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Daimler-Benz Aerospace/Fokker FA-X - Archived 5/96

Orientation

Description. Proposed advanced-technology, 100-140 passenger class regional/commuter transport jet aircraft.

Sponsor. The Fokker Aircraft Experimental (FA-X) is sponsored privately by Daimler-Benz Aerospace and Fokker.

Contractors. Daimler-Benz Aerospace (DASA), Munich, Germany; and NV Koninklijke Nederlandse Vliegtuigfabriek Fokker, Amsterdam-Zuidoost, the Netherlands. NV Fokker is owned by Fokker Holding, a company established in 1993 by new parent DASA.

Status. Currently in study phase. The FA-X is a successor to DASA's Future Advanced Small Aircraft (FASA) study and Fokker's Advanced Technology Small Aircraft (ATSA) program. FASA, in turn, succeeded the DAA 92/122 (also called the Regioliner) effort, which had been terminated in 1993 following DASA's acquisition of Fokker. The DAA 92/122 was an extension of the MPC 75 program led by DASA and with CATIC participation. MPC 75 reparatory design and market feasibility studies began in January 1988 and were concluded in December 1990. An MoU to study joint design and production of the DAA 92/122 was signed by DASA, Aerospatiale, and Alenia in 1991.

Total Produced. Not applicable.

Application. Short-medium range, regional/commuter airline operations.

Price Range. Price will depend on configuration; could be in the \$25-\$30 million range (1995 US dollars).

Technical Data

As the FA-X is still in early formative stages, specific technical data are not available. The following applies only to the earlier DAA 92/122, which conceivably could bear some resemblance to the eventual FA-X design.

Design Features. Cantilever low wing monoplane with swept transonic, laminar flow airfoil. The airframe would have been produced in conventional light alloys with a considerable amount of primary and secondary structure in carbon fiber-reinforced plastics. Avionics would have included fly-by-wire controls and an all digital electronic flight instrumentation system.

(DAA 92/DAA 122)

Dimensions	Metric	US
Overall length	29.60/34.60 m	97.11/113.52 ft
Overall height	9.70 m	31.82 ft
Wingspan	29.70 m	97.44 ft
Weights		
Operating wt empty	26,350/29,350 kg	58,092/64,705 lb
Maximum T-O weight	43,050/50,000 kg	94,909/110,231 lb

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Max structural payload 10,300/14,350 kg 22,707/31,636 lb

Seating. DAA 92: 88-95 passengers

DAA 122: 112-125 passengers

Performance(a)

High speed cruise 593 km/h 320 kt

Range with full passenger load 2,780 km 1,500 nm

Propulsion

DAA 92/122 (2) Advanced-technology medium-bypass-ratio turbofan engines with thrust rating in range of 69.0-82.3 kN (15,500-18,500 lbst). Candidates included BMW/Rolls-Royce BR715, MTU/Pratt & Whitney RTF180, CFM International CFM88, and Allison AE 3014.

^(a) At maximum takeoff weight, unless indicated otherwise.

Variants/Upgrades

MPC 75-200. First of a proposed family of regional jets and the subject of the lapsed agreement between DASA of Germany and CATIC of the People's Republic of China (PRC). This initial variant was to seat 80 passengers and be powered by twin 10,000 lbst turbofan engines.

MPC 75-300. Second product of the MPC partnership was to be a stretched version seating 100-120, depending upon exact nature of the fuselage extension.

MPC 75-200/300F. Preliminary designation for all-cargo/freighter variants. The baseline aircraft would accommodate five 96" x 125" pallets or 11 LD3-46 containers.

DAA 92/122 Regioliner. Designation for a family of regional jet aircraft partly based upon the MPC 75. The new Regioliner was the subject of an MoU between DASA, Aerospatiale, and Alenia signed in 1991. MPC partner CATIC of the PRC did not sign onto this effort but hoped to secure a 10 percent workshare including responsibility for the empennage and rear fuselage in the event of a program go-ahead.

The MoU called for an in-depth study of the market potential of all-new technology regional jet aircraft in the 80-130 seat classes and the eventual formation of a consortium that could incorporate the Dornier Do.228 and Do.328, the ATR 42 and ATR 72, and the Regioliner jets.

AAC.100. Aerospatiale, Alenia, and CASA studied this same market within the AAC.100 project. AAC.100 was originally a propfan, but like the MPC 75, moved toward the use of conventional turbofans on wing or empennage positions. This project ended with the signature of the DAA 92/122 MoU.

FASA. With abandonment of the Regioliner concept in 1993, DASA turned its attention to a new 130-seater called the Future Advanced Small Aircraft (FASA). This aircraft was to be based on Regioliner technology and was to be powered by two underwing-mounted engines. The basic configuration (FASA 1) was to be a 110-passenger aircraft. Later derivatives were to include a stretched version (FASA 2) and a shortened version (FASA 3).

FA-X. In late 1994, DASA and Fokker merged and scaled down their small airliner projects (FASA and ATSA, respectively), resulting in the Fokker Aircraft Experimental (FA-X). Currently in a business opportunity study phase, the basic FA-X concept has been frozen, although design details have yet to be finalized. The jet would be in the 100-140 passenger class.

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Program Review

Background. Before DASA moved to acquire Fokker, the German company set out to launch its own 90-120 passenger family of advanced technology jets. In early 1991, DASA signed an MoU with Alenia and Aerospatale to study market, economic, and legal issues with respect to launching a new family of regional jet aircraft.

Genesis in MPC 75 and AAC.100. The DAA 92/122 was essentially an extension of the MPC 75 effort between DASA and CATIC of the People's Republic of China (PRC) and partially the AAC.100 of Aerospatale, Alenia, and CASA.

On June 6, 1986, at the Hannover Air Show, MBB (DASA) and CATIC signed an agreement to conduct feasibility studies of a new 60-80 passenger class regional airline transport called the MPC 75. The initial powerplant candidate for the aircraft was the General Electric GE38-B5, an UnDucted Fan™ version of the GE38 turboprop/turboshaft engine family. GE and MBB/CATIC signed an MoU in 1987 to study the application of the GE38 to the new aircraft. In April 1988, Allison inked a similar MoU to study the integration of a propfan version of the T406 turboshaft engine.

During the rest of 1986, MBB and CATIC searched for additional risk-sharing partners to help defray the estimated \$1.0-\$1.3 billion development costs while conducting a 15-month feasibility study. Japan was formally asked to join the MPC 75 partnership in late 1986 but never joined the effort.

In October 1987, MBB and CATIC signed another agreement, this one to establish a joint company to be set up in January 1988, headquartered in Hamburg, West Germany, and originally called Multi-Purpose Commuter Aircraft GmbH. However, the company was not established until November 1988 and was subsequently called MPC Aircraft GmbH.

During late 1989 and 1990, the MPC 75 design was further refined. The aircraft was shortened, propfans were totally eliminated as propulsion, and weight and passenger capacity were increased.

In 1991, the MPC 75 and AAC.100 programs were merged into a new effort to develop a family of regional airliners called the DAA 92/122 Regioliner. DASA, Aerospatale, and Alenia were the companies involved in the Regioliner program.

Program Responsibilities. DASA had hoped to establish an assembly line in Hamburg and would have designed and produced most of the Regioliner's flight controls and avionics, and would have integrated propulsion. CATIC, never formally a part of the Regioliner program, wanted to design and produce the rear fuselage and empennage. Responsibilities of Alenia and Aerospatale were never announced.

Propulsion Options. DAA 92/122 aircraft would have required engines significantly more powerful than those for the aborted MPC 75 and AAC.100. Engine thrust was initially set at 15,500 lbf for the DAA 92 and 18,500 lbf for the stretched variant. If the program had been launched, there would have been no shortage of candidate propulsion systems. Candidates included the BMW/Rolls-Royce BR715, the MTU/Pratt & Whitney RTF180, the CFM International CFM88, and the Allison AE 3014.

FA-X. The DAA 92/122 program was abandoned in the wake of the DASA acquisition of Fokker. DASA then began a study effort of a Future Advanced Small Aircraft (FASA), a new 130-seat jetliner. Fokker was pursuing a similar program called the Advanced Technology Small Aircraft (ATSA). In 1994, the companies merged the two programs into the Fokker Aircraft Experimental (FA-X) effort. The basic FA-X concept is frozen, although design details have not been finalized. The aircraft will likely be offered with a choice of powerplants.

The FA-X program is currently in a business opportunity study phase, which will take at least a year to complete. No firm timetable has been established, although Fokker has said that the aircraft will not be launched before the turn of the century. The FA-X could enter service in the 2002-2004 time-frame. If a business case is established for the FA-X, further technical work will follow, building on the FASA and ATSA programs. DASA is leading the current study team. Fokker will assume program management if the program is determined to be feasible.

Funding

Funding for the FA-X study effort is not known.

Analysis. DASA's acquisition of Fokker has left the plans of both companies regarding regional aircraft in a state of flux. DASA and Fokker are willing to let the market decide the size, price, and performance of any new aircraft. Despite the current FA-X study, the stretched version of the Fokker 100 (called the Fokker 130) is still under consideration. The companies will likely not build both the FA-X and the Fokker 130.

Stretching the Fokker 100 would require considerably less expenditure than development of a new aircraft like the FA-X. However, a completely new design could provide DASA and Fokker with considerably more marketing flexibility.

The FA-X program could eventually involve a number of partners, and several interested parties in Asia apparently would like to participate. British Aerospace has also held discussions with DASA and Fokker over joint development of a new regional aircraft. (However, BAe has since allied itself with ATR; see below.) Prospective suppliers for the FA-X aircraft may be asked to invest their own funds in the program.

According to Fokker, the FA-X would not be launched until after the turn of the century. The company wants to obtain the maximum amount of sales from its still-successful Fokker 100 regional jet before embarking on a new aircraft.

European regional aircraft activities are undergoing restructuring and realignment. The French-Italian ATR consortium has reached an agreement with the Avro and Jetstream subsidiaries of BAe to form an alliance. This alliance would initially involve the pooling of sales, marketing, and customer service functions. The alliance would be open to involvement from other manufacturers; the goal is to establish a single European regional aircraft consortium. In 1996, the alliance partners plan to study the potential for a new regional jet program launch. This new program could possibly involve a 90-passenger aircraft and/or a 120-passenger aircraft. Such aircraft would directly challenge the FA-X.

Timetable

Jun	1986	MBB and CATIC began MPC 75 feasibility studies
	1987	MBB and CATIC agreed to set up joint company to develop MPC 75 GE signed MoU with MBB and CATIC to study application of GE38 propfan engine to new MPC 75 aircraft Feasibility analysis completed
Jan	1988	Preparatory/preliminary design began
Jun	1988	Allison signed MoU to study Model 501-M80R33 propfan installation
	1989	MPC eliminates propfan from MPC 75 design
Dec	1990	Completion of preliminary design phase
	1991	Regioliner MoU signed
	1993	DASA acquired majority stake in Fokker DAA 92/122 terminated FASA study initiated
	1994	FASA and ATSA programs merged into FA-X

Worldwide Distribution

Not applicable.

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Forecast Rationale

We believe that it is too early to issue a forecast for the FA-X. Even if the program receives a go-ahead, it is possible that no production aircraft would be built within the next 10 years.

Ten-Year Outlook

No FA-X aircraft are forecast during the next 10 years.

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