September 2022

Multi Role Tanker Transport Capability (MRTT-C)

Letter of Intent[1] signed	Memorandum of Understanding[2] signed	1st delivery	Initial Operational Capability	Final delivery

Participants

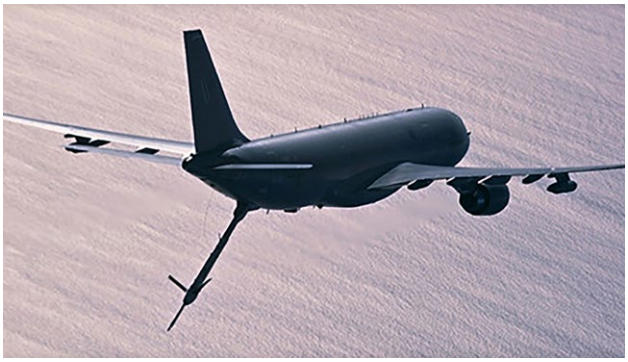
What is MRTT?

TThe Multi Role Tanker Transport, an Airbus A330 based aircraft, is used by NATO nations to provide air-to-air refuelling (AAR). The MRTT Capability (MRTT-C) is a High Visibility Project[3] establishing a multinationally owned and operated fleet of MRTT aircraft. Beyond the AAR core mission, the MRTT aircraft can also transport personnel and cargo, as well as conduct medical evacuation missions through a special configuration. The latter has proven particularly valuable during the COVID-19 pandemic.

Multinational effort

Following operations in Libya and extensive analyses by the European Defence Agency (EDA), it was agreed at the NATO Summit in 2012 that the EDA would lead an initiative to address the shortfall in AAR capacity in Europe.

The initiative's aim is to optimise the use of existing and planned AAR assets, and develop a European Multinational MRTT Fleet (MMF). In 2016, Luxembourg and the Netherlands formally launched the project. Following the project's launch, Germany and Norway joined in 2017, followed by Belgium in 2018, and the Czech Republic in 2019. The MRTT-C fleet currently consists of nine Airbus A330 MRTT aircraft, with seven aircraft already delivered in mid-202 and final delivery scheduled for 2024. There is an option for adding two additional aircraft to the fleet.



Airbus A330 Multi Role Tanker Transport aircraft.

This multinational fleet arrangement is a cost-effective and flexible solution, reducing the European shortage in AAR capabilities and the reliance on U.S. capabilities. The aircraft in the MMF are owned by NATO, and managed by the NATO Support and Procurement Agency, with the support of the Organization for Joint Armament Cooperation. Overall, the project therefore constitutes a practical example of effective cooperation between NATO and the European Union in delivering critical capabilities.

Nov. 2012
NSPA[4] and OCCAR[5] sign agreement for acquisition phase.

Aug. 2016
Memorandum of Understanding signed by Luxembourg and the Netherlands. Contract with Airbus signed for 2 firm aircraft orders plus 5 options.

Jun. 2017
Germany and Norway join. 5 options are turned into firm orders, expanding MRTT-C to 7 aircraft. New option for 4 aircraft is being added.

Feb. 2018
Belgium joins. 1 option is turned into a firm order, expanding MRTT-C to 8 aircraft and leaving 3 aircraft options.

Oct. 2019
Czech Republic joins.

Jun. 2020
First delivery of Airbus A330 MRTT.

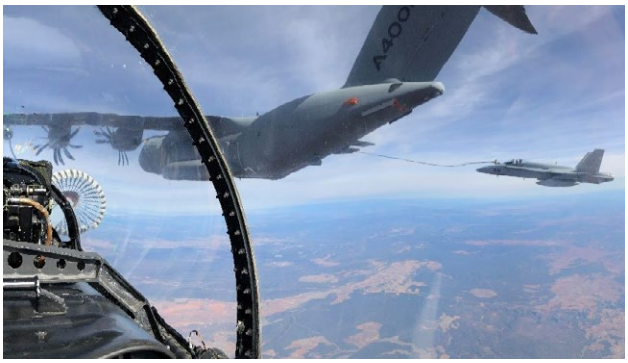
Sep. 2020
1 option is turned into a firm order, expanding MRTT-C to 9 aircraft and leaving 2 aircraft options

2024
Final delivery.

1 Initial non-binding document outlining participants' will to explore the area in question further.
2 Legally binding document specifying details of cooperation.
3 Multinational initiative tailored to address key capability areas, usually launched at Defence Ministers' level.
4 NATO Support and Procurement Agency.
5 Organization for Joint Armament Cooperation.

Why is it important?

Air-to-air tankers are vital in supporting NATO operations that require long range air missions. For these missions, the goal is to limit the time aircraft spend on the ground. MRTT allows aircraft to be refuelled mid-flight, extending mission time significantly. It can be equipped with one or both refuelling standards, a probe-and-drogue system, and a boom. The set-up of these refuelling methods can be adapted to meet nations' requirements. NATO has a standardised valve system to ensure aircraft across the Alliance can be refuelled.

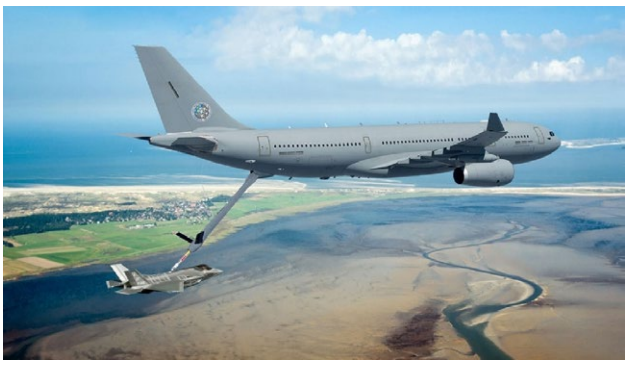


Execution of AAR through the probe-and-drogue system.

How does it work?

The probe-and-drogue system consists of fuel pods, located under the wings of the tanker, a retractable hose housed in the pods, and a centreline hose used for refuelling larger aircraft. The receiver must be equipped with a probe, usually located at the nose of the plane. When performing an AAR manoeuvre, the tanker extends the drogue-stabilized hose towards the receiver. Once the receiver inserts the probe into the tanker's drogue, the valves open and fuel starts to flow.

Tankers can be equipped with multipoint systems which allow for two aircraft to be refuelled simultaneously. Both helicopters and small aircraft can be easily equipped with a refuelling probe. The probe-and-drogue system also allows refuelling by non-dedicated tanker aircraft. A popular example exists for naval carrier operations, when one tactical fighter can refuel another tactical fighter, through the so called buddy-buddy refuelling. This refuelling process, however, requires more adjustments by the pilot and is susceptible to bad weather. Automated AAR (A3R) systems are being developed to address these issues, as well as to allow Unmanned Aerial Systems to conduct AAR.



Airbus A330 Multi Role Tanker Transport aircraft executing AAR through the boom system.

In the boom system, the tanker is equipped with a flying boom, a rigid telescopic tube which is attached to the rear of the aircraft. The receiver is equipped with a refuelling receptacle usually located behind the cockpit. This is the simplest and safest position for the boom to be attached, and the fuel to be routed into the fuel tanks. Once the two parts properly connect, the fuel starts flowing through a rigid pipe inside the boom.

The greatest advantage of this system is its high-fuel flow rate. It is also less susceptible to adverse weather. However, the refuelling process requires a boom operator on the side of the tanker, and only one receiver can be fuelled at a time.

Did you know?

1. There used to be a system of wing-to-wing refuelling. However, this is no longer used.
2. Air-to-air refuelling does not only mean longer mission time, but it also allows receivers to take-off with less fuel and greater payload such as weapons, cargo, or personnel. It is thus, a key enabler for distance and endurance, and a force multiplier that allows combat air platforms to cover multiple missions.
3. Air-to-air refuelling is not only used during fixed wing military missions, but also for helicopter operations.

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