
Work hard and stay humble– the sign on my office wall pretty much captures the spirit of Tool Gauge. Founded in 1966 by an Austrian immigrant who worked in Australia as a General Motors machinist, the company began building injection molding tools and established an injection molding facility. In the mid-1980s, it began supplying parts to Boeing and became BAC5231-approved. Forward 50 years and the company has been the proud recipient of Boeing's *Silver Performance Excellence Award* for seven consecutive years and is one of only a handful of Boeing-certified class 1 and class 2 plastics shops in the world capable of machining full five-axis parts for global aerospace OEMs and tier-one aircraft interior integrators.

Despite being one of Washington state's best-kept secrets for so many years, Tool Gauge has always been known for its leading-edge manufacturing and engineering teams in aerospace circles. After working in shop floor operations management for the past 15 years, I have experienced "team power" first-hand. As the company's newly minted CEO since October 2016, it is my responsibility to ensure that we continue to leverage our extensive talent pool to tackle the challenges that come with growing pains, whether cost control, technical innovation, global competition, customer satisfaction, product quality, or on-time delivery to name just a few.

People are a business' most valuable asset and like any valuable asset, they need to be cared for. In that respect, I find that being a female CEO, although a bit unconventional for an aerospace company, I'll admit, does help when it comes to coaching and communication. It has been proven time and time again that happy employees make for happy customers, so I strive to constantly empower our employees and managers to come up with new ideas, give them room to grow and the latitude to make decisions in a safe environment. If new ideas don't work, we try something different or simply go back to the way it was, all with the objective of getting the company to innovate and move forward as a team.

Today the results of this employee-centric philosophy speak for themselves. Last year, the team successfully deployed a complex ERP system without missing a single shipping deadline, which is no small feat knowing we ship hundreds of thousands of metal and plastic assemblies every year all over the world.

As a team, we have taken big steps toward becoming a top performing global supplier of aerospace parts and assemblies in a competitive, fragmented global market. The pressure to reduce supply chain costs has compelled us to focus our efforts on adding value through technological innovation. We've worked hard to identify those areas where we could make an investment, solve a problem, and offer more value to our aerospace partners. With the latest engineering solutions, we design and produce accurate structural parts faster and at lower, more competitive costs for our customers.



Debbie Lee is an AFA board member and serves as CEO of Tool Gauge, a Tacoma-based manufacturer of complex, high-value plastic and metal assemblies for global aerospace OEMs and tier-one aircraft interior integrators.

Our philosophy doesn't stop at cultivating existing talent, but also extends to hiring. At Tool Gauge, we are extremely fortunate to work hand in hand with local colleges, including the Aerospace Joint Apprenticeship Committee (AJAC), Bates Technical College, Clover Park Technical College, and Renton Technical College, to develop the next-generation of engineering interns, qualified CNC machinists, journeymen mold makers, and machine programmers.

What does the future hold for Tool Gauge? In April, we kicked off an extensive international marketing communications campaign to put our name on the global map, starting with announcing a $5 million investment into a major expansion of our Tacoma manufacturing facility. This infusion of capital will double our factory floor, create up to 100 new jobs in the region over the next five years, and allow us to expand our plastics press range, broaden our secondary operations, and install a state-of-the-art vertical paint system leading to shorter lead times, enhanced quality, and better cost control.

ee-centric philosophy

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From "Domestic Engineering" to Aerospace Manufacturing to President

Born in the shadow of the war, when women were being driven back into kitchens or steno rooms after doing "men's work" riveting B-52s for the war effort, my childhood in the 1950s was a confusing mixture of expectations and stereotypes.

Most of the career choices available to me as a young woman in the 1960s included becoming a teacher, housewife, retail clerk, secretary, or nurse. Back then, as now, these are notable and respectable careers, yet for a woman wanting to dive into something different, they were limiting.

I am oftentimes asked how I moved away from the archaic stereotypical occupations and into the field of aerospace when so few women even saw it as an option.

The answer is simply that I could see the commonalities between what I, as a young girl, was being taught and what I observed of manufacturing. Some things are learned, and others are innate; for me, it was a little of both. My passion for manufacturing was born out of curiosity and the wonder of how things worked and how they were made. I understood from an early age that everything is part of a process and order.

What I learned as a child through observing and listening to my peers has given me the depth of knowledge I have today. I was able to transition my early skills in ironing, cooking and sewing into manufacturing and quality processing. Home economics classes that taught 5S and Lean became the foundation for my understanding of manufacturing processes. These concepts, which seem innovative and new today, were the building blocks of home economics.

I had the ability to look at a dress pattern and envision an aircraft

blue print. I could see a recipe in a cookbook and understand the relationship between the recipes and the assembly procedures for a rocket. This is what allowed me to flourish in the new and unchartered environment of women in the aerospace industry.

I was one of the few women business owners in the mid-1970s. Although I understood the societal norms of the time, it was not easy to be overlooked during meetings when I had much to contribute.

Though much male chauvinism is a thing of the past in today's world, back then it was alive and well. But I was not deterred. I was determined to make a place for myself, and the only way was through hard work, continual learning, and engaging more than my counterparts until I was not only accepted, but respected among my peers.

My journey did not come without its cold shoulders. It was said that I didn't know what I was talking about because I was inexperienced or incompetent. As discouraged as I may have felt at times, I kept going to those meetings, standing my ground, making my voice heard, and changing one mind at a time.

Many early naysayers have since closed their companies or gotten out of the industry altogether. I have prevailed.

For me, the world opened up once I stood my ground and worked toward my aspirations. As the President of Hobart Machined Products, a small aerospace manufacturing company I co-own with my husband, Larry, I have met with princes, sheiks, ambassadors, and world leaders. I have worked with Boeing Commercial Airplane presidents from Frank Schrontz to Ray Conner on federal and state policy issues. I used the voice that I have fought so hard for to collaborate with people from all walks of life. Nonetheless, my most cherished experiences were with people who were looking for a better way of life, and being able to give them an opportunity.

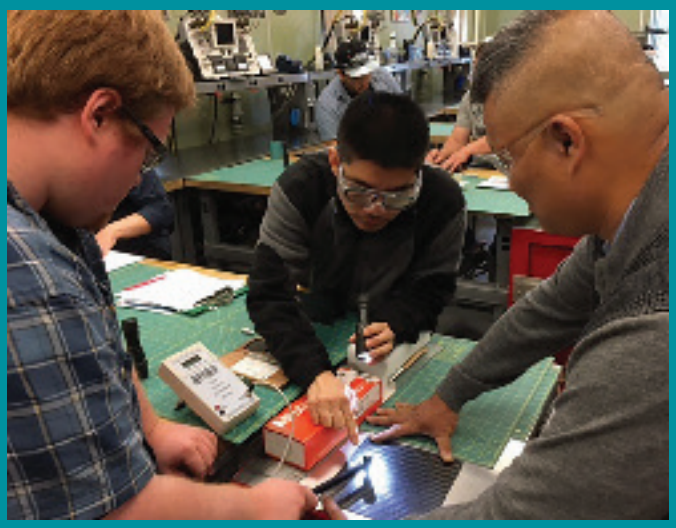
My career has led me full circle, and I now have the privilege of developing a STEM curriculum for young women through the Expanding Your Horizons program at Edmonds Community College and teaching it every spring. In my curriculum, I explain through an interactive model the relationship between home economics (sewing) and manufacturing (blueprint reading). It is a model that encourages young women to look beyond what they see and to think about how things are interconnected or related to each other. The model is creative and energizing, and puts wonder and curiosity back into learning. Through my teaching, I strive to pass along my curiosity for learning about, and understanding, the world around us.

Over the years the industry has recognized my accomplishments and today I serve on steering committees, boards of directors, advisory roles, and government appointed positions. My life has given me a broad range of unique experiences and challenges. It has been most rewarding.

Our small company, tucked away in the Cascade foothills, has made a difference and I am forever grateful to be in the aerospace industry.

by Rosemary Brester, with Megan Anderson and Kelly Maloney

Rosemary Brester is president and CEO of Hobart Machined Products, Inc. Rosemary serves as a member, officer, or chair of numerous industry and community organizations and is passionate about convening industry, community, and governmental groups to make the most of small businesses.


A Different Way

With the emergence of Starbucks, Microsoft, and Amazon, many Washingtonians may not realize the impact to the state's economic health of the aerospace industry. Aerospace remains big business in Washington state. According to the Department of Commerce, in 2015, the aerospace industry generated $69.9 billion in economic activity and provided over 136,000 jobs with 1,400 employers. However, this financial health does not go unnoticed by others. The state is experiencing increased competition from other suppliers, states, and countries; at the same time, employers are facing an aging workforce and a potential skills/knowledge drain.

One of Washington's edges has always been its skilled workforce, which is now threatened. The government, employers and educators have realized they must collaborate to address the challenge of developing, hiring, and maintaining a skilled workforce for the generations to come. Along with the threat of the "silver tsunami," we must also explore and embrace innovation and new technology if we want to remain relevant.

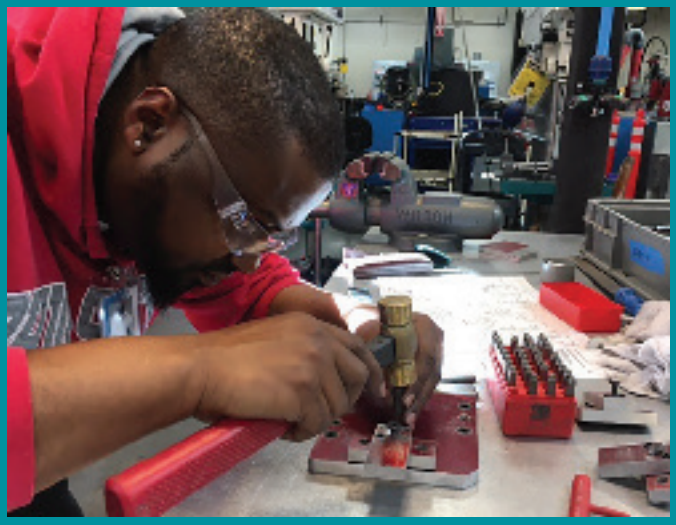
To address part of the training needs, local and state government supported the creation of a program to support the aerospace and manufacturing sector. Traditionally, the focus for education and training has been through two-year, four-year or six-year college




degrees and apprenticeship programs. Through true collaboration of industry, education and business, a different kind of training was created. The Washington Aerospace Training & Research (WATR) Center emerged with customized trainings and short-term, high-demand certificates. The result: a new option for employers and students.

The WATR Center is managed by Edmonds Community College through an operating agreement with the Aerospace Futures Alliance (AFA). WATR Center programs allow students to learn complex skills in just twelve weeks. The short-term certificates were developed by Edmonds Business Training Center's curriculum designers working with subject matter experts (SMEs) from Boeing and industry suppliers. The program uses both an online delivery platform (to provide 24/7 access to curriculum) and a hands-on lab experience.

The lab replicates workplace training embedded with soft skills. This has enabled WATR to provide industry-recognized certificates of completion (COC) for basic skills in aerospace. There are COCs for mechanical assembly, tooling, electrical assembly, composites and quality assurance. The collaboration has paid off with more than 1,780 WATR graduates working since August 2010. Currently, of those employed, about 55 percent work for the Boeing Company and 45 percent with 110 other companies.



Besides being a great place for employers to find qualified candidates, WATR has become a trusted source for delivering customized training to suppliers. Customized training is specialized training that is usually company-specific and may contain proprietary information. WATR Center's experience allows them the ability to quickly develop and offer specialized training.

The Center provides a non-disclosure agreement so businesses can rest assured that their information remains protected. WATR's skilled facilitators work with businesses and their SMEs to ensure that customized training meets the specifications of their company's needs. Based on this expertise, WATR was chosen to develop and deliver training for incumbent workers for the 777X composite wing. If your company has a training or hiring need, you can contact WATR staff at washingtonaerospace.com.

Larry Cluphf serves as the Executive Director of the Washington Aerospace Training & Research Center and The Business Training Center for Edmonds Community College.

Training the aviation technicians of tomorrow

Everett Community College's aviation maintenance program has been at Paine Field (now the Snohomish County Airport) since 1968, and is looking to the future so that they can train the next generation of technicians.

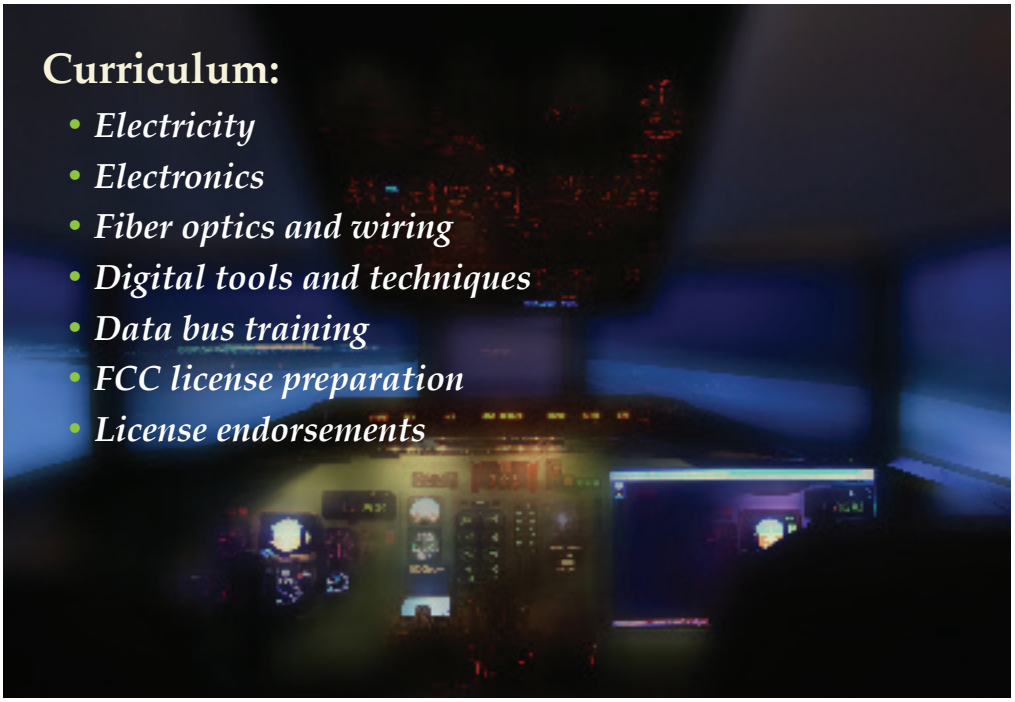
In 2016, EvCC became the first college in Washington state to offer an advanced avionics program. The college created the program after hearing about the need for aircraft electronics technicians from the aerospace industry.

The Boeing Company's 2016 Pilot and Technician Outlook report identified avionics as one of the largest skill gaps among aviation maintenance technicians. Other industry partners, such as Delta and Alaska Airlines, as well as avionics manufacturers and repair shops, also identified avionics as one of the largest skill gaps in the industry.

The Part 147 Consortium, known as the Fighting 147s, is chaired by Rob Prosch, EvCC's associate dean of aviation, and meets quarterly with the Washington State Center of Excellence for Aerospace and Advanced Manufacturing. Avionics training is an industry-driven initiative that has been the core of their work over the past year.

The consortium worked closely with the Center of Excellence for Aerospace and Advanced Manufacturing, Boeing, Delta Airlines, Alaska Airlines, Rolls Royce, Nida Corporation, Dynon Avionics, and other regional avionics manufacturers to develop curriculum outcomes for the advanced avionics program at EvCC.

Other colleges in the region offer introductory avionics programs based in electronics, but our program also maintains an FAA Part 147, which allows us to link the two programs together. That link



John Bonner leads the Everett Community College's Office of Corporate & Workforce Training, which includes EvCC's Advanced Manufacturing Training & Education Center (AMTEC), Aviation Maintenance Technician School, and the Corporate & Continuing Education Center (CCEC).

gives our students unique and advanced opportunities to learn avionics systems in aircraft.

The advanced avionics program includes college certificates and degrees that tie into our A&P program so students can be fully prepared to be an aircraft electronics technician or avionics technician. The curriculum consists of electricity, electronics, fiber optics and wiring, digital tools and techniques, data bus training — including computer language and a bit of programming so they can work on the computer systems found in avionics, including microprocessors — and FCC license preparation and license endorsements. The last thing students learn is a systematic approach to troubleshooting for avionics, both theoretical and hands on. Unique to our program, students are also evaluated on soft skills including participation, teamwork, and documentary discipline.

While EvCC is the first of the state's Part 147 schools to offer the advanced avionics program, the plan is for other schools to emulate our courses and programming and implement similar programs according to their own timelines.

Avionics is a very expensive program to implement. The program was launched with support from EvCC's Board of Trustees, the college's operating budget, and through grants from the state and local industry.

Industry has stepped up in a big way to make the program possible by way of equipment and materials donations. Fluke provided EvCC with $38,000 worth of electronic test equipment. Dynon Avionics donated a working mock-up of a general aviation glass cockpit, valued at $25,000. Without this kind of industry support, we wouldn't have been able to get the program off of the ground. Our partners understand that by partnering with the college, they have a direct hand in creating their own workforce pipeline.

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Feature Story

Driving forces of M&As in Aerospace

In the first half of 2017, aerospace and defense M&A volume remained well above the historical 10-year average despite slowing order activity and continued cost pressures on the supply chain.

During the first six months of 2017, aerospace and defense transaction volume was down slightly from the second half of 2016, with 199 transactions compared to 227. However, year-over-year, transaction volume was up 43 percent compared to the first half of 2016. Strong activity across IT services and software, commercial components and subsystems, and composites segments served as transaction drivers.

Near term M&A activity in the industry will likely benefit from the positive momentum established during the Paris Air Show, where order activity for both narrow body commercial and defense aircraft was stronger than expected.

Against this backdrop, in addition to strong long-term air traffic and build rate forecasts, we expect several trends to drive continued industry consolidation in the second half of 2017.

OEM Build Rate Increases Continue to Stress Supply Chain

Both Boeing and Airbus continue to look for ways to aggressively cut costs and increase build rates on key platforms. The price and order competition on comparable platforms such as the 737 vs A320 and 787 vs A350 remains fierce. After several years of embracing an expanded supplier base, both OEMs are driving their respective supply chains to consolidate so they can regain control over technological capabilities, cost, and capacity.

As a result, suppliers are faced with the challenge of substantially building production capacity while simultaneously providing near-term price reductions. This is driving key suppliers to make significant investments in equipment, systems, and acquisitions to expand capabilities and/or enhance automation.

While large Tier I suppliers such as Spirit, Safran, and Triumph have the resources to support these demands, the competitive dynamic presents a challenge for small to mid-sized Tier I and Tier II suppliers.

"Investors are aggressively seeking opportunities that offer proprietary content, an MRO offering, or unique manufacturing capabilities."

Brian Murphy is President and Managing Director at Meridian Capital and also leads the firm's Aerospace & Precision Manufacturing Practice. As President, Brian is responsible for managing the firm's activities and driving strategic initiatives.

M&A Interest Focused on Proprietary Content and Cross Border Activity

Key strategic investors and industry focused private equity firms continue to demonstrate a strong M&A appetite. In particular, as the commercial build-to-print market has become increasingly competitive, investors are aggressively seeking opportunities that offer proprietary content, an MRO offering, or unique manufacturing capabilities.

Additionally, several well-established Tier I Airbus suppliers based in Europe and Asia are seeking US acquisitions with direct relationships with North American OEMs.

These investment rationales, coupled with the pricing and build-rate pressures outlined above, are likely to lead to continued industry consolidation over the next 12 months.

Boeing's Impact on the MRO Market

Boeing used the Paris Air Show to further set the stage for the planned launch of its new Global Services business that aims to capture a much larger share of the global maintenance, repair, and overhaul market. Specifically, Boeing is aggressively targeting to reach $50 billion in MRO revenue within the next 10 years.

Historically, the MRO market has been highly fragmented with airlines valuing characteristics such as flexibility, responsiveness, and competitive pricing often associated with smaller, independent companies. Boeing intends to address these customer needs through an internal reorganization as well as through selective acquisitions.

Boeing's rejuvenated commitment to the MRO market will likely drive consolidation at all levels as companies look to position themselves to protect market share and expand differentiated capabilities.

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- Boeing supplier since 1937

We're proud to support the Aerospace Futures Alliance and participate in the 12th Annual Governor's Aerospace Summit.

Aerospace and the threat of a cyberattack

The world of cyber security is never ending, and forever connected. The cyber world is growing by the millisecond and with it, the threats of cyber security breaches in aerospace are growing as well. From sophisticated simulations and 3D printing to robotics and automation, and computer-aided manufacturing (CAM), all sectors of aerospace—aviation, space and unmanned aerial systems—are vulnerable to the potential disruptive and debilitating risks of cyberattacks.

Most people think of a shadowy figure crouching over a bright screen in a dark room when conjuring up images of a computer hacker, but cyber threats can look like something as simple and innocent as an email asking you to reset an account password. This is called phishing, and is one of the most prolific ways cyberattacks are introduced into a business' network and spread near and far.

In the cyber security world, the bad guys are manipulative and insightful. They are adept at using the weakness of human nature to gain access to the information they wish to exploit. Tom Captain, retired vice chairman, Deloitte LLP Aerospace and Defense, warns that "it is important for aerospace companies and their suppliers and vendors to invest in addressing this strategic vulnerability."

While it is imperative every industry add measures to prevent cyberattacks, it is critical for aerospace. Think of an airline or maintenance repair operator doing heavy maintenance, or a machine shop using a software-guided design to manufacture the parts or components of an aircraft. These are at risk of potentially dangerous cyberattacks. "As the design and manufacturing of commercial aircraft have become more reliant on the

internet and computer modeling, the risk and exposure to cyber threats has increased. The Stuxnet virus that infected the centrifuges at the Iranian nuclear facilities has demonstrated that our CAD and CAM computerized systems are targets for strategic and tactical cyber threats," said Captain.

By starting with a secure network, a company can prevent many of the obvious and very simple cyber security attacks. Implementation of comprehensive endpoint protection solutions such as antivirus tooling, behavioral tracking and firewall protection are standard approaches today, and should be maintained and monitored at all times. These types of programs will look for codes that are not recognized by the systems, and help to block and notify the user of abnormal activity within their system.

According to the FBI"s cyber security division, monitoring company systems and acting as quickly as possible when and if an attack does occur is crucial to the protection of a company's intellectual property and/or to preventing disruption and manipulation of a company's work activity. The FBI further recommends dividing the company network with separate routers and additional firewalls. Implementing separate secure networks, called "air gapping," stops a would-be hacker from creating havoc on an entire network.

Being proactive by setting up preventive security measures will only get you so far if your employees are not properly trained. Every single employee in a company must be aware of the types of attacks used to gain access to company or personal information. Phishing attacks are very common, and can be disguised to look exactly like a legitimate concern to the employee. Phising is a simple concept, and employees can easily fall victim if they are not trained to look for telltale signs of an attack.

Hackers are getting more and more mature, and are shifting to a new, more targeted form of phishing. "Spear phishing" is a targeted attack on an individual at a company that would have access to the exact information that the hacker is seeking. They do this by researching and finding as much information as they can about the employee's position at the company, as well as their interests, family members and their interests, and even their possessions. This information is easily gained by looking at an employee's profile on the company website and personal and professional social media accounts. Employees should be encouraged to guard their personal information and not to post or share information that could be used to a hacker's advantage.

All of these factors contribute to a healthy cyber security environment. Companies of all shapes and sizes, in all industries—and especially in aerospace—cannot afford to hesitate when it comes to taking every precaution necessary when protecting their employees, their information, and their customers.

The objective is for companies and system vendors to do an "extraordinarily effective job of protecting these systems from cyberattacks, with firewalls, isolation from the public internet, virus detection and procedural protocols," said Captain.

by Megan Anderson, AFA

Tax Incentives, Credits, and Opportunities for Washington Aerospace Companies

As a Washington aerospace company, chances are you're performing activities that qualify for various federal and state tax incentives. Many companies are missing opportunities to benefit from one or several of these incentives.

At Moss Adams, we work with over 200 aerospace companies to help ensure they are utilizing the benefits provided to them under state and federal tax law. Some of the most beneficial tax savings strategies are as follows:

Federal Incentives and Credits

- **R&D Tax Credit.** For companies investing in new or improved products, processes or technologies, there could be as much as a 5 percent to 9 percent reduction of taxes for qualified activities.
- **Perform a cost segregation study.** These studies separate building components into proper asset classifications and can result in shorter tax lives and front-loaded depreciation deductions. These studies are particularly beneficial for companies with a significant amount of property, plant and equipment.
- **Form an IC-DISC.** For companies that sell their US-produced property internationally, forming an interest charge domestic international sales corporation (IC-DISC) could reduce taxes by up to 20 percent. An IC-DISC is a "paper company" without employees that's held by an individual or flow-through entity.
- **Domestic manufacturing deduction.** Qualified production property produced in the US may qualify for this deduction, which can effectively reduce your tax rate by about 3 percent on qualifying income.

Washington State Incentives and Credits

- **Reduced B&O Tax Rate for Aerospace Businesses.** Companies with operations in specific categories may benefit from a lower B&O tax rate. Manufacturers & Processors for Hire – 0.2904 percent, Aerospace Product Development Businesses – 0.9 percent, or Certificated FAR Part 145 Repair Stations – 0.2904 percent.
- **B&O Tax Credit for Preproduction Development Expenditures.** For companies engaging in product development (similar to R&D), there is a credit equal to the amount of qualified aerospace product development expenditures multiplied by 1.5 percent.
- **B&O Tax Credit for Property/Leasehold Taxes paid on Aerospace Business Facilities.** For companies engaged in manufacturing commercial airplanes or components, a credit equal to the property or leasehold excise taxes paid on new buildings, the land for new buildings, the increased value of renovated buildings, and tangible personal property eligible for the manufacturing machinery and equipment exemption, is applied against B&O tax.
- **Sales & Use Tax Exemption for Computer Hardware/Software/Peripherals.** Sales and use tax exemption applies to purchases of computers, software, and peripherals used primarily in the development, design, and engineering of aerospace products, or in providing aerospace services.
- **Sales & Use Tax Exemption for Manufacturing Machinery and Equipment.** Sales and use tax exemption applies to purchases of qualifying machinery and equipment used in a qualifying manufacturing operation or a research and development operation.

by Kurt Lippmann, Partner, National Aerospace Leader, Star Fischer, Partner, R&D Tax Services, & Adam Cline, Partner, State and Local Tax

Kurt Lippmann is the leader of Moss Adams' aerospace & defense practice and has extensive experience managing federal and state income tax returns for corporations and partnerships, meeting all tax compliance requirements, reducing audit exposure, and proactively easing his clients' worldwide tax burden.


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BOEING

How Rising Interest Rates Affect the Aerospace Industry

As most readers know, the Federal Reserve (Fed) finally began raising interest rates over the last 18 months. As a banker with extensive experience in the aerospace sector, I thought it might be beneficial to discuss what the impact of interest rates could be on our economy and specifically on Washington's aerospace industry.

It's prudent to begin any writing about the impact of interest rates by starting with the basics as to why the Fed raises and lowers interest rates, and what it means.

It might not be a perfect analogy, but it helps to think of the Fed as the security guard of the economy, keeping it in balance. Most often, this is done through raising and lowering rates. And as we all know, since the economy significantly stumbled back in 2008, the Fed rapidly and consistently lowered rates to historic levels. The reason it did this was to provide more borrowing ability for consumers, which in turn helps propel growth and an improved economic picture.

When consumers buy more, the economy grows. As the economy grows, the demand for goods often outstrips the supply and prices go up, creating inflation. And despite its bad reputation, inflation in and of itself is not necessarily a bad thing, as it is the by-product of a growing economy. If the Fed decides that the economy is growing so fast that demand will greatly outpace supply, then it can raise rates, which slows the amount of cash entering the economy. This helps ensure the truly bad side of inflation is controlled.

So now, finally, the Federal Reserve is slowly increasing interest rates, which brings us to the more pressing question. How might this affect you and your aerospace-related business?

The answer is kind of a good news/bad news situation, although I think the good news outweighs the bad. In terms of good news, rising rates are a signal that the economy is growing and the high demand for air travel will be sustained. This increasing air travel is driving high production rates and a backlog of aircraft orders. So, as long as the Fed does not raise rates too rapidly or too high creating an economic slowdown, the aerospace industry should benefit. However, the cost of borrowing money is going to increase, so business owners in the industry are going to have to take that into account. But to my way of thinking, most businesses, if they had to choose, would choose more orders for aerospace-related products than slightly better loan terms. The other good news/bad news for the aerospace industry is that with higher rates and mild

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inflation, costs (wages and supplies for production) and prices to customers will likely increase over time. The higher costs are generally pushed down throughout the supply chain which can squeeze margins. The supply chain will need to continue to look for efficiencies in order to sustain profit margins.

The key in all of this is patience and taking the long view. It took years for interest rates to get to where they are today and we are now seeing a methodical correcting through small rate increases. At the end of the day, we have lived with unusually low rates for years and a return to a "normal" rate environment is inevitable. The question is really only about the increments the Fed will use to get us to that environment.

All told, the rate environment is changing and the aerospace industry, like the rest of the economy, will be affected. But, it is important to note that amidst this period of change, Washington remains home to a robust intellectual infrastructure and tenured workforce. These valued employees and the businesses they serve will be more in-demand than ever as manufacturing rates continue to rise and the demand for moving goods around the globe continues to grow.

HOW TO ENGAGE THE MEDIA

Getting great press coverage isn't easy – and it shouldn't be.

Good news organizations are discerning in their coverage. It's about mixing hard news stories with softer features, providing actionable insight for readers while also entertaining them. That means it can be difficult to get attention from the kinds of publications – like the PSBJ – where you would like to see your company profiled.

But there are simple ways to get more attention from respected press outlets. Here are a few tips:

Be a resource: Reporters need sources to do their jobs. Every day, sources provide us with news tips, expert opinions and thoughtful analysis for stories. We rely on sources to help us break news and make sure readers get the information they need. Being a source doesn't mean you're slipping secret documents to reporters in a dark alley like they do in the movies (though we'll take those secret documents if you have them). Rather, our sources are most frequently people we call when news is breaking to confirm it and find out what it means.

For example – say Boeing announces a new middle-of-the-market jet. We would need Boeing suppliers to explain what this new jet means for the job market in Washington state. A top executive at a local supplier who could speak to that would make a great source. There's no better time to pitch a reporter than when you can be a source for a story she's already writing.

Attach yourself to news stories/trends: Frequently, reporters get pitches from companies that simply say – "We exist, so you should write about us." That will rarely work. But a pitch that connects a company to a trend – a robotics company that's training robot-makers for the future of manufacturing, for example – can be a very effective way to get a reporter's attention. Or, if there's a breaking national story – Boeing selling jets to a foreign company or government, for instance - a local company that has done business in that country would be extremely helpful for a reporter working on deadline.

Be a thought-leader: When aerospace executives express contrarian ideas or views, that can be newsworthy. Share those ideas with a reporter, or offer to write an opinion editorial that argues in favor/against an issue you feel strongly about.

Know what kinds of stories the publication you're pitching typically writes: The PSBJ has a number of standing features – stories that run on a regular schedule – and we're always looking for companies that fit into those categories. For instance, we do a family business feature once a month. Pitch reporters for those specific features and you're more likely to land coverage.

Make news: Executive changes, expansions, financings, mergers and acquisitions are all of interest to readers. Not sure your moves qualify as news? Ask yourself – would I be interested in reading about another company making this move? If the answer is yes, it's probably a news story.

Don't over-pitch: The best sources know when they have something newsworthy and only reach out then. Reporters' inboxes are full of thousands of pitches that aren't relevant. Pitch only when you have real news to share. That will help you build relationships with reporters and make it more likely they'll reach out to you. Answer when they call, respond when they email, be honest and as transparent as possible, and they'll do the same for you.

Emily Parkhurst is editor in chief of the Puget Sound Business Journal (PSBJ). She joined the PSBJ in 2012 and served as a technology reporter and managing editor prior to being named editor in May 2016.

Boeing's investment in Washington grew to $13.5 billion in 2016

Savings from state aerospace tax incentives, however, decreased to $242 million, $63 million less than 2015

Airplanes being prepped for delivery stand in the shadow of Mt. Rainier outside the Boeing Delivery Center in Seattle, WA (Craig Larsen)

Boeing invested more than $13.5 billion in Washington in 2016, confirming the value the state and taxpayers receive from Boeing's presence in the state, according to a report Boeing just filed with the Washington Department of Revenue. The total is an increase from the $13 billion Boeing invested in Washington in 2015.

"The $13.5 billion Boeing spent in Washington last year reaffirms that the aerospace tax incentives are working as envisioned by our state leaders, whose goal was to make Washington more attractive and competitive for the industry," said Bill McSherry, vice president of Government Operations, Boeing Commercial Airplanes. "Even as Boeing takes steps to maximize efficiency and minimize costs in an extremely competitive global market, we continue to invest in our future here."

Boeing's 2016 investment comprises billions of dollars for payroll, supplier purchases and capital investments in Washington. This includes significant expenditures tied to the new 777X facilities, a direct result of Washington's aerospace incentives.

It also includes hundreds of millions of dollars Boeing paid in state and local taxes, more than $32 million in community contributions and nearly $35 million in college tuition for Boeing employees in Washington. Nearly half of Boeing's employees worldwide reside in Washington state.

investing in washington

As a result of the investments, Boeing reported $242 million in savings in 2016 via the Washington aerospace tax incentives. While these savings are significant, they are $63 million less than what was realized in 2015, in part due to a reduction in pre-production and development activities as development programs such as the 737 MAX have matured.

Specifics of the incentive savings include:

- Based upon continued robust airplane deliveries in Washington, Boeing reported a Business & Occupation, or B&O, tax rate reduction of $100 million.
- Based upon Boeing's investment of billions of dollars in qualified pre-production and development activity, Boeing reported a B&O Pre-Production tax credit of $82 million.
- Based upon hundreds of millions of dollars spent on construction materials, Boeing reported a Sales & Use tax exemption on construction materials of $23 million.

The value of Boeing's ongoing operations and future development is further multiplied by the investments made throughout Boeing's supply chain, the money spent by Boeing employees and the work performed by Boeing's charitable partners in the community, explains McSherry.

Boeing's capital investments in Washington include upgrades to the Renton site to facilitate 737 rate increases and 737 MAX production, modifications and improvements for additive manufacturing processes and equipment at multiple sites, groundbreaking for a Workforce Readiness Center in Auburn, and ongoing 777X infrastructure additions.

Boeing's efforts to maximize efficiency and reduce costs include working to reduce non-labor costs, improve productivity, eliminate layers of management and, when absolutely necessary, reduce headcount. Through 2016, Boeing largely succeeded in minimizing layoffs, instead focusing on attrition and voluntary departures from the company.

More than 500 Washington companies used the Aerospace Tax Incentives in 2016.

Evolutions in

Turn-key Integrated Systems

There are few commercial airplanes in the sky today that Electroimpact has not helped build. For over 30 years, Electroimpact has specialized in riveting machines, advanced fiber placement, robotic assembly systems, tooling, spacecraft handling equipment and complete automation solutions for wing panel assembly.

As a Tier 1 supplier to OEMs, our success is enabled by our engineers and our partnerships with high-quality, reliable and cost-effective suppliers in the local aerospace supply chain.

Until recently, we designed, built, and supported custom standalone automation equipment for our customers. Electroimpact employs a unique model where our engineers work on all aspects of a project from cradle to grave. The scope of work involved in standalone equipment along with the Electroimpact model allowed our engineers to master every aspect of the design and build of the equipment.

For example, an Electrical Engineer on a riveting machine would draw the full electrical schematic, and then design, build and meticulously wire each and every electrical enclosure and integrated system.

Our engineers' experience and intimate knowledge of our equipment and their processes has allowed us to expand and

take on more responsibilities. Today, our customers commonly ask us to provide turn-key factory installations for entire automated assembly systems.

These complete automated assembly solutions are larger and more complex as they comprise an assortment of machines, robots and flexible tooling that all must seamlessly coordinate with each other and communicate under one integrated control and safety system.

In addition to the increased size and complexity, the complete system is delivered as a single turn-key installation as opposed to being staggered. This change in product scope, requirements and schedule has led to an evolution in our approach to the electrical engineering of a system.

Our new approach focuses our engineering experience on the design, integration and documentation of the system and allows us to partner with local panel build shops for an efficient, high-quality electrical assembly and wiring of our equipment.

We find our partners by touring the many supplier facilities located within one hour of our headquarters in Mukilteo.

When identifying a future partner, we assess whether the supplier is able to build to quality standards defined by Electroimpact and regulatory bodies, be scalable, leverage existing and future build technologies, be cost competitive, and provide feedback and suggestions for us to improve our own processes.

One of our successful partnerships is with a supplier called Process Solutions. Located in Stanwood, WA, Process Solutions has 30 years of experience with electrical panel build, a large staff of wiring technicians and a large assembly space.

Process Solutions builds electrical panels for a number of Electroimpact projects. Electroimpact Electrical Engineers create 3D models of all parts, model their exact mounting locations on the electrical panel and document all corresponding electrical wiring of the panel using SolidWorks Electrical, an innovative new software that integrates 3D modeling and electrical wiring schematics.

Upon completion of the project documentation, the integrated 3D and electrical schematics are electronically transmitted to Process Solutions. To build the electrical panels, Process Solutions machines the electrical enclosure, installs all the parts, and accurately terminates and labels all wiring between parts per the Electroimpact electrical schematic.

Process Solutions then performs a quality inspection before returning a finished electrical panel to Electroimpact to be integrated into the equipment installation. The extensive skilled staff and large assembly space at Process Solutions allows them to handle even the largest systems Electroimpact has undertaken, greatly leveraging our engineering team's experience, which otherwise could get bogged down in the manufacturing effort of building and wiring the electrical panels ourselves.

"(We) are looking for other areas where we can use our supply chain here in Washington to improve our business."

Productivity, quality and efficiency are all improved with this partner relationship.

Electroimpact has been able to successfully design and implement full turn-key integrated systems by utilizing our experienced engineers to design, 3D model and document the electrical system, enabling our skilled local supplier base to assemble, build and wire high-quality complicated custom assemblies.

Partnerships with local suppliers, such as Process Solutions, have enabled us to take on large, full automated assembly system projects while simultaneously improving the quality of our customer delivered equipment and documentation.

This has been such a success that we have begun implementing the same process for our equipment's pneumatic assemblies and are looking for other areas where we can use our supply chain here in Washington to improve our business.

Dr. Peter Zieve is the founder and owner of Electroimpact, Inc., a respected aerospace assembly automation firm headquartered in Mukilteo, WA. He received his BSEE from MIT in 1976 and his Ph. D. in Mechanical Engineering from the University of Washington in 1986.

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When we work together to create better opportunities for all, the possibilities soar. Boeing is proud to work with 1,700 suppliers and partners in Washington, spending about $6 billion. Thank you, Boeing suppliers, for supporting the delivery of 748 airplanes last year.
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