DEFENCE

CAPABILITY APPROACH

AIRMOBILE AND AIR CAVALRY

FRENCH EXCELLENCE
IN DEFENCE AND SECURITY

GICAT

The French land defence and security industry association

GICAT.COM

INTRODUCTION

NO MOVE WITHOUT COMBAT HELICOPTER SUPPORT

Sixty years ago, the French Army acquired its first helicopter unit to give ground forces fire, intelligence and mobility capabilities to supplement resources deployed on the ground.
This unit was capable of intervening very quickly at a great distance and of overcoming obstacles on the ground. In sixty years, the technical and tactical capabilities of the French ALAT have evolved considerably, and it is now possible to perform a wide range of missions, both day and night, in active duty in operational theaters and on French soil, in operations involving national security and civil assistance: fire support, intelligence, air assault, logistic transport, command support, counter terrorism, heliborne operations and aerial evacuation of personnel, medical support, etc.
Today, it is no longer possible to send forces, either conventional or special forces, into combat without combat helicopter capabilities. The increased use of helicopters, combined with rapid changes of the operational environment in which the forces must act, has created new technical, logistical and human challenges to adapt this tool to evolutions in the field.

THE VAST MAJORITY OF CURRENT DEVELOPMENT FACTORS ARE RELATED TO A SERIES OF MAJOR GENERAL TRENDS:

- a massive increase in digital data flows, which generate numerous opportunities for interaction between different actors in the battlefield, and just as many vulnerabilities;
- the multiplication of operations within populations requires increased identification, firepower effect control and protection capabilities;
- an increase in workload for crews, who are faced with increasingly complex systems and situations, information flows that exceed the capabilities of human processing and increased coordination requirements;
- requirements to reduce the life cycle costs of equipment;
- the increased use of simulation tools for training and command support.

NUMEROUS CAPABILITIES IMPLEMENTED DURING RECENT OPERATIONS

Operations conducted by the French army over the past 60 years have shaped what army aviation is today in France. Recent operations have highlighted a number of technical and operational capabilities that allow helicopter capabilities to be a sought-after and powerful tool.

Afghanistan
Operations in Afghanistan focused predominantly on infantry combat in direct contact with the enemy and required very high level of integration between helicopter units and maneuvering ground units, down to company team and Special Forces patrol. The missions were conducted at high altitudes, in very hot temperatures in the summer and very cold temperatures in the winter, in direct support of ground troops in contact with insurgents, and very often amid the civilian population. These operations required helicopters with large power reserves, particularly for utility helicopters responsible for the delivery and recovery of combat units, aircraft that were protected and capable of sustaining damage from direct fire, as well as featuring efficient detection, identification and fire systems to eliminate any risk of friendly fire or collateral damage. These operations required sophisticated means of communication, tactical data transmission and information sharing in real time to ensure the integration of aircraft in land forces maneuver.

Libya
Missions in Libya were all conducted by night at levels 4 and 5, from a sea based naval forces and in the context of Air Mobile operations without any deployment of land forces.
They required significant C4I capabilities to ensure coordination with the naval and air forces. This was made possible because the French army aviation has developed the capacity to operate, support and control aircraft onboard battleship, the capability to fight by night requiring efficient night vision devices and highly trained crews. Army aviation also used effective protection systems against enemy surface-air defenses deployed on the ground. Combat modules consisting of different types of aircraft intervened "in packs", in the dead of night, in desert areas and in urban areas. Fighting far from their home base after long flights over water, these helicopters relied on technical mission preparation, command and control resources and solid control of combat helicopter tactical maneuvers.

Ivory coast
Interventions in the Ivory Coast were mainly conducted in urban areas by integrated air-land units requiring close coordination with the troops deployed on the ground. The use of weapons required formal identification and fire coordination abilities and accurate control of firepower effects to eliminate the risk of collateral damage. This type of operation is based on solid training in air-land units, integrated to ensure proper control of procedures and collective know-how, rigorous mission preparation and on information exchange resources in order to share a common operational picture of the tactical situation in real time.

Mali
By implementing all of the combat helicopter capabilities across the entire spectrum of tactical operating

procedures developed by the army aviation, helicopters in Mali allowed combat forces on the ground to be highly responsive and to quickly seize opportunities, to surprise highly responsive and experienced armed groups, and to facilitate ground unit maneuvers and commitment. These operations were characterized by long thoroughfares and a particularly challenging geographical environment for both soldiers and equipment. The quick advance of units and the extent of areas to cover required the establishment of temporary air bases as close as possible to combat areas. These areas were very basically equipped and subjected to harsh environmental constraints (extreme heat, dust, storms, etc.). These operations required sturdiness and resilience for men and equipment and efficient supply chains, able to follow the pace of operations and to support highly mobile units widespread over large geographical areas. On a technical level, aircraft autonomy was necessary to reduce the number of forward ammunition and refueling points (FARP) and was facilitated by weapon accuracy, which limited the amount of munitions to be carried and optimized the amount of fuel available.

CLOSELY LINKED HUMAN AND TECHNICAL CAPABILITIES

The operational capabilities of the French army aviation, which have been demonstrated in recent operations, are the result of deliberate policy, many years of human and technological investment and an innovative doctrine. All of these factors are evolving constantly to adapt to situations encountered in operations, and to take advantage of the technological developments provided by industry.

The lesson learned from past combat and the analysis of the major trends in the operational environment have allowed us to identify the main areas where the forces requirements will remain strong in the near future:

Overall aircraft performance

- A weight/power ratio sufficient to have a real, in-depth capacity for action.
- Piloting assistance systems to lessen crew workloads and enhance flight safety.
- High resistance to allow for use on bases lightly equipped and under stringent environmental conditions.
- A technical architecture that will allow for frequent integration of new equipment to adapt the weapon system to changes in the operating environment.
- Simplicity of operating systems to reduce the cost of training and employment constraints in operation.
- Mission equipment.
- Weapons with complementary effects and ranges, to eliminate a wide range of targets.
- Accurate weapon systems that may be used without the risk of collateral damage or friendly fire.
- Observation and target acquisition systems consistent with on-board weapons, that will allow combat in poor visibility conditions, particularly at night.
- Data display systems (monitors, HMD, HUD, etc.), whose performance is consistent with sensor performance.
- Coupling systems between the observation resources and onboard weapons.
- Munitions designation and guiding resources to enhance performance of other weapons systems (other helicopters, planes, drones, ground troops, etc.).
- Mission assistance systems to provide crews with moving solutions and firing windows.
- Ammunition that may be handled without constraints on minimally equipped terrain and on ships.

C4I resources

- Voice and digital communication resources for integration in land, naval and air operational structures.
- Means of interaction with other weapons systems, especially tactical drone systems.
- Friend/foe identification resources.
- Long-distance communication resources for in-depth operations, particularly in a special operations context.
- Information protection and encryption devices.
- Information merging and sharing capabilities to reduce crew workload and the time between information acquisition and action.

Protection and backup

- Ballistic protection to protect vital parts of the aircraft and the ability to withstand weapon impacts without compromising the mission.
- Active protection systems for the detection and protection against all battlefield threats (missiles, guns, rockets, lasers, etc.).
- Resources to allow the crew to survive in case of a crash and automatic triggering of alerts and tracking systems.
- Resources to enhance security, including piloting assistance systems for critical flight phases (brown out, ship deck landing, tactical flying with poor visibility, etc.) and systems to reduce crew workload (information processing, MMI, head-up display on helmet visor, etc.).

Support

- Tooling systems that are easy to implement, flexible and transportable without constraints.
- Digitized documentation systems to facilitate operation, updating and information sharing.
- Appropriate logistical information systems to network all support actors.
- Smooth logistic flows to lower inventories.
- Simplification of support concepts by using self-tests, equipment that is easily replaceable online, etc. Operational readiness.
- Simplifying equipment implementation by using intuitive systems similar to domestic IT resources.
- Realistic simulation resources for crews and mechanics.

AIRMOBILE AND AIR CAVALRY

COMPONENT BREAKDOWN

C4I

The concept of Air Combat and Air Mobility Combat implies that, in order to prepare and conduct combat action from the 3rd dimension, helicopters must be compliant, in the short term, with the new digitized information system (SICS) of modernized battle groups (SCORPION program), to feature combat assistance and SAR detection, to collaborate with UAVs and to integrate with all various tactical data link networks.

SURVEILLANCE AND TARGET ACQUISITION & DESIGNATION

In terms of surveillance and target acquisition, this future Army Aviation equipment will also feature new-generation optronics sensors and laser designators/rangefinders, active imaging and photo/video links (Land units, UAVs, helicopters, etc.). This equipment will be the basis for automated target acquisition and classification systems in autonomous mode (airborne optronics) and hybrid mode (merging data from airborne optronics and radar installed on another vehicle).

SUPPORT AND SERVICES

Life Cycle cost control for weapons systems is one of the key financial challenges. In terms of maintenance and training, support systems for future weapon systems will use «as is» support, thereby limiting preventive maintenance (reduced logistic footprint and maintenance hours), as well as dynamic logistics (appointed airland areas, configuration/ munitions/spares/fuel management, etc. on a plot during the operation). New tools such as augmented reality will occupy a prominent place in equipment design (maintenance actions from design outset) and will be consolidated for maintenance, simulation for education, training, rehearsal and operational readiness, and even for dynamic mission reassignment.

HELICOPTER DESIGN AND ENGINEERING

Upstream of deployment in the armed forces, the helicopters of 2020 will feature open architecture avionics on a vehicle equipped with NG rotor blades, thereby improving component performance and signatures, reducing detectability, allowing the vehicle to fly at high speeds, and electric flight controls beyond a certain tonnage.

PILOTING DEVICES & CREW ASSISTANT

Helicopters of the future will also incorporate ongoing field monitoring and penetration functions, targeted piloting to reduce crew workload and offer mission control options, landing (zero visibility, sand, snow, ship deck landing, etc.), wide range piloting optronics, obstacle detection and heads-up display.

WEAPON SYSTEM ARCHITECTURE

In parallel, in the weapons field, architectures will evolve towards new gun and rocket ammunition (airburst, programmable, and cluster ammunition), reduced gun weights, guided rockets and the integration of a NLOS missile (fired above line of sight). Firing control will evolve to optimize the combination of weapons, sensors and information systems.

VULNERABILITY AND SURVIVABILITY

To increase the crew survival, in addition to the performance and lightening ballistic protection, efforts should focus on the detection of small caliber fire and portable AT rockets (RPG), reinforcing equipment against impacts and integrating nanotechnology, radar and infrared detectability, decoy homing, battle damage repair and protection against CBRN threats and strong fields.

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AIRBUS HELICOPTERS

Support & Services

Helicopter Design & Engineering

A division of Airbus, Airbus Helicopters strives to provide the most efficient helicopter solutions to its customers who serve, protect, save lives and safely carry passengers in demanding environments. Its in-service fleet of 12,000 helicopters with 3,000 customers in more than 150 countries performs nearly every type of vertical flight task imaginable, spanning civil, government, military, law enforcement and parapublic uses.

THE BEST RANGE FOR THE BEST MILITARY FORCES

MISSION READY

Airbus Helicopters offers the largest range of military helicopters with derived versions of civil aircraft, such as the H125M, H145M, H160M, H215M and H225M, as well as specialised aircraft such as the Tiger and NH90. Combat proven, Airbus Helicopters' military range covers the entire operational spectrum ranging from reconnaissance, identification and tracking to deterrence, escort, light attack, attack, naval warfare, rescue, troop transport, special forces operations and military training. The company not only meets today's requirements, but is also paving the way for machines that meet tomorrow's needs.

Around 2,500 Airbus helicopters are in service today with approximately 100 armed forces who place their trust in Airbus. These operators have flown a collective 30 million helicopter flight hours with Airbus products.

THE MILITARY HELICOPTERS OF TODAY AND TOMORROW

- The **H160M** is Airbus' next generation of medium multi-mission military helicopters. Quiet and efficient, with built-in modularity, simplified maintenance, reduced operating costs, and high availability, the H160M will launch with first deliveries to France in 2026 in the frame of the Joint Light Helicopter programme.
- The **H225M**, **Tiger and NH90** have been successfully deployed in the most demanding situations. Airbus Helicopters is working to launch the **MkIII version** of the Tiger featuring new avionics, mission, and weapon systems, intended to extend operability beyond 2040.
- The **H145M** was certified in May 2015 with first deliveries to the German Armed Forces in December 2015. More than 50 of this type have been ordered to date with Germany, Thailand, Luxembourg, Serbia and Hungary.
- Airbus Helicopters also produces the **UH-72A Lakota** for the U.S. Army's Light Utility Helicopter programme, with more than 450 helicopters delivered on time, on cost and on quality.
- **HForce** is Airbus Helicopters' new on-board generic weapon system. It is designed to be incremental and modular and can be fitted onto any military version of Airbus' commercial helicopter range.
- The dedicated **Military Support Centre (MSC)** in Marignane brings together the company's resources to support the more than 500 helicopters operated by its historical partner, the French Armed Forces. These capabilities were bolstered in 2019 via global support contracts for the Cougar and Caracal helicopters, making Airbus responsible for the entire scope of helicopter support. A comparable support contract was also signed for the Tiger helicopter to secure aircraft availability throughout the next decade.

AIRBUS

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Surveillance & Target Acquisition & Designation

Weapon System Architecture

CILAS

A subsidiary of ArianeGroup and Areva, CILAS, has been at the leading edge of the modern technology sector for more than 50 years, thanks to its unique expertise in laser and optronics technologies. CILAS develops, manufactures and markets products and systems using these technologies for defense or security. The company is also involved in large-scale scientific laser programs.

AT THE EDGE OF LASER INNOVATION FOR 50 YEARS

RECOGNIZED KNOW-HOW IN FRANCE AND INTERNATIONALLY

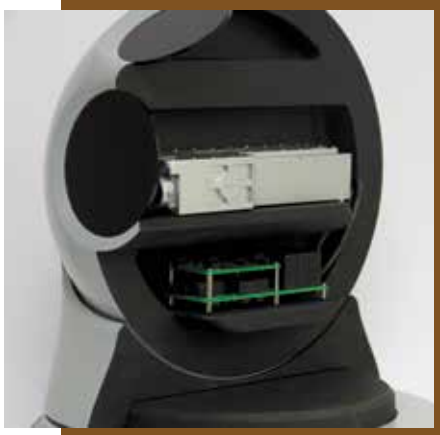
Due to its unique expertise in laser and optronics, CILAS proposes several products in the fields of designation and high energy lasers.

CILAS' Ground Laser Target Designators and Laser Target Modules deliver an accurate semi-active laser guidance for all types of precision guided ammunitions. Laser Target Designators are designed to meet the Joint Terminal Attack Controllers requirements to ensure surgical strikes. Laser Target Modules have been developed to equip attack helicopters, UAV and mobile land platforms.

CILAS' High Energy Laser Multiple Application - Power (HELMA-P) is designed to engage UAVs threats and also fixed targets. HELMA-P is a Counter UAV solution which ensures immediat, silent and surgical shots and avoids collateral damages.

MASTERING SURGICAL STRIKE

- The **DHY 307** is a Ground Laser Target Designator capable of illuminating a target up to 10 kilometers. The DHY 307 can operate with NATO and other laser guided weapons.
- The **DHY 308** is an evolution of the combat proven DHY 307. Two times lighter and more compact, the DHY-308 is equipped with an athermal diode pumped laser that does not need an active cooling system.
- The **DHY 208** is a 2kg Ground Laser Target Marker/Designator class. Developed to ensure easy transportation, the DHY 208 is for medium range designation use, up to 5km.
- The **Aladem 80 & 150** are Lasers Target Modules which can be embedded in gimbal payloads or land sights. Aladem are athermal modules with a very low residual consumption in stand-by mode. They can operate long range designation, 10 kilometers and beyond. Aladem 150 encompasses an eye safe laser range finder.
- **HELMA-P** is a fiber laser weapon system capable of detecting, locating, tracking and neutralizing soft aerial targets. Combined with a C2, it ensures the protection of a sensible area against mini drones. It can also be integrated on mobile platform for the security of military convoys.



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COLLINS AEROSPACE

Surveillance & Target Acquisition & Designation | Support & Services | Helicopter Design & Engineering | Piloting Devices & Crew Assistant | Weapon System Architecture

Collins Aerospace delivers a broad range of advanced solutions for helicopter operators. Our unique ability to leverage technologies across our commercial and military markets provides increased flexibility, reduced total lifecycle and acquisition costs through open systems and commercial-off-the-shelf solutions. We offer a global network of service & support to increase mission readiness.

REDEFINING HELICOPTER MISSIONS AND OPERATIONS

MORE INTELLIGENT, ELECTRIC AND CONNECTED

Today, helicopters are called on to perform a wide range of critical missions, in any location and any type of weather. At Collins Aerospace we're bringing more intelligent, more electric and more connected systems, delivering solutions that reduce pilot workload, enhance situational awareness and assist with smarter, timelier decision-making. From nose to tail, helicopter pilots have come to trust Collins Aerospace to provide solutions that let them focus on their mission when it matters the most. With a focus on enabling safety and operational efficiency, Collins is dedicated to providing cost-effective solutions for helicopters of all sizes and mission types.

A BROAD RANGE OF CAPABILITIES:

Avionics
- Integrated avionics and HeliSure™ cockpit display systems.
- Digital Terrain System, Surveillance and threat awareness.
- Traffic Alert Collision Avoidance System.
- Air Data System.
- Flight management computer.
- Mission computer.

Mission Systems
- Search & Rescue systems: Direction Finders and Personal Locator System.
- Radio and mission management systems.
- Communication & Navigation (SATCOM, Tactical Data Link).
- Rescue hoists.

Interiors and Lighting
- Helicopter crew and passenger seating.
- Cockpit Control Panels.
- Exterior/Interior Lighting.
- Aircraft and passenger oxygen systems.

Mechanical Systems
- Electro-mechanical primary flight control actuators.
- Main rotor and tail rotor actuators.
- Helicopter engine and fire protection systems.
- Windshield Wiper and Washing System.Electro-thermal ice protection.
- Rotor ice Protection.
- Motor drives and shafts.
- Health Usage Management Systems.

Simulation and training solutions
- Full Flight simulators and Virtual Training Devices.
- Tactical Trainers & Live Virtual Constructive.
- Image Generators.

Power & Control
- Environmental Conditioning.
- Electrical Generation.
- Power Distribution.

24/7/365 hour support

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C4I | Surveillance & Target Acquisition & Designation | Support & Services | Helicopter Design & Engineering | Piloting Devices & Crew Assistant

DCI

Created in 1972, Défense Conseil International (DCI) is a service provider, with the French State as reference shareholder. Its mission is to transfer French armed forces know-how to friendly countries. It offers customised solutions for the training of crews, maintenance technicians, air experts and for the maintenance of your aircraft. DCI has more than 100 customer countries and 7 permanent offices abroad.

THE REFERENCE OPERATOR FOR THE FRENCH MINISTRY FOR ARMED FORCES

CUSTOMISED COURSES TO MEET YOUR NEEDS

Défense Conseil International welcomes your crew members within its Helicopter International Training Centre (CIF-H) and within the French armed forces training centres for:

- Ab-initio pilot training / Instructor training;
- Tactical flight / Instrument rating / night vision goggles flight / deck-landing / mountain flight and all advanced technical flights...;
- Crew members training: winch operators, shooters, mission systems operators, divers...;

Building on the French armed forces operational commitments, DCI also offers training for the operational employment of your helicopters in all terrains and situations, including:

- Airmobile combat (recce, attack, airmobile assault,...) and special forces;
- Search & Rescue (SAR) and Combat SAR (CSAR).

ASSISTANCE FOR YOUR OPERATIONAL CAPABILITY

Drawing on the French armed forces experience and on the expertise of its subsidiary Helidax, DCI develops assistance solutions for the development of your helicopter capabilities:

- Training needs analysis;
- Maintenance, Supply, including fly-by-the-hour contracts;
- Assistance in airmobile unit development;
- On the job training for your ground crew.

DCI also provides your aeronautical technicians with initial training within the French Defence Aeronautical Institute (FDA I) and with operational training in the French armed forces training centres in the following fields:

- Airframe & engine;
- Avionics & armament;
- Security & airworthiness.

DCI

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DESCHAMPS

Helicopter Design & Engineering

DESCHAMPS' Mobi-mat® range is dedicated to ground reinforcement and tactical mobility. Since 1860, DESCHAMPS develops and manufactures in France innovative solutions for very demanding applications. DESCHAMPS operates worldwide and is a reference supplier for the main armed forces such as French, US, German, etc. and international organizations such as NATO/NSPA or the United Nations.

MOBI-MAT®: HELICOPTER SAFE LANDING ZONE

SAFETY FIRST

Mobi-mat® TAHEL™ helipads increase the safety of helicopter operations. DESCHAMPS developed it during the Yugoslav wars and they were used in all modern conflicts like Afghanistan, Iraq and Mali.

- High visibility from the air even under NVG.
- High dust/sand retention power.
- Fluid permeable: avoid helipad blow-up under rotor wind.
- Liquid permeable: avoid water/oil puddles.

EXPEDITIONARY BORN

Mobi-mat® developed its TAHEL™ helipads in order to be an expeditionary equipment. They perform in single operations as well as long-term deployments.

- Compact and ultra-lightweight.
- Installed very quickly by a few people.
- High durability in extreme conditions.
- High bearing capacity allowing truck traffic.

A GLOBAL SUPPORT

The Mobi-mat® TAHEL™ range is dedicated to helicopter operations. Thanks to 25 years of experience, DESCHAMPS is able to meet every requirements.

- Custom made solutions as well as off-the-shelf equipments.
- Ground support equipment team training.
- Helicopter portable mooring kit.
- Specific or ICAO compliant helipad lights kits.
- Logistic support in order to meet specific requirements.
- Maintenance services.

DESCHAMPS
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Vulnerability
& Survivability

LACROIX

Lacroix provides the French Armed Forces and others with a complete range of pyrotechnic self-protection solutions for aircraft. Lacroix designs, manufactures and supplies pyrotechnic flares to defeat the latest generation of IR missiles. Lacroix combines the expertise of its engineers with electronic warfare specialists and operational forces to capitalize on the latest operational knowledge and feedback.

CONCEPTION, DEVELOPMENT, MANUFACTURING & QUALIFICATION FOR DECADES

IN ACCORDANCE WITH THE HIGHEST STANDARDS

Lacroix's full range of MTV / Spectral / Kinematic chaff & flares enables aircrews to perform all kinds of operations.
The effectiveness of these flares have been demonstrated on a wide range of French and foreign rotary wings, and tested in some of the most demanding technical trials (France and NATO).
They are currently in operational use in many forces, engaged in operational missions and conflicts throughout the world.

Our know-how combined with strict compliance to the highest standards provide:

- Effectiveness demonstrated with combat proven protection of airborne platforms;
- Design compatibility with any dispensing system;
- Safe, reliable, and innovative decoys.

Our flares undergo extensive on-site development and qualifications in our testing facilities, hand in hand with our customers.

AIRBORNE FLARES MANUFACTURED FOR ROTARY WINGS

Lacroix's range of flares and chaff:

- MTV flares: Designed to counter missiles decoyed by high intensity IR output;
- Spectral flares: Designed to prevent the activation of missile IR counter-countermeasures;
- Kinematic flares: Designed to have a high IR output and an optimized trajectory preventing the activation of missile separation rate counter-countermeasures;
- Chaff cartridge or bundles for platform protection against RF threats. Customizable chaff cuts optimize the generated RCS (2 to 40 GHz).

Our range of helicopter cartridges is mostly available in:

- 1"x1"x8" format for MTV, spectral, and kinematic solutions:
  - LIR 110 series: Advanced conventional flare for helicopter protection against IR missiles. New architecture and process providing improved reliability and safety;
  - LIR 111 series (A2/T4/T6): Advanced spectral flares for helicopter protection against new generation IR threats.
- LIR 112: Kinematic flare for helicopter with dedicated separation rate:
  - 1"x1"x8" for conventional chaff decoy;
  - LEM 170: Lacroix specific design generates improved blooming to ensure a high level of protection.

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MUSTHANE

Support & Services

Vulnerability & Survivability

Musthane designs and manufactures flexible composite made products helping our customers to improve the survivability of the helicopters. Our products help also to increase the utilization rate of military helicopters in forward area operations.

HELICOPTER FORWARD AREA REFUELING & GROUND SUPPORT EQUIPMENT

HELICOPTER LANDING MATS

Musthane manufactures a very compact, robust and truly nomad patented helicopter landing mat comprising a very smart anchoring system. The mats are made of flexible composite and can be rolled for optimizing space. The anchoring system is adjustable and re-usable many times. The whole system allows to reduce the effects of brownouts and FODs.
The landing area also offers a proper surface for the deployment of the Ground Surface Equipment (refueling, maintenance...).

FORWARD AREA REFUELING POINTS

Musthane manufactures forward area refueling points comprising:

- Mobile fuel filtering and dispensing units;
- Flexible tanks or fuel bladders.

BALLISTIC SELF-SEALING PROTECTION FOR FUEL TANKS

Musthane manufactures a self-sealing protection material which is able to prevent leakage of the helicopter fuel tank in case of ballistic impact.
This solution innovative solution is lighter, thinner and offers an effective protection against the most commonly used calibers.
By using this solution, the helicopter manufacturers or users can increase the survivability and reduce at the same time the weight.

Musthane

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Support & Services

Weapon System Architecture

NEXTER SYSTEMS

The gun is a complementary weapon to missiles and rockets for helicopters and combat aircraft. It remains irreplaceable for short and very short ranges. It is also the close-combat and self-defense weapon for CSAR helicopters. In order to best meet the needs of the military and enable them to fulfil their mission, Nexter offers gun mounts and turrets for helicopters in service in many armies.

A COMBAT PROVEN OFFER

The range of products developed by Nexter is based on the 20M621 cannon, which is a light, accurate weapon with low recoil force (like a .5 machine gun) that can fire NATO-standard M50 ammunition.

TURRETED GUN SYSTEMS BY NEXTER

Based on Nexter's expertise in medium-calibre weapons for helicopters and aircraft, Nexter offers two Turreted Gun Systems (TGS) for combat helicopters: THL20 and THL30.

- The THL30, equipped with the 30M781 cannon, is dedicated to the TIGRE helicopter. It is currently in service in France, Spain and Australia and has proven itself in combat in Libya and Mali with French forces.
- The THL20, equipped with the 20M621 cannon (NATO standard M50 ammunition) is a light and compact TGS that can be easily integrated on light helicopters and is perfectly suited to the modernization of an existing helicopter. The THL20 is in service on the Puma helicopter in Romania and is being adopted by the Indian Army on the ALH.

Nexter can also offer two other weapon systems equipped with the 20M621 cannon.

- The SH20 is a retractable door mounting system that can be easily installed on any multi-mission helicopter to enhance its self-defense and ground fire support capability. Its retractable function ensures operational discretion for the user.
- The NC621 is a lightweight «Plug & Play» stand-alone system that is easily installed on a helicopter thanks to a 14-foot pylon that complies with NATO standards.

Nexter also offers the 30M791 gun and its 30x150mm ammunition, which have been developed to arm the Rafale. They offer unrivalled effectiveness in air combat.

nexter A COMPANY OF KNDS

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SAFRAN
ELECTRONICS & DEFENSE

Support & Services

Weapon System Architecture

Safran holds world or European leadership positions in optronics, avionics, electronics and critical software. Safran is the No. 1 company in Europe and No. 3 worldwide for inertial navigation systems used in air, land and naval applications. It is also the world leader in helicopter flight controls and the European leader in optronics and tactical UAV systems.

A FULL RANGE OF HELICOPTER SYSTEMS AND EQUIPMENT

MISSION PLANING SYSTEM: PREPARE - SUCCEED - DEBRIEF

Safran offers cross platforms and domains (Air/Land/Sea) mission planning solutions for coordinated operations, including between different countries and various assets. Based on its successful cooperation with the French army, Safran provides high performance helicopter mission planning systems. MPME is the most suitable software and hardware answer for rotary-wings platforms.

AIRBORNE OPTRONICS: REVEAL THE UNSEEN

Thanks to stabilization, high-definition sensors and advanced embedded functions, the new-generation EUROFLIR™410 from Safran provides ultra-long range observation and precision targeting capabilities. This combat-proven gyrostabilized turret is already used on the NATO NH90 helicopters and has been selected to equip the H160M Guépard, the multi-purpose helicopter intended for the French armed forces. Safran also supplies the Strix and Osiris sights on the Tiger helicopters.

COCKPITS, FLIGHT CONTROLS, AUTOPILOTS AND NAVIGATION

As the world leader in helicopter flight controls and autopilots, Safran offers a full range of products, including conventional and fly-by-wire flight controls, navigation/AHRS systems and instrument panels, to suit all requirements of any type of aircraft, either as original equipment or as retrofit. Safran equips all major helicopter manufacturers: Airbus Helicopters (NH90 and legacy), Finmeccanica Helicopters, Bell Helicopters, HAL, Sikorsky...

MISSILE SEEKERS

Safran makes seekers for the Mistral surface-to-air missiles, with an air-to-air version mounted on Gazelle and Tiger helicopters, as well as the seeker of the MMP (Missile Moyenne Portée), a medium-range anti-tank missile, and the seeker of the MICA VL surface to-air missile. Safran is also a contributor to the Anglo-French Sea Venom FASGW-ANL missile.

SAFRAN

SAFRAN ELECTRONICS & DEFENSE
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GICAT

The French land defence and security industry association

GICAT, a professional group, created in 1978, has over 270 subscribers, corporations, midmarket companies, SMEs and startups. These members cover a wide range of industrial, research, service and consulting activities for military and civil organizations, of national or international scope, involved in land and/or airland security and/or defence.

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