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AMPS
AIRBORNE MISSILE PROTECTION SYSTEM

AMPS FAMILY OF SOLUTIONS BY BIRD AEROSYSTEMS



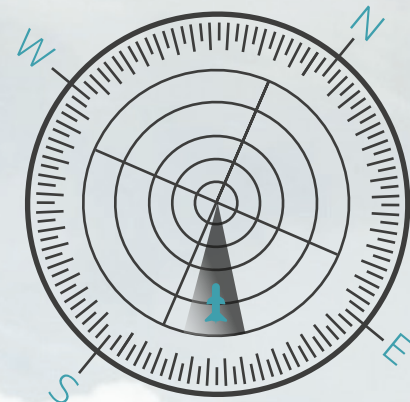
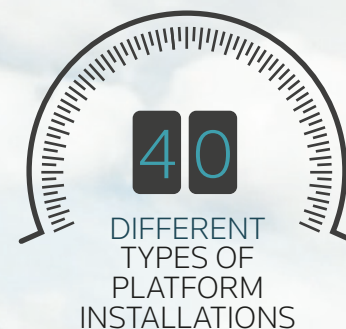
PROTECTING
US ARMY
NATO &
UN FORCES



FULLY CERTIFIED
ACHIEVED US ARMY AIRWORTHINESS
AND CERTIFIED BY LEADING OEMs MIL
DESIGN BUREAU (SB ON Mi-8/17),
AIRBUS HELICOPTERS



OPERATIONAL IN HIGH THREAT
ENVIRONMENTS AS:
AFGHANISTAN, LIBYA, IRAQ,
SOMALIA, MALI & S. SUDAN



PATENTED
CONFIRMATION
SENSOR
ELIMINATING THE
SYSTEM FALSE
ALARMS



SPREOS
ADVANCED
LIGHT WEIGHT
DIRCM
SOLUTION



INTRODUCTION TO AMPS

SELF-PROTECTION FOR AIRBORNE PLATFORMS
MEANS QUICKLY AND RELIABLY KNOWING WHETHER
ANYONE IS TARGETING THE PLATFORM FOR A
POTENTIAL ATTACK. THIS REQUIRES KEEPING A
CONSTANT LOOKOUT FOR POSSIBLE THREATS WHILE
BEING ABLE TO CONCLUSIVELY RULE OUT ALL FALSE
ALARMS WHILE PROVIDING THE MOST ENHANCED
PROTECTION AGAINST THE REAL THREATS.

BIRD's field-proven Airborne Missile Protection System (AMPS) family of solutions is designed to provide total protection in dense and diverse threat environments by protecting crews and aircraft against all known Surface-to-Air Missiles (SAMs), including man-portable air-defense systems (MANPADS), laser beam rider (LBR) and radar-guided missiles.

Integrated with BIRD's patented Confirmation and Tracking Sensors, AMPS uniquely ensures an unprecedented Zero False Alarm Rate (FAR) along with enhanced protection based on each real threat's unique characteristics.

With hundreds of aircraft installations, AMPS has been selected to protect a wide range of civil and military platforms used by US Government, NATO members, United Nations (UN) Air Operations and other Air Forces around the world.

DETECT – CONFIRM – PROTECT

AMPS FAMILY OF AIRBORNE PROTECTION SOLUTIONS

AMPS IS DESIGNED TO DETECT, AUTOMATICALLY VERIFY, AND FOIL SAM ATTACKS THROUGH THE EFFECTIVE USE OF COUNTERMEASURE DECOYS (FLARES AND CHAFF) AND BY DIRECTIONAL INFRARED COUNTERMEASURES (DIRCM) THAT JAM THE MISSILE'S INFRARED (IR) SEEKER, THEREBY PROTECTING THE CUSTOMER'S AIRBORNE PLATFORM.

THESE SYSTEMS ARE INSTALLED ON A WIDE RANGE OF MILITARY AND CIVIL AIRCRAFT, USING A VARIETY OF DETECTION, CONFIRMATION AND JAMMING SENSORS INCLUDING:

DETECT – CONFIRM – PROTECT

AMPS-M

Protection against shoulder-launched missiles (MANPADS).

AMPS-ML

Protection against MANPADS threats posed by laser beam riders (LBR), laser rangefinders (LRF), and laser target designators (LTD).

AMPS-MLR

Protection against MANPADS, LBR threats, radar-guided missiles and radar-controlled guns.

MACS

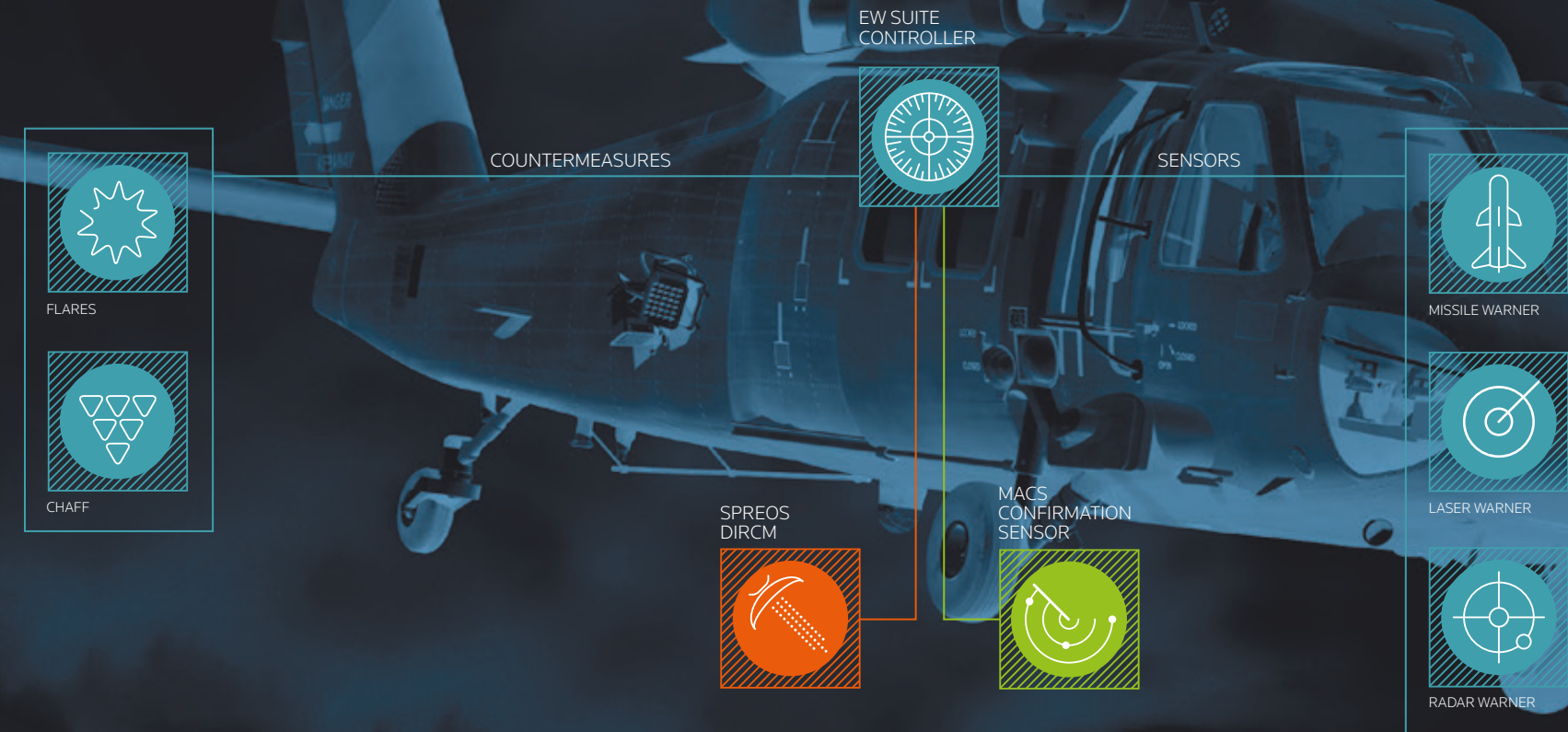
Missile Approach Confirmation Sensor (MACS) - Patented sensor providing confirmation of suspected incoming missile threats.

SPREOS

Self-Protection Radar Electro-Optic System (SPREOS) DIRCM – unique IR jamming solution that performs confirmation, tracking, and jamming of advanced IR guided missile threats.

AMPS: YOUR AIRBORNE MISSION SHIELD

BIRD provides AMPS as a turnkey solution that includes all services required for the installation on the aircraft starting from aircraft survey through Airworthiness Certification.



AMPS KEY BENEFITS AND FEATURES:

Fully autonomous, end-to-end solution from detection to protection.

Detection and verification of threats including SAMs, anti-tank guided missiles (ATGMs) and rocket-propelled grenades (RPGs).

Zero FAR performance ensures only real threats are declared by the system.

Enhanced protection using unique threat characteristics. e.g., velocity, distance, Radar Cross Section (RCS).

Combat proven in high threat areas such as Afghanistan, Iraq, Libya, Somalia, Southern Sudan.

Standalone configuration – no interfaces required to aircraft's mission or avionic systems.

MACS TO CONFIRM YOUR THREATS

BIRD's patented Missile Approach Confirmation Sensor (MACS) uniquely confirms suspected incoming missile threats, ensuring that the AMPS system declares only real threats to the aircrew.

Integrated with the passive Electro-Optical sensors, MACS receives a pre-alarm from the passive sensors, slews to the direction of the threat, and then uses its Semi-Active Radar to verify the validity of threats while analyzing the threat's unique characteristics.

This exclusive confirmation process between the Electro-Optical sensors and a high pulse repetition frequency (HPRF) Doppler radar of the MACS, rapidly provides the most effective filtering for all natural and man-made causes of false alarms while still protecting the aircraft from the short-range threats.

Concurrently, MACS collects relevant data on the real incoming threat (velocity, distance) enabling the AMPS system to provide the most effective countermeasure response against the incoming threat.

This unprecedented zero FAR enables AMPS to comply with stringent FAA/EASA civil aviation regulations, dramatically improving commercial and VIP aircraft protection.

DETECT – CONFIRM – PROTECT



MACS SENSOR ELIMINATING THE FALSE ALARMS



MACS KEY BENEFITS AND FEATURES:

Eliminates False Alarms and ensures that only real threats are declared.

Optimizes countermeasure logic by collecting specific threat information.

Provides seamless integration with soft-kill or hard-kill countermeasures.

Drastically reduces overall system lifetime costs.

Designed according to MIL, RTCA/DO environmental and EMI standards to meet military and civilian requirements (helicopters and fixed wing).

Simple installation with minimal penetration into the fuselage.

Mature and operational on civil and military aircraft world-wide.

SPREOS MORE THAN JUST A DIRCM

SPREOS is an advanced DIRCM system that provides enhanced protection against MANPADS for a wide range of airborne platforms ranging from small helicopters to large transport aircraft.

Uniquely multi-functional, SPREOS offers threat confirmation, tracking and jamming for IR-guided missiles within a single line replaceable unit (LRU).

Integrated with any MWS sensors, SPREOS receives a pre-alarm, slews towards the direction of the threat, activates its semi-active radar to confirm and track the threat while analyzing its unique characteristics (velocity, distance, position, and radar cross section) to enable the most effective jamming response.

Following the confirmation and tracking, SPREOS deploys its dual-band counter-measure laser to jam the threat while continually performing kill assessment by monitoring the threat and performing a real-time assessment whether it has been defeated and confirming the effectiveness of the laser and flare protection.

DETECT – CONFIRM – PROTECT



SELF PROTECTION RADAR ELECTRO-OPTIC SENSOR

SPREOS: THE MOST ADVANCED DIRCM SOLUTION ENSURING YOUR PROTECTION AGAINST MANPADS ATTACKS



SPREOS KEY BENEFITS AND FEATURES:

Patented dual-band RF confirmation and tracking ensures zero FAR.

Enhanced Jamming Logic – Collection of unique threat characteristics (velocity, distance, RCS) enabling an optimized jamming of the threat.

Kill Assessment - Constant threat tracking to assess whether the missile threat has been successfully neutralized.

Multiple independent laser generators with the latest quantum cascade laser (QCL) technology to counter the newest generation threats.

Integrates with all types of missile approach warning systems (MWS).

The most compact and lightweight DIRCM in the market – weighing less than 15kg.



AEROSHIELD ALL-IN-ONE MISSILE PROTECTION POD

AEROSHIELD IS BIRD'S ANTI-MISSILE DEFENSE POD DESIGNED FOR PROTECTING NARROW AND WIDE-BODY AIRCRAFT.

AEROSHIELD incorporates BIRD's AMPS system that enables to detect, verify, identify and foil MANPADS attacks. The system provides 360° coverage along with an unprecedented near zero FAR and maximum warning time, enabling optimal jamming techniques.

AEROSHIELD is the only pod solution in the market that supports protection with DIRCM and flares ensuring the highest aircraft survivability.

The pod fully complies with EASA/FAA civil aviation regulation procedures and is currently under contract for several VIP Head of State wide-body aircraft.

Smaller and lighter than any other pod-based solution on the market, the AEROSHIELD's minimal footprint makes integration to the aircraft less intrusive and far simpler in comparison to similar self-protection suites.

DETECT – CONFIRM – PROTECT

AEROSHIELD:
FULL PROTECTION FOR NARROW AND
WIDE BODY VIP AIRCRAFT

AEROSHIELD KEY FEATURES AND BENEFITS:

Provides unique protection by flares and DIRCM.

Lightest and smallest pod solution.

Minimal impact on aircraft performance.

Easily interchangeable between different aircraft.

Enables Civil Aviation Authorities Certification.

Highest reliability and effectiveness.

The AMPS system is offered by BIRD as a turn-key program with services ranging from initial platform survey through installation Design, DRS, Substantiations, Manufacturing, Installation, Integration, Testing and Certification.

Our dedicated in-house platform engineering group is able to deliver rapid, flexible solutions that will ensure the optimal deployment of the AMPS system on any type of aircraft while meeting the most demanding customer requirements and schedules.

The AMPS installations have been certified by leading OEM such Russian Helicopters (MIL-MMHP) and Airbus Helicopters, by leading engineering entities including the US Army Engineering Department (AED) and by major Civil Aviation Authorities worldwide.



AMPS FAMILY OF AIRBORNE PROTECTION SOLUTIONS IN ACTION

AMPS boasts a proven track record in the most dangerous conflict zones worldwide. The system has been in long-term, continuous and successful operation by advanced armed forces operating in high threat areas such as Afghanistan, Iraq, Libya, Somalia, Southern Sudan. AMPS has been selected and installed on Military, VIP and civil platforms used by the US Government, NATO members, the United Nations (UN) Air Operations and other Air Forces around the world.

Certified by leading aircraft manufacturers – including Airbus Helicopters, MIL Design Bureau and others – AMPS has over 650 installations on platforms. Installed platforms include EC135, EC635, EC145, BK117, EC155, Cougar, EC225, Mi8, Mi17, UH60, S-92, CH53, B407 and fixed-wing B200, B350ER, B737, F7X, A319, P3C, C130, and others.

