



Bombardier CRJ900 destined for China Express Airlines



Bombardier C Series production hangar, Mirabel

Business Aviation

HITTING HEIGHTS – *Montréal*

Preface

Home to aircraft manufacturers, suppliers and associations, Montréal is a leading centre of aviation. At the forefront is Bombardier, whose new C Series planes will benefit the whole of Québec province – not to mention ‘Brand Canada’.

Air Canada, Aviation, Montréal

Judging by the scene at Bombardier Aerospace’s C Series production hangar in Mirabel, about 50km north of Montréal, building an aircraft is as much about craft as it is hi-tech mechanisation. Handfuls of assembly workers quietly buzz around the cs100s and CS300s lined up on the floor in various stages of completion. At one end, robotics assist in joining together the components of the cockpit

and fuselage; at the other, technicians are manually installing the wiring, tubing and sensors on the plane's underside that act as its central nervous system. They occasionally wander back to their tool stations before disappearing again behind some nook of the aircraft.

The CS100 is the company's new 110-seat, narrow-body, medium-range aircraft; the CS300 is a longer version that accommodates 135 passengers. These planes represent probably the boldest – and riskiest – project in the global aerospace business today. It's hoped they will deliver on several scores: better fuel efficiency and lowered operating costs; a wider flying range for a plane of its size; lighter weight with quieter performance; and more comfort for passengers. According to Sebastien Mullet, a director of the C Series programme, the sales pitch to carriers "is that it will give them more flexibility and capabilities other aircraft today don't have. It can make current routes more profitable and open up new ones, while bringing down costs."

But for Bombardier Aerospace, the world's third-largest aircraft manufacturer after Boeing and Airbus, it's been a turbulent ride getting to this point. First announced in 2008, the C Series and its struggles have been widely reported, undermining the confidence of investors and buyers. Cost overruns were part of the reason that Bombardier was hit with a cash crunch last year. A CA\$1bn (€680m) investment by the Quebec government helped rescue the programme.

The provincial transport minister justified the money by arguing that the C Series "will benefit all Quebecers and the entire aviation sector". The statement touched on the

importance of the sector to the region's economy. Mirroring Bombardier's rank among aircraft makers, Montréal is home to the third-largest centre of aerospace manufacturing in the world (after Seattle and Toulouse, the homes of Boeing and Airbus respectively). But what puts Montréal at the top of the global aviation game is its status as a UN city and host to a dozen or so international organisations that together govern and regulate the industry (more on them later).

What's more, it's the only major hub where an entire aircraft can be made from locally sourced components. From avionics systems to cabin furniture, the city on the banks of the Saint Lawrence River exports CA\$12bn (€8.2bn) annually in aerospace products. With about 200 companies it's a diversified yet interlinked ecosystem, featuring a mix of homegrown start-ups and international subsidiaries such as Pratt & Whitney, Bell Helicopter and Rolls-Royce.

Bombardier's success over the past 30 years has arguably made it Canada's most global firm. But while the company has driven much of the growth and innovation in the Montréal cluster, not every aerospace company here depends on its fortunes alone.

Héroux-Devtek has been manufacturing and repairing landing gear since 1960 (long before Bombardier, then a snowmobile maker, acquired Canadair and made the leap into the aerospace business). Famous for having built the landing gear on the 1969 Apollo Lunar Module, Héroux has contracts with Boeing, Embraer, Mitsubishi and the United States Air Force.

Another key player is Air Canada, the national carrier. When it was privatised in 1989, a federal law was passed demanding the company keep its base in Montréal, in part to ensure it continued to operate in both English and French. Today it has revenue of CA\$13bn (€8.8bn).

Also woven into the fabric of the cluster are the region's eight polytechnics and universities, which feed companies with a steady stream of well-trained engineers, technicians and designers. In fact, educational opportunities are growing: Concordia University in Montréal recently launched an undergraduate programme in aerospace engineering.

Catherine Marsden, the programme's chair, says its goal is to speed up students' ability to join a company's design team after graduation. "The aerospace designer is usually somebody who has been around the business for a long time," she says. "It's like an ongoing apprenticeship: you absorb tribal knowledge from people who've been there forever." To jumpstart that learning process, students participate in internships throughout the programme. "The idea is that they come out of here already understanding all aspects of designing a plane."

If the C Series starts meeting expectations in performance and sales, the aircraft's impact on the local economy could be huge. It has already enticed several big names in aerospace to expand their Montréal footprint. Swiss firm Liebherr, a major supplier to Airbus, has opened its first offices in the city thanks to its contract to produce the plane's landing gear. Pratt & Whitney, meanwhile, has opened a second manufacturing facility at Mirabel, where it is making the C Series engines. "It's sort of a self-

fulfilling process,” says Mullet. “Once you have a big, next-generation project like the C Series up and running, it pulls everybody along.”

Not many Montréal residents realise, however, that it’s more than planes and aero parts that get made here: so too do all of the rules and best practices that govern the skies. Since 1947 the city has served as the headquarters of the International Civil Aviation Organization (ICAO), the UN agency that sets standards for air navigation, safety, traffic management and much more – in essence, the entire infrastructure for air travel. At the time Montréal was seen as a compromise between the US and Europe, with the Canadian government making a concerted effort to land icao.

Next to the icao office tower and limestone-clad congress centre on Place Victoria stands Tour de la Bourse, a handsome modernist skyscraper where the International Air Transport Association (IATA) – the trade group representing the world’s airlines – occupies seven floors. “It wouldn’t make sense if iata wasn’t in Montréal. I cross the street three times a day,” says Mike Comber, the association’s director of relations with ICAO. Comber, a genial Carioca and one-time combat pilot with the Brazilian air force, oversees iata’s representation on icao’s many working groups devising policy and protocols.

One of the most urgent files that iata is now working on with icao is improved standards for flight tracking in the wake of the 2014 disappearance of Malaysia Airlines flight MH370. “We’re looking at improving all the scenarios, from regular aircraft tracking, especially in oceanic or remote regions, to distress situations,” says Comber.

“Then there’s being better able to recover information, such as streaming flight recorders.”

Nearby you will also find the International Federation of Airline Pilots’ Associations, Airports Council International, the International Federation of Air Traffic Controllers’ Associations and the International Business Aviation Council. “That’s the way it has to be,” says Comber. “All airspace users need to be part of the discussion.”

Even on its own, iata has shaped air travel. The association assigns the airport codes that ensure your luggage arrives at the right destination; its bank acts as the clearinghouse for ticket sales, worth CA\$350bn (€239bn) annually. And it was iata that developed e-ticketing and electronic check-in kiosks. “We’re the best-kept secret in Montréal,” says Guy Brazeau, a native Québecker who oversees iata’s training programmes. “Maybe we’ve been here so long, not making too much noise, that few people in the city know of us.”

Others are more aware of these entities’ importance. Hélène Gagnon is the vice-president of public affairs for CAE, the 70-year-old company that is the world leader in the manufacture of flight simulators and pilot training. But she is also the chair of Aéro Montréal, the cluster’s lobby group, where one of her priorities has been to build more links between the aviation organisations based in the city.

It’s an initiative motivated by the fact that three years ago Montréal almost lost icao, and by extension all the others, due to aggressive bidding by Qatar to win the UN agency’s headquarters. In the end icao recommitted itself to Montréal but Gagnon describes the near loss as a wake-

up call for the city's aerospace industry. "We had taken for granted the importance of having organisations such as icao and iata here," she says. "If Montréal wants to brand itself as the aviation capital we need to bring the two together more."

Central Montréal has no shortage of architectural props to support its image as a technology hub. By the river, not far from the two aviation organisations, is Moshe Safdie's famed Habitat residence and a short walk further an iteration of Buckminster Fuller's geodesic dome concept, both created for the city's 1967 World Expo. They're vestiges of a time when Montréal was presenting itself as the metropolis of the future.

Its aviation cluster is now a fundamental part of the way the city hopes to present itself. Even though it has been surpassed by Toronto in size and influence, thanks to hosting major aviation bodies, Montréal remains a world city in ways that its rival is not. Importantly, thanks to the C Series, the city is again at the forefront of global aerospace development. If the aircraft proves to be the catalyst that Bombardier has promised, then the city's profile – and its income – could soar.

Aerospace cluster in numbers

CA\$15.5bn (€10.6bn) Total global sales per year

42,000 High-skilled employees, on average earning double the norm across the province of Québec

CA\$119m (€81m) Annual contribution of the ICAO alone to the local economy

CA\$400m (€274m) Annual investment by Pratt & Whitney in R&D, making it the cluster's leading investor

8 Number of universities and polytechnic schools in the

area offering undergraduate and master's degrees in aerospace-related subjects

Other companies in the cluster

01 Norduyn

Best known for its 1935 Norseman bush plane, Norduyn is a leading manufacturer of cabin-interior products such as trolleys and containers.

norduyn.com

02 MDA

A pioneer in satellite systems and space robotics, MDA designed the Space Shuttle's Canadarm and Dextre, the remote manipulation system that enables ground crews to make external repairs to the International Space Station.

mdacorporation.com

03 Mesotec

This high-precision machining specialist produces structural components and engine parts for GE Aviation, Bell Helicopter and Bombardier.

mesotec.ca

04 Innotech Aviation

In Montréal since 1955, Innotech is a business-jet completion house, designing interiors and installing entertainment systems.

innotechaviation.com

05 GGI International

Specialising in machine interface technologies, GGI designs controls for seats and reading lights.

ggi-international.com