

C Series launch: Specification details

Bombardier has begun offering the C Series to airlines. With two models that nominally have seat capacities of 110 and 130, the aircraft includes several technological features that will allow it to have 15% lower cash operating costs than the E-195.

Bombardier has launched its C Series, and some of its characteristics are revealed. The aircraft programme has two basic models: the C110 with a nominal seat capacity of 110; and the C130 with 130 seats.

The seating configurations of both aircraft are offered in a standard five-abreast layout, in a cabin that is six inches wider internally than the DC-9 and Fokker 70/100, and six inches narrower than the six-abreast 737. Benjamin Boehm, programme director for the C Series at Bombardier, comments that the aircraft has been launched primarily to replace ageing 100- to 150-seat aircraft. These include the DC-9, BAE 146/Avro RJ, Fokker 70/100, and the 737-200/-500. Boehm claims that there are about 5,400 aircraft in operation in the 100- to 150-seat bracket, and that the total market over the next 20 years is about 8,000 units.

The C110 has a standard 110-seat capacity with all-economy seating, but this will be reduced to 98 seats if four rows of four-abreast business-class seats are used. The C130 will have 130 and 119 seats in the same configurations.

The C Series has several key features that provide it with operating economics that are 15% lower than those of current generation aircraft. One is that the aircraft will be powered by Pratt & Whitney's new GTF engine. This is a

geared turbofan with a high bypass ratio used to achieve high fuel efficiency. Few details have been released about the GTF variant powering the C110/130, but the engine is expected to have a fan diameter of 75 to 80 inches so that it can achieve a high bypass ratio. PW's target is for the GTF to be 14-15% more efficient than current generation engines in the same thrust classes. Boehm claims that the aircraft will have 20% lower fuel burn than their nearest competitors, such as the E-195. The engines will be rated at 23,300lbs for both aircraft types.

Each C Series variant will have a standard and extended range (ER) model. The standard aircraft will have a range of 1,800nm, and the ER a 2,700nm capability. Boehm explains that the aircraft has been designed to serve major routes from smaller airfields, and so has a relatively short take-off field length. This is 4,300-4,950 feet for the C110/110ER, and 5,230-6,200 feet for the C130/130ER. The aircraft have a normal cruise speed of Mach 0.78.

In addition to low fuel burn performance, the GTF will have the additional benefit of giving the aircraft a margin of more than 20 EPNdB over Stage IV regulations. The engine's NOx emissions will be 50% lower than CAEP VI requirements.

The C Series will also utilise a range of new lightweight materials. Boehm states that about 70% of the materials

used in the C Series are not currently in service with commercial aircraft. New materials will predominantly be carbon fibre that will account for 47% of the aircraft's weight, and a third-generation aluminium lithium alloy which will account for about 23% of its weight. Details of the aircraft's expected operating empty weight (OEW) are not available, but the C110 and 110ER will have maximum take-off weights (MTOWs) of 118,800lbs and 127,800lbs. The C130/130ER will have weights of 129,300lbs and 139,100lbs.

Boehm says these materials will provide the aircraft with maintenance labour savings. The aircraft will have extended airframe check intervals of 750 flight hours (FH) for the A check and 7,500FH for the C checks. Bombardier will also offer calendar intervals for these checks.

The aircraft will also have an electrical braking system, meaning that no hydraulic lines will run down the landing gear legs. This is expected to provide some maintenance cost savings, since hydraulic lines will no longer have to be bled when braking system components are replaced.

Another major feature of the C110 and C130 will be integrated avionics. Boehm explains that each system will have circuit board cards in place of individual black boxes or line replaceable units. Not only will this save weight, but it will also reduce the cost of maintaining an inventory of spare items.

The lower levels of operating costs provided by the C Series are due to the following features: weight saving; lower fuel burn; extended airframe check intervals; and lower rotatable-related inventory and maintenance costs. The aircraft will also have superior range to the E-195, and will have a short take-off capability. These last two features should provide the aircraft with greater operational flexibility. Boehm's targets are for the C Series to have cash operating costs 15% lower than the E-195.

The cost of maintenance is crucial to this, and Bombardier is targeting this to be 25-30% lower than the E-195. The materials used in the airframe structure are expected to reduce the labour required for non-routine maintenance, and Bombardier has also managed to eliminate the daily check from the aircraft's maintenance programme. The shortest interval for an airframe check will be 100FH. Boehm claims that all these features will contribute to the aircraft being able to save about 50% of labour for maintenance in its first 10 years of operation. **AC**

To download 100s of articles like this, visit:
www.aircraft-commerce.com

BOMBARDIER C SERIES SPECIFICATIONS & CHARACTERISTICS

Aircraft type	C110/110ER	C130/130ER
Seats	110	130
MTOW lbs	118,800/127,800	129,300/139,100
Range nm	1,800/2,700	1,800/2,700
Engine thrust lbs	23,300	23,300
Take-off field length ft	4,320/4,950	5,230/6,200