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AEROSPACE INDUSTRY HITS NEW HEIGHTS

By Jennifer McFee
For the Free Press

Manitoba's aerospace sector is soaring to new heights as the ever-expanding industry races to provide new, greener aircraft to keep up to the booming demand for air travel.

Ken Webb, Executive Director of the Manitoba Aerospace Association, explains that highly-skilled aerospace experts provide the research, development and production capabilities to design aircraft, manufacture components, assemble airplanes and provide maintenance, repair and overhaul services.

"The aerospace industry is the people who design, build and maintain aircraft and space systems, as opposed to the aviation industry, which is the people that operate them and the supporting infrastructure" he said.

In Manitoba, this globally competitive market provides more than 5,500 direct jobs, as well as indirect and spinoff employment. Bringing in more than \$1 billion per year in sales revenue, Manitoba is the third-largest aerospace hub in Canada after Quebec and Ontario. More than 80 per cent of the products and services are exported around the world.

Here in Manitoba, three global names – Boeing, StandardAero and Magellan Aerospace anchor the sector along with a robust collection of world-class firms that specialize in component manufacturing, repair and overhaul services, global parts sourcing, aircraft modifications, and software development.

The Winnipeg Boeing plant manufactures components for all models of Boeing commercial airliners, including the 787 Dreamliner. Built in the 1970s, this plant is Canada's largest facility to manufacture composites, which are strong but light materials that replace metal components in aircraft. Winnipeg's Boeing plant has also designed and built new technologies to make aircraft quieter, inside and out.

Its Murray Park Road plant is expanding by 14,000 square metres to make parts for the next generation 737MAX.

Founded in Winnipeg in 1911, StandardAero is now one of the world's largest aviation support businesses, specializing in gas turbine engine maintenance, repair and overhaul. StandardAero keeps commercial airliners and the Canadian, U.S. and foreign militaries flying around the globe. Together with General Electric, they operate one of the world's newest engine testing and certification centres at the Winnipeg airport, where engines are tested for icing and other conditions before they are certified for production.

Formerly known as Bristol, Magellan Aerospace designs and manufactures engine units, metal and composite parts, small satellites and rocket systems and components for the F-35 Lightning II, one of the most advanced fighter jets in the world. A recent agreement with BAE Systems could lead to over \$1-billion worth of composites manufacturing in their newly expanded Winnipeg plant.

Although they may not be household aerospace names yet, Manitoba has a number of dynamic companies that are well known across the continent and around the world. Advanced Composites Structures, Cadorath, Cormer Aerospace and EMTEQ are all expanding internationally and MicroPilot sells UAV autopilots in over 60 countries. AeroRecip is the largest piston engine overhaul shop in Canada and Argus, Enduron and Standard Manufacturers are working to world-class status through the Competitive Edge program.

Manitoba is also home to a number of innovative research centres, including two of the world's newest icing and environmental testing and certification facilities for aircraft engines. The Global Aerospace Centre for Icing and Environmental Research (GLACIER) in Thompson is a joint venture between Rolls-Royce Canada and Pratt & Whitney Canada, and Winnipeg is home to the GE Aviation Engine Testing Research & Development Centre.



Submitted photos

Above Left: The Global Aerospace Centre for Icing and Environmental Research (GLACIER) in Thompson. Above: A typical icing test underway at the GE Aviation Engine Testing Research & Development Centre in Winnipeg. Both engine test sites are expanding into year-round testing operations.

Also in Winnipeg, the Composites Innovation Centre helps companies to develop new products and technologies using composite materials.

On the military side, Winnipeg is home to 17 Wing and the headquarters of the Royal Canadian Air Force, and the aerospace industry provides training for the RCAF at Southport near Portage la Prairie.

“Allied Wings runs the operations and provides the aircraft to do training for the entry-level pilots,” Webb explained.

The industry is experiencing exponential growth on the commercial aviation side, with a worldwide forecast for about 35,000 new aircraft over the next 20 years due to an increase in air traffic and the need to replace aging fleets. On the military side, Canada continues to invest in new aircraft to modernize its air force and search and rescue operations.

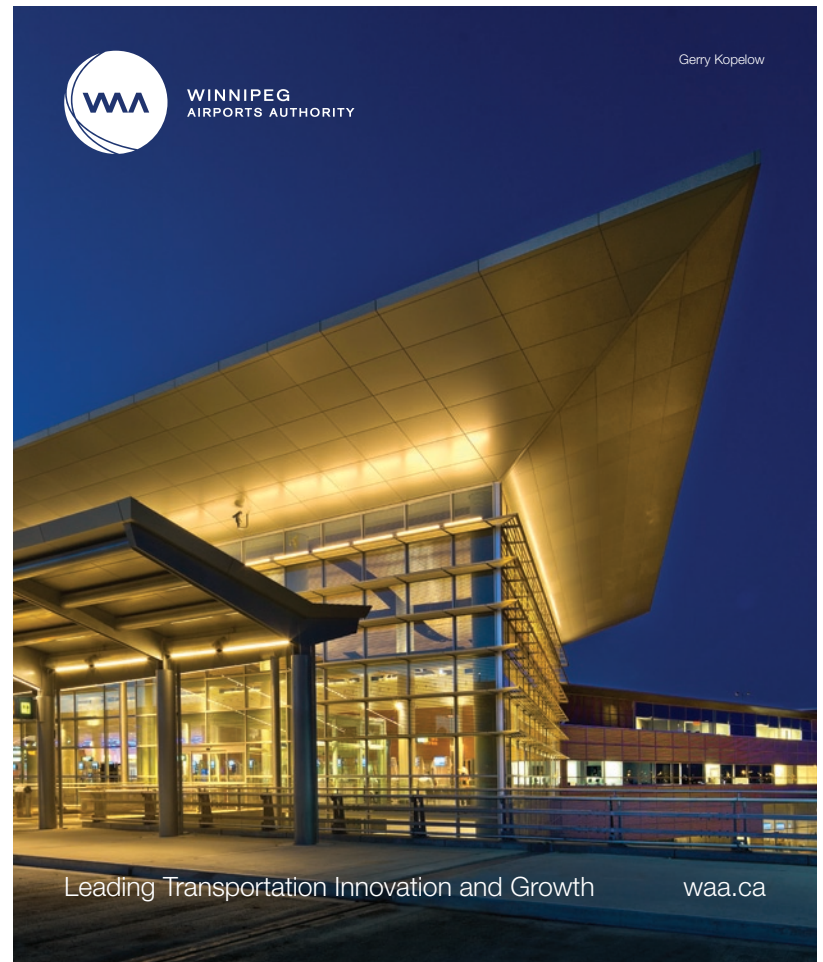
“The growth in air travel will continue, but the growth won’t be as much in North America and Europe as it has been in the past. It will be driven by India, the Middle East, China and Asia,” Webb said. “Those countries will be buying many of those new airplanes, and they will want them built there.”

“We’re all trying to expand our industry at a time when there are tremendous pressures on costs because of the competition coming from countries like India, Mexico and China,” Webb said.

In Manitoba, the Competitive Edge Supplier Development Program helps smaller companies qualify to become suppliers for the aerospace industry. The quality assurance standards are rigorous, since all parts of an airplane need to be certified.

As well, Manitoba’s technology-based aerospace companies are already planning how they’ll remain competitive 20 years from now, drawing on a Technology Roadmap for guidance.

“There is very strong competition,” said Webb. “At the same time, there is tremendous opportunity through the unprecedented growth.”



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MESSAGE FROM THE PRESIDENT



Kevin Bartelson

"From modest roots in small bush plane repair in the 1930s, the Manitoba aerospace industry has grown to include sophisticated design, manufacturing, servicing, testing, certification, training and research and development capabilities."

Canada is a global leader in aerospace and Manitoba is home to Canada's third-largest aerospace industry. Our highly competitive aerospace sector produces world-class products for customers on six continents.

During Aerospace Week we celebrate the success and the future of our industry. It keeps the world moving, provides rewarding careers for our community, and helps build a strong economy.

From modest roots in small bush plane repair in the 1930s, the Manitoba aerospace industry has grown to include sophisticated design, manufacturing, servicing, testing, certification, training and research and development capabilities.

We are home to Canada's largest aerospace composite manufacturing centre, the Royal Canadian Air Force's primary flying school, and one of the world's largest gas-turbine engine repair and overhaul companies. The internationally acclaimed Composites Innovation Centre and two of the world's most advanced aircraft engine testing and certification centres developed by Rolls Royce, Pratt & Whitney and GE Aviation are also located here.

Along with a number of global aerospace leaders, Manitoba has a network of SMEs that compete and supply into the world markets. This growing cluster is strengthened through the Competitive Edge Supplier Development initiative, an internationally recognized learner to world-class supplier and supply chain development program.

A supportive business environment, award-winning university, college and high-school collaborations and a Network-of-Excellence led by the Manitoba Aerospace Association support a culture of innovation and the development of a world-class industry.

With passenger air travel continuing to grow at five to six per cent annually and the 20-year world-wide demand for new commercial aircraft now at 34,000 aircraft and rising, the aerospace industry is booming. The rising demand provides a great opportunity, but in a global industry, our competitors from around the world are also looking to make the most of these opportunities.

The last year has been a busy one as OEMs continue to expand their production capability at the same time as they develop new, greener aircraft. Quieter, longer-range, more fuel-efficient aircraft with more comfortable cabins are coming to market, and Manitoba companies are helping to provide these innovative planes and the technologies inside them.

Boeing Winnipeg, currently producing composite components for all models of Boeing commercial airliners, including the 787 Dreamliner, has extended their union contract and is expanding their main plant on Murray Park road by 14,000 square metres as they prepare to make components for the new 737MAX.

Magellan Aerospace has signed an agreement with BAE Systems for more than 1,000 sets of horizontal tails for the F-35

Lightning II and will build the service module section for the three new RADARSAT Constellation Mission satellites for the Canadian Space Agency.

StandardAero, honoured last year with the 2012 Canadian American Business Council Achievement Award with GE Aviation for the two companies' collaboration on the GE Aviation Engine Testing Research and Development Centre, is already expanding the \$50-million test site and has signed new licence agreements with GE to become a TRUEngine service provider for specific GE engines. New agreements have also been signed with Rolls Royce (helicopter engines), Brit Air (regional jet engines) and the company continues to keep Canadian, U.S. and other foreign militaries flying by servicing the engines that power their aircraft.

Our small and medium-size companies have also had a busy year. Corner Group Industries, a top-50 contractor in Canadian Defence Review, has new statements of work with Boeing and Airbus and has announced plans to expand in New Brunswick and Mexico. EMTEQ added composites design and manufacturing capabilities to its operations, delivering its first set of composite interior panels for a major business aircraft customer, Enduron signed new contracts with General Dynamics and Advanced Composite Structures established its technologies in New Zealand through Oceania Aviation to provide Rotor Blade Repair support for customers in Australia and Oceania.

Our research and innovation centres are also growing. The Global Aerospace Centre for Icing and Environmental Research (GLACIER) engine testing centre in Thompson, a joint venture between Pratt & Whitney Canada and Rolls-Royce Canada, and The GE Aviation Engine Testing Research and Development Centre at the Winnipeg James Armstrong Richardson International Airport are both expanding. Only three and two years old respectively, and the newest aircraft testing and certification centres in the world, both facilities have added additional capabilities to move from cold-weather testing into year-round operations with a wider range of environmental and technical testing capabilities.

The Faculty of Engineering at University of Manitoba added a new aeropropulsion specialist to their Engineer in Residence program and Red River College opened its new Aerospace and Manufacturing Technology Access Centre to provide industry with enhanced access to the college's programs, technology, facilities, faculty members, students and Research Professionals. The University is also developing a new program in Aerospace Program Management.

Recognizing the strategic importance of the aerospace

industry, the government of Canada commissioned a review of how government policies, practices and programs can maintain and enhance Canada's competitive position as a top-five aerospace nation. In response to the recommendations in the "Emerson Review", the Manitoba aerospace community is developing a "technology roadmap" to identify the key technologies needed to keep us competitive in the years to come. More than 40 engineering, technical and business leaders across 12 organizations are engaged in this fore-sighting initiative.

The future looks bright for aerospace in Manitoba and Canada. The opportunities are great but the competition is fierce. By collaborating across industry, academia, research organizations and governments we can provide the winning combination of innovation, quality and business conditions that will create success for us for a long time to come.

**Kevin Bartelson - GM Boeing Canada Winnipeg
President, Manitoba Aerospace Association**

Manitoba Aerospace Association (MAA)

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or register for an information session on:
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EnviroTREC
Canadian Environmental Test Research & Education Center



The GLACIER/EnviroTREC facility in Thompson is a major component of Manitoba's claim to be the icing certification capital of the world for large gas turbine engines. This globally unique facility has been operational since November 2010 and has completed several icing certification programs.

EnviroTREC is a not-for-profit sister organization to GLACIER. EnviroTREC's purpose is to stimulate and mentor collaborative research and development activities and to promote the development of human resources necessary to support aerospace technology development in Manitoba. A priority for EnviroTREC is the development of technologies and skills related to the test, evaluation and certification of the next generation of large aircraft engines.

Please visit the EnviroTREC website at www.envirotrec.ca for more information.



**The Honourable Michelle Rempel,
Minister of State for Western
Economic Diversification**

GREETINGS FROM THE HONOURABLE MICHELLE REMPEL, Minister of State for Western Economic Diversification

It is with great pleasure that I extend greetings on behalf of the Government of Canada during Aerospace Week in Manitoba.

Our Government is committed to strengthening the innovation capacity of aerospace firms and enhancing Canada's competitive position in the global market by increasing our manufacturing productivity, investing in research to test and produce cutting-edge technology, and supporting opportunities for Canadians to develop needed skills and expertise.

The western Canadian aerospace industry is a competitive and vibrant sector employing nearly 27,000 people, generating more than \$3 billion in annual revenues, and contributing more than \$2.5 billion to Canada's real gross domestic product (GDP). Western Canada is a proven market leader, with cutting-edge technology, a strong R&D infrastructure, and a highly skilled, educated and specialized workforce. Manitoba is home to the

largest aerospace industry in the West and is the third largest provider of aerospace goods and services in the country.

Since 2006, Western Economic Diversification Canada (WD) has supported more than 30 aerospace sector projects to create high-value jobs, improve business productivity, strengthen skills development, and foster innovation.

Additionally, the Government of Canada's Industrial and Regional Benefits (IRB) Policy is helping Canadian companies gain access to high quality business opportunities by leveraging Canada's military procurement. WD assists small- and medium-sized businesses to access IRB opportunities and strives to position western Canadian companies as suppliers of choice.

I look forward to our continued collaboration and combined efforts to strengthen the aerospace sector in Manitoba and across the West. Together, we are showing the world that Canada's West Means Business.

MESSAGE DE L'HONORABLE MICHELLE REMPEL, ministre d'État à la Diversification de l'économie de l'Ouest canadien

J'ai l'immense plaisir de vous saluer au nom du gouvernement du Canada à l'occasion de la Semaine de l'aérospatiale au Manitoba.

Notre gouvernement est résolu à renforcer la capacité d'innovation des firmes aérospatiales et à améliorer la position concurrentielle du Canada au sein du marché mondial en accroissant notre productivité manufacturière, en investissant dans la recherche visant l'essai et la production de technologies de pointe, et en soutenant les possibilités pour les Canadiens d'acquérir les compétences et l'expertise nécessaires.

L'industrie aérospatiale de l'Ouest du Canada est un secteur concurrentiel en plein essor qui emploie près de 27 000 personnes, génère plus de 3 milliards de dollars de revenus annuels et contribue au produit intérieur brut (PIB) réel du Canada à hauteur de plus de 2,5 milliards de dollars. L'Ouest du Canada est un chef de file reconnu du marché qui est doté d'une technologie de pointe, d'une solide infrastructure de recherche et développement et d'une main-d'œuvre hautement qualifiée et spécialisée. Le Manitoba est le foyer du secteur

aérospatial le plus important dans l'Ouest de même que le troisième fournisseur en importance de produits et services aérospatiaux au pays.

Diversification de l'économie de l'Ouest Canada (DEO) a soutenu depuis 2006 plus de 30 projets de l'industrie aérospatiale visant la création d'emplois de haute valeur, l'amélioration de la productivité des entreprises, un perfectionnement accru des compétences et le soutien de l'innovation.

La Politique des retombées industrielles et régionales (RIR) du gouvernement du Canada aide par ailleurs les sociétés canadiennes à accéder à des possibilités d'affaires infiniment intéressantes en misant sur l'approvisionnement militaire du Canada. DEO aide les petites et moyennes entreprises à avoir accès à des possibilités de RIR et s'efforce de faire des sociétés de l'Ouest canadien des fournisseurs de prédilection.

Je compte sur notre collaboration soutenue et nos efforts conjugués pour raffermir le secteur aérospatial du Manitoba et de tout l'Ouest. Ensemble, nous montrons au monde que *l'Ouest est en affaires*.

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**Peter Bjornson, Manitoba's
Minister of Entrepreneurship,
Training and Trade**

"DYNAMIC, INNOVATIVE AND FOCUSSED" ARE APPROPRIATE DESCRIPTORS FOR BOTH MANITOBA'S AEROSPACE SECTOR COMPANIES AND THE THOUSANDS OF SKILLED MANITOBBANS THEY EMPLOY.

In proclaiming Aerospace Week 2013 on behalf of the Government and people of Manitoba I am honoured to be able to acknowledge our companies and the men and women who continue to make them successful.

For over 75 years our aerospace sector has been providing aviation and space-related products and services to customers around the world. In order to ensure continued success in today's increasingly competitive global marketplace, Manitoba companies are implementing advanced technologies and industrial processes while concurrently providing advanced training for their employees. The Provincial Government continues to work closely with academia and industry to provide training and financial assistance to ensure strategic growth projects are implemented in Manitoba.

Manitoba continues to focus on advanced composite product development, spacecraft manufacturing and aviation aero-engine testing. As Boeing and Magellan take on new advanced commercial composite fabrication work, new business initiatives are underway at EMTEQ and Cormer Aerospace. The Composites Innovation Centre is providing expertise and support for all these initiatives.

Magellan Winnipeg recently celebrated its 50 years of excellence in the production of the Black Brant family of sounding rockets to support the space science community; I strongly encourage people to visit the new historical exhibit at the Manitoba Museum. Magellan's legacy of excellence in developing and manufacturing space hardware goes far beyond the Black Brant. In 2003 a satellite designed and integrated by Magellan Aerospace was launched on a two-year scientific mission to measure ozone depletion over Canada. Ten years later "SciSat" is still operating and providing scientists with

additional environmental data. Magellan's success at building reliable complex space hardware has resulted in additional satellite contracts with the Canadian Space Agency. A mission to study space weather is scheduled for launch in 2013 and an eco-system monitoring satellite constellation is to be launched in 2018. The Province of Manitoba is a strong supporter of Magellan Winnipeg.

Manitoba has become a world centre for year-round advanced aviation engine testing. Three of the world's largest aircraft engine original equipment manufacturers have invested approximately \$100 million to establish the most sophisticated test infrastructure in the world here in Manitoba. Rolls Royce, Pratt & Whitney and the National Research Council of Canada are partners in the Global Aerospace Centre for Icing and Environmental Research (GLACIER) test facility which is operated by MDS Aerotest while General Electric Aviation has teamed with StandardAero to build and operate the GE Aviation Engine Testing, Research and Development Centre (TRDC) at Winnipeg's James Richardson Airport. The Province of Manitoba is pleased to partner with industry in establishing an Engineer in Residence at the University of Manitoba to meet the needs for well-trained, specialized engineers and operators to support aero-engine testing in Manitoba.

In closing I would like to wish the entire aerospace community success with Aerospace Week 2013 and a prosperous future.

**– Peter Bjornson, Manitoba's
Minister of Entrepreneurship,
Training and Trade**



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LOCAL AVIATION AND AEROSPACE ENTREPRENEURS THRIVING

By Holli Moncrieff
For the Free Press

Business is booming for local aerospace entrepreneurs. Just ask the owners of three companies that have grown far beyond their expectations: Advanced Composite Structures Inc., Cadorath and Gregorash Aviation.

Alvin Gregorash started his company almost by accident. A long-time employee of StandardAero, Gregorash left to become an independent parts broker shortly before the aviation giant decided to close its piston engine division.

When StandardAero employees were unable to raise the capital required to save the business, Gregorash decided to risk it all.

"At the 11th hour, I thought there was an opportunity there. I'd worked with all the guys in the piston shop," he said. "When StandardAero's president asked how I would finance the venture, I told him that I would mortgage the house, the wife and the kids. I made him an offer he couldn't refuse."

Today, Gregorash Aviation is a family-owned company specializing in engines, parts and supplies. One of their businesses, Aero Recip, is the largest piston engine overhaul shop in Canada.

They maintain an excess of 200 engine cores, with a minimum of 115 engines in process at any one time. Their Dyno Test Cell is the only test cell in North America that tests radial and opposed piston engines ranging from 65 to 1,200 horsepower.

"In the beginning it was tough. We'd taken over something StandardAero had been phasing out," said Gregorash.

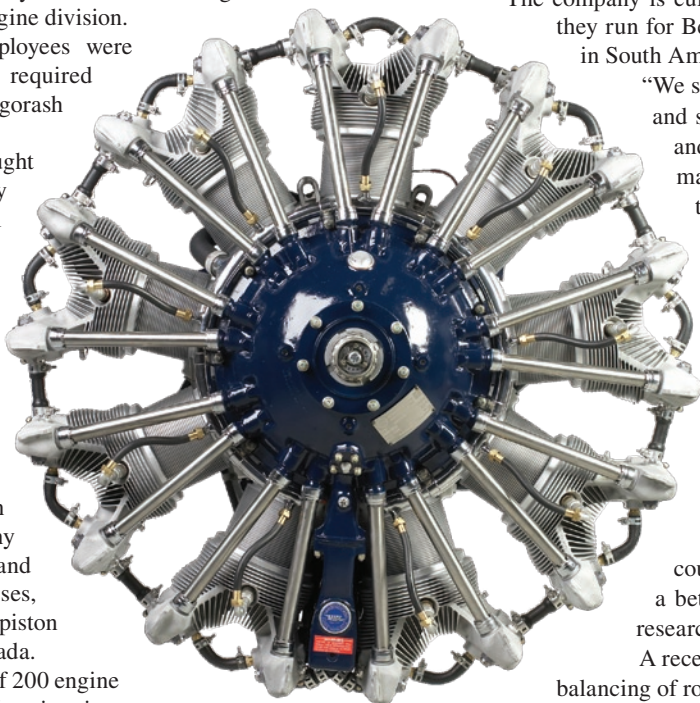


Photo by Darcy Finley for the Winnipeg Free Press

**Above: Employees work on the floor at Cadorath Aerospace.
Below: An engine at Gregorash Aviation. Submitted photo**

Cadorath also had humble origins. It started out as a plating company over 55 years ago. Now Rolls Royce and Bell Helicopter are two of the company's major clients.

"We have a level of professionalism and skill that are unmatched in the industry – decades of experience. There is a tremendous amount of passion and integrity at Cadorath," said Johnny Sutherland, Director of Marketing.

Cadorath launched their AeroParts website at Heli-Expo 2012.

"AeroParts is an online resource for the buying and selling of helicopter parts. It's currently the fastest-growing website for helicopter parts in the world," Sutherland said. "It is basically a request-for-quote website where people have the option of building a shopping cart full of quotes."

The company is currently developing other repair lines in addition to the one they run for Bell Helicopter, and is looking at expanding their client base in South America.

"We seek out the parts our customers are looking for. We can buy and sell parts all over the world," said Sutherland. "It's cheaper and faster to recondition the original parts than to have the manufacturer do a run of new ones. When we're done with them, they look better than new."

When James Anning and his brother Bruce started Advanced Composite Structures Inc. (ACS) back in 1988, they had one main goal – to trounce the competition.

For over 20 years, ACS has been providing Main/Tail Rotor Blade and Composite Component repair services to the helicopter industry. With in-house repair design capability, the company can repair any make and model of aircraft.

"My brother was working for our competition back in the '80s when composites were a new thing. We decided this was something we wanted to do," Anning said. "Bruce could see ways of improving the processes – of giving the user a better product at a better price. We spent a lot of money on research and development."

A recent breakthrough for the company was achieving the moment balancing of rotor blades.

"We were able to take a set of rotor blades that were a constant problem for the customer and adjust the blades to the point that they were perfect. The customer couldn't believe it," said Anning. "We're consistently hearing our customers really love our products and our pricing structure. We've evolved to the point where we are extremely efficient. Our competition doesn't like us very much."

Use this QR code to link to Cadorath's recently-produced corporate video.





BOEING CHOOSES WINNIPEG FOR MAJOR SITE EXPANSION

Boeing's fabrication division operates 12 plants in three countries – giving them plenty of options when it comes to allocating work – but the aircraft icon singled out Winnipeg as the site of a 150,000-square-foot expansion. Already the biggest composites manufacturing facility in Canada, this 22 per cent boost to Boeing Canada Winnipeg's existing space (bringing the total to 665,000 square feet) will primarily be used to construct the one-piece composite acoustic inner barrel for the engine inlet of the 737 MAX – making this new model 40 per cent quieter than it is today.

"Boeing Canada Winnipeg has a great future ahead in support of unprecedented production rates," said Kevin Bartelson, general manager, Boeing Canada Winnipeg. "Earlier this year, we negotiated a successful contract extension with our local Canadian Auto Workers union. This contract ensures we have the stable workforce, skills and now the manufacturing space we need to take on exciting new production for the 737 MAX."

This local expansion – the first since 1990 – offers concrete evidence of Boeing's enduring commitment to Winnipeg. Ever since winning important contracts to build parts for the 787 Dreamliner a decade ago, Boeing Canada Winnipeg has increasingly been tapped to construct some of the company's most complicated composite-parts assemblies, while less sophisticated constructs are shifted to other sites.

This positions the Winnipeg operation especially well, given that the local Boeing outlet is making parts for the company's most modern aircraft. Also significant is Boeing Canada Winnipeg's repeated No. 1 ranking for Lean practices, beating out nearly 50 other sites to take top honours for the last four years in a row. This annual in-house award serves as an abiding testament to the capability, reliability and work ethic of Boeing's highly skilled Winnipeg personnel. Approximately 1,600 aerospace manufacturing professionals now work at Boeing Canada Winnipeg—as large a workforce as has ever existed, which comprises a major support to Winnipeg's aerospace sector and its specialized clusters. The new expansion, about the size of 12 Olympic-sized swimming pools, means that employment is expected to remain steady for the next 10 years.

DID YOU KNOW:

- Boeing's fabrication division singled out Winnipeg as the site of a 150,000-square-foot expansion, increasing its existing space by 22 per cent to 665,000 square feet
- The expanded footprint will primarily be used to construct the one-piece composite acoustic inner barrel for the engine inlet of the 737 MAX
- Boeing Canada Winnipeg has increasingly been tapped to build some of the company's most complex composite-parts assemblies
- About 1,600 aerospace manufacturing professionals work at Boeing Canada Winnipeg, with the expansion expected to keep employment stable for the next 10 years



Boeing Canada Winnipeg will undergo a 150,00-square-foot expansion.
Submitted photos

STUDENT SPACE PROJECT READY FOR LAUNCH

By Holli Moncrieff
For the Free Press

The sky isn't even close to the limit for the students of Brant-Argyle School. This winter, their winning science experiment will be launched into outer space as part of the Student Spaceflight Experiment Program.

Brant-Argyle's project was selected from 1,254 proposals submitted to the program. As one of 17 winning entries, it's also the first international experiment to be chosen and the first one from an elementary school in Canada or Manitoba.

"We had to develop an experiment that could fit in a test tube and go to the International Space Station," explained Maria Nickel, a science and technology teacher at Woodlands School. Nickel is also the director of Student Spaceflight Experiment Program – Interlake. "The same experiment will be run on earth so we can compare the results."

The experiment will study how cosmic radiation affects DNA and whether green tea, a natural antioxidant, can prevent radiation damage. The experiment will use yeast cells, which will be exposed to cosmic radiation for four weeks and then returned to earth for examination.

"CancerCare Manitoba has been a big part of this," said Nickel, who has been assisting the three Grade 5 students from Brant-Argyle School as they prepare the experiment and assemble the necessary paperwork. "The kids have been treated like NASA researchers – they have to go through the same processes, the same checks and balances. Their initial time frame was eight weeks. I told them they either met their deadlines or they forfeited their spot."

The launch has since been delayed until early December.

"It's been a huge learning curve for the kids because they're not used to delays like this," Nickel said. "When they go into the workforce, these are the kind of things they'll be faced with."

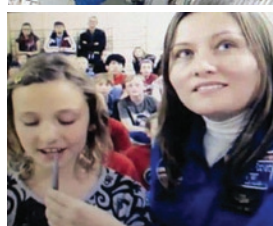
Nickel participated in the Advanced Space Academy for Educators offered by Honeywell. Her space club has been a popular extracurricular activity at Woodlands School for five years. Between 16-18 students are accepted for the club, and they must apply to get in.

Nickel found out about the Student Spaceflight Experiment Program while searching for an astronaut who would be willing to Skype with her space club. Each experiment costs \$20,000 U.S. Nickel and the students were able to get a provincial grant for \$10,000. The rest of the money came from the private sector and individual donors.

"The students don't want to do anything else. I haven't seen this kind of engagement from them in a long time. This has really caught their fire," she said. "This is something positive for Canadian kids."

Two other experiments from students in the division were runners-up. All three experiments will be demonstrated to members of the Manitoba Aerospace Association during Aerospace Week.

The other experiments investigate whether or not the royal jelly made by honeybees can slow bone loss in astronauts, and whether algae can be used as a biofuel source.



Top: Maria Nickel, science and technology teacher at Woodlands School, tries her hand as flight director at Mission Control in Houston. She was tasked to be flight director for a shuttle mission at the Honeywell Space Academy for Educators. Middle: SSEP students work with glove-box training.

At left: Nickel 'free floats' at the NASA Johnson Space Center. Nickel and student Tess Doerksen speak to an astronaut during the uplink to the International Space Station. Doerksen's uncle helped design and build the Canadarm.

Submitted photos

Students from kindergarten to Grade 8 also designed and competed in a mission patch competition. The winning designs, which came from kindergarten to Grade 8 students at Argyle and Grade 5-8 students at Stony Mountain School, will be launched on Sept. 5. with some of the Mission 3 experiments.

The school division is hoping to raise enough money to send the award-winning students to the NASA Kennedy Space Centre in Florida to see their experiment launched into space.

CORMER'S EXPANSION CUSTOMER- DRIVEN

By Holli Moncrieff
For the Free Press

Cormer Aerospace (a division of Cormer Group Industries) is a great example of the strength of the local aerospace industry. The company is currently in the midst of opening two new locations – one in New Brunswick and another in Mexico. Cormer currently has two locations in Winnipeg, along with a warehouse.

Leo Sousa, President of Cormer Aerospace, says that an aggressive strategic plan was key to Cormer's continued success. One of the key strategies was adding additional facilities with similar capabilities to ensure customers were confident in their ability to support growth and minimize risk. The second portion of the same strategy was to locate themselves in regions with a growing cluster of complementary companies.

"Cormer had humble beginnings, but its shareholder had the vision of developing it into a world-class organization," said Leo Sousa. "We were fortunate enough to align ourselves with some key customers, and we have continued to evolve into what we are today."

Another focus was for Cormer to incorporate the Competitive Edge Supplier Development Program (a program presented by the Manitoba Aerospace Human Resources Council), which helps companies align their processes with world-class performers in the industry.

In addition, one of the company's current goals is to have composites grow to 20-30 per cent of their aerospace business, further adding to their ability to vertically integrate their customer's requests.

"The industry has evolved. What was acceptable 10 to 15 years ago is not what customers are looking for today," said Sousa. "Customers are looking for partners and do not want to maintain hundreds if not thousands of small suppliers. We are strategically tailoring our growth to support these expectations."

Cormer's property holdings and contracts have continued to grow. They have recently renewed or landed contracts with Boeing 767 and 747, Magellan Wire Strike Program, Boeing F18, FACC, several Bombardier programs, Latecoere – 787 Door Program, and Airbus – Toulouse A350 Program.

"We have reinvented ourselves to ensure we stay efficient, lean and focussed on growth," Sousa said. "The most important aspect to all of these plans is ensuring we continue to attract the right people in the right areas for our expansion since these plans will always be led by the people we have here in Winnipeg. We're always searching for top performers to join our team."

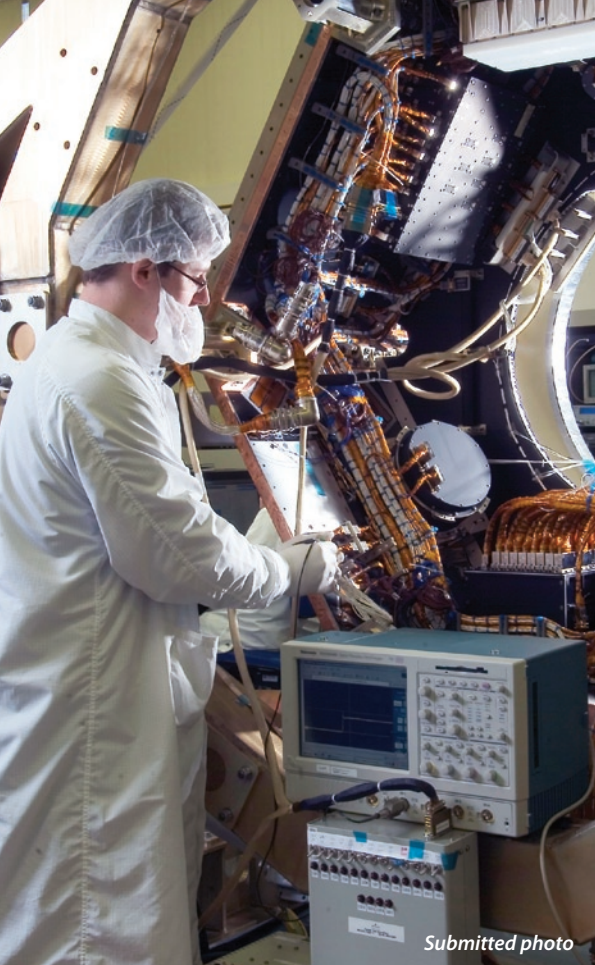


From left, Leo Sousa, President of Cormer Aerospace, Sandra Unik, Senior Manager, Human Resources and Donnie Miousse, Programming/Fixture and Tool Design Supervisor.

Photo by Darcy Finley for the Winnipeg Free Press

"We are still growing in Winnipeg. Several departments are aggressively expanding – particularly our engineering and project management areas and we are currently interviewing for additional team members" said Sandra Unik, Senior Manager, Human Resources and Corporate Affairs.

The company originally started small in 1988, leasing 3,000 square-feet of factory space on Keewatin Street with customers in agriculture and bus manufacturing. By 2000, Cormer had transitioned completely to defense and aerospace. It now has 200 employees and over 250,000 square-feet globally.



Submitted photo

Assembly of the CASSIOPE satellite at Magellan Aerospace, Winnipeg.

'MADE IN MANITOBA' SPACE TECHNOLOGY

For the Free Press

Magellan Aerospace, Winnipeg is unique in Manitoba's vibrant aerospace community in that it operates a sophisticated space business. For more than 80 years Magellan has made many pioneering contributions to Canada's space heritage, including the design and development of a family of suborbital sounding rockets, scientific payloads for rockets and the International Space Station, and spacecraft buses for the Canadian Space Agency small satellite missions.

On Sept. 4, Magellan announced the award of a \$110-million contract from MacDonald, Dettwiler and Associates Ltd. (MDA) for the RADARSAT Constellation Mission (RCM) satellite bus manufacture. This is the largest space contract to date for Magellan, and includes the manufacture of three spacecraft buses, including the control systems, on-board computers, power generation and distribution systems, electronics, wiring, on-board communications links with the ground, and the bus assembly, integration and test. Since 2005, Magellan has been awarded the initial Phase A, B, and C Preliminary and Detailed Design contracts leading up to this current manufacturing phase (Phase D). This phase, including the complete bus assembly, integration and test, will be carried out at Magellan's facility in Winnipeg, where other Canadian Space Agency (CSA) satellite missions, including CASSIOPE and SCISAT-I, were also manufactured.

The RCM mission will support maritime surveillance (ship detection, ice monitoring and oil spill detection), disaster management and ecosystem monitoring.

"The RCM contract is not only a great opportunity for Magellan Aerospace and its employees," said Don Boitson, Vice President and General Manager of Magellan Aerospace, Winnipeg. "It is also an important mission for Canadians that will provide essential monitoring of our remote North and constant wide-area maritime surveillance off the vast coasts of our country. Magellan takes great pride in being a Tier One subcontractor on the most exciting Canadian space project of this decade."

Adding to the excitement at Magellan this fall, is the imminent and much-awaited launch of the Cascade SmallSat and Ionospheric Polar Explorer, or CASSIOPE, small satellite that Magellan delivered to MDA for the CSA in 2008. CASSIOPE is a multi-purpose mission carrying eight unique instruments to conduct space environment research and advanced telecommunications technology demonstration.

The CASSIOPE satellite was designed and built in Magellan Aerospace, Winnipeg. In addition to the bus design, manufacture, and Assembly, Integration and Test (AIT) for CASSIOPE, Magellan also designed and developed the in-flight computer and custom-build data handling card, flight software, mechanical and electrical ground support equipment, Command and Data Handling (C&DH) unit, elements of the e-POP payload, as well >>

"More than 50 years ago our company recognized the potential future for space exploration. Evolving the Black Brant rocket program to our present satellite design and manufacturing capability reflects the essence of Magellan's vision of excellence for technology development."

—James Butyniec, CEO



**MAGELLAN HAS AN
INTEGRATED VISION OF
AEROSPACE.**

Magellan provides customers with solutions for space missions that include sounding rockets and payloads, space shuttle payloads, International Space Station payloads, and spacecraft buses and integration services.

Magellan Aerospace is a global enterprise providing integrated products and services to the aerospace industry worldwide. Through the Magellan Operating System™ (MOS) the company is focusing on consistent and sound operating systems that ensure operational excellence. www.magellan.aero



<< continued from previous page

as the mechanically-designed deployable booms.

CASSIOPE presently resides at Vandenberg Air Force Base where it is being prepared for launch this month on a Falcon 9 launch vehicle.

Magellan Aerospace was an innovator in Canada's space industry, daring to enter into the unknown more than 50 years ago when space exploration was in its infancy. The Black Brant rocket was one of Canada's first space contributions to the world, and a proud part of Magellan's past that has developed into Magellan's thriving space business today. In 2012, the company celebrated the 50th anniversary of the first launch of a Magellan-built Black Brant rocket and commemorated the event by providing a full-scale Black Brant 5C rocket to the Manitoba Museum for the enjoyment of museum patrons and to showcase one of Manitoba's significant contributions to the field of rocketry and space science.

This year Magellan will celebrate a special milestone at its propellant plant in Stony Mountain. The Rockwood Propellant Plant is holding a celebration to commemorate the 50th anniversary on Sept. 19. Rockwood is the only privately-owned propellant plant in the world and has manufactured solid rocket propellant used to power a variety of rockets including the Black Brant, CRV7 and Excalibur. Over the course of 50 years, the Rockwood Propellant Plant has distributed products to customers around the world as well as to NASA, CSA, and the Department of National Defence.

Over 150 people have been invited to attend the celebration and to witness the unveiling of a commemorative plaque.

"This milestone at our Rockwood plant is a testament to the hard work and dedication our employees have shown over the past 50 years," said Boitson. "This celebration offers the opportunity to acknowledge the important contributions the propellant plant has made to Magellan and to the history of rocketry in Canada."

Magellan Winnipeg's largely Manitoba-grown engineering team is the foundation of Magellan's space business and has much to celebrate in 2013. Magellan has a longstanding relationship with our local universities and colleges and offers exciting opportunities to graduates transitioning into the professional world.

COMPETITIVE EDGE PROGRAM HELPS AEROSPACE COMPANIES HONE PERFORMANCE

By Holli Moncrieff
For the Free Press

If you want to improve your performance, you have to compete against the best. It's a principle that has long been accepted by world-class athletes, and now it's being applied to Manitoba's aerospace suppliers.

Manitoba's Competitive Edge Supplier Development Program (CESD) was adapted from a similar program created by the North West Aerospace Alliance in England. CESD identifies 11 business processes that are critical to managing a business and becoming an effective and positive supplier for Original Equipment Manufacturers and/or Tier 1 companies. Each company is ranked on how well they are currently handling the 11 processes. Rankings range from learner to world-class.

Companies that participate in the program receive mentorship, training, and a detailed picture of exactly where they stand compared to the top companies in the industry.

"This program was the main conduit for us to start aligning ourselves with the larger companies and get ourselves up to world-class status," said Mike Easton, president and CEO of Argus Industries. "As a budding aerospace company, we're competing with Boeing. It's hard to get noticed. This is a great way to get relationships going and start speaking the same language."

The Manitoba Aerospace Association implemented the program about four and a half years ago. With almost 30 per cent of Manitoba Aerospace member companies enrolled, the program is already showing great success, says John Kliewer, Human Resources Development Officer for Manitoba Aerospace Human Resources Council.

"All the companies have advanced. We've seen gains of five to seven points up to 18," he said. "They've moved from what we call Learners to Performers or Contenders."

Each company is kept on track with quarterly steering committee reports, along with annual audits and benchmarking sessions.

"Benchmarking is a needs analysis – here's what the strengths of your business are and here is what needs improvement," explained Kliewer. "The accountability provides the motivational factor."

Easton has seen his company's delivery performance climb from 80 per cent to between 98-99 per cent.

"On 1,000 orders a month, that's a pretty good delivery rate. We've landed contracts we never would have been considered for if we weren't in this program," he said.

Participating in the program helped Enduron identify opportunities to grow their business. Enduron, a sheet metal company that works on detail parts, will be moving into the hydraulic and pressure tube business as well.

"We had an inkling that this market was out there, and we're really excited. This is a new direction for us," said Richard Klassen, Enduron President. "We're looking forward to the next benchmarking."

Klassen was eager to participate in the program to resolve long-standing problems and learn to communicate more effectively as an organization.

"The program had been pretty carefully thought-out. They had answers to just about all of our questions," he said. "It solved problems that had been lingering around here a long time, and it helped us understand the keys to our success. It opened up communication and has given us a common language."

Standard Manufacturers joined the program just over two years ago. Even though Standard is far from a new company – they've been in business for



Above: Michael Easton from Argus Industries, Kim Gretschmann from Standard Manufacturers.
Photos by Darcy Finley for the Winnipeg Free Press

over 30 years – Kim Gretschmann, VP of Operations, says it was helpful to learn where they stand in the industry.

"It's a relatively fast track to understanding where you are and where you want to be. It gives you training to get everyone on the same page right away – it's a good roadmap for success," she said, adding that the mentorship component was particularly helpful. "One of the biggest things the program did was help us achieve uniformity across the company. Everyone's in the know on where it is we want to be so we can move forward as a team. Our reactivity is less, and people are more focussed."

Micropilot also joined the program two years ago. Micropilot has been in business for 19 years and has 20 employees.

"It's important to have some system of assessing your performance. It made a lot of our processes much more rigorous and disciplined," said Howard Loewen, President of Micropilot, who has noticed his staff takes more ownership of their work and has become more involved in decision-making. "For a relatively modest expenditure, you get the benefit of a lot of smart people. A new set of eyes helps you see things in a different light."

To learn more about the CESD Program contact the Manitoba Aerospace Human Resources Council at 204-272-2952 or visit www.manitoba-aerospace.mb.ca.



The Composite Development Team at EMTEQ. Submitted photo

INDUSTRY COLLABORATION DRIVES PRODUCTION DEVELOPMENT OF NEW EMTEQ INTERIOR PANELS

For the Free Press

On July 15, Winnipeg-based EMTEQ Canada delivered its first set of composite interior panels to a major customer following four months of collaboration inside Manitoba's aerospace industry. EMTEQ joined forces with Composites Innovation Centre (CIC) and the Composites Research Network (CRN) to develop a manufacturing capability that demonstrates new technology.

EMTEQ Canada received approval on March 15, 2013 from a major business aircraft customer to design an interior panel solution with goals of improving visual aesthetics and durability. EMTEQ went further by optimizing the design and process for lean manufacturing flow.

"One of the ways that we can provide value to our customers is by eliminating waste in the process. To accomplish this, we develop unique fabrication technology that is married to our lean methodology," said David Vanderzwaag, EMTEQ Composite Product Manager. To shorten the development timeline, Vanderzwaag worked with Manitoba's composites experts, starting with the CIC.

With technical advice and financial support from the National Research Council of Canada Industrial Research Assistance Program, EMTEQ began collaborating with CIC in early 2012, when the need for a composites capability was identified. The CIC helped EMTEQ understand the requirements, infrastructure, and systems necessary for composites manufacturing operations. CIC Principle Engineer, Steve Crouch, assisted in new technology development that began with manufacturing trials at the CIC. Crouch led CIC resources to support EMTEQ throughout development and right into production.

In 2012, EMTEQ also engaged with engineers from the Composites Research Network. CRN supported EMTEQ with knowledge-based engineering solutions to streamline the creation of its new composite manufacturing capability.

"EMTEQ, with its commitment to innovation, is a natural partner for us," said Göran Fernlund, CRN Technical Director.

During production development, the team identified a gap in layup experience given the difficult product geometry. To remedy this, CIC's Aerospace Manager, Gene Manchur, initiated a "Complex Layup and Bagging Workshop" to close the gap. Drawing on subject matter experts from Boeing Canada Operations - Winnipeg, EMTEQ, and CRN, the CIC led the interactive workshop on-site at EMTEQ.

"We were immediately impressed with the collaborative stance that the management from each entity took," said Manchur. "It is a real testament to how Manitoba's aerospace composites industry can come together for mutual benefit."

EMTEQ learned superior layup and bagging strategies, and Boeing experts Rudy Braun and Don Jennings were able to review EMTEQ's approach to tooling, out-of-autoclave (OOA) and lean production. CRN is capturing workshop content in their online Knowledge in Practice Centre, and the CIC plans to make the workshop results available to other clients.

The EMTEQ-led industry collaboration successfully demonstrated an OOA, heated tooling process for aircraft interior panels that enables one-piece manufacturing flow. EMTEQ secured an order for an 18 aircraft program, and has achieved tremendous growth internally with this capability. EMTEQ Canada started 2012 with 53 employees and now employs over 100 people.

"This initial program is paving the way for EMTEQ in applying composite technology in aircraft interiors, particularly in business aviation, a market segment in which the company specializes," said Udaya Silva, the company's managing director in Canada. "This is a perfect example of government, academic, and nonprofit collaborations elevating SMEs by leveraging regional strengths in technologies, in this case composites manufacturing".

About EMTEQ and Its Partners

As a global aerospace company, EMTEQ's commitment to the collaborative advancement of aircraft products keeps our customers at the forefront of technology. EMTEQ offers an extensive selection of innovative, value add products and services for both retrofit and forward fit applications in the commercial and business aviation markets. Products range from cables to integrated installation kits; from cabin power to LED lighting; and from structures to exterior lighting.

From multi-faceted, complex programs to production overload needs, EMTEQ complements our products with comprehensive program management and full engineering, design, and certification services. Employing more than 500 employees worldwide, offices and manufacturing facilities are located in New Berlin, WI; Miramar, Florida; Great Falls, MT; Winnipeg, Canada; Montreal, Canada; Taubaté, Brazil; São José dos Campos, Brazil; Bachenbülach, Switzerland. EMTEQ complies with EN/JSIQ/AS9100:2004, ISO9001:2008, or EN9100:2003 standards backed with FAA/EASA Part 145 Repair Stations and global technical support. Learn more about EMTEQ and its partners at www.EMTEQ.com.

Composites Innovation Centre

The Composites Innovation Centre Manitoba Inc. (CIC) is a not-for-profit corporation jointly sponsored by industry and government that commenced operations in October, 2003. Its mandate is to support and stimulate economic growth through innovative research, development and application of composite materials and technologies for manufacturing industries and to be a catalyst for creating new business opportunities in Manitoba.

Specifically, the CIC is a technology solutions provider for the composites industry in Manitoba and Western Canada using targeted core technical capabilities and a large national and international network of research and commercialization organizations. Education and training activities are a key focus to ensure the development of critical skills and resources that are needed by this expanding industry sector.

Composites Research Network

Launched in 2012, the CRN (<http://crn.ubc.ca>) is a collaborative industry-university organization based in Western Canada focussed on closing the innovation gap and reducing product, and process, development risk in composite design and manufacturing. Responding to drivers in the aerospace, automotive, civil infrastructure and consumer industries the CRN was developed by Anoush Poursartip, University of British Columbia Professor in Materials Engineering, based on three decades of experience with the UBC Composites Research Group and Convergent Manufacturing Technologies. The CRN is currently supported by a seed investment from the Canadian Government and has more recently engaged the Boeing Company as a founding Tier 1 member.

The CRN is engaged in numerous projects ranging from fundamental research, applied research and development while also providing direct support to industrial partners. In all cases the primary output of CRN projects is knowledge in practice documents, or KPDs. Knowledge in practice documents bring together the fundamental science and industrial wisdom in composite manufacturing by capturing open, correct and usable knowledge. To facilitate the use of these documents by industry practitioners, the CRN has developed an online knowledge management framework for its membership, called the Knowledge in Practice Centre.

STANDARD AERO'S TRADITION OF EXCELLENCE CONTINUES

For the Free Press

StandardAero continues to demonstrate why, for over 100 years, it has grown to become not only one of Canada's pioneer aviation/aerospace companies, but one of the world's largest aviation support businesses specializing in gas-turbine engine maintenance, repair and overhaul.

With a company whose birthright rests among the people of Manitoba, it is with great pride that its citizens share in the success of its growth, progress and global reputation for excellence.

From a small automotive parts repair shop founded by two men in Winnipeg in 1911, StandardAero has evolved as a major centre of excellence among a diverse array of industries ranging from commercial aviation, industrial power, military aviation, engineering services and helicopter programs. And the companies within those market sectors are no less diverse, representing the world's leading OEMs and defence agencies.

Considered by many as 'the apple of Winnipeg's eye,' it comes as no surprise that StandardAero has served as the workplace of choice to multiple generations of Winnipeggers who believe that the quality of their work and their company, are second-to-none. This tradition of excellence was no less present in 2013.

One of StandardAero's less publicly visible operations is its Engineering business unit. Not only does this core function generate advanced technology solutions in support of the company's immediate, customer-driven product needs, it also serves as a local technology and training incubator through the Centre for Aerospace Technology and Training (CATT) – a joint partnership between Red River College (RRC), StandardAero and the federal (Western Diversification) and provincial governments. Within the partnership, StandardAero provides the facility, equipment maintenance, shop access, shop supplies, security, trained operators and OJT trainers for RRC project support.

The centre includes such advanced capabilities as Chemical Vapour Deposition, Fluoride Ion Cleaning and Robotic Laser Welding.

Over the past 12 months there have been scores of successes involving StandardAero's CF34 and CFM56 product lines. In June StandardAero announced it had signed license agreements with GE to become an independent TRUEngine authorized maintenance, repair and overhaul (MRO) provider, making StandardAero the first independent TRUEngine authorized MRO provider for CF34 engines and the second for CFM56 engines. The Helicopters team also got its chance to bang the drum in 2013 when, announcing they had been selected by Rolls-Royce to be an Authorized Repair Maintenance and Overhaul Center (AMROC) in support of the RR300 engine at both its Winnipeg and Singapore locations. The announcement was well-timed as StandardAero had just expanded its operational capabilities in Singapore by moving to a larger facility at the Seletar Aerospace Park.

For years StandardAero has provided MRO support for business aviation, general aviation enthusiasts and now, military turboprop-powered aircraft (trainers), using the PT6A engine. Just last month the company announced that it had expanded its turboprop engine test capabilities with the implementation of a new test cell, component repair capability. StandardAero is only the second MRO in the world selected by the USAF selected to provide turboprop support on the T-6A Texan II.

As a long-time service provider on the Lockheed C-130 Hercules, StandardAero's Government & Military sector in Winnipeg continues to keep the U.S., Canadian and other foreign militaries flying by servicing the engines that power those aircraft. Although sequestration and increased defence spending scrutiny is having an impact on the industry, StandardAero continues to expand its presence among key foreign



militaries that rely on the aircraft.

One of StandardAero's key growth areas is in the area of industrial power – a target vertical in which 40 per cent of the overall market is held by StandardAero. Even though the company is the dominant player in this arena, areas for growth continue to emerge and the company has plans to leverage its expertise in this field and further capitalize on some very strategic, high margin business.

StandardAero's reputation for service quality and expertise in turbine engine MRO has resulted in partnerships with many OEMs. One such example occurred last year with StandardAero and GE receiving the prestigious Canadian American Business Council (CABC) Achievement Award for the two companies' collaboration effort on the GE Aviation Engine Testing Research & Development Centre (TRDC).

West Canitest R&D Inc (WestCaRD) is working closely with GE Canada and StandardAero to facilitate year-round utilization of the GE Aviation TRDC located at Winnipeg's James Armstrong Richardson International Airport. Now in its second year of operations, this world-class, \$50 million R&D Test Centre has had a very successful record of completing engine certification tests under various winter temperatures and icing conditions. Engines that have been tested at the TRDC so far include the world's newest, high-technology engines such as the GENx 1B series that are on the new Boeing 787 Dreamliner, the GENx 2B for the new Boeing 747-8, and the GE-Honda engine destined for the new HondaJet business aircraft.

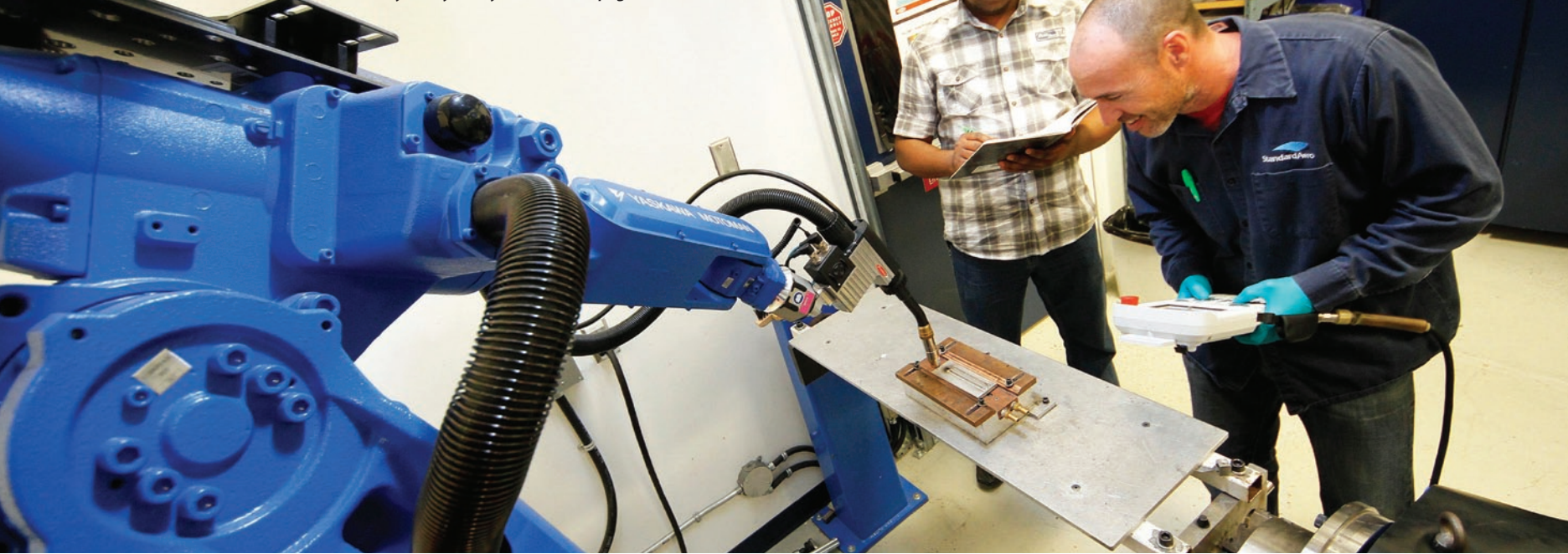
GE is investing in further improvements to the TRDC facility and additional WestCaRD equipment is being added to the facility to enable other year-round engine testing such as hailstone ingestion testing and endurance testing. These new testing technologies, such as advanced instrumentation and sensors, vibration monitoring equipment, and high speed cameras are bringing new technical capabilities to Manitoba.

These exciting new technologies require a specialized workforce, so WestCaRD is working closely with the University of Manitoba Engineering Faculty and with Red River College to facilitate the education and training opportunities. In collaboration with the Province of Manitoba, GE Aviation, StandardAero and EnviroTREC, WestCaRD has contributed to the establishment of a new Aero-Engine Testing Engineer-in-Residence position at the University of Manitoba to spearhead some of the specialized education and training.

In 2012-13, StandardAero was also recognized as one of Canada's top-100 employers as well as among Manitoba's top 25. And each September, StandardAero celebrates its heritage as one of Winnipeg's oldest private companies, recognizing the team who has made the company what it is today.

Oyedela Ola (P. Eng) and laser technician Justin Grehen set up hybrid laser trials on aerospace materials at the Centre for Aerospace Technology and Training, a collaboration between Red River College School of Transportation, Aviation and Manufacturing and StandardAero.

Photo by Darcy Finley for the Winnipeg Free Press



RED RIVER COLLEGE'S CATT CENTRE AT FOREFRONT OF ROBOTIC WELDING TECHNOLOGY

By Todd Lewys
For the Free Press

It's an acronym that sounds futuristic and mysterious all at once – the CATT Centre.

And while its home could be cities such as Boston, New York – even Toronto or Ottawa – the Centre for Aerospace, Technology and Training calls Winnipeg home. Not only that, but the centre is intimately involved in developing new laser welding techniques aimed at making aircraft more efficient from their engines on out.

"We've actually formed an independent campus with Standard Aero – it's also supported by Western Diversification, the province of Manitoba and the federal government's Technology Access Centre Program (TAC), which supports salaries and research internships – that's devoted to developing new processes for the repair of aircraft engines," said Fred Doern, chair, Applied Research, School of Transportation and Aviation Management. "It's used half the time by the college, and half the time by Standard Aero."

Over the past 18 months, CATT's Oyedele Ola has been working with engineers and operators at the centre to develop new welding processes for aerospace and other manufacturing. Some of the

processes that Ola and his team are coming up with are – in a word – amazing, said Doern.

"One of the processes – hybrid welding, which is a combination of laser and GMAW (a.k.a. MIG) welding – allows for deeper penetration, and is being applied to aluminum alloys. It's an optimization process, and the beauty of it is that you can do rapid, long welding seams that reduce weight by 30 per cent, but that allow for the same structural strength," he explained. "It's a revolutionary technique being used for steel in European shipbuilding and auto industries, as well as in the aerospace industries, so bringing it to Winnipeg is very important."

From there, the techniques get more futuristic. For example, a cold metal welding technique is being developed to maximize the uses of Inconel, a high nickel super alloy.

To add to the futuristic feel, robots with machine vision systems are also being used to ensure the leading-edge welding techniques are applied in flawless fashion.

"Almost all the devices here are cutting edge," said Doern. "Our job is to come up with new techniques, and to optimize them for different applications that can be used for automobiles, buses (locally at Motor Coach Industries and New Flyer) and aviation. The robotics/machine vision systems are used for part

assembly and verification; their primary use is to ensure quality control is as high as possible."

Further to that, robotics is used to get precise, repeatable welding paths.

"At CATT, we're demonstrating high-end robotic welding, and have built a robotics training lab that's used as a training facility for western Canada," he said. "This past summer, we welcomed Baxter, a two-armed robot with vision system whose developer was formerly of MIT (Massachusetts Institute of Technology). Right now, it's a research system that we hope can be used with other robots to optimize quality and eliminate repetitive elements, so being involved in its development it is very exciting."

Part of that involvement has students working in a variety of areas.

"They're working hard at coming up with common language platforms, as well as programs for jigs and fixtures (which hold parts to do welding)," Doern said. "It's practical applied research for the college. We're excited about CATT – it's becoming recognized as one of the leading facilities in robotic welding in Canada. It's a great opportunity for the students, and the companies. It's catching a lot of attention, and has also earned the respect of our partners," said Doern. "We're ecstatic to be involved in all this, to say the least."



U OF M ENGINEER-IN-RESIDENCE WORKS TO BRING INDUSTRY PERSPECTIVE TO CLASSROOM

By Todd Lewys
For the Free Press

It's been about one year since Kathryn Atamanchuk's engineering career came full circle.

"I was once a student, went to work in private industry, and now I'm in front of students," said Atamanchuk, who traded in her portfolio as StandardAero's Director of Engineering Services for a position as one of the University of Manitoba's Engineers-in-Residence for aero-engine testing. "It's exciting to be part of a program that's producing so many bright, young engineers."

Turns out, Atamanchuk's role at the U of M ties nicely to the one she was filling at StandardAero just before she went on maternity leave.

"My last role was to help support the relocation of the General Electric certification facility to the Winnipeg Airport," she said. "While on maternity leave, the U of M called. They said they had a position for a liaison between the province's two gas turbine engine certification testing facilities (GLACIER in Thompson and the GE Test, Research and Development Centre in Winnipeg) and the university. I would also be responsible for providing a course for students about the instrumentation technologies used by these facilities. The position seemed like a great fit, so I accepted."

She said the decision has proven to be a good one.

"After spending 13 years at StandardAero, I wanted to bring an industry perspective to the classroom. I wanted to show students how things work in the real world to prepare them for the job they'd be doing."

Atamanchuk said her job is two-pronged: one of her first responsibilities is to help students gain experience through specific course offerings and cooperative job placements. The second is to act as a liaison between

the test facilities and the university to help facilitate research initiatives.

The first part of the job description – providing students with experience and guidance – has been going exceedingly well to date.

"Right now, one student is going to Thompson in September, and we currently have two on summer placements at the General Electric facility here in Winnipeg," reported Atamanchuk, adding that both facilities have also provided projects for the U of M's Innovative Design for Engineering Applications (IDEA) Program this fall – a capstone design course for engineering students in their final year of studies. "The hands-on experience they gain is invaluable."

With approximately 80 per cent of the new gas turbine engines produced for aircraft coming to Manitoba to be tested at one of the two certification facilities, the job placements and projects provide students with a chance to see cutting-edge technology and learn about it up close. At the same time, industry gets to see what the students have to offer.

Looking at the bigger picture, the university's partnerships with these certification test facilities are going to have a resoundingly positive impact on the overall engineering program, she added.

"It's a really exciting opportunity for Manitoba and the University of Manitoba to have in more ways than one," said Atamanchuk. "We're going to be directly involved in research initiatives which will add to our credentials as a leader in aerospace in Canada. At the same time, more high-tech, leading-edge jobs are going to come from the U of M's and Red River College's partnership with the test facilities. That's great news for the province's economy."

Most importantly, the reputation of the U of M's engineering program is bound to increase, perhaps on an exponential level.

"Our goal is to be a centre of excellence," she said. "We're going to provide the industry with research support, and will do our best to prepare our students to be able to step in and use their talents to be key contributors to the industry. We're very fortunate, as we've had a lot of support from the provincial government and Western Economic Diversification. Their support is going to play a huge part in our success as we move forward."

In the meantime, the plan is to keep doing what she's been doing – educating the students, and being an advocate for the aero-engine test industry.

"I'm excited to be here – I'm enjoying teaching, and the challenges involved in being an agent for the program – making sure people know about it, and all we're doing to support it. It's a very positive place to be," said Atamanchuk.

WestCaRD is proud to be facilitating new technology growth and stimulating job opportunities in Manitoba



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Allied Wings (above) operates pilot training out of Southport (left), which was originally established as CFB Portage in 1940.
Submitted photos

SOUTHPORT – PAST AND PRESENT

For the Free Press

Southport Airport & Commercial Properties was founded in 1992 as a non-profit organization to take ownership and manage the assets of the former Canadian Forces Base Portage la Prairie.

Located five kilometres south of the city, CFB Portage was originally established in 1940 as a training base for military pilots. After the transition from CFB Portage to Southport occurred, military pilot training continued through the 3 Canadian Forces Flight Training School, which was being operated by Bombardier and succeeded by Allied Wings in 2005 until present. Since CFB Portage became Southport, it has re-invested into its assets and diversified to include property management and development specializing in aerospace, commercial and residential industries, equipped with a privately owned public airport (Portage/Southport CYPG). Southport's commercial tenant base has grown to include educational/training institutions, manufacturing and health-care administration. For its tenants as well as the general public, Southport also offers a community-like environment with a full recreation centre, nine-hole golf course and walking paths.

In the area of aerospace education and training, Allied Wings (Canada Wings) operates out of Southport and services the Canadian Forces' primary flight training program. It operates and maintains a fleet of 39 aircraft/helicopters utilized for training including fixed wings Grob 120 A and King Air C-90B, and rotary wings Bell 206 and Bell 412,

in combination with flight simulators. In addition to flight training, Canada Wings also operates Southport's entire airfield including air traffic control, navigation services and runway maintenance. For students training with Allied Wings, Southport offers onsite food and accommodation services, which are designed specifically to meet the flight requirements these students have.

Red River College's Stevenson Aviation Program operates its Aircraft Maintenance Engineer Apprenticeship Program out of Southport. Stevenson Campus was originally established in 1984 to provide skills training and upgrading within the Canadian aviation industry. Following CFB's conversion to Southport in 1992, the campus moved its operations to the former air force base that same year and eventually merged with Red River College in 2002. Today the program is designed similar to trades training and certification. Southport offers students long-term accommodations on site at its primary student residence, Mynarski House, which is currently undergoing renovations to upgrade and improve the rooms to include private washrooms, among other amenities.

In the field of aerospace manufacturing, Airport Technologies Inc. (ATI) specializes in the restoration and refurbishment of airport maintenance equipment, such as self propelled snow blowers and high-speed runway sweepers. Since then it has grown into manufacturing its own designs out of its plant in Southport, in addition to being a Re-Life specialist for runway snow blowers and sweepers. ATI manufactures

the fastest (up to 25 mph) Airport Plow Vehicle in the world – the Snow Mauler – and its High Speed Airport Snowblower, the Snow Wolf. ATI's Canadian customers include the Winnipeg James Armstrong Richardson International Airport, the Department of National Defence, Saskatoon John D Diefenbaker International Airport, Regina International Airport, Allied Wings, Cranbrook Airport, Brandon Airport, Edmonton City Centre Airport, Nanaimo Airport and Abbotsford Airport. Its U.S. customers include Dulles International Airport, Dupage Airport, Pittsburgh Allegheny Airport, Reagan National Airport, Chicago O'Hare Airport and Cherry Capital Airport in Traverse City Michigan.

Southport is currently looking into exploring and servicing the developing Unmanned Aerial Vehicle (UAV) industry. They were the host of the 2012 Unmanned Systems Canada Student UAV Competition and have been chosen again as the host for the upcoming 2014 competition, May 2-4. Southport's manager of marketing and business development recently attended the largest UAV trade conference in the world in Washington, D.C. What Southport can offer not only to Canadian UAV companies but to international ones as well, is the ability to conduct commercial test flights with its 62 acres of airspace, in addition to airside workspace facilities, the potential for the new development of an indoor test flight complex or Hangar, onsite food and accommodation services and competitive usage rates. Southport's site and facilities also offer Maintenance Repair Overhaul companies various benefits as a more cost-effective alternative than other airports.

MANITOBA AEROSPACE ASSOCIATION MEMBERSHIP 2013:

COMPANIES:

Boeing Canada Winnipeg
Magellan Aerospace, Winnipeg
StandardAero
EMTEQ (Canada)
Advanced Composites Structures
Aero Recip
Allied Wings
Argus Industries
Cadorath Aerospace
Carlson Engineered Composites
Cormer Aerospace
Dynamic Machine Corp.
Enduron / Custom Inc.

Fast Air Executive Aviation Services
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University of Manitoba - TTO
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Winnipeg Airports Authority (WAA)
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GLACIER pioneered gas turbine icing certification testing in Manitoba in 2010. Today, GLACIER is one of the world's most advanced icing cloud simulation systems. Through on-going investments in the facility, GLACIER will continue to be a world leader in the icing certification field. We are proudly located in Thompson, Manitoba whose unique weather conditions provide unequaled cold weather test and evaluation opportunities.



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