

ARCHIVED REPORT

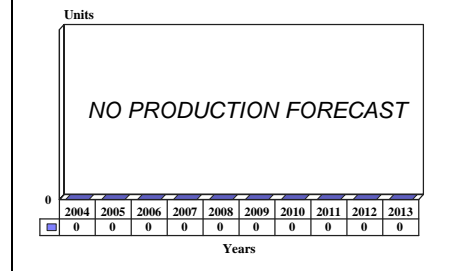
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Agusta A129 - Archived 11/2005

Outlook

- Final 15 for Italian Army delivered in 2003
- Italy to upgrade all 60 units to incorporate greater capabilities
- A129 appears out of running in current attack helicopter competitions

10 Year Unit Production Forecast
2004 - 2013



Orientation

Description. Twin-engine, single-main-rotor military anti-tank/ground attack/utility helicopter.

Sponsor. Italian Ministry of Defense.

Contractors. Construzioni Aeronautiche Giovanni Agusta SpA; Cascina Costa di Samarate (VA), Italy. Now part of AgustaWestland.

Status. Production completed in 2003; development of improved A129 International variant.

Total Produced. Through 2003, Agusta delivered 65 Mangustas, including five prototypes.

Application. Anti-armor, area suppression, and scout.

Price Range. A129, approximately \$7 million; A129 International estimated at \$7.5 million, both in 2004 U.S. dollars.

Contractors

AgustaWestland, <http://www.agustawestland.com>, Rome, Italy, Tel: + 39 0331229111, Fax: + 39 0331229605, Prime

Rolls-Royce plc, <http://www.rolls-royce.com>, 65 Buckingham Gate, London, SW1E 6AT United Kingdom, Tel: + 44 20 7222 9020, Fax: + 44 20 7227 9178 (GEM Turboshaft)

BAE Systems North America - Information & Electronic Systems, Division HQ, <http://www.iesi.na.baesystems.com>, 65 Spit Brook Rd, Nashua, NH 03061-0868 United States, Tel: + 1 (603) 885-4321, Fax: + 1 (603) 885-2772, Email: randal.e.morger@baesystems.com (Infrared Jammer)

Whittaker Safety Systems Division, 2731 Systron Drive, Concord, CA 94518-1355 United States (Fire Detection System)

Technofan, <http://www.technofan.com>, 10, place Marcel Dassault, ZAC du Grand-Noble - BP 30053, Blagnac, 31702 France, Tel: + 33 61 30 92 00, Fax: + 33 61 30 02 04 (Ventilation System)

Technical Data

(A129 Mangusta)

Design Features. Single-main-rotor, conventional helicopter with fully articulated, four-blade main rotor and two-bladed tail rotor. Main blades of carbonfiber and Kevlar skins over a Nomex honeycomb core, and

stainless steel. Airframe of composite and light alloy materials; 45 percent of total fuselage weight is composite materials. Stub wings mounted at mid-fuselage point are also of composite materials. Tail

section includes a swept-back vertical stabilizer and tailplane with a small ventral fin on which a tail wheel is mounted. Front-drive engines are mounted in external ballistic-tolerant nacelles aft of the main rotor

pylon. Landing gear is conventional fixed twin main wheel and single tail wheel; the main units have hydraulic shock absorbers.

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Length of fuselage	12.275 m	40.274 ft
Overall length (rotors turning)	14.29 m	46.875 ft
Fuselage max width	0.95 m	3.125 ft
Height (tail rotor turning)	3.315 m	10.875 ft
Main rotor diameter	11.90 m	39.042 ft
Tail rotor diameter	2.24 m	7.354 ft
Wingspan	3.20 m	10.5 ft

Weight

Weight empty, equipped	2,529 kg	5,575 lb
Max T-O weight	3,700 kg	8,157 lb

Capacities

Max armament load	500 kg	1,102 lb
Max internal fuel load	933 liters	246 gal

Performance (ISA +20C; T-O weight of 3,700 kg at 2,000 m)

Dash speed	315 km/h	170 kt
Max speed at S/L	259 km/h	140 kt
Hover ceiling OGE	2,390 m	7,850 ft
Hover ceiling IGE	3,290 m	10,800 ft
Max rate of climb	637 mpm	2,090 fpm
Endurance (anti-tank role)	2.5 hr	2.5 hr
Max endurance	3.0 hr	3.0 hr

Propulsion

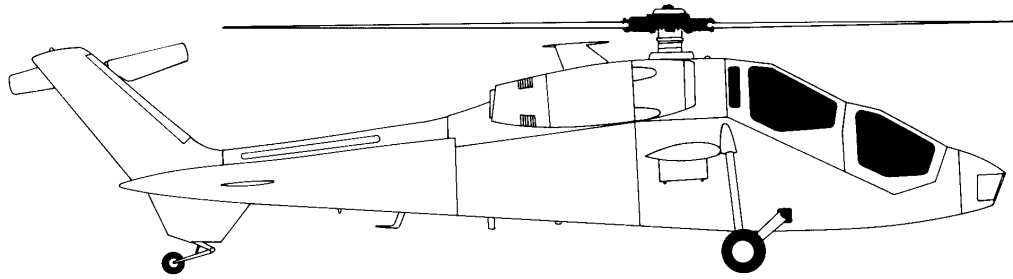
A129	(2)	Rolls-Royce plc GEM 2 Mk 1004D two-spool axial-centrifugal-flow turboshaft engines rated 615 kW (825 shp) each, max continuous. Engine partially license-built in Italy by Industrie Aeronautiche e Meccaniche Rinaldo Piaggio SpA.
A129 International	(2)	LHTEC T800-LHT-800 centrifugal-flow free turbine turboshaft engines rated 939 kW (1,260 shp) each.

Armament

Maximum load on outboard stations, 200 kilograms (441 lb); maximum weight on inboard stations, 300 kilograms (661 lb). Armament options include eight TOW missiles, two seven-tube 6.985 centimeter (2.75 in) rockets, two 12.7mm machine gun pods, six HELLFIRE missiles, and two 19-tube 6.985 centimeter rockets. The Emerson Electric HeliTOW system incorporating the Kollmorgen FLIR was flight tested in 1989 with enormous success. A Lucas or Breda turret-mounted gun system optimized for air-to-air operations may be fitted at a later date.

Seating

Crew of two, tandem-seating arrangement.



AGUSTA A129

Source: Forecast International

Variants/Upgrades

A129. First of the family, this attack helicopter has been ordered by the Italian Army.

A129 International. Agusta flew a T800-powered demonstrator in 1988 and evaluated this model during the 1990 military buildup in the Persian Gulf. Aside from its uprated powerplants, the International version features a five-bladed main rotor system. This variant was proposed for a Dutch Army anti-tank helicopter requirement, but that service instead selected the McDonnell Douglas AH-64 Apache in 1995. Optional equipment includes a laser designator for HELLFIRE missiles, an autotracking sight, and a mast-mounted sight for the scout role.

Multirole. The final 15 Mangustas for the Italian Army were delivered in a partial International configuration; they were not fitted with the Army's T800 engines or updated avionics.

Max gross weight of this model is 10,140 pounds, an 1,100 pound increase over the current model's take-off weight, and max speed rises from 135 knots to 150 knots.

The Italian Army's initial 45 A129s are being upgraded to this standard from 2002 to 2007 in a \$205 million upgrade project.

Program Review

Background. The Agusta A129 Mangusta (Mongoose) dates back to 1972, when the Italian Army issued a requirement for a light anti-tank helicopter. After evaluating several proposed modifications/upgrades to existing types, in 1977 the service chose to proceed with the design and development of a fully mission-dedicated aircraft, one that would be capable of defeating Soviet-type armor in a classic NATO/Warsaw Pact confrontation.

The A129 primary mission is specialized attack against armored vehicles/targets with anti-tank or area suppression weapons. The rotorcraft has full night/bad weather combat capability. It is also suitable for an advanced scouting role. It is designed for maximum survivability, including the ability to survive a single 12.7mm high explosive hit to the main rotor. The airframe is designed to withstand an 11.1 m/second vertical descent.

Avionics/Equipment. The A129 possesses full day/night operational capability. Included are a Honeywell pilot's night vision system (PNVS) and an integrated helmet and display sighting system (IHADSS), both

coupled with a Honeywell-supplied helicopter IR nav system (HIRNS). All main functions of the aircraft are handled by a fully integrated Harris Corp digital multiplex system, or IMS, which controls and monitors communication, navigation, flight director, autopilot, fly-by-wire, transmission and engine condition monitoring, fuel/hydraulic/electrical systems monitoring, aircraft performance, caution and warning systems, and fire control. Also included are GEC Avionics Doppler radar and a Kratos COINS. Emerson's HeliTOW was flown and tested against armored targets in mid-1989, with 19 of 20 missiles hitting their respective targets. The Emerson system employs a Kollmorgen forward-looking infrared (FLIR) system for target acquisition and designation.

Production. Agusta began work on an initial 15-unit production batch in 1986 and began delivering them to the Italian Army in October 1990. Approval was granted for an Italian Army buy of 66 aircraft, including six pre-production aircraft.

A129 International. In mid-1988, Agusta announced that the A129 demonstrator proposed for the multi-

national LAH requirement would be fitted with a pair of T800 turboshafts provided by Garrett and Allison. These companies formed Light Helicopter Turbine Engine Co (LHTEC) to compete their T800 candidate against a similar engine proposed by a Pratt & Whitney/ Textron team. LHTEC ultimately won the U.S. Army engine competition to power the Boeing/Sikorsky RAH-66 LH. The International variant was one of

several designs proposed for a Dutch Army requirement, but was unsuccessful.

Agusta also proposed this aircraft for a large, 145-unit Turkish attack helo requirement (won by the Bell AH-1Z) and for a 25-30-unit Australian Army requirement known as Project Air 87. The latter competition was won by the Eurocopter Tiger.

Funding

Annual Italian funding is not available.

Recent Contracts

Not available.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1978	Preliminary design begins
	1978	Italian Army orders initial prototypes
Dec	1980	GEM engine chosen over Lycoming LTS 101
Sep	1983	First A129 flight
Mid	1984	Flight testing completed
Mid	1985	Westland/Agusta MoU signed
	1986	Low-level production commenced
Oct	1988	First flight of T800-powered A129
Oct	1990	Initial production deliveries
	1995	A129 International announced
Late	2003	Final Italian Army deliveries
	2007	Italian A129 upgrade to multirole standard to be completed

Worldwide Distribution

Italian Army 60

Forecast Rationale

The Italian Army received the final 15 new production A129s in 2003. Once Agusta has upgraded the first 45 Mangustas to a new EES (armed recon/escort helicopter) configuration, these 15 units will be similarly modified in a project to be completed in 2007.

The further developed A129 International, powered by T800 engines, has competed unsuccessfully in a number

of international attack helicopter contests but has come up against some very stiff competition, and, frankly, its window of opportunity appears to have closed.

Consequently, we are not forecasting further production of any of the A129 variants. The on-going EES upgrades will be modifications of inventory aircraft.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Aircraft	(Engine)	<u>High Confidence Level</u>				<u>Good Confidence Level</u>				<u>Speculative</u>				Total 04-13
		thru 03	04	05	06	07	08	09	10	11	12	13		
AGUSTAWESTLAND A129	RR 1004	65	0	0	0	0	0	0	0	0	0	0	0	0
Total Production		65	0	0	0	0	0	0	0	0	0	0	0	0