

ARCHIVED REPORT

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Airbus A380

Outlook

- Airbus terminated production of the A380 in 2021
- The manufacturer delivered 251 A380s over the program's lifetime, of which 244 remained in service by the end of 2021
- Middle East carrier Emirates was the program's largest customer; it took delivery of 123 aircraft through December 2021

Orientation

Description. Four-engine, intercontinental-range, widebody commercial transport aircraft.

Sponsors. The governments of France, Great Britain, Germany, and Spain and the Airbus member companies.

Total Produced. Total of 251 aircraft delivered through December 2021, excluding test aircraft retained by Airbus.

Application. Very long-range, high-density passenger/cargo transportation.

Price Range. Estimated at \$454 million.



Airbus 380

Source: Airbus

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Airbus Commercial Aircraft	http://www.airbus.com/aircraft.html , 1, Rond Point Maurice Bellonte, Blagnac, France, Tel: + 33 5 61 93 33 33, Fax: + 33 5 61 93 36 64, Prime
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Subcontractor

Airbus Defence and Space	http://www.airbus.com , Rechliner Strasse, Manching, Germany, Tel: + 49 8459 81 0, Fax: + 49 8459 81 64085 (Wing Inner Inboard Fixed Leading Edges)
Airbus Helicopters Deutschland GmbH	http://www.airbus.com/helicopters.html , Industriestrasse 4, Postfach 1353, Donauwörth, Germany, Tel: + 49 906 71 0, Fax: + 49 906 71 40 11 (Passenger Doors; Cargo Doors)
BAE Systems plc	http://www.baesystems.com , 6 Carlton Gardens, Stirling Sq, London, United Kingdom, Tel: + 44 1252 373232, Fax: + 44 1252 383991 (Wing Inboard Outer Fixed Leading Edges)
Boeing Aerostructures Australia	http://www.boeing.com.au , 226 Lorimer St, Port Melbourne, Victoria, Australia, Tel: + 61 396473111, Fax: + 61 396462253 (Wingtip Fences)
CTRL Systems Inc	http://www.ctrlsys.com , 1004 Littlestown Pike, Westminster, MD 21157-3026 United States, Tel: + 1 (410) 876-5676, Fax: + 1 (410) 848-8073, Email: info@ctrlsys.com (Seals)
Collins Aerospace Systems, Landing Gear	http://www.collinsaerospace.com , 6225 Oak Tree Blvd, Independence, OH 44131 United States, Tel: + 1 (216) 341-1700, Fax: + 1 (216) 429-4806 (Main Landing Gear)
Collins Aerospace Systems, Electric Systems	http://www.collinsaerospace.com , 4747 Harrison Ave, Rockford, IL 61108-7929 United States, Tel: + 1 (815) 226-6000 (Ram Air Turbine)
Collins Aerospace Systems	http://www.collinsaerospace.com , Four Coliseum Centre, 2730 W Tyvola Rd, Charlotte, NC 28217-4578 United States, Tel: + 1 (704) 423-7000, Fax: + 1 (704) 423-7002 (Evacuation; Primary Flight Control Actuator)
Collins Aerospace Systems, Sensors & Integrated Systems	http://www.collinsaerospace.com , 14300 Judicial Rd, Burnsville, MN 55306-4898 United States, Tel: + 1 (952) 892-4000, Fax: + 1 (952) 892-4800 (Air Data System; Ice Detection System)
Collins Aerospace Systems, Aerostructures	http://www.collinsaerospace.com , 850 Lagoon Dr, Chula Vista, CA 91910-2098 United States, Tel: + 1 (619) 691-4111, Fax: + 1 (619) 691-3030 (Ailerons; Elevator; Rudder)
Collins Aerospace Systems, Power & Controls	http://www.collinsaerospace.com , One Hamilton Rd, Windsor Locks, CT 06096-1000 United States, Tel: + 1 (860) 654-6000, Fax: + 1 (860) 353-5805 (Air Conditioning)
Daher	http://www.daher.com , Aéroport de Tarbes-Lourdes-Pyrénées, Tarbes, France, Tel: + 33 5 62 41 73 00, Fax: + 33 5 62 41 73 05 (Nose Lower Structure; Nosewheel Doors)
Diehl Aerospace GmbH, Plant Frankfurt	http://www.diehl.com/aviation/en/ , An der Sandelmühle 13, Frankfurt am Main, Germany, Tel: + 49 69 5805 0, Fax: + 49 69 5805 1399 (Evacuation; Flight Deck Displays)
Eaton Aerospace, Fuel & Motion Control Systems Division	http://www.eaton.com , 5353 Highland Dr, Jackson, MS 39206 United States, Tel: + 1 (601) 981-2811, Fax: + 1 (601) 987-5255 (Hydraulic Systems)
Eaton Aerospace Ltd, Fuel & Motion Control Systems Division	http://www.eaton.com , Abbey Park, Titchfield, Fareham, Hampshire, United Kingdom, Tel: + 44 1329 853000, Fax: + 44 1329 853797 (Fuel Distribution)
Engine Alliance LLC	http://www.enginealliance.com , 400 Main St, M/S 181-48, East Hartford, CT 06108 United States, Email: engalliance@pw.utc.com (GP7200)
FACC AG	http://www.facc.com , Fischerstrasse 9, Ried im Innkreis, Austria, Tel: + 43 59 616 0, Fax: + 43 59 616 81000, Email: info@facc.com (CFRP Window Frames; Flap Track Fairings)

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Honeywell Aerospace, Aviation & Air Transport	http://aerospace.honeywell.com , 21111 N 19th Ave, Phoenix, AZ 85027 United States, Tel: + 1 (602) 436-2311 (Flight Management System)
Honeywell Aerospace, Aircraft Landing Systems	http://www.honeywell.com , 3520 Westmoor St, South Bend, IN 46628 United States, Tel: + 1 (219) 231-2000, Fax: + 1 (219) 231-2020, Email: alscommunications@honeywell.com (Main Wheel; Brakes)
JAMCO Corp	http://www.jamco.co.jp/ , 6-11-25, Osawa, Mitaka, Tokyo, Japan, Tel: + 81 422 31 9111, Fax: + 81 422 32 6998, Email: mktg4@jamco.co.jp (Upper Floor Deck Crossbeams; Vertical Tail Reinforcements)
Latecoere	http://www.latecoere.aero , 135, Rue de Periole, BP 25211, Toulouse, France, Tel: + 33 5 6158 7700, Fax: + 33 5 6126 2841 (Passenger Doors; Lower Nose Section)
Leonardo Aircraft	http://www.leonardocompany.com , Via Ing. Paolo Foresio, 1, Venegono Superiore, Italy, Tel: + 39 0331 813111, Fax: + 39 0331 827595, Email: aircraft@leonardocompany.com (Center Upper Fuselage)
Liebherr-Aerospace Toulouse SAS	http://www.liebherr.com , 408, Ave des Etats-Unis, Toulouse, France, Tel: + 33 5 61 35 28 28, Fax: + 33 5 61 35 28 00 (Spoilers)
Mitsubishi Heavy Industries Ltd (MHI)	http://www.mhi.com , 3-2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo, Japan, Tel: + 81 3 6275 6200 (Cargo Doors)
Nord-Micro AG & Co OHG	http://www.nord-micro.de , Victor-Slotosch-Strasse 20, Frankfurt/Main, Germany, Tel: + 49 6109 303 0, Fax: + 49 6109 303 233, Email: mail@nord-micro.de (Environmental Control)
Parker Aerospace, Fluid Systems Division	http://www.parker.com , 300 Marcus Blvd, Hauppauge, NY 11788 United States, Tel: + 1 (631) 639-3737, Fax: + 1 (631) 434-8152, Email: esdmarket@parker.com (Fuel Quantity and Management)
Parker Aerospace, Stratoflex Products Division	http://www.parker.com , 700 Fourth St, Mansfield, TX 76063 United States, Tel: + 1 (817) 738-6543, Email: spdmarketing@parker.com (Hydraulic Hose)
Patria Aviation Oy	http://www.patria.fi , Lentokonetehtaantie 3, Halli, Finland, Tel: + 358 20 4691, Fax: + 358 20 469 3385, Email: aviation@patria.fi (Composite Wing Spoilers)
Pratt & Whitney Canada	http://www.pwc.ca , 1000 Marie-Victorin Blvd, Longueuil, Quebec, Canada, Tel: + 1 (450) 677-9411, Fax: + 1 (450) 647-3620 (APU)
RUAG Aviation	http://www.ruag.com/Aviation , Seetalstrasse 175, PO Box 301, Emmen, Switzerland, Tel: + 41 41 268 41 11, Fax: + 41 41 260 25 88, Email: info.aviation@ruag.com (D-Nose Skins for Wing Inner Fixed Leading Edge and Outer Fixed Trailing Edge)
Rolls-Royce plc	http://www.rolls-royce.com , 90 York Way, London, United Kingdom, Tel: + 44 13221 242424, Email: UK_enquiries@rolls-royce.com (Trent 900 Engine)
Saab Aeronautics	http://www.saab.com , Bröderna Ugglas Gata, Linköping, Sweden, Tel: + 46 13 18 00 00, Fax: + 46 13 18 00 11 (Wing Fixed Leading-Edge Outboard of Inner Engine Nacelles)
Safran Electrical & Power	http://www.safran-electrical-power.com , Parc d'activite d'Andromede 1, rue Louis Bleriot, Blagnac, France, Tel: + 33 5 34 28 20 00, Fax: + 33 5 34 60 01 99, Email: communication@fr.labinal.com (Electrical Harnesses)
Safran Landing Systems	http://www.safran-landing-systems.com , Inovel Parc Sud 7, rue Général Valérie André, Velizy-Villacoublay, France, Tel: + 33 1 46 29 81 00, Fax: + 33 1 46 83 02 00 (Nose Landing Gear; Brake-by-Wire)
Safran Nacelles, Le Havre	http://www.safran-nacelles.com , Route du Pont VIII, BP 91, Gonfreville l'Orcher, France, Tel: + 33 2 35 55 47 00, Fax: + 33 2 35 53 35 06 (Nacelle)
ShinMaywa Industries Ltd	http://www.shinmaywa.co.jp/english/ , 5-25, Kosone-cho, 1-chome, Nis, Nishinomiya, Hyogo, Japan, Tel: + 81 798 47033, Fax: + 81 798 45574 (Wing End Root Fillet Fairings)
Societe Anonyme Belge de Constructions Aeronautiques (SABCA)	http://www.sabca.be , Chaussée de Haecht, 1470, Haachtsesteenweg, Brussels, Belgium, Tel: + 32 2 729 5511, Fax: + 32 2 705 1570, Email: info@sabca.be (Center Rear Lower Fuselage Shell)
Stelia Aerospace	http://www.stelia-aerospace.com , 20 rue Georges Barrès, PO Box 2, Mérignac, France, Tel: + 33 5 56 55 02 55, Fax: + 33 5 56 12 75 90 (Center Rear Main Deck Floor; Flight Deck Seats)

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Subaru Corporation	http://www.subaru.co.jp , Ebisu Subaru Bldg 1-20-8, Shibuya-ku, Tokyo, Japan, Tel: + 81 3 6447 8000, Fax: + 81 3 6447 8184 (Vertical Tail Composite Assemblies)
Thales Aerospace	http://www.thalesgroup.com/en/aerospace , Tour Carpe Diem, 31 Place des Corolles, CS 20001, Paris, La Defense Cedex, France, Tel: + 33 1 57 77 80 00, Fax: + 33 1 57 77 87 70 (Flight Deck Displays)

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Overall length	72.72 m	238.6 ft
Overall height	24.09 m	79.03 ft
Wingspan	79.75 m	261.7 ft
Fuselage width	7.14 m	23.4 ft
Cabin length	51.1 m	167.7 ft
Weight		
Maximum takeoff weight(a)	560,000 kg	1,234,588 lb
Operating weight empty	270,000 kg	595,248 lb
Typical volumetric payload	66,000 kg	145,505 lb
Performance		
Max operating Mach number	Mach 0.89	Mach 0.89
Range (with 544 pax)	14,800 km	7,991 nm
Propulsion		
(4)	Rolls-Royce Trent 900 or Engine Alliance GP7200 advanced turbofans rated at 311 kN (70,000 lbst) each.	

Seating/Accommodation

A380-800: Airbus lists typical passenger seating for 525 in a three-class layout and 544 in a four-class layout, but configurations vary widely in service. Emirates, for example, introduced a new two-class configuration in 2015 that seats over 615 passengers. Other operators fly the A380 with seating for just over 400 passengers. Maximum seating is 853 pax, according to Airbus.

(a) This applies to the highest weight variant; Airbus offers lower weight variants that comply with specific airport weight restrictions.

Variants/Upgrades

A380-800. The initial version, which seats 525 in a typical three-class layout (see specifications above). First delivery completed in October 2007.

A380-800F. Conceptual freighter version with design max gross weight of 1.3 million pounds, max payload of 331,500 pounds. Max range with max payload was to be 5,600 nautical miles. Airbus logged 27 orders for the freighter before delays in the program sent customers to other aircraft. Federal Express canceled its order for 10 freighters at the end of 2006 and ordered Boeing 777s instead. United Parcel Service followed suit in the spring of 2007. It was the only remaining order Airbus had for the freighter variant.

A380-900. Proposed stretched version. Few details are available other than that it was to seat 656 passengers in a three-class configuration, or up to 900 in a high-density layout.

A380plus. Conceptual version of the A380 revealed in June 2017 at the Paris Air Show. It features new split winglets and other aerodynamic improvements that would improve fuel burn by 4 percent. Tweaks to the cabin layout that add 80 more seats plus a revised maintenance program would cut costs per seat by 13 percent. To allow the additional passenger load to be carried over the aircraft's full 8,200-nautical-mile range, the maximum takeoff weight of this version would increase to 578 tonnes (1,274,028 lb).

Airbus A380 Archived APR**Program Review**

Background. During the 1990s, Airbus and Boeing saw rapid growth in Pacific Rim air travel and growing congestion at major international hubs. Airbus and Boeing discussed joint development of the so-called Very Large Commercial Transport (VLCT), an aircraft that would seat 600 to 800 passengers and offer ranges of 7,000 to 10,000 nautical miles.

The two makers ended the joint effort after several years, but Airbus pressed on with design work on what would eventually become the A380, firm in its belief that the market required a 550- to 650-seat widebody to meet future demand.

Airbus launched the A380 program in December 2000 based on 50 orders from six customers. Its configuration was finalized in 2001, and construction of the first test aircraft began in January 2002. Airbus rolled out the first A380 in January 2005, and the aircraft made its maiden flight on April 27 of the same year.

In mid-2005, as the A380 was beginning its flight testing, Airbus conceded that the original delivery schedule had slipped by six months. About a year later the consortium announced a further six-month slip, saying it would deliver only nine aircraft in 2007, rather than the planned 25. This resulted in a management shakeup at Airbus and its parent company, then known as EADS.

In October 2006, Airbus said the program was two years behind schedule and that only one aircraft would be handed over in 2007. The problem was that wiring installed in fuselage sections built in France would not mate with wiring performed at German assembly sites. Several different fixes were implemented, but the manufacturer stated it would take a year to standardize the mating process.

The company was also battling a gain in empty weight in the passenger model, amounting to about 2 percent above specifications as of November 2006, according to press reports. The company investigated a number of potential solutions to the problem, including a change in materials for some components.

Customers of the freighter variant, which included United Parcel Service and Federal Express, canceled orders after Airbus began to pull personnel from the freighter program to deal with delays in the passenger model. Airbus also had to pay out penalties on late deliveries to other customers.

Airbus delivered the first A380, to Singapore Airlines, in October 2007.

In-Flight Failure of Trent Engine

A Qantas A380 experienced an in-flight disintegration of a Rolls-Royce Trent 900 engine on November 3, 2010. An interim report by the Australian Transport Safety Bureau (ATSB) issued a month after the incident stated that the aircraft's inboard port engine had sustained an uncontained failure of the intermediate pressure (IP) turbine disc. The resulting explosive force shot fragments into the port wing and tail of the aircraft, damaging the aircraft's fuel supply system and fuel tanks and taking out one of the jet's two hydraulic systems. The damage made landing the aircraft extremely difficult, and it was fortunate that the crew skillfully managed to land the aircraft safely.

The ATSB identified fatigue cracking within a stub pipe that feeds oil into the high-pressure (HP)/IP bearing structure as the potential source of the failure. During the investigation into the incident, cracks were discovered in wing bracket structures due to unexpected stresses on the affected components during the manufacturing process at Airbus' Broughton facility. The company revised its manufacturing process to avoid strain on the component and moved to a stronger material, but transitioning to a modified wing in the production process caused it to miss a month of production during 2013. Deliveries totaled only 25 aircraft during the year, down from 30 in 2012. The modified wing is standard on new aircraft built in 2014. A retrofit program addresses the issue on existing aircraft.

Production Termination Announced

Airbus announced plans in February 2019 to terminate production of the A380 in 2021. The move followed a decision by Emirates to cancel 39 of its remaining orders for the type and instead order 40 A330-900 and 30 A350-900 twin-engine widebody airliners to fill its requirements.

Airbus was not making money on the A380 program at the current low production rates. Airbus executives resisted terminating the program because of the prestige they attach to building the world's biggest passenger jet, but closing down the program makes sense. Ironically, with Emirates replacing its A380 orders with orders for smaller Airbus widebodies that the manufacturer can build at a profit, Airbus will come out ahead on the deal.

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Funding

Airbus has estimated A380 development costs at \$10 billion to \$12 billion (1998 dollars); independent projections range as high as \$15 billion to \$18 billion.

Contracts/Orders & Options/Inventories

For a complete list of A380 family orders and options and details on inventories, see Appendix VI, "Major Civil Transport Orders and Options," and Appendix VII, "Major Civil Transport Inventories."

Forecast Rationale

Airbus terminated production of the A380 in 2021. The backlog for the ultra-large widebody at the end of 2020 included only five aircraft, all for Emirates. The manufacturer delivered the last of these in December 2021, all of which were equipped with Rolls-Royce Trent engines.

Demand for the A380 dried up even before the 2020 pandemic. In recent years a few operators of the A380 tried selling used aircraft without much success, indicating that there were not any other operators looking to expand their fleets beyond what they had in inventory.