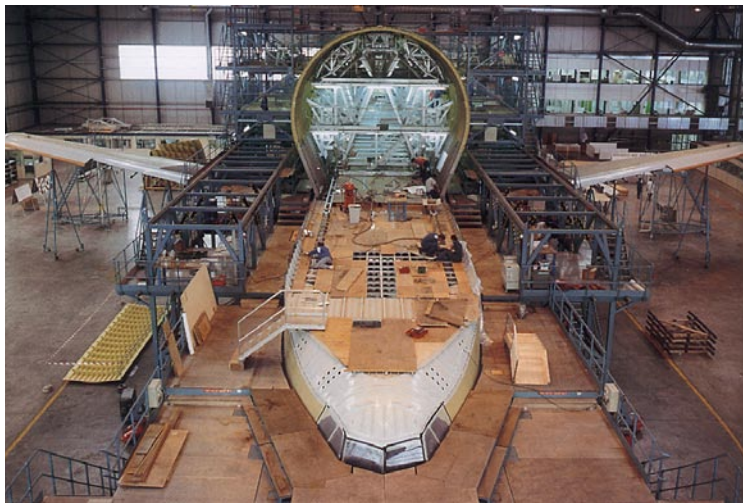


Data & Development



X-Plane A300-600ST Beluga Package

A300-600ST Beluga



Description

The A300-600ST Super Transporter was designed to replace Airbus Industrie's Super Guppy transports, used by the consortium to ferry oversized components such as wings and fuselage sections between Airbus' partners' plants throughout western Europe.

Development of the A300-600ST, nicknamed Beluga, began in August 1991. The A300-600ST's tight development program - for what in many ways is effectively a new aircraft - saw the transport rolled out in June 1994, with first flight on September 13 that year. The A300-600ST then entered a 400 hour flight test program which culminated in mid 1995, with certification awarded that September and with delivery and entry into service with Airbus in January 1996. All of the first four on order had been delivered by mid 1998 (allowing the Super Guppy's retirement in October 1997). The fifth Super Transporter was delivered in 2001.

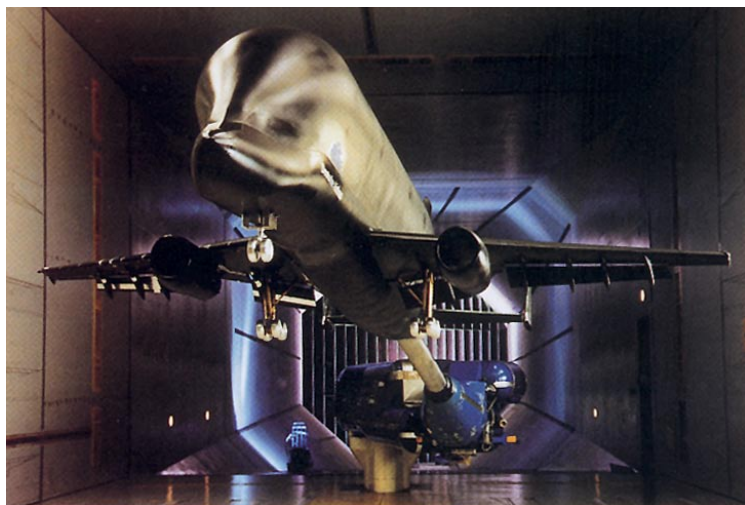
The A300-600ST is based on the A300-600 airliner, with which it shares the wing, lower fuselage, main undercarriage and cockpit. The main differences are obvious - a bulged main deck, new forward lower fuselage, new enlarged tail with winglets and an upwards hinging main cargo door. A design study of a similarly configured A340, the A340ST Mega Transporter, to carry A380 components is underway.

Program management of the A300-600ST is the responsibility of the Special Aircraft Transport Company, or SATIC, an economic interest grouping formed on a 50/50 basis by Aerospatiale and DASA operating on behalf of Airbus Industrie. While much of the work on the aircraft is performed by the Airbus partners, other European companies are also involved in the program.

Photos show the final assembly in Toulouse, transport of the cockpit and fuselage-wing section for final assembly, watertanks on a test rig, the first flight and Beluga 1 at the paint shop.



A300-600ST Beluga



Prototype

Final assembly of the Beluga 1 prototype began at Colomiers near Toulouse, France in early 1993. Work started on a „topless“, windowless, A300-600R „non-flyable aircraft“ without the upper fuselage that was delivered from Dasa works at Hamburg Finkenwerder to Toulouse.

As a prototype, the Aircraft was being build quite different from final assembly of the Airbus at Toulouse and Hamburg where the aircraft moved from station to station, manufactured on the principal of assembly-line production. The manufacture of the Beluga instead resembled construction in a dockyard. Development, design and manufacturing activities proceeded alongside each other on a single construction site.

Commonality

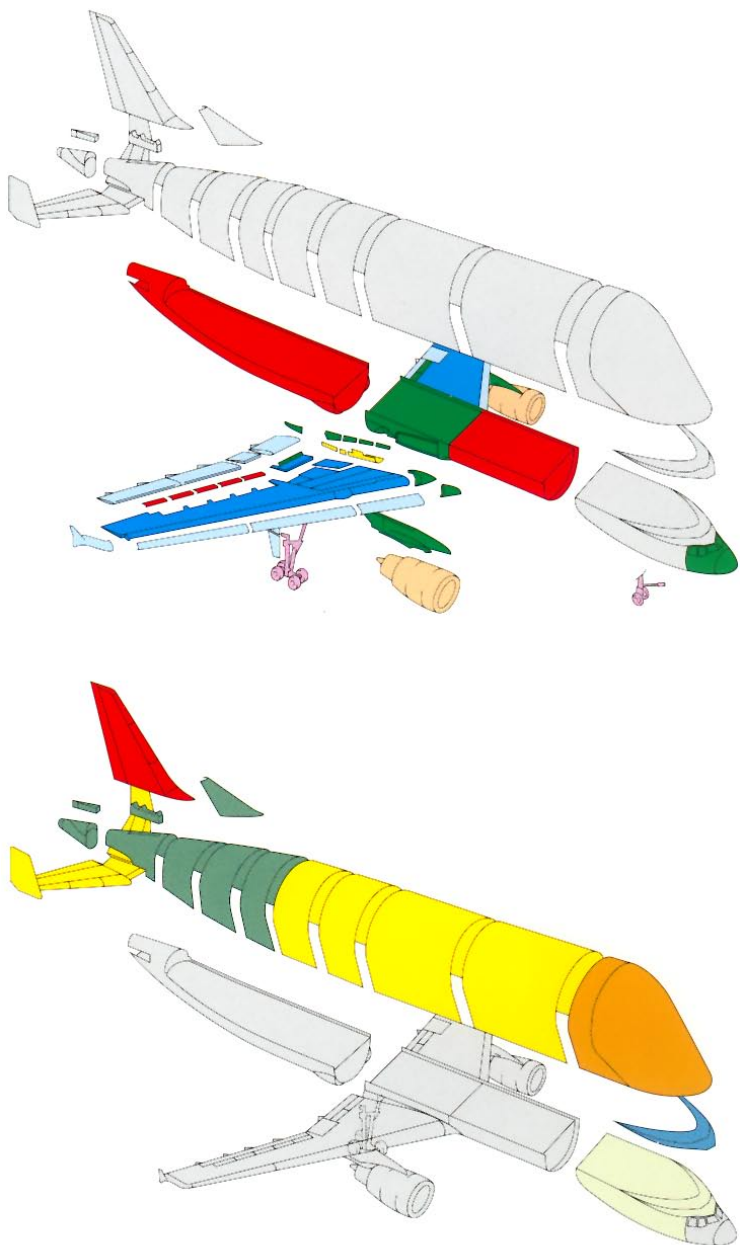
Although the Beluga shares an impressive commonality with the A300-600R, yet the giant whale-like aircraft bears little physical resemblance and is virtually a new aircraft. It differs, not only in size, but also in technical complexity.

Construction of the Beluga begins at the normal A300-600 assembly line, before being completed by Sogerma-Socea. Some 80 percent of the airframe structure is identical and (as previously mentioned) includes the wings, General Electric turbofan engines, landing gear, most of the lower fuselage, and the pressurised flight deck while system commonality is at almost at 90 percent.

To the most notable changes that have been described earlier should be added, that the new nose section is equipped with a galley, toilet and two additional passenger seats. Also structure wise, the sheer size and weight of the Beluga required the stronger and larger tail assembly from the Airbus A340.

The Photo above shows a model of the aircraft being tested at the Deutsche Aerospace Airbus.

The first drawing shows the A300-600R structures that have been included in the new design. The drawing below highlights the new or modified structures for the Beluga.



A300-600ST Beluga

A300-600 Flightdeck

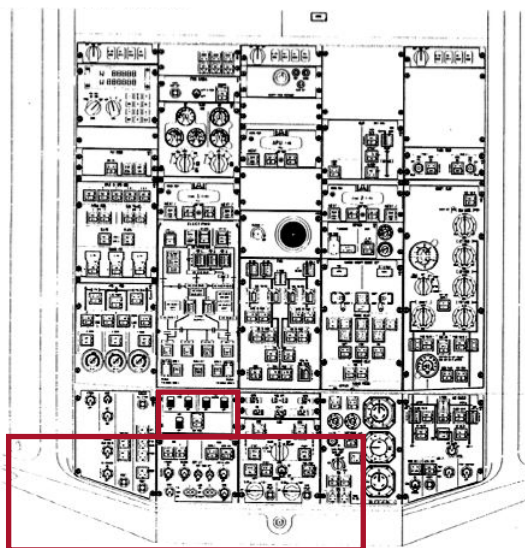
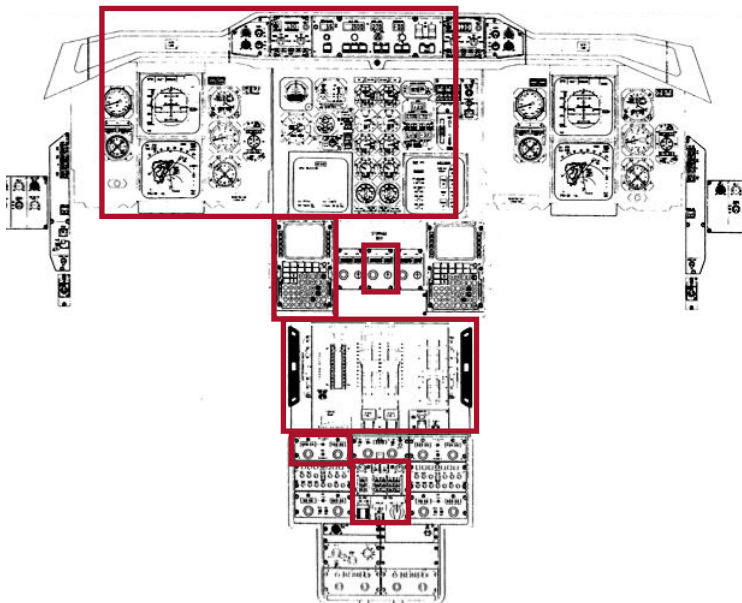
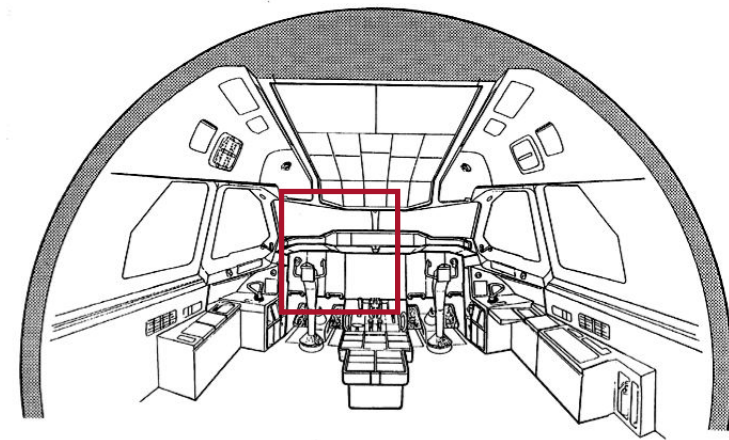
Around 1980 the development of the A300-600 B4 series went hand-in-hand with the advanced shortened A310. This series incorporated many new design features. Centre-piece was a new two-crew cockpit.

The A300-600 flightdeck was planned and designed in consultation with the airlines, with crew comfort, low workload and good working space being the prime considerations. Central to these aims were improved operation safety, high level of automation, automatic switching or change-over a „lights out“ concept and a centralised warning system. Crew stations, instrument panels, control column and rudder pedals were designed for optimum seat positions and visibility.

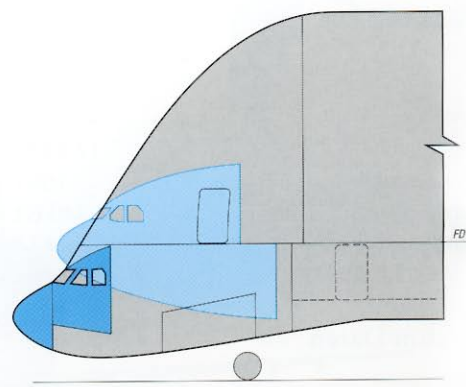
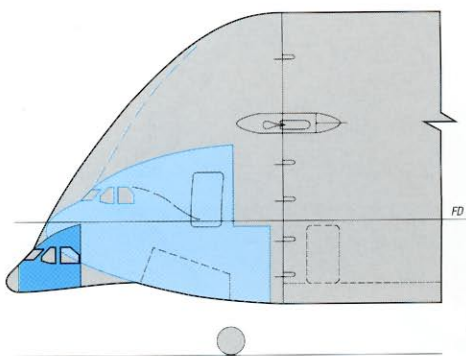
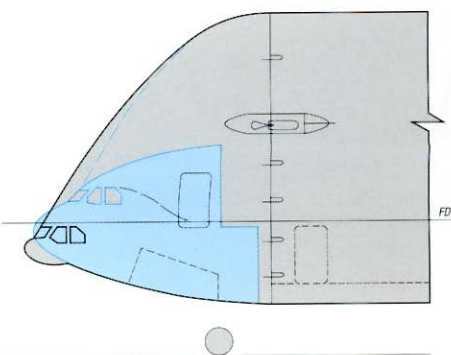
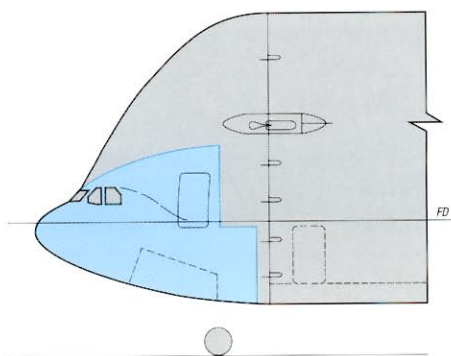
The pilots instrument panels contain all primary flight and navigational instruments, while the centre panel incorporates those instruments where joint-venture use is acceptable, such as the primary engine instruments, the master warning panel, brake pressure indicator, and the standby attitude, airspeed and altitude instruments. Flap/slat indicators and landing gear controls are positioned closer to the first officer.

In the two-crew A300-600 flightdeck, Airbus took advantage of Porsche car designers to produce a spacious and ergonomically-styled interior and of the enormous advances made in avionics technology. All instruments, displays and controls are in front of the pilots, or within easy reach on an overhead panel, which also includes the systems control and monitoring information provided on earlier models on the engineer's console.

Flightdeck features include an Electronic Flight Instrument System (EFIS), an Electronic Centralised Aircraft Monitor (ECAM) unique to airbus, digital avionics and flight management systems, and a windshear warning and guidance system. Six cathode ray tube (CRT) displays are used for primary flight, navigation and warning information. The EFIS comprises a primary flight display (PFD) and navigation display (ND) mounted vertically for each pilot, while there are two ECAM displays, for warning and systems in the lower centre position.



A300-600ST Beluga



The central pedestal layout affords easy access to all crew members. Forward of the throttles are the navigation controls, while alongside the throttles are the controls for the flaps/slats, speed breaks and trim wheels, with the fuel levers and parking brake located just behind. At the rear are the audio controls, VHF communications and automatic direction finder (ADF).

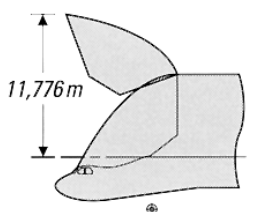
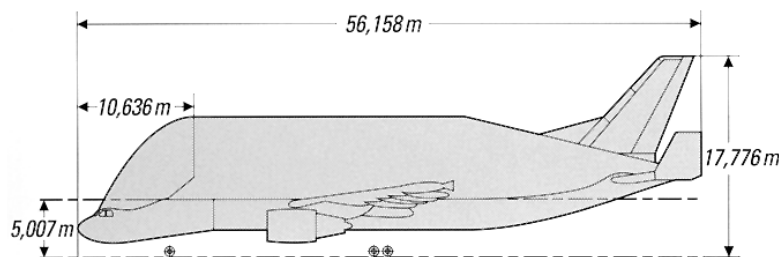
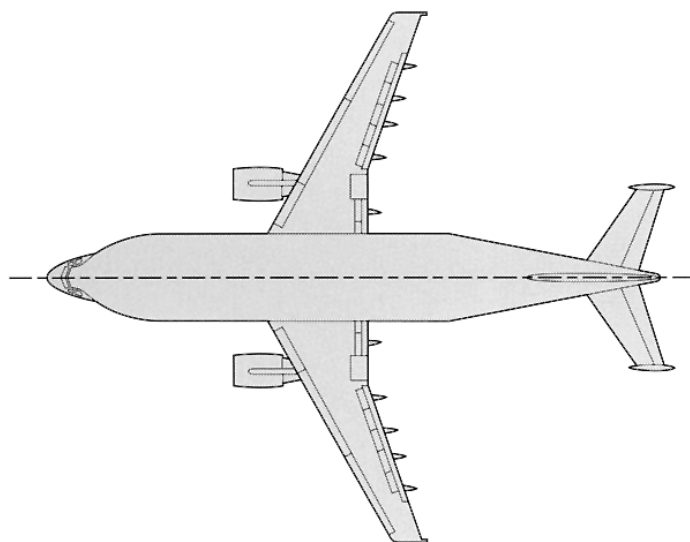
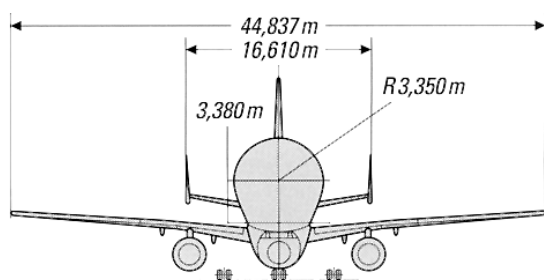
Drawings on the page before show the overall layout of the flightdeck; the main instrument panel, with glareshield, PFDs, EFIS & ECAM displays, centre pedestal; as well as rear-pedestal and the overhead-panel. The red highlighted areas show what has been incorporated into the panel design for X-Plane so far.

Beluga Cockpit

Originally, the front section of the fuselage together with its hydraulic, electrical and flight control system connections was planned to be separable, like the one of the Super Guppy. Safety considerations on one hand however, and the requirement for reduced loading and unloading times on the other, led to the location of the cockpit below the main deck. A complicated process performed in many steps.

Whereas the airworthiness authorities required a tolerance of loads up to 9G for crew safety, a tolerance of only 2,5G was proven from the re-positioned A300-600 cockpit section below the cargo deck. As a result there was lower expenditure for design and materials, greater payload and an increased safety factor for the crew.

A300-600ST Beluga



Specs

Dimensions:

Wing span 44.84m (147ft 0in), length 56.16m (184ft 3in), height 17.23m (56ft 6in). Wing area 260m² (2798.7sq ft). Internal useable length 37.70m (123ft 8in), diameter 7.40m (24ft 3in).

Weights:

Max payload 47 tonnes (103,615lb), max takeoff 155,000kg (341,700lb).

Capacity:

The A300-600ST's max payload of 47 tonnes (103,615lb) is unlikely to be fully utilised, as the emphasis of the design is on volume rather than payload. The internal main cabin volume is 1400m³ (49,442cu ft), and can carry a range of oversize components, such as a fully equipped A330 or A340 wing shipset, or two A320/321 wing shipsets, or two A310 fuselage sections (front & rear).

Performance:

Max cruising speed 780km/h (421kt). Range with a 40 tonne payload 2400km (1295nm), range with a 30 tonne (66,150lb) payload 4000km (2160nm).

Powerplants:

Two 262.4kN (59,000lb) class General Electric CF6-80C2A8 turbofans.

Registrations & First Flights

Beluga 1	F-GSTA	1994
Beluga 2	F-GSTB	1996
Beluga 3	F-GSTC	1997
Beluga 4	F-GSTD	1998
Beluga 5	F-GSTF	2001

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