

IAI Heron

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The **IAI Heron (Machatz-1)** is a medium-altitude long-endurance unmanned aerial vehicle (UAV) developed by the Malat (UAV) division of Israel Aerospace Industries. It is capable of Medium Altitude Long Endurance (MALE) operations of up to 52 hours' duration at up to 35,000 feet. It has demonstrated 52 hours of continuous flight, but the effective operational maximal flight duration is less, due to payload and flight profile. There is a new version, Heron TP, also known as IAI Eitan.

On 11 September 2005, it was announced that the Israel Defense Forces purchased US\$50 million worth of Heron systems.^[2]

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Design and development

Heron navigates using an internal GPS receiver, and either a pre-programmed flight profile (in which case the system is fully autonomous from takeoff to landing), manual override from a ground control station, or a combination of both. It can autonomously return to base and land in case of lost communication with the ground station. The system has fully automatic launch and recovery (ALR) and all-weather capabilities.

Heron can carry an array of sensors, including infra-red and visible-light surveillance, intelligence systems (COMINT and ELINT) and various radar systems, totaling up to 250 kg (550 lb). Heron is also capable of target acquisition and artillery adjustment.

The payload sensors communicate with the ground control station in real-time, using either direct line of sight data link, or via an airborne/satellite relay. Like the navigation system, the payload can also be used in either a fully pre-programmed autonomous mode, or manual real-time remote operation, or a combination of both.

Heron



| | |
|------------------------|---|
| Role | Unmanned aerial vehicle |
| National origin | Israel |
| Manufacturer | Israel Aerospace Industries |
| First flight | 1994 |
| Primary users | Israeli Defence Force Indian Air Force Indian Navy German Air Force Brazilian Federal Police Turkish Air Force |
| Unit cost | \$10M ^[1] |
| Variants | EADS Harfang IAI Eitan |



IAI Heron on display at the Paris Air Show 2009

Operational history

The Heron saw significant use during Operation Cast Lead in Gaza of 2008–2009. During the deployment, each brigade combat team was assigned a UAV squadron for close support. This was the first Israeli operation in which UAVs, helicopters, and fighter jets were allocated to ground forces directly without IAF central command authorizing sorties. Air-support controller teams operated alongside brigade commanders at the front emphasizing the brigade commander's utilization of direct air assets.^[3] A high degree of situational awareness was achieved by maintaining at least a dozen UAVs in flight over Gaza at all times. Aerial surveillance was provided by Heron and Hermes 450 UAVs and Apache attack helicopters. Along with coordination between the Air Force and ground troops, Israel ground forces were able to utilize cooperation with the Israel Security Agency by having operatives attached to the forward units. This inter-service coordination allowed for a higher level of tactical awareness and the ability to strike time-critical targets.^[4]

Other countries operating the Heron include Singapore, India and Turkey.^[5] France operates a derivative of Heron named **Eagle** or **Harfang**.^[6] In 2008, Canada announced a plan to lease a Heron for use in Afghanistan, starting in 2009.^[7] As of mid-2009, Australia is leasing two Herons as part of a multi-million dollar lease to operate the vehicles in Afghanistan.^[8]

Heron variants

- Turkey operates a special modified version of the Heron, which utilizes Turkish designed and manufactured electro-optical sub-systems. For Example, the Turkish Herons uses the ASELFLIR-300T Airborne Thermal Imaging and Targeting System designed and manufactured by ASELNAN of Turkey. The Turkish Herons have also stronger engines in order to compensate for the added payload created by the new ASELFLIR-300T. This is the same FLIR system what will be used by the AgustaWestland/TAI T-129 Attack helicopter^[9] and the TAI Anka MALE UAV. IAI staff maintain that the Turkish Heron's "with its enhanced performance, is better than all existing Heron UAVs operating worldwide".^[10] TUSAS(Turkish Aerospace Industries) provide maintenance and overhaul services for the Turkish Herons.^[11]
- France operates its own special version of the Heron, called *Harfang*.

Operators

 Azerbaijan

- Azerbaijani Air Forces - 5^[12]

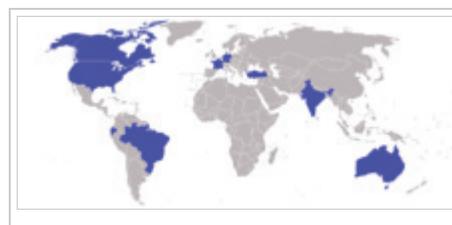
 Australia



IAI Heron on display at the Paris Air Show 2009



Controlling the UAV for experimental purposes at the Fallon Naval Air Station



- Royal Australian Air Force – 3^[13]

Brazil

- Brazilian Federal Police- 15^{[14][15]}

Canada

- Royal Canadian Air Force – Formerly operated 3;^[16] ceased operations July 2011

Ecuador

- Ecuadorian Navy – 2^[17]

France

- French Air Force – EADS Harfang

Germany

- German Air Force – 3 plus 2 ground stations on an initial one-year lease starting in 2010^{[18][19]}

India

- Indian Air Force – 50^{[20][21]}
- Indian Navy^[22]

Israel

- Israeli Defence Force – 1+^[23]

Singapore^{[24][25]}

- Republic of Singapore Air Force – 2

Turkey

- Turkish Air Force – 10

United States

- United States Navy – 2^[26]

Mexico

- Federal Police (Mexico) – 3^[citation needed]

Specifications^[27]

Data from {name of first source}

Operators of Heron UAV and its derivatives

General characteristics

- **Crew:** 2 on ground
- **Length:** 8.5 m (27 ft 10 in)
- **Wingspan:** 16.60 m (54 ft 5 in)
- **Height:** ()
- **Max. takeoff weight:** 1,150 kg (2,530 lb)
- **Powerplant:** 1 × Rotax 914, 86 kW (115 hp)

Performance

- **Maximum speed:** 207 km/h (113 knots, 130 mph)
- **Range:** 350 km (189 nm, 217 mi)
- **Service ceiling:** 10,000 m (32,800 ft)
- **Rate of climb:** 150 m/min (492 ft/min)
- **Wing loading:** 200 kg/m² (40.9 lb/ft²)
- **Endurance:** 52 hours^[28]
- **Payload:** 250 kg (550 lb)

See also

Related development

- IAI Eitan
- EADS Harfang

Aircraft of comparable role, configuration and era

- EADS Harfang
- MQ-1 Predator
- DRDO Rustom
- TAI Anka

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External links

- IAI Heron Official page (http://www.iai.co.il/18900-16382-en/BusinessAreas_UnmannedAirSystems_HeronFamily.aspx)
- IAI Heron Update (<http://www.defense-update.com/products/h/Heron-UAV.htm>)
- MALE UAV Applications (<http://www.defense-update.com/features/du-2-05/uav-4.htm>)
- UAV Sensor applications (<http://www.defense-update.com/features/du-2-05/feature-sensor.htm>)
- EO Sensors for UAVs (<http://www.defense-update.com/features/du-2-05/EO-sensors.htm>)
- SAR sensors for UAVs (<http://www.defense-update.com/features/du-2-05/SAR-list.htm>)
- Heron UAV News (<http://www.defencetalk.com/tag/heron/>) at DefenceTalk

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