SPONSOR CONTENT

Aerospace

From the leasing of aircraft like KF Aerospace's DC10, to the manufacture of high-tech parts and applying innovative technology solutions, Canada's depth in aerospace capability helps the industry maintain its competitive edge on the global stage. SUPPLIED

Staying competitive in a challenging global market has been a key focus for the Canadian aerospace industry.

Building on momentum

Jim Quick, president and CEO of the Aerospace Industries Association of Canada (AIAC), says the sector remains strong and is well positioned to continue competing internationally thanks to the momentum generated by industry and government initiatives over the past five years.

In particular, the Emerson and Jenkins reports made recommendations, most of which were accepted by the previous government, that addressed key competitive issues and were welcomed by the industries.

"Program and policy development at the federal government level is very important for us," he says. "It allows us to stay on top of our game."

Mr. Quick points out that AIAC worked closely with the previous government for five years to improve Canadian programs and policies that will better support the ongoing growth and competitiveness of the industry. The efforts resulted in across-the-board achievements relating to technology development, defence procurement, controlled goods, space and international trade.

"We've got to figure out the industry's needs, where the pinch-points are and how we can carve out a niche of capability."

Daniel Zanatta
is vice president of business development, marketing and contracts at Magellan Aerospace

It's not surprising, therefore, that some industry leaders are now waiting anxiously to see what the new government's attitude towards their sector will be.

Bryan Akerstream, director of business development at Kelowna, B.C.-based KF Aerospace, says the previous government's defence procurement strategy (DPS), for example, was embraced warmly by the industry, and he hopes that the new government will see its merits and move forward with, at least, something similar that includes industry engagement.

The DPS was backed by a "Value Proposition Guide" released a year ago and was widely welcomed by the aerospace sector. The guide was meant to provide clarity and direction for companies preparing bids under the DPS rules.

Daniel Zanatta, vice president of business development, marketing and contracts at Magellan Aerospace, says it's important to keep in mind that the DPS is a work in progress and not set in stone.

"If this model gets tweaked by the incoming government, which we expect, we hope it will be something more global and uniform in nature, and that it will be implemented as a more stable process, less likely to be changed significantly as we go through transitions in government," he says. "One of our concerns longer term is that the program is stabilized. Tweaking from time to time is okay and usually leads to improvements. But it remains to be seen how significantly it may change under the incoming government."

Having stable and predictable programs and policies is important to Canada's aerospace companies because of the trends emerging in the sector globally. For example, globalization and shifts in the supply chain present new challenges, but also opportunities.

Mr. Zanatta points out that shrinking budgets are affecting aerospace companies throughout the global supply chain, and Canadian firms in particular need to find new ways to meet the challenge.

"A few months ago I had an opportunity to speak at a workshop for a group of Ontario-based SMEs," he adds. "They are looking for ways to differentiate themselves – that's now the commonly used term – and it's no different for us at Magellan. We've got to figure out the industry's needs, where the pinch-points are and how we can carve out a niche of capability."

Mr. Zanatta believes the changing global market makes it very difficult for most Canadian SMEs to make it on their own.

"They need to partner to create more critical mass to allow them to better utilize the human, technical and financial resources available to them so that they can compete for some of the opportunities out there," he adds. "Right now, many Canadian companies are vulnerable because they've become dependent on government legacy programs at home and internationally."

While legacy work creates short- to medium-term opportunities in Canada, it doesn't draw on leading-edge technologies and market differentiators, and will not help Canadian companies position themselves for the long term.

Mr. Akerstream says the cost pressures in global supply chains are forcing Canadian companies to adapt as best they can.

"For the most part, we try to be more efficient and keep our focus on quality, which is our competitive advantage," he says.

However, for some OEMs, it comes to quality versus cost, and suppliers need to find the right balance between the two.

"We've managed to do that by being cost competitive while keeping quality high," adds Mr. Akerstream. "Canadian maintenance technicians are trained to a very high standard, and that helps."

Jay Teichroeb, vice president of AIAC Pacific, based in Abbotsford, B.C., says supplier consolidation is a global trend impacting aerospace firms in Western Canada.

"We are seeing OEMs and prime contractors reducing the number of suppliers they deal with, which puts pressure on SMEs to find ways to collaborate to pursue opportunities," he says.

For example, a number of B.C. companies in aviation training and flight simulation are now combining their capabilities and skills to bid for export opportunities.

"There is a clear recognition among industry leaders in B.C. of the importance of Canada working as a cohesive cluster to pursue global opportunities," says Mr. Teichroeb.

ABOUT the AIAC

The AIAC is the national association representing Canada's aerospace manufacturing and services sector. As the world's fifth-largest aerospace industry, Canada's aerospace sector contributes nearly $28-billion to the economy in GDP, exports 80 per cent of its output, and dedicates over 20 per cent of its activity to research and development. Aerospace is responsible for the employment of 172,000 Canadians. AIAC represents the interests of over 700 aerospace companies across Canada.

Online? Visit www.aiac.ca and globeandmail.com/adv/aerospace for more information.

GROWTH

Airports must prepare for surge in air travel

Current forecasts peg the number of new aircraft that will be needed over the next 20 years to meet growing global demand for air travel at 38,000, and with the Asia-Pacific region alone expected to absorb 40 per cent of them, Canadian airport operators are already laying the groundwork to cope with not only significantly more passengers, but also larger and more technologically advanced aircraft.

James Cherry, president and CEO of Aéroports de Montréal (ADM), the local airport authority responsible for the management, operation and development of Montréal-Trudeau and Montréal-Mirabel international airports, says while larger aircraft, like Boeing's 787 Dreamliner and the Airbus A380, need different additional facilities, such as purpose-built airbridges, their higher capacities and the anticipated increase in the number of flights in coming years means the ability of airports to process substantially more passengers quickly and efficiently also needs to be in place.

"We have a capacity for over 400,000 aircraft movements a year, and we are at about 220,000, so we have nothing to be worried about."

James Cherry
is president and CEO of Aéroports de Montréal

"At Montréal-Trudeau, for example, a new $250-million international jetty is scheduled to open in September next year to accommodate continued growth in international traffic," says Mr. Cherry. "It will feature six new boarding gates to handle more Airbus A380 and Boeing 787 Dreamliner aircraft, a large commercial area and a VIP lounge."

A major expansion of apron space was completed in 2013 to accommodate the extended international jetty, resulting in more fluid aircraft traffic in the area. The expansion is part of a decade-long modernization program at Montréal-Trudeau that added two new state-of-the-art passenger jetties, a new international arrivals complex, a U.S. departures hall, and fully automated check-in and baggage handling facilities.

"This is the type of expansion that all Canadian airports that expect to receive increased traffic over the next 10 to 20 years need to be planning and implementing. Or they risk being left out of the coming boom in air travel," adds Mr. Cherry.

As a key manufacturing location for Canadian aircraft maker Bombardier, Montréal-Mirabel is expected to be positively impacted by the increased demand for commercial aircraft, particularly in Asia where the company is actively developing new markets.

Increased global aerospace activity will also benefit the 30 other manufacturers based at Mirabel and could help boost job creation in the region, adds Mr. Cherry.

ADM will continue to develop the aerospace industrial capacity of Mirabel and plans to invest up to $50-million in runway improvements on the site.

At Montréal-Trudeau runway capacity to cope with the anticipated increase in air traffic is not the challenge that it is at some other Canadian airports, says Mr. Cherry.

"The airport was deliberately constructed with far more runway capacity than we needed. We have a capacity for over 400,000 aircraft movements a year, and we are at about 220,000, so we have nothing to be worried about."

INSIDE

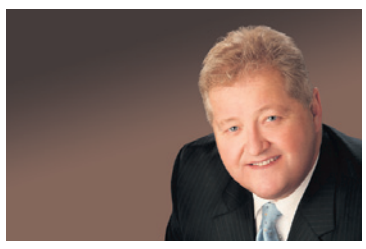
Canada can't afford to rest on its aerospace laurels.
AIAC 2

Electronics is the future of the aircraft industry.
AIAC 3

AEROSPACE

OPINION

Past success not enough to maintain Canada's place in global aerospace sector



By Jim Quick, President and CEO of the Aerospace Industries Association of Canada

Canada has the opportunity to play a significant role in the expected boom in demand for new aircraft around the world over the next 20 years. STANDARD AERO

As national icons go, the Canadarm for me ranks right up there with maple syrup and the Mounties' red serge tunics. Millions of us have watched with pride over the years as this indispensable tool in space technology has taken centre stage in TV coverage of daring repair and maintenance manoeuvres by astronauts floating outside the International Space Station.

While most Canadians can sit back and bask in the glory that Canadarm has brought to our country, the industry that created the technology cannot dare to do the same.

The global aerospace sector is evolving rapidly, and Canada has to evolve with it or risk losing our hard-won place as one of the world's top five aerospace nations.

Right now, we are continuing to do very well. We rank first for civil flight simulation and small engine production, second in the manufacture of business and regional aircraft, third overall in civil aircraft production and fifth in helicopter production.

Our industry contributes somewhere in the range of $29-billion to the national economy and provides approximately 180,000 jobs. We export 80 per cent of what we make and 60 per cent of that goes into the global supply chain.

On the face of it, our future looks rosy, but on closer analysis, the emerging challenges in global aerospace will demand even harder work than the effort that got us to where we are today.

We are up against a growing global array of well-funded, well-managed competitors who want a share of the aerospace action, and it may well be the share that we currently hold. Therefore, we have to be smart and strategic to not only maintain what we have, but grow it as well.

We cannot simply rely on our reputation to carry us through. To do so would leave future generations with little more than old footage of Canadarm to rekindle memories of our past aerospace greatness.

The opportunities are clear. Over the next 20 years, 38,000 new aircraft worth an estimated $5.9-trillion will be needed to meet an explosive growth in demand for air travel. Canadian companies are well placed to be part of that. The space business is also booming as the international space community develops a unified vision of where space exploration will go next and exciting commercial ventures revitalize the satellite sector. Just a few short years ago, there were only three countries active in space; now there are more than 50.

Our focus over the next 10 to 20 years has to be on the emerging trends such as the shifts in the global supply chain. OEMs have been very clear that they want suppliers to take on more risk and larger work packages. That means there's more pressure on costs and production.

The suppliers that are going to succeed in that environment are the ones that have the right processes and appropriate certifications and operating procedures to meet the needs of the OEMs.

A big challenge we face in adapting to this trend is the structure of our sector. Most of our firms are small and medium-sized companies. In fact, 93 per cent employ fewer than 250 people. To meet the needs of OEMs and maintain our place as a global aerospace leader, we must make sure that our SMEs can grow faster than they have in the past. To achieve this, we will need program and policy changes and a renewed emphasis on technology development and innovation so that good ideas lead to commercial products and don't languish in research and development workshops.

Here at home, we need to continue to work with governments on defence procurement to secure the right equipment for our service men and women. In doing that, we will be building additional Canadian capacity and capability to bid for foreign defence contracts.

The biggest threat we face is the possibility that we will fail to recognize the global trends and respond to them with the same commitment to success that has brought us to where we are today. We cannot simply rely on our reputation to carry us through. To do so would leave future generations with little more than old footage of Canadarm to rekindle memories of our past aerospace greatness.

AEROSPACE BY THE NUMBERS

A KEY CONTRIBUTOR TO CANADIAN ECONOMY:

- GDP: **$29B** (increase of $1B)
- Employment: **$180,000** (increase of 7,000)
- Revenues: **$27.7B** (increase of $2.6B)
- R&D investment: **$1.8B** (increase of $0.1B)

A CANADIAN MANUFACTURING LEADER:

- **5x** the R&D intensity
- **2.5x** greater productivity growth
- **62%** more value-added (GDP) per full-time employee
- **47%** more skilled labour
- **29%** higher wages

A GLOBAL LEADER IN KEY NICHE SEGMENTS:

- **1st** in civil flight simulation
- **1st** in small engine production (helicopters and turbo prop engines)
- **2nd** in business and regional aircraft production
- **3rd** in overall civil aircraft production
- **3rd** in general aviation production
- **5th** in helicopter production
- **5th** overall in the OECD

A MAJOR EXPORTER – 80% OF PRODUCTS ARE EXPORTED

Deep connections to the international supply chain:
Over 60% of our exports are supply chain oriented, and those exports are becoming increasingly diversified both in terms of destination (increasing exports to Europe and Asia Pacific) and product category (for example, landing gear).

Celestica engineers perform material analysis in their Toronto quality and reliability laboratory. SUPPLIED

TECHNOLOGY AND INNOVATION

Electronics set to reshape commercial airline industry

When Boeing's 787 Dreamliner entered commercial service with All Nippon Airways in 2011, a new chapter in air travel was opened. As the world's first e-enabled commercial aircraft, Boeing says the 787 combines the power of integrated information and communications systems to drive operational efficiency, enhance revenue and streamline maintenance.

Electronics (the "e" in e-enabled) is now transforming air travel around the world and providing opportunities as well as challenges for Canadian aerospace companies.

Michael McGuire, vice president, aerospace and defense at Toronto-based Celestica, says the electronification of the aerospace industry, driven by the increasing need for aircraft connectivity, has significant supply chain implications.

"It changes who your competitors are and who your supply base is," he says. "And that in turn changes what you can expect to create."

For example, electronics facilitates predictive maintenance and allows airlines to order spare parts they know they will need down the road, and that helps manufacturers ensure that they have the parts in stock.

"We are seeing with the 787, the Airbus A380 and other e-enabled aircraft that the efficiencies are significantly better than what was expected," adds Mr. McGuire.

Brad Jackson, Celestica's vice president, strategic business development, says when electronic systems are integrated into mission-critical applications such as the aircraft, quality and reliability are essential. If the electronics in your mobile device fails, it's an inconvenience, but if the electronic systems in the aircraft fail, it would be catastrophic.

"That's what Celestica technology innovation is focused on," he says. "We are leveraging our 20-year heritage in high-reliability electronics to support customers in markets where high-reliability applications are critical, like aerospace and defence."

However, while technology innovation is important, the real challenge is market definition and the ability to transform innovation into commercial relevance, adds Mr. Jackson.

"It's one thing to have a track record of innovation, but continuing to innovate and commercialize new products is the key," he says.

However, Canada has too few companies that are competing on the global stage, and that's a problem that must be addressed through increased collaboration among organizations with relevant skills and expertise, adds Mr. Jackson.

"The complexities and challenges are too great for any one company to deal with alone," he says. "In order to remain competitive, they need to adopt a very open posture and think about how they are going to develop a role for themselves in the technology ecosystems of the future."

Mr. Jackson points out that this approach is in line with the global trend away from the traditional closed model for innovation where an original equipment manufacturer or subcontractor would leverage their vertical supply chain to innovate, to a more open model where firms co-operate because they can't do it all themselves.

"Celestica has embraced this through a business-led private-public partnership that's leveraging consortiums, academia and industry partners to co-invest, share the risk and develop new solutions for the market," he adds. "This includes incorporating advances in material science, optics/photonics and renewable energy into solutions and processes that are helping to advance e-enabled technology."

This type of approach has positioned the company to help customers and other aerospace companies understand how they can tap into the global marketplace and capitalize on some of the trends transforming the aerospace industry, says Mr. McGuire.

"That's where Celestica really excels," he adds. "We're able to help our customers change and modify their supply chain to address the new realities of the world. We have become a facilitator to help them grow and become increasingly competitive in their marketplace."

SPACE

New strategy needed to keep space sector in orbit

Canada's standing as a global leader in space technology is slipping away because the country no longer has a vision of how the industry should move forward, according to key participants in the sector.

Steve Ulrich, director of the Spacecraft Robotics and Control Laboratory in the Department of Mechanical and Aerospace Engineering at Carleton University in Ottawa, says Canada needs to re-engage with former partners like NASA, build on the current collaboration with the European Space Agency (ESA) and develop a relationship with China, which is emerging as a leading player in space.

"Our vision should be geared toward big international programs," he says. "Exploration of the moon and Mars are definitely two top initiatives we should be aiming at, but right now it looks like we're missing the boat."

Daniel Zanatta, vice president of business development, marketing and contracts at Magellan Aerospace, says Canada lacks a long-term space strategy, which has created a continuity gap.

"While we have a number of programs currently underway, there's not a lot on the horizon," he says. "We are using a lot of technical resources and good minds that we've invested in to support these programs, but we need the next set of projects to keep them engaged.

"This problem was recognized in the Emerson report of 2014 – government is the largest space customer. Industry needs a predictable plan in order to make sound decisions on investment, capital, and people, adds Mr. Zanatta.

"I am encouraged by the incoming government's apparent understanding that investment in R&D and support of space has many benefits for the economy and for Canada's role internationally," he says.

Dr. Ulrich says there's no doubt that Canadian space technology companies have the expertise to continue to be global leaders.

"We have expertise in pretty much all fields covered by space exploration, and our universities are doing leading-edge research," he adds. "We've got virtually the whole spectrum covered from a science perspective. It's just a matter of leveraging what we have and putting together a strong team to bid on contracts issued by ESA or NASA."

Jim Quick, president and CEO of the Aerospace Industries Association of Canada, agrees that Canada needs a new vision for its role in space.

"As a space-faring nation, our reputation was stellar; we were first country to launch a communications satellite; we put the Canadarm into the shuttle program and onto the International Space Station," he says.

Canada was once one of only three countries in space along with the United States and the Soviet Union. Now more than 50 are competing in a very tight market.

"I think Canada's status as a space-faring nation has fallen because we sat on our reputation and we didn't make the right investments and the right strategic decisions," adds Mr. Quick. "It's not too late for the Canadian space industry, but we do need to act urgently if we're going to continue building on the space heritage Canadians are so proud of."