

Fire Fighting: Leonardo offers an innovative solution with the C-27J Next Generation "Fire Fighter"

- Adopting the second-generation MAFFS II (Modular Airborne Fire Fighting System), the C-27J "Fire Fighter" represents the state of the art in aircraft for fighting forest fires
- Rapid and efficient, it can operate beyond the reach of other firefighting equipment
- The C-27J Fire Fighter is a sustainable and versatile "ecosystem" that can be quickly reconfigured for transport, humanitarian support, civil protection, or search and rescue missions

Leonardo offers an innovative, high-tech solution for the increasingly difficult fight against forest fires in the form of the C-27J Next Generation "Fire Fighter", a twin-engine turboprop aircraft intended to work alongside helicopters and amphibious "scooper" aircraft that take water directly from seas, lakes and rivers.

What makes this aircraft unique is the second-generation MAFFS II (Modular Airborne Fire Fighting System), a "roll-on/roll off" transportable module that can be loaded and unloaded as required in only 90 minutes. The module consists essentially of a 7,500-litre tank which can be refilled on the ground with water and retardant liquid in under 10 minutes, and a spray nozzle emerging through the left hatch of the fuselage.

Respect for the environment

Europe is one of the world's most complex and intricate territories from a geographical and morphological perspective.

It is distinguished by a vast wealth of fauna and nature and a marked transformation of its natural environment to meet human needs, as well as the presence of sites of historic interest.

According to data reported in the World Fire Atlas of the European Space Agency (ESA), in the last seven years, in Europe, a considerable number of fires have affected Portugal, Italy, Greece, France and Spain. The highest number of fires was reached in Portugal in August 2016 and October 2017.

2022 was the second-worst year (after 2017) in the European Union in terms of areas burned by forest fires. Almost 900,000 hectares of natural land – an area roughly the size of Corsica – were burned, while in 2023, fires affected over 500,000 hectares of natural land in Europe. Moreover, the forest fires of 2023 were impossible to control with traditional firefighting equipment.

As for Italy, ISPRA (the Italian Institute for Environmental Protection and Research) reports, based on data from EFFIS - the European Forest Fire Information System of the European Union's Earth from Space monitoring program Copernicus, that 615 fires were detected between 1 January and 30 July 2024, affecting a total area of 221 km². 40 km² of the areas affected by fire in the early months of 2024 were forested (that is, 18% of the total).

This dramatic situation has worsened in recent years, due in part to phenomena consequent upon global warming.

This is one of the reasons why Leonardo is entering the field with its C-27J Next Generation "Fire Fighter", providing Europe and all interested countries with a real sustainable "ecosystem" that is scalable and adaptable for different purposes; a modular tool capable of reducing costs by maximizing the effectiveness of fighting forest fires and of civil protection worldwide.

THE GAME CHANGER IN FIRE FIGHTING

Land-based solution, pressurized drop, working in cooperation with scooper assets

Proven Modular Airborne Fire Fighting System (MAFFS) II solution produced by United Aeronautical Corporation (UAC)



C-27J UNRIVALED FEATURES ENABLING FIRE FIGHTING MISSIONS



Able to operate from **short and unpaved runways**, close to fire areas



Outstanding maneuverability also at low altitude



Remarkable max cruise speed (325 KTAS) for rapid response to fire disasters



Excellent external visibility from the cockpit, **great situational awareness**



Empowering Sustainability and Environmental Protection Operations

C-27J FIRE FIGHTER MAIN FEATURES



Roll-On Roll-Off, easy to install palletized module



Tank capacity **up to 7,500 lt (2,000 US Gal)** of water or retardant



Turnaround time between fire fighting sorties: **lower than 10 min**



Ground Pattern Coverage (GPC) level: **up to 8** gallon per 100 sqft



Max number of **volume drops:** **2 per sortie**



Easily reconfigurable, for transportation, humanitarian support, civil protection and SAR roles

What's more, in line with the company's Environmental Sustainability Plan (which already includes the C-27J in this special configuration among its technological solutions for fighting the effects of climate change), the fire-retardant liquid chosen by Leonardo for use on the C-27J Fire Fighter is diluted Phos Chek 259 FX, composed of a mixture of ammonium polyphosphates – Ammonium Phosphate (map) CAS no. 7722-76-01 and Diammonium Phosphate CAS no. 7783-28-0. These substances are normally used for agricultural fertilization and are absolutely non-polluting and non-harmful for the environment, people and animals, as certified by studies conducted by the European Chemicals Agency (ECHA), published on the website www.echa.europa.eu. In accordance with Regulation No. 1272/2008 (CLP), the product is not classified as hazardous, persistent, bio accumulative or toxic (PBT/vPvB), and will not cause endocrine disruption or harmful effects on health. This is the compound normally used by fire fighters to carry out firefighting missions all over Italy.

The strengths of the C-27J Next Generation

"Fire Fighter" The C-27J Fire Fighter is able to operate effectively even at low altitudes and in unfavorable weather conditions. Agile, maneuverable and fast, it is equipped with cutting-edge digital avionics, with a maximum cruising speed of 325 knots (602 Km/h) and STOL (Short Take Off and Landing) characteristics allowing it to take off and land on short or semi-prepared runways near the sites of intervention; it can quickly reach and operate optimally where and when other firefighting vehicles travelling by air or land can't, including isolated locations and places where water is scarce or the sea is too rough for "scooper" type aircraft.

At an average speed of 130 knots (250 Km/h), a pressurised jet of water mixed with fire-retardant liquid can cover a large amount of ground with each drop. Its range can be adjusted, allowing the crew to adapt the profile of the mission to the specific conditions of each fire and the orography of the terrain. Moreover, the proposed solution is not limited to fighting fires but can also be used in their prevention.

An effective fire-fighting system must meet a series of requirements: ability to reach isolated areas far away from the sea or other sources of water; rapid response to emergencies; reduction of environmental impact in line with the guidelines of the European Green Deal; use of multi-mission solutions capable of reducing the cost of operating the aircraft, ensuring continuous use even in winter; having a large number of common platforms with high operational flexibility for different types of missions; including the "aircraft system" in the context of a high level of interoperability with ground structures.

Finally, the aircraft can be easily reconfigured for transport, humanitarian support, civil protection, and Search and Rescue missions. For all these reasons, the C-27J Next Generation "Fire Fighter" represents the best solution – already chosen by Slovenia – to guarantee rapidity, efficiency and effectiveness of intervention, not only for firefighting but in numerous other fields, all to the advantage of versatility and, consequently, of cost-effectiveness compared to other specialized set-ups.

Testing and Certification

The testing and certification of the MAFFS II module and all subsystems is already under way, and with this in mind, on Monday, 11 November 2024, an in-flight operational demonstration with real drops was held at the Navy Aircraft Station on the grounds of Maristaer airport in Taranto- Grottaglie and at the former Navy airfield in Manduria (Taranto).

The C-27J "Spartan" Next Generation Multi-role by vocation

Leonardo's C-27J "Spartan" Next Generation is the most effective and versatile multi-role, multi-mission tactical transport aircraft of its class available on the market today. Its ability to operate on even the most rudimentary runways and in extreme environmental conditions is unmatched by any other twin-engine transport aircraft. The C-27J Next Generation's operational efficiency and performance has been further improved with the introduction of new aerodynamic equipment and solutions.

C-27J SPARTAN

Successful and Proven Platform | Unparalleled Versatility



Quickly reconfigurable tactical airlifter

Dedicated configurations for special missions available

Wide cargo bay and outstanding floor strength

Easy loading/unloading operations without ground support tools

APU for autonomous operation on austere airfields

OPERATIONALLY TESTED in the most demanding scenarios

AIRCRAFT ORDERED
93 from 19 operators

TOTAL FLIGHT HOURS FLOWN
250,000+

OPERATIONAL TEMPERATURE
-55°C to ISA+35°C

OPERATIONAL ENVIRONMENT
ALL WEATHER

OPERATIONAL LIGHTING CONDITIONS
DAY and NIGHT

WHERE NO AIRCRAFT HAS GONE BEFORE

TAKE-OFF GROUND RUN AT MTOW
580 m

LANDING GROUND RUN AT MTOW
340 m

OPERATIONS ON UNPAVED AIRSTRIPS WITH
CBR <3

CARGO BOX DIMENSIONS
2.45 m WIDE and 2.25 m HIGH

VARIABLE CARGO FLOOR
HEIGHT and PITCH

MAX PAYLOAD
11,300 kg



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The C-27J Next Generation is equipped with new digital avionics for operating in civil airspace without limitations and improving interoperability in various tactical scenarios. The new wing tips equipped with "winglets" also help improve climbing performance and increase maximum take-off weight (MTOW) by a further 1,000 kg, up to a total of 32,500 kg.

With its exceptional structural robustness and system redundancy, the Spartan offers unique reliability, resilience and maneuverability. Ordered and deployed by some of the world's most important air forces, the C-27J is reliable and extensively tested in the most challenging operational contexts, capable of effectively carrying out any kind of tactical transport mission, from disaster relief to "last tactical mile" support for troops and firefighting missions using airborne systems.

It is equipped with 2 turboprop engines guaranteeing extraordinary performance, extreme operational flexibility and economy of use.

The aircraft is also qualified to perform short take-offs and landings (STOL) on unpaved runways (California Bearing Ratio – CBR >3). Compared to other military transport aircraft in its class, the C-27J has the best descent and climb speed (4,000 and 2,500 ft/min) and can also perform tactical maneuvers up to 3G, minimizing its approach phase and reaching a safe altitude faster. Finally, it is qualified to operate even in extreme temperature conditions (-55° C to + 50° C/ISA+35° C) and can transport its load even at high altitudes.

Infosheet

The extremely versatile C-27J offers 11 possible configurations to suit specific missions and can be reconfigured in only half an hour. The 5 basic configurations are: Cargo Transport, Troop Transport, Medical Evacuation, Cargo Airdrop, Paratroop Airdrop. It is equipped with 2 turboprop engines guaranteeing extraordinary performance, extreme operational flexibility and economy of use.

The aircraft is also qualified to perform short take-offs and landings (STOL) on unpaved runways (California Bearing Ratio – CBR >3). The 6 optional configurations (requiring modules or equipment available to customers on request) are: VIP Transportation, Passenger Transportation, Special Medevac, Biocontainment, Basic Firefighting and Advanced Firefighting. The "Fire Fighter" (Advanced Firefighting) version can contain the MAFFS II roll-on/roll-off system with a capacity of 7,500 litres.

C-27J SPARTAN: SUCCESSFULLY DEPLOYED WORLDWIDE

