

Bombardier Launches the C Series

by Luigi Vallero



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After nearly a decade of planning, Bombardier announced the launch of its 110/130-seat C Series at the Farnborough Air Show with a 'letter of interest' from Lufthansa for 30 airplanes plus 30 options, with delivery starting in 2013.

Having successfully developed the modern regional jet (RJ) at the beginning of the Nineties with the Canadair Regional Jet (CRJ) family (*Airways*, March 2001), Bombardier began to investigate the feasibility of a bigger aircraft.

Originally called the BRJ-X (for Bombardier Regional Jet eXpansion), the design was intended for the 100-seat market, complementing the smaller CRJ series while entering an arena hitherto dominated by Airbus, which was offering the A318, and Boeing, with its 737NG (Next-Generation) family and 717.

The BRJ-X was always envisaged as a completely new design, with a wider fuselage accommodating between 80-120 passengers in a 3-2 seating layout and the two engines hung in underwing nacelles. But the timing was not right for Bombardier. Its major competitor, Brazilian manufacturer EMBRAER (*Airways*, November 2001), had been quicker in developing the ERJ 170/190 series (*Airways*, July 2004 & December 2005), grabbing a major share of the market. Bombardier was forced to shelve the project and concentrate instead on the more secure option of developing stretched versions of the CRJ: the 70-seat CRJ700 and 86-seat CRJ900.

At Farnborough in July 2004, the BRJ-X was presented in revised form as the C Series (the 'C' standing for Competitive, Continental, and Connector). The C Series was aimed at being at least 15% more cost-efficient to operate than similar-class aircraft then in production, and at least 20% more than the older designs it was intended to replace.

Bombardier targeted airlines operating 100/150-seat types, such as the Douglas DC-9 and MD-80, Fokker 100, Boeing 737 'Classics', and BAe 146. This market had



been estimated at approximately 6,000 aircraft, equating to \$250 billion, over the next 20 years, with potential coming from the customer base in the lower end of this segment, among both mainline and low-cost carriers.

In March 2005, the board of directors of Bombardier Aerospace gave authority to offer the CSeries to customers, in anticipation of a formal launch. Two basic versions were envisioned: the 110/115-seat CSeries 110 and the 130/135-seat CSeries 130. Both variants were suitable for either short-haul routes up to 1,800nm (3,300km), or for transcontinental operations of up to 3,200nm (6,000km). First delivery was set for 2010.

The CSeries cabin offered a comfortable 3-2 layout in economy and 2-2 in business or first—including features such as broader seats and armrests for the middle-seat passenger, larger-than-standard windows, and large, pivoting overhead storage bins—commonly found on modern wide-bodies but a first for single-aisle types—allowing each passenger to stow a sizeable carry-on bag while providing the largest overhead bin volume per passenger.

In June 2005, Bombardier unveiled a cabin mockup at the Paris Salon.

Despite high praise the CSeries failed to attract customers, again compelling Bombardier to suspend development program, on January 31, 2006. Only 50

employees were kept working on the project. Meanwhile, Bombardier decided to develop the 100-seat CRJ1000, as well as planning the CRJ NextGen family upgrade.

On January 31, 2007, the CSeries program was officially restarted. At the Dubai Airshow last November, Pratt & Whitney was confirmed as the powerplant provider, with the GTF (Geared Turbofan). Now renamed PurePower PW1000G, this made its first flight on July 11, 2008, on the manufacturer's Boeing 747SP.





The CSeries will be constructed of advanced composites (47%), aluminum lithium (23%), standard materials (22%) and titanium/steel (9%). AVIC I (China) has the contract to manufacture the center section of fuselage, doors, and tailcone; wings will be built by Bombardier at Belfast, Northern island; and the aft fuselage and cockpit will be constructed at Saint-Laurent, Quebec. Final assembly will take place at Montréal-Mirabel.

Bombardier estimates development and production costs at around \$3.3 billion, and is hoping that the CSeries will capture up to half the market, projected at 6,300 aircraft worth \$250 billion. List price is \$46.7 million.

Lufthansa says it chose the CSeries because of lower fuel burn and emissions, and less noise than current types. Qatar Airways has expressed interest in up to 20 aircraft, and International Lease Finance Corporation (ILFC) is watching the program very carefully. Bombardier is aiming for half the estimated market of 6,300 aircraft over the next 20 years, and promises that the CSeries will set new standards for airlines, passengers, and the environment alike. ➔

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