

Airbus A330 MRTT

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The **Airbus A330 Multi Role Tanker Transport** (MRTT) is an aerial refuelling tanker aircraft based on the civilian Airbus A330. The A330 MRTT has been ordered by the Royal Australian Air Force (RAAF), Royal Air Force (RAF), United Arab Emirates Air Force, Royal Saudi Air Force and Republic of Singapore Air Force. The EADS/Northrop Grumman KC-45 was a version of the A330 MRTT proposed for the United States Air Force.

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A330 MRTT / KC-30A Voyager



A Royal Air Force Voyager during the 2011 Royal International Air Tattoo at RAF Fairford

Role	Aerial refuelling and transport
Manufacturer	Airbus Military
First flight	15 June 2007
Introduction	1 June 2011
Status	In service
Primary users	Royal Air Force Royal Saudi Air Force Royal Australian Air Force United Arab Emirates Air Force
Produced	2007–present
Number built	27 as of April 2016 ^[1]
Developed from	Airbus A330
Variants	EADS/Northrop Grumman KC-45

Design and development

The Airbus A330 MRTT is a military derivative of the A330-200 airliner. It is designed as a dual-role air-to-air refuelling and transport aircraft. For air-to-air refuelling missions the A330 MRTT can be equipped with a combination of any of the following systems:

- Airbus Military Aerial Refuelling Boom System (ARBS) for receptacle-equipped receiver aircraft.
- Cobham 905E under-wing refuelling pods for probe-equipped receiver aircraft.

- Cobham 805E Fuselage Refuelling Unit (FRU) for probe-equipped receiver aircraft
- Universal Aerial Refueling Receptacle Slipway Installation (UARRSI) for self in-flight refuelling.

The A330 MRTT has a maximum fuel capacity of 111,000 kg (245,000 lb) without the use of additional fuel tanks, which leaves space for the carriage of 45,000 kg (99,000 lb) of additional cargo. The A330 MRTT's wing has common structure with the four-engine A340-200/-300 with reinforced mounting locations and provision for fuel piping for the A340's outboard engines. The A330 MRTT's wing therefore requires little modification for use of these hardpoints for the wing refuelling pods.^[2]



Starboard refuelling pod on a Royal Air Force Voyager

The A330 MRTT cabin can be modified to carry up to 380 passengers in a single class configuration, allowing a complete range of configurations from maximised troop transport to complex customisation suitable for VIP and guest missions. Available configurations include 300 passengers in a single class and 266 passengers in two classes.^[3] The A330 MRTT can also be configured to perform Medical Evacuation (Medevac) missions; up to 130 standard stretchers can be carried. The main deck cargo configuration allows carriage of standard commercial containers and pallets, military, ISO and NATO pallets (including seats) and containers, and military equipment and other large items which are loaded through a cargo door. Like the A330-200, the A330 MRTT includes two lower deck cargo compartments (forward and aft) and a bulk area capability. The cargo hold has been modified to be able to transport up to 8 military pallets in addition to civilian Unit Load Device (ULD).



RAAF KC-30A refuelling control station

An optional crew rest compartment (CRC), located in the forward cabin can be installed for a spare crew to increase time available for a mission. The passenger cabin of the A330 MRTT can be provided with a set of removable airstairs to enable embarkation and disembarkation when airbridges or ground support equipment are not available.

Standard commercial A330-200s are delivered from Airbus Final Assembly Line in Toulouse (France) to Airbus Military Conversion Centre in Getafe, Spain for fitting of refuelling systems and military avionics. The tanker was certified by Spanish authorities in October 2010.^[4] It was first delivered to Australia on 1 June 2011.^[5] Qantas Defence Services converted the remaining four A330-200s at its Brisbane Airport facility on behalf of EADS for the Royal Australian Air Force.^{[6][7]}

Operational history

The A330 MRTT has been ordered by Australia, United Kingdom, United Arab Emirates, Saudi Arabia and Singapore. Australia was the launch customer for the A330 MRTT.

Australia

Designated as KC-30A, the Royal Australian Air Force (RAAF) A330 MRTTs are equipped with both an Aerial Refuelling Boom System (ARBS) and two Cobham 905E under-wing refuelling pods. The aircraft are powered by two General Electric CF6-80E engines.^[8] Australia initially arranged to procure four aircraft with an option to obtain a fifth; this option for a fifth aircraft was exercised to allow for two simultaneous deployments of two aircraft, the fifth being for contingency coverage. Australian KC-30A are operated by No. 33 Squadron RAAF

based at RAAF Base Amberley.^[9] Australia has designated the aircraft *KC-30A* Multi-Role Tanker Transport.^[10] Australia's aircraft are configured for 270 passengers plus cargo.^[11]

In 2005, the RAAF expected that deliveries would begin in late 2008 and be completed in 2010.^[12] Deliveries fell two years behind schedule, in part because of delays in the boom's development.^[13] On 30 May 2011, KC-30A A39-003, the third converted A330, arrived at RAAF Base Amberley and was formally handed over on 1 June 2011.^[14] The second A330 conversion, A39-002 was ferried to RAAF Amberley on 18 June 2011 and handed over to the RAAF on 22 June 2011.^[15] In June 2010, Qantas announced receipt of the fourth aircraft at its Brisbane facilities for an anticipated 10-month conversion.^[16] On 3 December 2012, the final fifth KC-30A was delivered to the RAAF.^[7]

In July 2013, it was reported there were ongoing delays with preparing the KC-30A for full entry into service due to problems with the refuelling systems, including the hose-and-drogue system passing too much fuel.^[17]

In August 2013, the KC-30A made its debut as a VIP transport, ferrying Prime Minister Rudd and an entourage to Al Minhad Air Base, United Arab Emirates.^[18] In August 2014, Defence Minister David Johnston announced the intention to purchase two additional KC-30As with one in VIP configuration for transport of the Prime Minister.^[19]

On 22 September 2014, the RAAF deployed an Air Task Group to a staging base at Al Minhad Air Base in the United Arab Emirates, as part of a coalition to combat Islamic State forces in Iraq. The aircraft included F/A-18F Super Hornets, a KC-30A tanker transport and an E-7A Wedgetail airborne early warning and control aircraft. The KC-30 started operations just days after arriving in the UAE by aerial refueling US and other coalition aircraft over Iraq. On 6 October 2014, the RAAF started their first combat missions over Iraq with two Super Hornets supported by the KC-30 tanker.^{[20][21]}

In July 2015, Defence Minister Kevin Andrews announced the order of two additional KC-30s, to be delivered in 2018. The new tankers will be based on A330-200 airliners that were previously operated by Qantas on lease from CIT Aerospace, and will be the first KC-30As to be converted from airframes that have already seen civilian service.^{[22][23][24]}

In the 2016 Defence White Paper, the Australian Government stated that it was exploring options to increase the size of the fleet to nine in order to support new RAAF aircraft such as the P-8A Poseidon.^[25]

United Kingdom

In January 2004 the UK Ministry of Defence announced that a variant of the A330 MRTT had been selected to provide tanking service for the RAF for the next 30 years under the Future Strategic Tanker Aircraft (FSTA) programme, replacing the RAF's existing L-1011 and VC10 tankers. The Ministry of Defence then began negotiations with the AirTanker consortium.



RAAF KC-30A tail number A39-004, at Qantas Defence Services' conversion facility in Brisbane, 6 November 2011



KC-30A refueling demonstration with F/A-18A Hornets

On 27 March 2008 the UK Ministry of Defence signed a deal to lease 14 aircraft under a private finance initiative arrangement from EADS-led consortium AirTanker, with the first aircraft to enter service in 2011.^[26] There are two versions, designated **Voyager KC2** and **Voyager KC3**,^{[27][28]} the former will be fitted with two Cobham 905E under-wing refuelling pods, the latter with a Cobham 805E Fuselage Refuelling Unit (FRU) in addition to the under-wing pods. None of the RAF aircraft are fitted with the Aerial Refuelling Boom System (ARBS). Both versions of Voyager are powered by a pair of Rolls-Royce Trent 772B-60 engines.^[29]



Royal Air Force Airbus Voyager at the Airbus factory in Getafe, Spain

As of May 2014 nine aircraft have been delivered, completing the "core fleet" of RAF aircraft.^[30] By August 2014, ten have been delivered with one for civilian purposes.^[31] The remaining deliveries are to be a "surge capability", available to the RAF when needed, but otherwise available to Airtanker for tasks such as "release to the civil market, less its military equipment or to partner nations in a military capacity with the MoD's agreement".^[30]

In November 2015 it was announced that an RAF A330 will be refitted to carry government ministers or members of the Royal Family for official visits. The refit would cost £10m but would save about £775,000 annually compared to the current practice of chartering flights. This aircraft will be fitted with 158 seats.^[32]

United Arab Emirates

In 2007, the United Arab Emirates announced it had signed a memorandum of understanding with Airbus to purchase three A330 MRTT.^[33] EADS, Airbus's parent company, announced the signing of a contract with UAE in February 2008.^[34]

The UAE aircraft will be equipped with both an ARBS and two Cobham 905E under-wing refuelling pods. The ARBS units installed on these tankers include a secondary boom hoist developed for the UAE.^[35] This system permits the boom to be retracted, even in the event of a primary boom retraction system failure.^[35] The United Arab Emirates Air Force selected the Rolls-Royce Trent 700 for its tankers.

The first A330 MRTT for the UAE was delivered on 6 February 2013.^[36] The remaining two had been delivered by 6 August 2013.^[37]

Saudi Arabia

Saudi Arabia finalised an agreement to purchase three A330 MRTT equipped with both an Aerial Refuelling Boom System (ARBS) and two Cobham 905E under-wing refuelling pods, on 3 January 2008.^{[38][39]} In July 2009 it was announced that Saudi Arabia ordered three additional A330 MRTT tankers.^[40] RSAF chose the General Electric CF6-80 to power its A330 MRTTs.

As of 31 August 2013 three aircraft have been delivered.^[41] On 25 February 2013 the first A330 MRTT has been placed in operational use. Three more A330 MRTTs have been ordered in a follow-on contract. Delivery is expected in late 2014.^[42]

Singapore

In February 2012, Singapore also expressed interest in the A330 MRTT to replace its four KC-135s.^[43] The Republic of Singapore Air Force selected the A330-200 MRTT in February 2014 over the Boeing KC-46.^[44] Signature of the contract for six aircraft was announced by Airbus on 7 February 2014. These aircraft will be fitted with Trent 772B engines and be delivered from 2018.^[45] Singapore's aircraft will be configured for 266 passengers plus cargo.^[46]

South Korea

On 30 June 2015, South Korea selected the A330 MRTT aerial refueling aircraft for procurement. South Korea is to order four aircraft with deliveries planned to be completed in 2019.^[47]

France

In November 2011, France expressed interest in acquiring 14 A330 MRTT aircraft to replace its KC-135 tankers, A340 and A310 transports.^[48] In December 2011, France decided in principle to replace its KC-135 tankers, A340 and A310 transports with A330 MRTTs, and in October 2012 announced that they would order 14 in 2013.^[49] In 2013, Livre Blanc cut the requirement to 12 aircraft. In May 2013, Airbus made an offer for 12 to 14 A330 MRTTs to France.^[50]

On 20 February 2014, French Chief of Staff identified that France would acquire 12 A330 MRTTs. These will consist of two batches, initially the standard configuration with a boom and wing refuelling pods and later with a cargo door and SATCOM.^[51] On 20 November 2014, French Air Force Minister announced an agreement to order 12 refuelling aircraft.^[52]

On 15 December 2015, France has ordered eight A330 MRTTs, from an eventual requirement for 12 of the type worth a total €3 billion (\$3.3 billion). The aircraft constitute the second tranche of the multi-year contract for 12 A330 MRTTs signed by the French Ministry of Defence in November 2014 and bring the total firm order to nine. The initial aircraft is expected to be delivered to the French air force in 2018, with further handovers of one or two per year until 2025.^[53]

Possible operators

India

The Airbus 330 MRTT and Il-78 were competing for a global tender floated in 2006 by the Indian defence ministry for six refuellers to extend the operating radius of Indian fighter jets. In May 2009, India finally chose the Airbus A330 MRTT over the Il-78.^[54] However, in January 2010, the government cancelled the order citing high cost as the reason,^[55] reportedly against the wishes of the Air Force.^[56]

After rebidding, India selected Airbus as its "preferred vendor" in November 2012.^{[57][58]} In January 2013, it was reported that India had again selected Airbus' A330MRTT as "preferred bid".^{[59][60]}

In February 2015 Defenseworld.net quoted Airbus officials that negotiations with Indian Air Force has been completed and the contract will be signed after Aero India 2015.

Qatar

On 27 March 2014 Airbus announced that the Qatar Emiri Air Force intends to purchase two A330 MRTTs.^[61]

Spain

Spain's Ministry of Defence stated that it is to acquire two A330 MRTT in 2016 to replace its ageing Boeing 707 tankers.^[62] In 2014, Spain's Secretary of State for Defence, stated that the Ministry of Defence began negotiations with Airbus Defence and Security about swapping their excess order for 13 Airbus A400Ms for an undisclosed number of Airbus A330 MRTT aircraft.^[63] Airbus Defence and Security commercial director said that although being a difficult issue, the company will cooperate with Spain in order to find possible solutions to reach an agreement.^[64]

Belgium

According to the 2015 new defence plan, the Belgian Ministry of Defence intends to buy three A330 MRTT's. The Belgian government is investigating the €840 million plan of minister Steven Vandeput as well as the option of equipping the ordered Belgian A400M fleet of seven planes with under-wing pods. A combined Belgian A330 MRTT and A400M fleet would cost up to €1 billion.^{[65][66]}

Netherlands

In 2013, the Netherlands expressed interest in the A330 MRTT to replace its two KDC-10s. Through the European Air Transport Command, a study was conducted to standardise and expand the European Air Refuelling capability, the Netherlands was lead nation for the study also involving Norway and Poland. In December 2014, it was announced that the Netherlands Air Force had selected the A330 MRTT to replace their KDC-10s in 2020. Negotiations for four aircraft were underway; they are proposed to be stationed at Eindhoven Airbase for use by the Netherlands, Poland and Norway.^[67]

Failed bids

Brazil

The A330-based tankers lost in a bid for the Brazilian Air Force *KC-X2 Program*. Instead IAI won the contract for two 767-300ER tanker conversions.^[68]

United States

The US Air Force (USAF) ran a procurement program to replace around 100 of their oldest KC-135E Stratotankers, i.e., initially excluding the more common updated KC-135R variant. EADS offered the A330 MRTT. The Boeing KC-767 was selected in 2002;^[69] however the USAF cancelled the KC-767 order upon the uncovering of illegal manipulation and corrupt practices during the competition.^{[70][71][72]}

In 2006, the USAF released a new request for proposal (RFP) for a tanker aircraft, which was updated in January 2007, to the KC-X RFP, one of three acquisition programs that are intended to replace the entire KC-135 fleet.^[73] The Airbus A330 MRTT was proposed again by EADS and Northrop Grumman as the *KC-30*. It again competed against the Boeing KC-767, which is a smaller aircraft (holds about 20 percent less fuel), less cargo, but is also cheaper. Northrop Grumman and EADS announced plans to assemble the aircraft at a new facility in Mobile, Alabama, which would also build A330 freighters.

The Air Force announced on 29 February 2008, that the KC-30 was chosen as the KC-135 replacement, and was designated KC-45A.^{[74][75]} On 18 June 2008, the United States Government Accountability Office upheld a protest by Boeing on the award of the contract to Northrop Grumman and EADS.^[76] This left the status of the KC-45A in doubt, requiring the Air Force to rebid the contract.^[77]

On 24 September 2009, the USAF began the first steps in the new round of bids, with a clearer set of criteria.^[78] On 8 March 2010, Northrop Grumman withdrew from the bidding process, asserting that the new criteria were skewed in favour of Boeing's offering.^{[79][80][81]} On 20 April 2010, EADS announced it was re-entering the competition on a stand-alone basis and intended to enter a bid with the KC-45, still intending for Mobile to be the final assembly site.^[82] On 24 February 2011, the USAF announced that the development contract had been awarded to Boeing. William J. Lynn III, the deputy defence secretary, said Boeing was "the clear winner" under a formula that considered the bid prices, how well each of the planes met war-fighting needs and what it would cost to operate them over 40 years.^[83]

Variants

A330 MRTT

An Airbus A330-200 converted by Airbus Military for air-refuelling duties.

KC-30A

Australian designation for an A330 MRTT with two under-wing refuelling pods and an Aerial Refuelling Boom System.

KC-45A

United States Air Force designation for an A330 MRTT with two under-wing refuelling pods and an Aerial Refuelling Boom System, order cancelled.

Voyager KC2

Royal Air Force designation for an A330 MRTT with two Cobham 905 under-wing pods, primarily used for refuelling fast jets.^[84]

Voyager KC3

Royal Air Force designation for an A330 MRTT with two under-wing pods and a "Cobham Fuselage Refuelling Unit (FRU)" for a centreline refuelling capability, primarily used for refuelling large aircraft.^[84]

Operators

A total of 49 aircraft on order with 27 delivered.^[85]

Australia

- Royal Australian Air Force – 5 in service "Launch Customer"^{[16][86]} with 2 more on order^[23]
 - 33 Squadron.

France

- French Air Force – 9 aircraft on order^[87]

Saudi Arabia

- Royal Saudi Air Force – 6 delivered^[85]

Singapore



The first A330-200 MRTT for the Royal Australian Air Force taking off for a test flight from Getafe Air Base in Spain

- Republic of Singapore Air Force – 6 on order^[85]

Republic of Korea

- Republic of Korea Air Force – 4 on order^[85]

United Arab Emirates

- United Arab Emirates Air Force – 3 delivered.^[88]
 - Air Refuelling Squadron

United Kingdom

- Royal Air Force – 13 delivered. A total of 14 aircraft on order (7 × KC2, 5 × KC3 + 2 fitted for KC3).
 - 10 Squadron^[89]
 - 101 Squadron

Accidents and incidents

On 19 January 2011, an air refuelling accident occurred between a boom equipped A330 MRTT and a Portuguese Air Force F-16 over the Atlantic Ocean off the coast of Portugal. Early reports indicate that the boom broke off at the aft end of the boom near the F-16's receptacle which caused the boom to recoil into the underside of the A330 MRTT. The boom then became uncontrollable and oscillated until it broke off the boom assembly at the pivot point.^[90] Both aircraft were damaged, but landed safely.^[91] The A330 MRTT involved was an Airbus test aircraft destined for the RAAF; the air arm issued a statement that the aircraft was operated by an Airbus crew with no Australian personnel on board. At the time of the incident, Airbus had not begun deliveries.^[90]

On 10 September 2012 at approximately 19:30 (CEST), an A330 MRTT's refuelling boom became detached in flight at an altitude of 27,000 ft in Spanish airspace.^{[35][92]} The boom separated cleanly at a mechanical joint and fell to the ground, while the aircraft landed safely in Getafe.^{[35][92]} There were no injuries caused by the malfunction.^{[35][92]} The incident was the result of a conflict between the backup boom hoist (fitted to the UAE-destined A330 MRTTs) and the primary boom retraction mechanism, and was attributable to the testing being conducted.^[35] Airbus later explained that the malfunction was not possible under ordinary operating conditions, and that procedures had been designed to avoid similar incidents in the future.^[35] Following the incident, INTA, the Spanish regulatory authority, issued precautionary restrictions to other users of boom-equipped A330s.^[35]

Specifications

Data from A330 MRTT,^[93] KC-30,^{[94][95]} Airbus A330^[96]

General characteristics

- **Crew:** 3: 2 pilots, 1 AAR operator
- **Capacity:** Various passenger configurations are available including 291 passengers (United Kingdom)^[97] and 8 military pallets + 1LD6 container + 1 LD3 container (lower deck cargo compartments)
- **Payload:** 45,000 kg (99,000 lb) non-fuel payload
- **Length:** 58.80 m (193 ft)
- **Wingspan:** 60.3 m (198 ft)
- **Height:** 17.4 m (57 ft)

- **Wing area:** 362 m² (3,900 ft²)
- **Empty weight:** 125,000 kg (275,600 lb)
- **Max takeoff weight:** 233,000 kg (514,000 lb)
- **Powerplant:** 2× Rolls-Royce Trent 772B or General Electric CF6-80E1A4 or Pratt & Whitney PW 4170 turbofans, 320 kN (72,000 lbf) 320 kN each
- **Fuel Capability:** 111,000 kg (245,000 lb) max, 65,000 kg (143,000 lb) at 1,000 nmi (1852 km) with 2 hours on station

Performance

- **Maximum speed:** 880 km/h (475 knots, 547 mph)
- **Cruise speed:** 860 km/h (464 knots, 534 mph)
- **Combat radius:** 1,800 km (972 nmi) with 50 tonnes of fuel for 4 hours^[98]
- **Ferry range:** 14,800 km (8,000 nmi, 9,200 mi)
- **Service ceiling:** 13,000 m (42,700 ft)

See also

Related development

- Airbus A330
- Airbus A310 MRTT
- EADS/Northrop Grumman KC-45

Aircraft of comparable role, configuration and era

- Boeing KC-135 Stratotanker
- McDonnell Douglas KC-10 Extender
- Boeing KC-46
- Ilyushin Il-96-400TZ
- Ilyushin Il-78M

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External links

- Airbus Military A330 MRTT official site (<http://www.a330mrtt.com/>)
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- Rivals eye Boeing's US airforce deal, by Jorn Madslien, BBC News (<http://news.bbc.co.uk/2/hi/business/6227700.stm>)
- RAAF: New tankers to take on many roles (<http://www.defence.gov.au/news/raafnews/EDITIONS/4702/topstories/story12.htm>)



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