TIGER ATTACK HELICOPTER, GERMANY

THE TIGER HELICOPTER.

The Tiger helicopter is being developed for France and Germany in three configurations, HAC (French) and UHT (German) anti-tank helicopters and a combat support helicopter designated HAP for the French Army. Tiger is being built by Eurocopter, a subsidiary of the EADS (European Aeronautics Defence and Space) company formed by DaimlerChrysler Aerospace of Germany, Aerospatiale Matra of France and CASA of Spain. First flight of the aircraft was in 1991. Serial production began in March 2002 and the first flight of the production Tiger HAP for France took place in March 2003. France has ordered 80 aircraft (70 HAP combat support and ten HAC antitank). The first HAP version was delivered in March 2005. Germany has ordered 80 combat support aircraft and the first UHT Tiger for Germany was delivered in April 2005. Total procurement is planned to be 120 for France and 120 for Germany.

In December 2001, Eurocopter, with the Tiger ARH (armed reconnaissance), was awarded the contract for the Australian Army’s Air 87 requirement for 22 helicopters. The Tiger ARH is a modified version of the Tiger HAP with upgraded MTR390 engines, a laser designator incorporated in the Strix sight for the firing of Hellfire II air-to-ground missiles and M299 "smart" launchers. The first Tiger ARH took its maiden flight in February 2004 and deliveries began in December 2004. It is scheduled to enter service in 2005, with final deliveries in 2008. Certification of the Hellfire II missile is underway and should be completed in September 2005. Australian Aerospace (a subsidiary of Eurocopter) has set up a local production facility for assembly of the helicopters and the manufacture of parts for the entire programme. ADI Ltd is a major subcontractor, responsible for customising the mission and communications systems.

In September 2003, Spain selected a version of the Tiger HAP combat support helicopter, to be called the HAD, which will be armed with the Trigat LR and Mistral missile systems. 24 helicopters will be ordered which will also have an uprated Enhanced MTR390E engine and a heavier payload. Six helicopters in the HAP version will be delivered to Spain in 2006 and 2007, which will later be converted to HAD. 18 HAP versions will be delivered between 2010 and 2014.

France is to acquire 40 of its 80 helicopters in the HAD version and Spain and France signed the development contract for the helicopter in December 2004.

TIGER ANTI-TANK HELICOPTER

Both Tiger HAC and UHT anti-tank helicopters have an Osiris mast-mounted sight from SFIM, with infrared charge coupled device (IRCCD) camera and laser rangefinder. There is a nose-mounted forward looking infra-red (FLIR) with a 40° x 30° field of view. Tiger can be equipped with four MBDA (formerly Matra BAe Dynamics) MISTRAL or Raytheon Stinger air-to-air missiles. The air-to-air missile control functions are on the flight control grip. Target acquisition is achieved by using the joystick to steer the sight manually or with automatic tracking. The FIM-92 Stinger missile, also produced under license by EADS (formerly LFK), is equipped with a 1kg warhead and range up to 5km. The Mistral missile has a 3kg warhead and range of 6km.

The Tiger is fitted with EADS/LFK ATA firing posts for the launch of Euromissile HOT 3 and Euromissile TRIGAT LR anti-tank missiles, fired by the gunner. Only one weapon is activated at a time. The TRIGAT LR missile has a range of 500m to 5,000m and can be applied in direct attack or terminal dive attack modes. The HOT 3 missile has a range of up to 4,000m.

The Tiger ARH for Australia is being fitted with the M299 launcher for Hellfire II missiles and will also be armed with 70mm rockets.

COMBAT SUPPORT TIGER

In its combat support role the Tiger uses a gun for short-range engagements, 68mm rockets at medium and long range and Mistral missiles to engage airborne threats. The helicopter is equipped with a turreted 30mm gun together with: either four Mistral missiles, 44 rockets plus four Mistral missiles, or 68 rockets. Only one weapon can be activated at a time. The combat support Tiger helicopter for the French Army (Tigre HAP) is equipped with a 30mm AM-30781 automatic cannon from Giat. Rate of fire is 750 rounds per minute. Tigre HAP also carries four Mistral missiles and two pods each carrying 22 SNEB 68mm rockets.

The Combat Support Tiger has a SFIM Strix roof-mounted sight, with a gyro-stabilised platform, infrared camera, charge coupled device television camera (CCD TV), laser rangefinder and direct optical sight.

DESIGN

In order to minimise the weight, approximately 80% of the airframe has been constructed of composite materials. The frames and beams have been fabricated from Kevlar and carbon laminates. Panels are composed of Nomex honeycomb material with carbon and Kevlar skins. The helicopter blades are of fibre-composite construction. Radar reflective structures and surfaces have been minimised.

COCKPIT

Each cockpit is equipped with two multi-function colour displays supplied by Thales Avionique and VDO Luftfahrtgerate Werk GmbH, which display imagery from the gunner's sight, the FLIR and video image from the Dornier/VDO Eurogrid digital map generator.

The French Tigre helicopter has a TopOwl helmet-mounted sight for both crew stations and a head up display for the pilot, all supplied by Thales Avionique. The German Tiger crew is equipped with BAE Systems Integrated Day and Night Helmets. Australian Tigers have the Helmet-Mounted Sight Display (HMSD) from ADI.

Each crew station is equipped with a Control and Display Unit (CDU). Navigation, communications and system status are controlled via the CDU. The CDU includes a Data Insertion Device (DID), which is a removable memory pack preprogrammed with mission data at a ground station.

COUNTERMEASURES

EADS Defence Electronics is providing the EWS electronic warfare suite for the Tiger, which includes a radar warning receiver, laser warner, MILDS missile launch detector developed by EADS DE, central processing unit from Thales and SAPHIR-M chaff / flare dispenser from MBDA. This system is also fitted in the NH 90 helicopter. Indra is providing the electronic warfare suite for the Spanish Tigers.

NAVIGATION

The navigation system contains two Thales Avionique three-axis ring laser gyro units, two magnetometers, two air data computers, BAE Systems Canada CMA 2012 four-beam Doppler radar, radio altimeter, global positioning system and a suite of low air speed sensors.

ENGINES

The Tiger is powered by two MTU/Turbomeca/Rolls-Royce MTR390 turboshaft engines rated at 960kW (1,285shp). Self-sealing crashworthy fuel tanks have explosion suppression and non-return valves

SPECIFICATIONS - TIGER ATTACK HELICOPTER, GERMANY

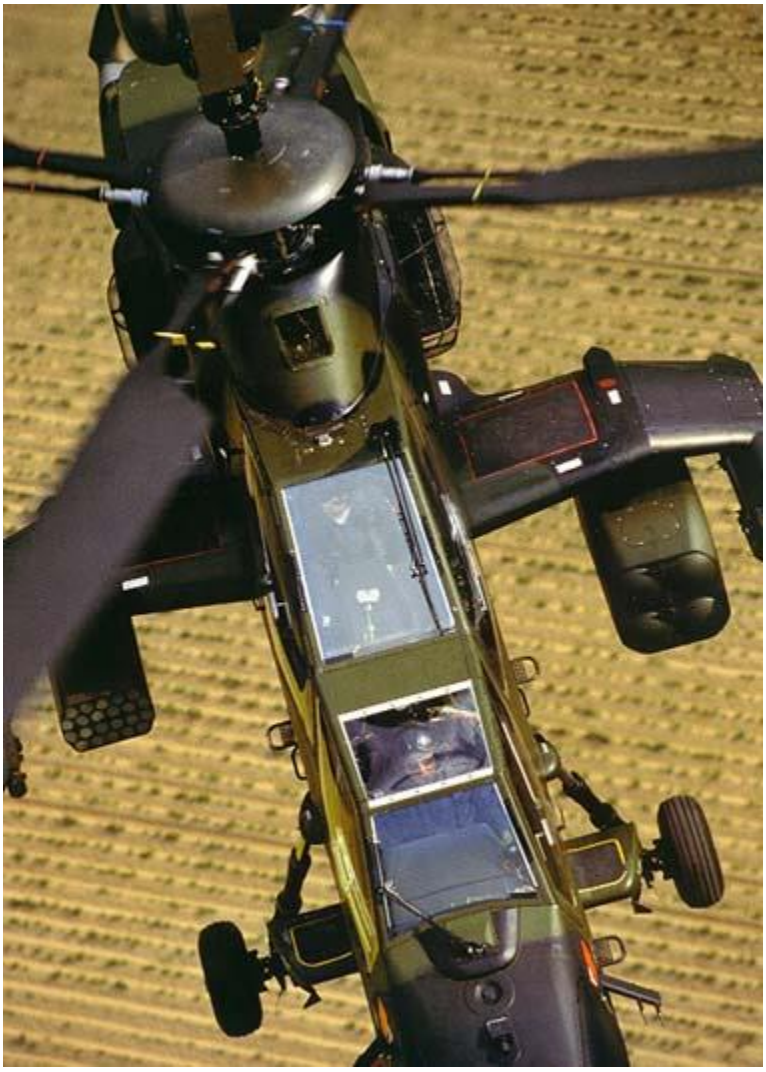
design mission weight	5400 kilograms
alternate gross weight	6000 kilograms
Length	14 metres
Height	3.81 metres
wing span	13 metres
hover out of ground effect (OGE)	3200 metres, anti-tank version
	3500 metres, combat support version
vertical rate of climb	5.2 metres per sec, anti-tank version
	6.4 metres per sec, combat support version
maximum rate of climb	10.7 metres per sec, anti-tank version

	11.5 metres per sec, combat support version
flight speed, armed	145 knots, anti-tank version
	155 knots, combat support version
cruise speed	124 knots
design limit speed	161 knots, anti-tank version
	174 knots, combat support version
maximum range, internal fuel	800 km
mission endurance	2 hours 50 minutes
maximum endurance, internal fuel	3 hours 25 minutes
Agility	40 degree angle of yaw after first second
trigat missile range	500 metres to 5 kilometres
maximum air to air missile range	> 5 kilometres maximum autonomous
target identification and engagement	5 kilometres
maximum internal fuel capacity	1020 kilograms
maximum internal plus external fuel capacity	1575 kilograms

EADS Defence Electronics is supplying the EWS electronic warfare suite for the Tiger.

Tiger Helicopter missions will be managed via Eurogrid, a digital map system

Mistral (left) and Stinger (right) air-to-air missiles.



Tiger Helicopter on exercise.

The Tiger helicopter is being developed in two configurations, an antitank helicopter and a combat support helicopter

Prototype PT1 in escort/combat support version "Gerfaut" for the French Army