

# ARCHIVED REPORT

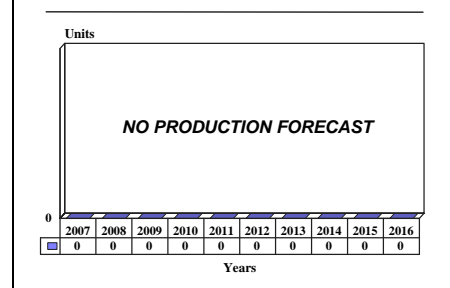
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## Alenia/Aermacchi/Embraer AMX - Archived 02/2008

### Outlook

- Potential Venezuelan sale scuttled by U.S.
- Italy, Brazil both upgrading inventory aircraft
- No further production forecast

10 Year Unit Production Forecast  
2007 - 2016



### Orientation

**Description.** Single-engine, single-seat close air support aircraft; two-seat trainer variant.

**Sponsor.** The governments of Italy and Brazil.

**Status.** Production completed.

**Total Produced.** Approximately 140 A/T-AMXs produced in Italy, with 65 built in Brazil (including prototypes) through 2003. Production completed.

**Application.** Close air support/interdiction, reconnaissance, low-level air defense.

**Price Range.** Manufacturers' unit flyaway cost, \$16.5 million in 1999 U.S. dollars; unit cost of \$18.75 million reported in 1999 sale to Venezuela.



AMX

Source: Embraer

## Alenia/Aermacchi/Embraer AMX

## Contractors

## Prime

<b>AMX International Ltd</b>	Via Faustianiana, Rome, 00131 Italy, Tel: + 39 06 52 291, Fax: + 39 06 807 2215, Prime
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## Subcontractor

<b>Aermacchi SpA</b>	<a href="http://www.aermacchi.it">http://www.aermacchi.it</a> , Via Ing P Foresio, 1, Venegono Superiore, 21040 Italy, Tel: + 39 0331 813111, Fax: + 39 0331 813450, Email: <a href="mailto:info@aermacchi.it">info@aermacchi.it</a> (Avionics Integration)
<b>Alenia Aeronautica</b>	<a href="http://www.alenia-aeronautica.it">http://www.alenia-aeronautica.it</a> , 45, Via Campania, Rome, 00187 Italy, Tel: + 39 06 420881, Fax: + 39 06 42824528 (Flight Control System)
<b>Embraer - Empresa Brasileira de Aeronáutica SA</b>	<a href="http://www.embraer.com">http://www.embraer.com</a> , Av Brigadeiro Faria Lima, 2170, São José dos Campos, 12227-901 São Paulo, Brazil, Tel: + 55 12 3927 1000, Fax: + 55 12 3921 2394 (Wing Leading Edge Slat)
<b>Lital SpA</b>	<a href="http://www.lital.it">http://www.lital.it</a> , Via Pontina, Km 27800, Pomezia, I-00040 Italy, Tel: + 39 06 911 922 63, Email: <a href="mailto:info@lital.it">info@lital.it</a> (Inertial Navigation System (INS))
<b>Rolls-Royce International Ltd</b>	<a href="http://www.rolls-royce.com">http://www.rolls-royce.com</a> , 65 Buckingham Gate, London, SW1E 6AT United Kingdom, Tel: + 44 20 7222 9020, Fax: + 44 20 7227 9178 (Spey Mk 807 Turbofan)
<b>Smiths Aerospace Mechanical Systems - Flight Controls</b>	<a href="http://www.smiths-aerospace.com">http://www.smiths-aerospace.com</a> , Wobaston Rd, Wolverhampton, WV9 5EW United Kingdom, Tel: + 44 1902 397700, Fax: + 44 1902 394394 (Primary Flight Control)

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## Technical Data

**Design Features.** High/shoulder wing design constructed primarily of conventional aerospace aluminum alloys. Wing has leading and trailing edge control devices for short-field performance and maneuvering. Retractable tricycle landing gear; all three units have a single wheel. Tail unit has an all-moving horizontal stabilizer with elevators. Swept vertical stabilizer has powered rudder but no rudder tab. Brazilian aircraft have different avionics and weapon delivery systems, as well as twin 30mm cannon.

	<u>Metric</u>	<u>U.S.</u>
<b>Dimensions</b>		
Length	13.575 m	44.54 ft
Height	4.6 m	15 ft
Wingspan, over missiles	10 m	32.8 ft
<b>Weight</b>		
Operational weight, empty	6,000 kg	13,228 lb
Max gross	11,500 kg	25,353 lb
<b>Performance</b>		
Max level speed	Mach 0.86	
Service ceiling	13,000 m	42,650 ft
Range, at max gross wt (2,720 kg/6,000 lb) of external stores		
hi-lo-hi	520 km	280 nm
lo-lo-lo	370 km	200 nm

## Alenia/Aermacchi/Embraer AMX

**Propulsion**

AMX (1) Rolls-Royce plc/Derby Engine Division Spey Mk 807 non-afterburning low-bypass-ratio turbofan, 49.06 kN (11,030 lbst), produced under license by Fiat Aviazione SpA and Alfa Romeo for Italian aircraft. Rolls-Royce assisting Companhia Electromecanica CELMA in assembly of Brazilian engines. Future use of the 58.38 kN (13,125 lbst) RB168 Mk 821 is planned.

**Armament**

Italian aircraft – One GE M61A1 20mm cannon, 350 rounds.

Brazilian aircraft – Two DEFA 554 30mm cannon.

One twin-pylon hardpoint on underfuselage; four underwing hardpoints; wingtip rails for two AIM-9L Sidewinder or MAA-1 Piranha air-to-air missiles. Total external stores capacity, 3,800 kg (8,377 lb).

**Crew**

Pilot only for AMX; T-AMX is two-seat trainer variant.

## Variants/Upgrades

**AMX.** Basic single-seat, close air support and counter-air aircraft. Brazilian Air Force designation A-1.

**AMX-T.** Two-seat trainer derivative currently in flight testing. Further development of the two-seat version is under consideration for maritime attack, and for night/all-weather and electronic reconnaissance (ECR) missions. Two Italian-built AMX-T prototypes flew in 1990; first Brazilian-built variant flew in 1991.

**AMX EW.** A planned electronic warfare (EW) variant, a scale model of which was exhibited at the 1995 Paris Air Show. Aircraft would feature canoe-shaped fairing beneath fuselage, housing the EW suite. Initial research funding (\$143.7 million) was approved by Italian government in fiscal 1996. None ordered.

## Program Review

The AMX originated in Italy during the mid-1970s to replace the Aeritalia/Lockheed F-104G and Fiat (Aeritalia) G.91 types serving in the close support role. Aeritalia (now Alenia) and Aermacchi pursued independent designs, but subsequently signed a collaborative agreement in 1978 to develop a new attack/close air support aircraft for the Italian Air Force requirement. Embraer of Brazil, which unsuccessfully proposed an indigenous design to fill a similar Brazilian requirement in 1974, joined the program in 1981.

Italy formed its first AMX squadrons in 1989, and Brazil took delivery of its first that same year. The consortium's original plans called for production of a minimum of 332, with output building to four per month by 1990. The manufacturers felt a maximum rate of eight per month could be achieved, depending upon the

volume of export orders. However, no export market developed for the aircraft.

In 1999, Venezuela selected the AMX-T as a replacement for its aging Rockwell T-2 jet trainers and said it would order eight aircraft. Interest then lapsed and, although a formal order had not been placed as of November 2005, reports at that time indicated that Venezuela wanted to move ahead with an order for 12 aircraft.

### *Venezuelan Deal Scuttled*

Because relations between Venezuela and the U.S. have continued to deteriorate, the latter has refused to permit the transfer of U.S.-designed communications systems for the aircraft and this action has precluded an AMX-T purchase by Venezuela.

## Funding

Italian AMX EW development funded at \$143.7 million in FY96.

## Alenia/Aermacchi/Embraer AMX

## Timetable

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<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Jun	1978	Aermacchi/Alenia collaboration announced
Sep	1978	Spey Mk 807 engine selected
Early	1979	Design definition
Sep	1980	Embraer signs joint manufacturing agreement
May	1984	Italian prototype first flight
Oct	1985	Brazilian prototype first flight
May	1988	First production aircraft flown
Early	1989	Initial Italian deliveries
Nov	1989	Initial Brazilian deliveries
Mar	1990	First flight of Italian-assembled two-seater
Late	1990	First flight of Brazilian-assembled two-seat trainer
	1999	Production completed for Italy, Brazil
	2005	Brazil, Italy launch separate AMX upgrade programs

## Worldwide Distribution/Inventories

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(As of November 15, 2006)

<b>Italy - Air Force</b>	74
<b>Brazil - Air Force</b>	53

## Forecast Rationale

Although both Italy and Brazil are in the process of upgrading their AMX aircraft, these projects will not result in a re-opening of the line.

Embraer had hoped to sell a dozen two-seat trainer variants to Venezuela, but Washington refused to allow the transfer of U.S. systems fitted to the aircraft. In any

case, it had not been confirmed as to whether Venezuela was shopping for new-production aircraft or surplus Brazilian machines.

We are not forecasting a re-opening of the line in Brazil and, consequently, are not projecting additional AMX production.

## Ten-Year Outlook

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No further production is forecast.

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