



# ASELSAN ROTARY WING CAPABILITIES

**aselsan**

TECHNOLOGY SERVING PEOPLE & PLANET

# OVERVIEW

## PREMISES

5,000,000 M<sup>2</sup> TOTAL AREA 500,000 M<sup>2</sup> ENCLOSED AREA



**\$2.5**  
BILLION  
REVENUE

**5,600**  
SUPPLIERS

**88**  
INTERNATIONAL  
CLIENTS



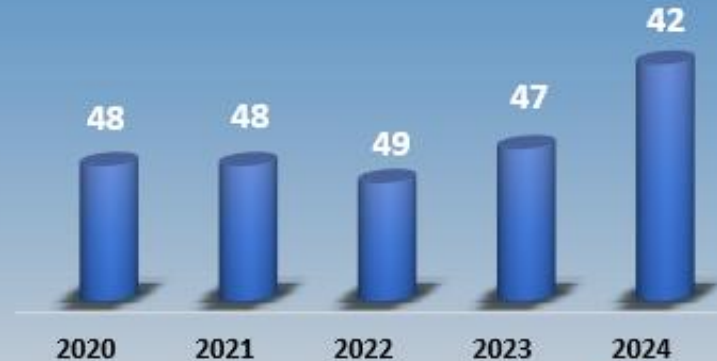
**TÜRKİYE'S MOST VALUABLE  
COMPANIES LIST**

**11**  
R&D CENTERS

**THE LARGEST  
DEFENCE  
INDUSTRY  
COMPANY**



**TOP DEFENCE CONTRACTORS LIST**



UNCLASSIFIED

# Avionic Systems Integration

Avionic Suite

Mission/Weapon/Flight  
Management

EGL and  
Radio  
Navigation

Communication

Airborne EO  
Targeting &  
Surveillance

Radar/  
Electronic  
Warfare

Integration/  
Modernization



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# Avionic Suite

DISPLAY & MISSION  
COMPUTER

Multifunction Display

Keyboard Display

Helmet Mounted  
Display



Multifunction Display / Keyboard Display / Helmet Mounted Display



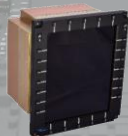
CMFD-55



VMFD-68



CCD-68



GMFD-68



IMD-820



SMFD 810



VMFD 810



KDU-44



KDU-45



TCCU-810



UFCP



AVCI

# Avionic Suite



## DISPLAY & MISSION COMPUTER

- Multifunction Display
- Keyboard Display
- Helmet Mounted Display

ITAR Free Solutions

Operates as a mission computer & display system packaged into one LRU.



## CONTROL PANEL

- ICS Radio & IFF
- Weapon Management



## HARDWARE & SOFTWARE DEVELOPMENT



# Avionic Suite Integration

30+  
Different  
Platform

CUTTING EDGE TECHNOLOGY  
HIGH FUNCTIONALITY FMS  
PILOT WORKLOAD REDUCTION  
PAYLOAD INTEGRATION

T-625 GÖKBEY



S-70A BLACK HAWK



T-129 ATAK



CERTIFIED & AIRWORTHY SOLUTIONS  
HIGH RELIABILITY & AVAILABILITY  
FIELD PROVEN SOLUTIONS

# Mission & Flight Computers

## SYSTEM MANAGEMENT

Mission & Display Management  
Platform Interface Management  
Communications & Identification Management

## MISSION MANAGEMENT

Navigation Management  
Stores & Weapon Management  
Mission Planning

**Modular  
Architecture**

**Extendable  
Capacity**

**DO 178 &  
DO 254  
Compliance**

**Civil & Military  
use**

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# Mission & Flight Computers

## SYSTEM MANAGEMENT

- Mission & Display Management
- Platform Interface Management
- Communications & Identification Management

## MISSION MANAGEMENT

- Navigation Management
- Stores & Weapon Management
- Mission Planing



T-129 Atak Helicopter  
Mission Computer



GÖKBEY Flight  
Control Computer



HÜRKUŞ Trainer Aircraft  
Mission Computer



ANKA UAV  
Mission Computer



ANKA UAV  
Flight Control Computer



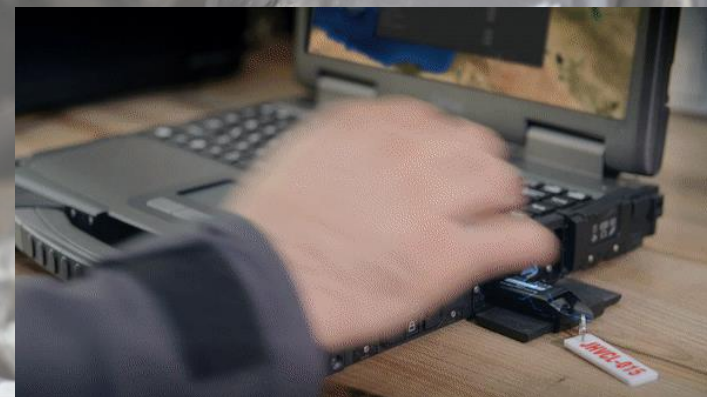


# Mission/Flight/Weapon Management

**YOU FOCUS  
ON YOUR TASK**

**WE'LL TAKE CARE OF  
THE REST**

## MISSION & FLIGHT MANAGEMENT



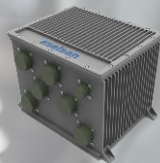
### Mission & Flight Management Systems



Digital Moving Map



System Interface Unit



Data Concentr. Unit



Health and Usage Mon. Systems



VYB-4CF Data Loader Unit



Mission Computer

# Mission/Flight/Weapon Management

**YOU FOCUS  
ON YOUR TASK**

**WE'LL TAKE CARE OF  
THE REST**

## WEAPON MANAGEMENT



### Weapon Management Systems



Missile/Rocket  
Interface Unit



Gun Interface Unit



Armament Control  
Panel



Store  
Management  
System Computer



Hand Control  
Units

# Helmet Mounted Display

AVCI HELMET INTEGRATED CUEING SYSTEM

INCREASED  
SITUATIONAL  
AWARENESS

CUE WEAPONS &  
ELECTRO OPTICS

ENHANCED IMAGE OF  
THE SCENE

VISOR PROJECTED,  
SEE-THROUGH MONOCROME  
DISPLAY  
WITH NIGHT VISION  
CAPABILITY,  
HYBRID (INERTIAL AND  
OPTICAL) HEAD TRACKING



# Embedded GNSS & Inertial Navigation

PLATFORM NAVIGATION&CONTROLS

**YOUR LAST LINE OF DEFENSE  
IS SAFETY**

**WE'VE GOT YOU COVERED**



ITAR Free

Platform Navigation Systems



**ANS-510** Airborne INS  
Ring Laser Gyro (RLG)



**ANS-511** Airborne INS  
Ring Laser Gyro (RLG)  
DO-178B & DO-254 Certified



**ANS-611** Airborne INS  
Fiber Optic

# Inertial Navigation

## PLATFORM NAVIGATION

Navigation & Control

EO/FLIR/  
Camera/Radar  
Stabilization

**YOUR LAST LINE OF DEFENSE  
IS SAFETY**

**WE'VE GOT YOU COVERED**



Guidance & EO  
Navigation Systems



KILAVUZ-11  
Tactical Grade IMU



KILAVUZ-20  
Tactical Grade IMU



KILAVUZ-30  
Tactical Grade IMU

# Communication Systems



Airborne Radios



IFF Systems



Intercommunication System



Data Link

# 9681 V/UHF Airborne Software Defined Radio

- Provides secure and reliable voice and data communication in 30-512MHz
- Relay configuration to increase the coverage area for V/UHF communication of ground and airborne units
- Have Quick-II and SATURN for interoperable communication



Remote Control Unit

9681 V/UHF  
Airborne SDR

Software  
Defined  
Architecture

COMSEC  
Built-in  
Encryption

TRANSEC  
Frequency  
Hopping

30W AM/  
15W FM

MIL-STD-810F  
MIL-STD-461E  
MIL-STD-704A

MIL-STD-1553B  
ARINC-429  
RS-422

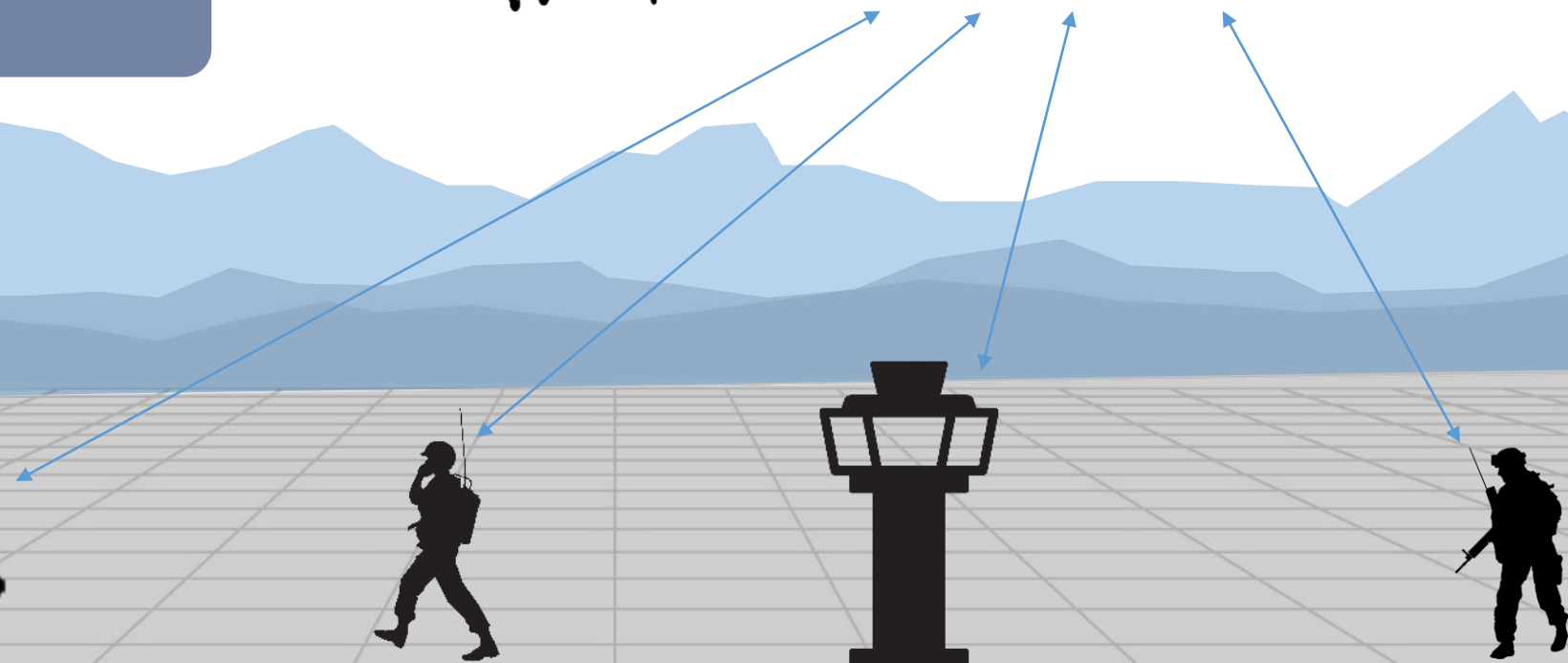
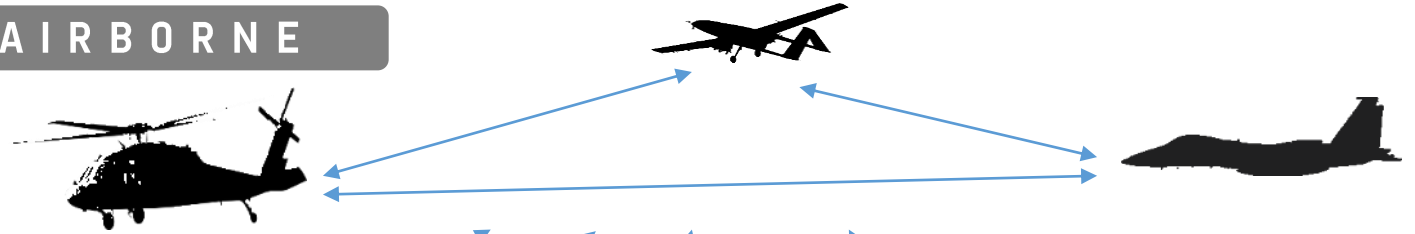
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# 9681 V/UHF SDR Operational Concept

9681 V/UHF Radios provides secure and reliable voice and data communication in Electronic warfare environment for Air to Air and Air to Ground.

AIRBORNE



VEHICULAR

MANPACK

AIR TRAFFIC  
CONTROL TOWER

HANDHELD



# Interoperable Communication

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**Clear waveforms**  
for compatibility  
with other  
manufacturers'  
radios

**HaveQuick-II**  
(STANAG-4246) and  
**SATURN**  
(STANAG-4372)  
for compatibility with NATO  
platforms

Transfer of Technology  
Program to develop  
**New National  
Waveform**

# 9681 HF Airborne Software Defined Radio

- Designed for Beyond Line of Sight communication with the most advanced HF technology covered in the related NATO STANAGs and military standards



3G Automatic Link Establishment

COMSEC Built-in Encryption

TRANSEC Frequency Hopping

2-30 MHz  
150W Max Power

MIL-STD-810F  
MIL-STD-461E  
MIL-STD-704A

MIL-STD-1553B  
ARINC-429  
RS-422

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# 9681 V/UHF and HF Airborne SDR Benefits

Enables increased Coverage Area with Relay Capability



Remote Control Unit

9681 V/UHF Airborne SDR



9681 HF Airborne SDR

Remote Control Unit

Long Distance Beyond Line of Sight Communication

Provides protection against Electronic Warfare threats

Flexibility to add new radio waveforms/features for future needs

Offers secure communication that cannot be intercepted

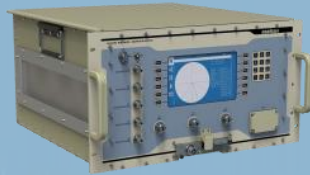
# Identification of Friend or Foe (IFF) Solutions



IFF Mode5/S  
TRANSPONDER



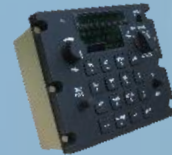
IFF Mode5/S  
SHORT/MID RANGE  
INTERROGATOR



IFF Mode5/S  
LONG RANGE  
INTERROGATOR



INTERROGATOR  
CONTROL AND  
DISPLAY SYSTEM



REMOTE  
CONTROL UNIT

- Designed to identify friendly platforms and to avoid any kind of «fratricide»
- Used for Land, Air, Naval Forces and Civilian Air Traffic Control
- Mode 1, Mode 2, Mode 3/A, Mode C and Mode S Support

STANAG  
4193  
Edition-3

Mode 5

MIL-STD-810G  
MIL-STD-461E  
MIL-STD-704

1553B  
ARINC-429  
RS-422  
Ethernet

ADS-B  
Transmit  
Feature

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# IFF BENEFITS

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**Enhances  
Situational  
Awareness**

**Reduces  
Fratricide  
Incidents**

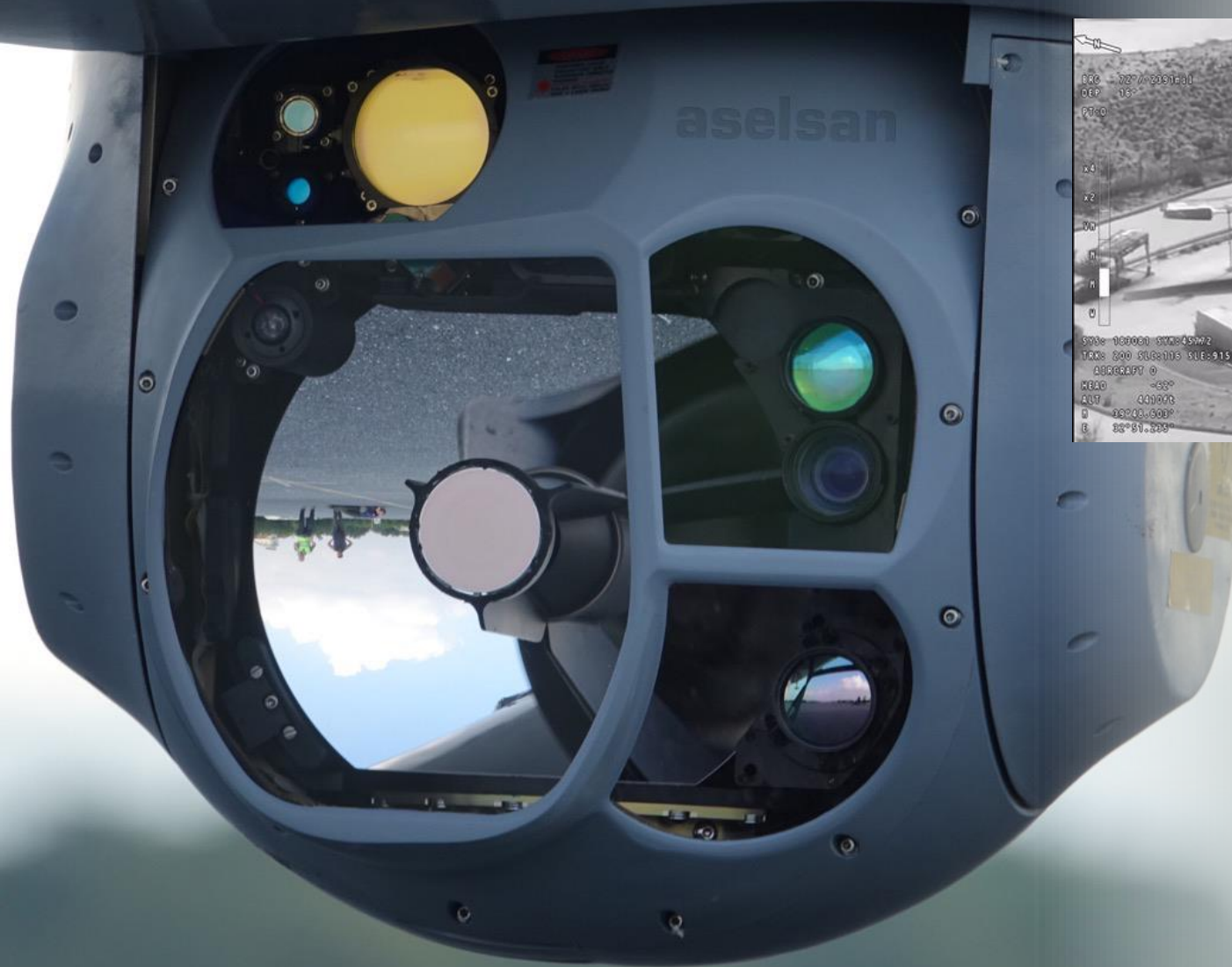
**Helps  
Rapid  
Decision  
Making**

**Integrates  
with Radar**

**Helps  
Air Traffic  
Control**

**Increases  
Friendly  
Force  
Coordination**

# Airborne Electro-Optic Targeting Systems



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# Airborne Reconnaissance Surveillance & Targeting Systems

High Performance Cameras

LRF & Designation

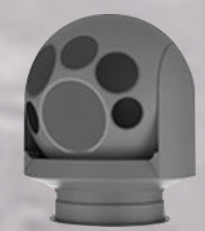
Accurate Target Location



ASELFLIR 400



ASELFLIR 500



ASELFLIR 600



ASELPOD

# What is ASELFLIR400?

Reconnaissance Surveillance & Targeting System

HD Infrared Camera

Full HD Day Camera

SWIR Camera

Turret Only Unit



Laser Range Finder

Laser Designator

Laser Pointer & Illuminator

Laser Spot Tracker

Rotary Wing Fixed Wing  
Land Vehicles

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# Why ASELFLIR400?



ITAR FREE

Delivery of Laser Guided Munitions

Determination of Highly Accurate Geo-Location

Compatible Laser Pointer With Night Vision Goggles

Superior Range Performance

**MAKE THE FIRST MOVE**



**HEWS - EW SELF PROTECTION SUITE  
ASELSAN MAKES SURE SURVIVING IS NOT A DREAM**

# EW Self Protection System

ALL-IN-ONE SELF PROTECTION  
SENSORS / COUNTERMEASURES

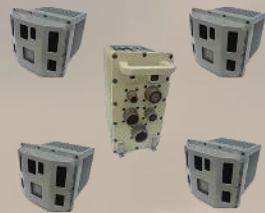
Helicopter Electronic Warfare Self Protection System(HEWS) is integrated Self Protection System for fixed and rotary wing aircrafts.



Radar Warning Receiver (RWR)



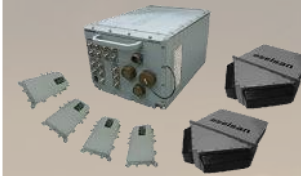
Missile Warning System (MWS)



Laser Warning Receiver (LWR)



Suite Central Processing System



RF Jammer (RFJ)



KARTACA-Countermeasure Dispensing System



IR Countermeasures (IRCM/DIRCM)

# EW Self Protection System - HEWS

1

D E T E C T I O N

2

C O U N T E R M E A S U R E

MWS



LWR



RWR



KARTACA CMDS



RFJ



IRCM/DIRCM

T H R E A T S



IR Guided Missiles



Radar Guided Missiles



Laser Guided Air Defense

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# IR Guided Missiles

# 1

## DETECTION

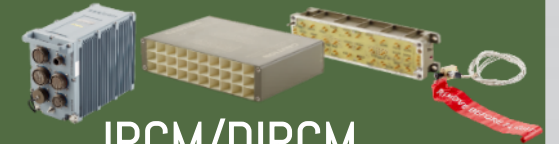
MWS  
Missile Warning System



# 2

## COUNTERMEASURE

KARTACA Chaff/Flare  
Dispensing System



IRCM/DIRCM



## THREATS

IR Guided  
Missiles

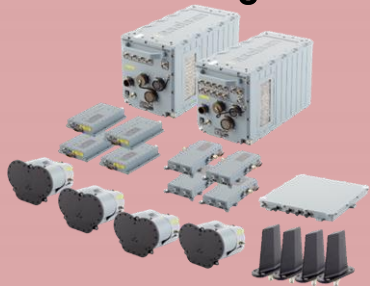


# Radar Guided Missiles

# 1

## DETECTION

RWR  
Radar Warning Receiver



# 2

## COUNTERMEASURE

KARTACA Chaff/Flare  
Dispensing System



New Gen. RF Jammer



## THREATS

Radar Guided  
Missiles

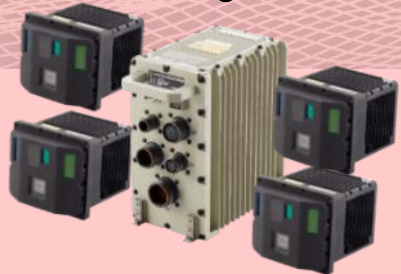


# Laser Guided Missiles

1

## DETECTION

LWR  
Laser Warning Receiver



2

## COUNTERMEASURE

KARTACA Chaff/Flare  
Dispensing System



## THREATS

Laser Guided  
Missiles



# KARTACA Chaff/Flare Dispensing System

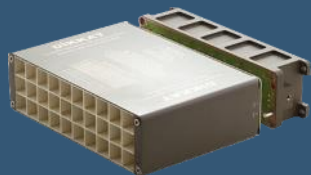
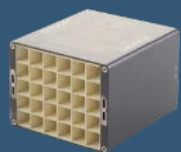
- **First system** with a proven demo of NDAS (STANAG-4781) compatibility;
  - Automatic decoy identification:  
**No more error-prone manual entry**
  - Programming and firing **EAD - Expendable Active Decoys**
- Back-compatible with **legacy decoys**



NDAS  
Compatible

EAD dispensing:  
Additional safety  
during HOJ  
scenarios

An integral  
part of  
HEWS



KARTACA Chaff / Flare Dispensing System

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# Platform Integration

3D Scanning



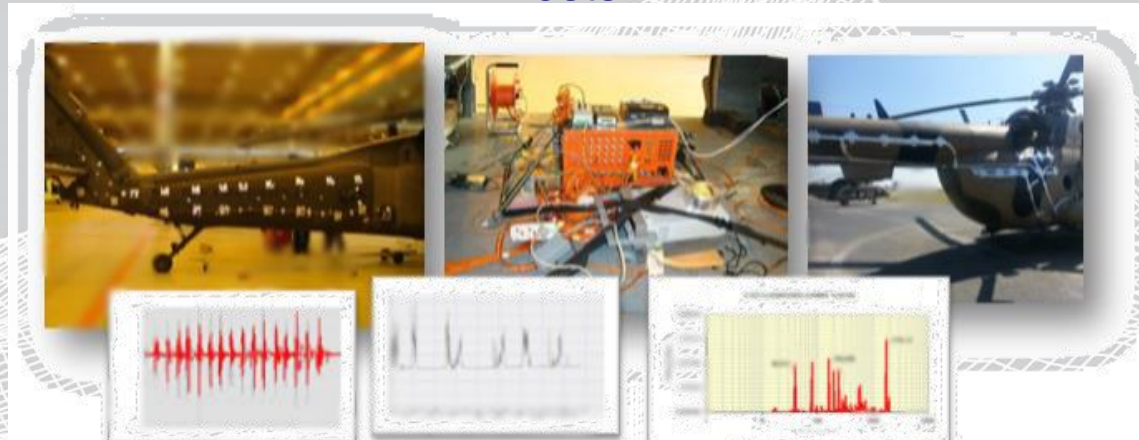
Digital Modeling



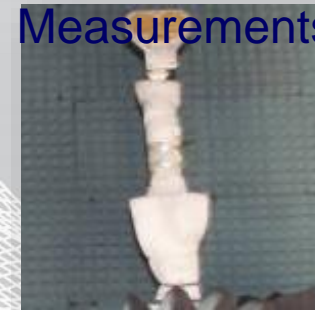
EMI/EMC Tests Antenna Isolation Tests



Platform Temperature, Vibration, Shock, Electrical Characteristics, Ground and Flight Tests



Anechoic Chamber Measurements



# Platform Integration

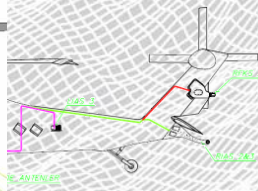
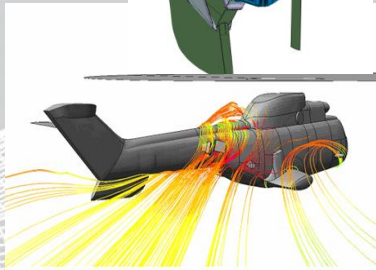
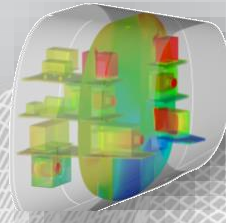
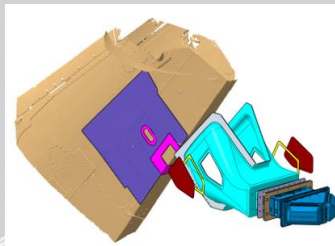
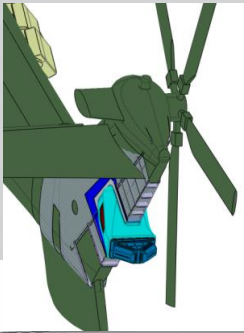
## Determination of Platform Interference



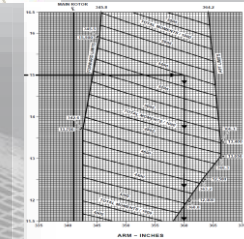
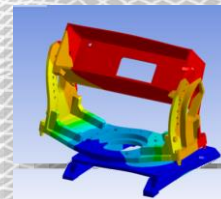
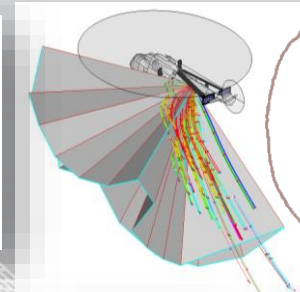
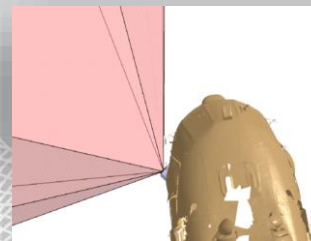
## Flight Performance Tests



## Design



## Analysis

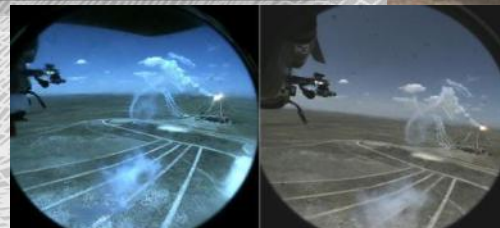
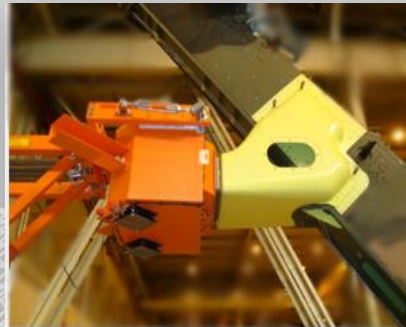


# Platform Integration

## Platform Installation



## Ground and Flight Tests





**FIELD PROVEN**

# References

AH-1



S-70



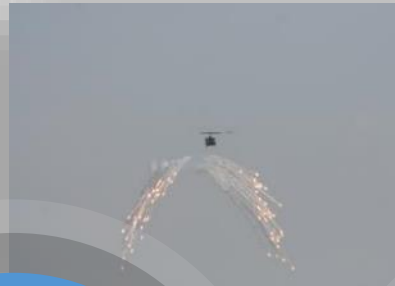
AS-532



UH-1



T-129



Chosen by  
6  
Countries

Integrated on  
500+  
platforms

Combat  
Proven

# Integration / Modernization

+ 1100  
Air  
Platform

Fast &  
Reliable  
Integration

Turnkey  
Solution



UNCLASSIFIED

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# Functional Tests

System  
Integration  
Activities

Functional

Environment  
Tests

EMI/EMC

Power

aselsan



VERTICAL FLIGHT SOCIETY  
LEONARDO INTERNATIONAL  
FELLOWSHIP AWARD  
2022 WINNER

# Platform Tests

A person wearing a white high-visibility vest with the 'aselsan' logo and a headset stands on a tarmac, looking towards a black helicopter in flight. The helicopter's main rotor blades are blurred, indicating it is in motion. The background shows an airfield with various structures and a clear blue sky.

Platform  
Integration  
Analysis

Ground &  
Flight  
Tests

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# Airworthiness

**Certified  
Solutions**

**Excellent Safety  
Record**



# Through-Life Support

**ON-SITE  
SUPPORT**

**MAINTENANCE**

**REPAIR &  
RETURN  
SERVICES**

**POST DESIGN  
SERVICES /  
UPGRADES**

**TRAINING**  
User Training  
Trainers Training  
Training Studio

**DOCUMENTATION  
TECHNICAL  
MANUALS  
USERS MANUAL**

**GUARANTEE**



# T129 ATAK ATTACK HELICOPTER Avionic Systems

## aselsan

**ICCC**  
INTEGRATED CENTRAL  
CONTROL COMPUTER



**KDU-44**  
KEYBOARD DISPLAY  
UNIT



**VMFD-68**  
VIDEO  
MULTIFUNCTION  
DISPLAY



**DMAP**  
DIGITAL MOVING  
MAP



**ANS-510**  
ASELSAN  
AIRBORNE INERTIAL  
NAVIGATION SYSTEM



**DLU-4CF**  
DATA LOADER  
UNIT



**ASELFILIR-300T**  
ELECTRO-OPTICAL  
RECONNAISSANCE,  
SURVEILLANCE AND  
TARGETING SYSTEM



**AVCI**  
HELMET INTEGRATED  
CUEING SYSTEM



**HEWS**  
HELICOPTER  
ELECTRONIC WARFARE  
SELF PROTECTION SYSTEM



**9681 HF**  
AIRBORNE RADIO



**9681 V/UHF**  
AIRBORNE RADIO



**IFF-3010**  
IFF TRANSPONDER



**DHS-121**  
INTERCOMMUNICATION  
SYSTEM



**WIU**  
WEAPON INTERFACE  
UNIT



**GIU**  
GUN INTERFACE  
UNIT





**1**  
WINNER

ASELSAN  
QUALITY AWARDS SYSTEM PROJECTS  
**2021 WINNER**

Vertical Flight  
Society

**1**  
WINNER

VERTICAL FLIGHT SOCIETY  
LEONARDO INTERNATIONAL  
FELLOWSHIP AWARD  
**2022 WINNER**

# T70 BLACKHAWK

## TURKISH UTILITY

## HELICOPTER

### Avionic Systems

**aselsan**

**VMFD-810**  
VIDEO MULTIFUNCTION  
DISPLAY



**KDU-45**  
KEYBOARD DISPLAY UNIT



**SMFD-810**  
SUPER MULTIFUNCTION  
DISPLAY



**ATLAS**  
ASELSAN  
DIGITAL MOVING MAP  
HTAWS SYSTEM



**MFSC**  
MULTIFUNCTION SLEW  
CONTROLLER



**USB PANEL**  
DATA TRANSFER  
CONTROL PANEL



**ANS-511**  
ASELSAN AIRBORNE INERTIAL  
NAVIGATION SYSTEM



**DHS-201**  
DIGITAL  
INTERCOMMUNICATION  
SYSTEM



**AVCC**  
ACTIVE VIBRATION  
CONTROL COMPUTER



**ECP**  
EMERGENCY  
CONTROL PANEL



**RCP**  
REVERSION CONTROL  
PANEL



**GVK-760**  
MISSION DATA  
RECORDER



**HEWS**  
HELICOPTER  
ELECTRONIC WARFARE  
SELF PROTECTION SYSTEM



**IFF-3010**  
IFF TRANSPONDER



**9681 HF**  
AIRBORNE RADIO



**9681 V/UHF**  
AIRBORNE RADIO



**ASELFLIR-R400D**  
ELECTRO-OPTICAL RECONNAISSANCE  
AND SURVEILLANCE SYSTEM





# T625 GÖKBEY LIGHT UTILITY HELICOPTER Avionic Systems

**aselsan**

**TCCU-810**  
TOUCHSCREEN COCKPIT  
CONTROL UNIT



**IMD-820**  
INTEGRATED MISSION  
DISPLAY



**ATLAS**  
ASELSAN  
DIGITAL MOVING MAP  
HTAWS SYSTEM



**MSC**  
MULTI-FUNCTION  
SYSTEM CONTROLLER



**ASELFLIR-R400D**  
ELECTRO-OPTICAL  
RECONNAISSANCE  
AND SURVEILLANCE SYSTEM



**FCC-442**  
FLIGHT CONTROL  
COMPUTER



**ACP**  
AUTOPILOT CONTROL  
PANEL



**ANS-511**  
ASELSAN AIRBORNE INERTIAL  
NAVIGATION SYSTEM



**DCU**  
DATA CONCENTRATOR  
UNIT



**HUMS**  
HEALTH & USAGE,  
MONITORING SYSTEM



**HEWS**  
HELICOPTER  
ELECTRONIC WARFARE  
SELF PROTECTION SYSTEM



**IFF-3010**  
IFF TRANSPONDER



**9681 HF**  
AIRBORNE RADIO



**9681 V/UHF**  
AIRBORNE RADIO

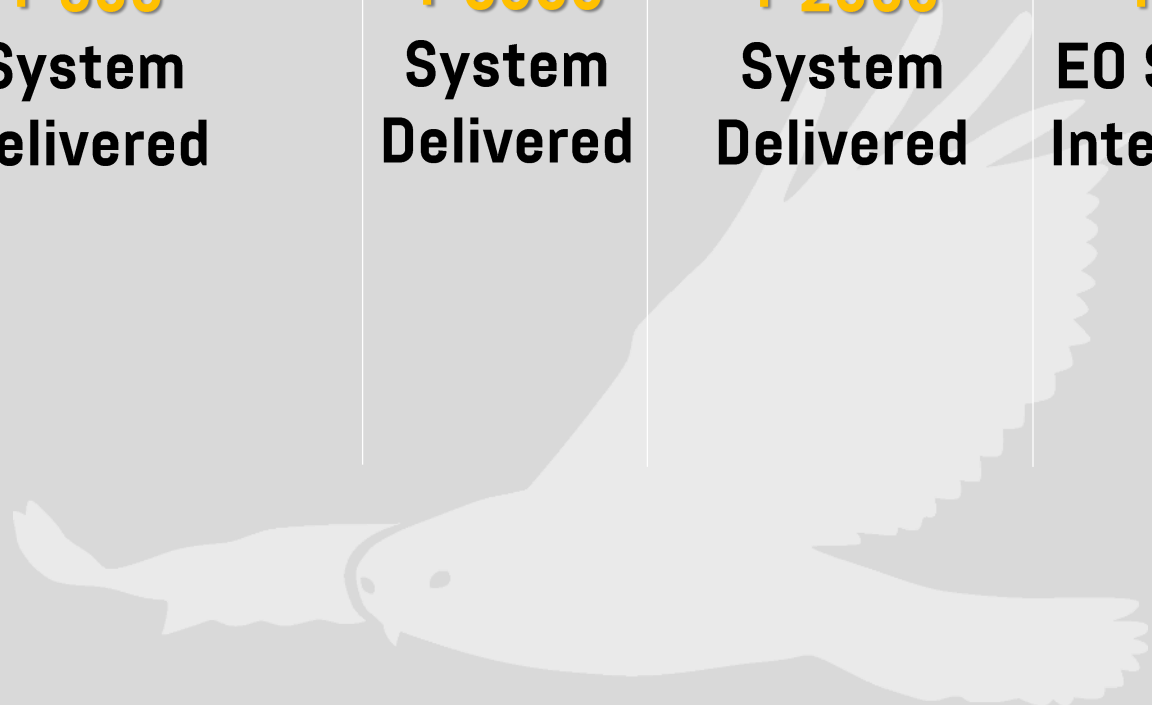


**DHS-201**  
DIGITAL INTERCOMMUNICATION  
SYSTEM



# References

Avionic Suite	Mission/Weapon/Flight Management	Inertial& GNSS Navigation	Communication	Airborne Electro Optic Targeting	Radar/ Electronic Warfare	Integration/ Modernization
<b>+ 30</b> Different Platform	<b>+ 650</b> System Delivered	<b>+ 3000</b> System Delivered	<b>+ 2500</b> System Delivered	<b>+ 250</b> EO System Integration	<b>+ 400</b> EW System Delivered	<b>+ 1100</b> Air Platform



BEYOND BORDERS FOR A  
BRIGHTER FUTURE

PREPARE FOR THE  
UNEXPECTED



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