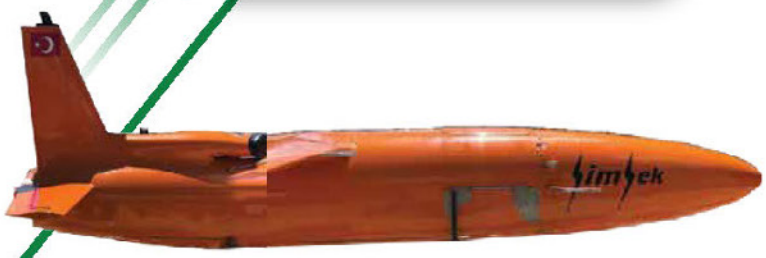
Sustaining Global Defence Productions

‘Sustaining Defence Production, and enhancing transfer of technology.’

Drones Catalog

AKSUNGUR

ŞİMŞEK



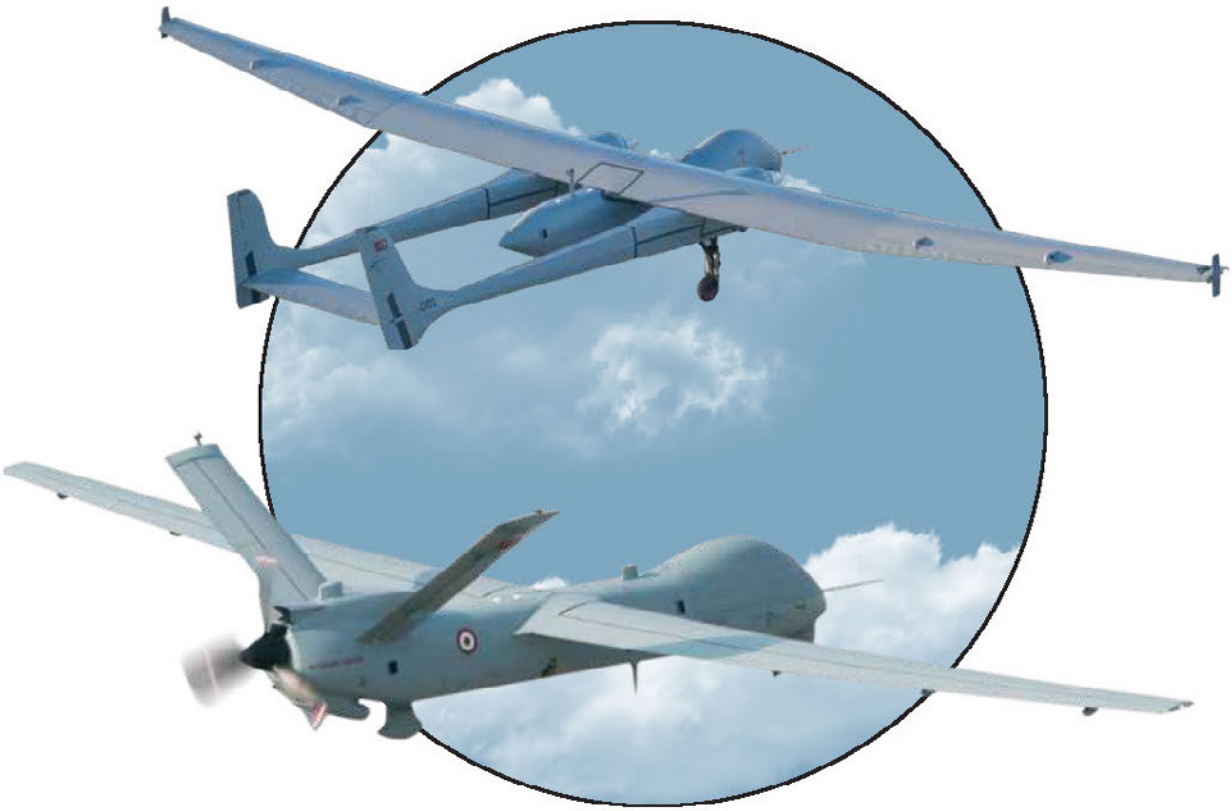
ANKA UAV FAMILY

UNMANNED AERIAL VEHICLES

ANKA UAV FAMILY

Multirole Male Class
Unmanned Aerial Systems,
Perform Day and Night,
All Weather Reconnaissance,
Target Detection / Identification,
Signal Intelligence and
Close Air Support Missions
with Various Payload Options

OVERVIEW



Medium Altitude Long Endurance UAV Systems ANKA and AKSUNGUR are Multirole, Multi Purpose Systems for Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) and Strike missions.

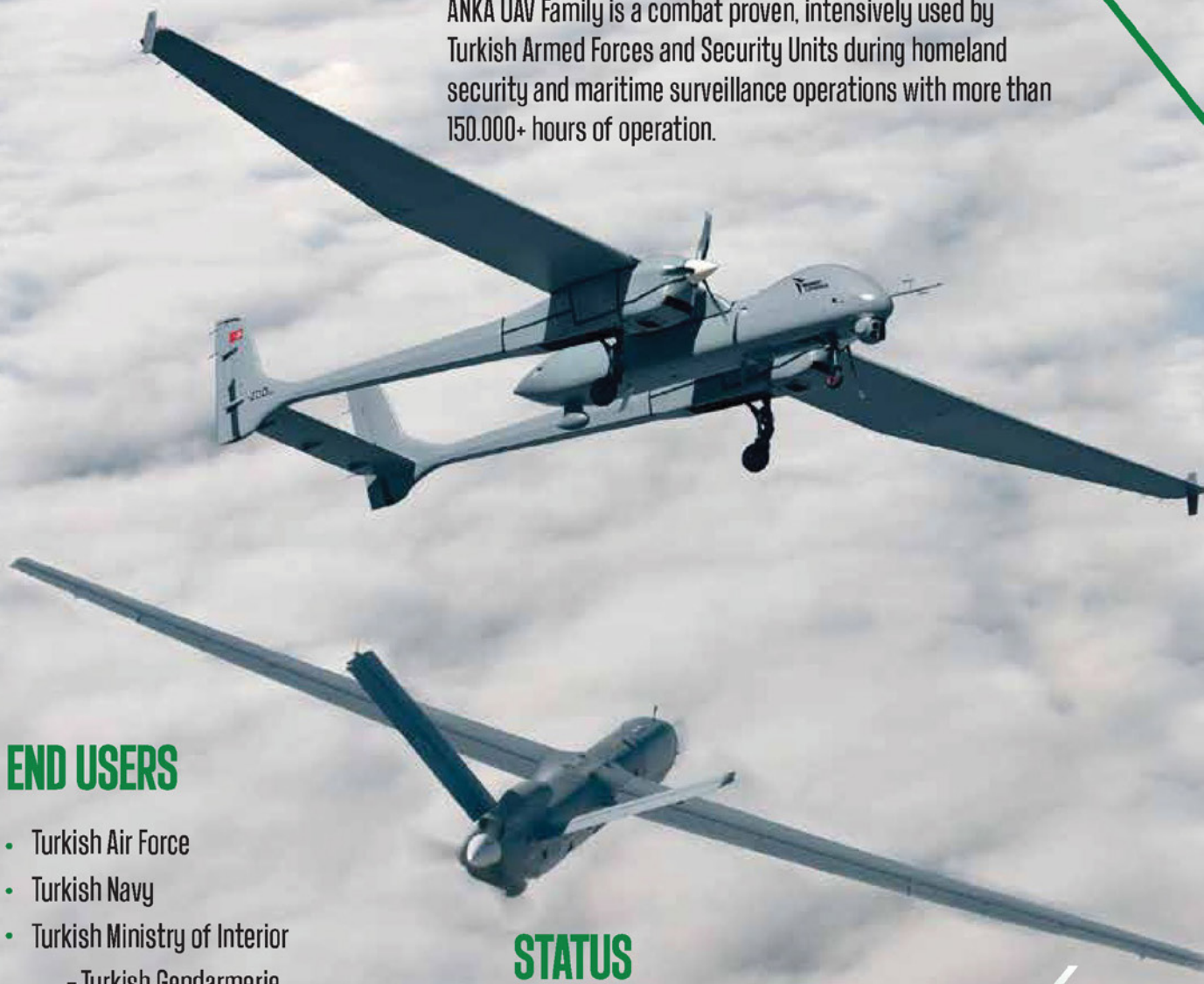
ANKA and AKSUNGUR MALE UAV systems provide a broad spectrum of intelligence collection capability to support their end users in maintaining national peace, during crisis and wartime operations. The capabilities of these UAV systems will provide a real time planning of current operations, to include: monitoring of enemy offensive and defensive positions, deception postures and combat assessment.

ANKA and AKSUNGUR UAV Systems are multi-sensor, multi-mission systems for;

- ISR (Intelligence, Surveillance and Reconnaissance)
- Targeting
- Air to Ground Strike
- Matitime Surveillance
- Border and Coastal Protection
- Communication Relay
- Electronic Warfare & Signals Intelligence

OPERATIONAL STATUS

ANKA UAV Family is a combat proven, intensively used by Turkish Armed Forces and Security Units during homeland security and maritime surveillance operations with more than 150.000+ hours of operation.



END USERS

- Turkish Air Force
- Turkish Navy
- Turkish Ministry of Interior
  - Turkish Gendarmerie
- Turkish General Directorate of Forestry
- Tunisian Air Force
- Kazakhstan Air Force Defence Force

STATUS

- Operational (160.000+ Operational Hours)
- Deliveries*
  ANKA: 36+
  AKSUNGUR: 5+

TECHNICAL DATA

ANKA

Performance

Endurance	Up to 30 hr @ Mission Altitude
Service Ceiling	Up to 30.000 ft (MSL)
Line of Sight (LOS) Range	250+ km
Powerplant	Heavy Fuel Engine
Payload Configuration Alternatives	EO/IR + SATCOM + Radio Relay EO/IR + SATCOM + Laser Guided Smart Bombs and Missiles EO/IR + SATCOM + SAR/ISAR/GMTI + AIS EO/IR + COMINT/DF + ESM/ELINT
	Depending on the requirements, ANKA/AKSUNGUR UAV can be accommodated with various payloads.

DIMENSIONS

Wing Span 17.5 m

Length 8.6 m

Height 3.25 m

WEIGHTS

Maximum Take-Off Weight	1.700 kg
Mazimum Payload Capacity	350+ kg

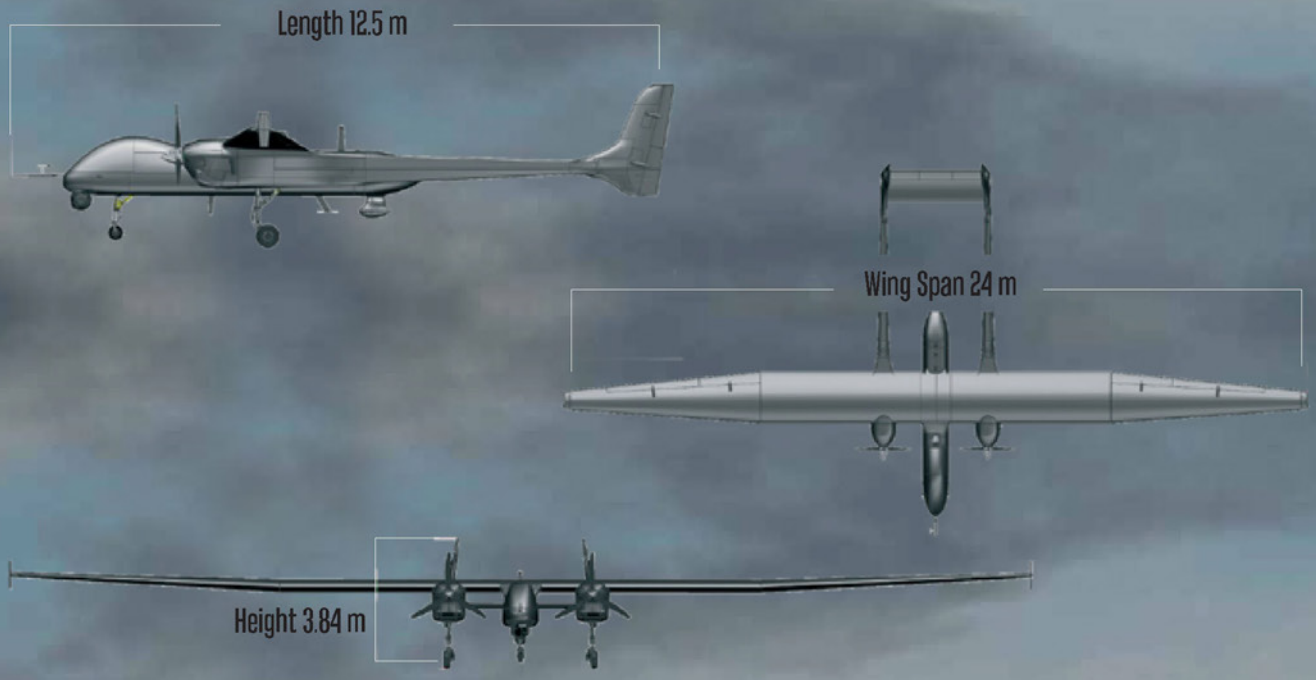
TECHNICAL DATA

AKSUNGUR

Performance

Endurance	Up to 50 hr @ Mission Altitude
Service Ceiling	Up to 40,000 ft (MSL)
Datalink Range	250+ km
Powerplant	Heavy Fuel Engine
Payload Configuration Alternatives	EO/IR + SATCOM + Radio Relay EO/IR + SATCOM + Laser Guided Smart Bombs and Missiles EO/IR + SATCOM + SAR/ISAR/GMTI + AIS EO/IR + COMINT/DF + ESM/ELINT Depending on the requirements, ANKA/AKSUNGUR UAV can be accommodated with various payloads.

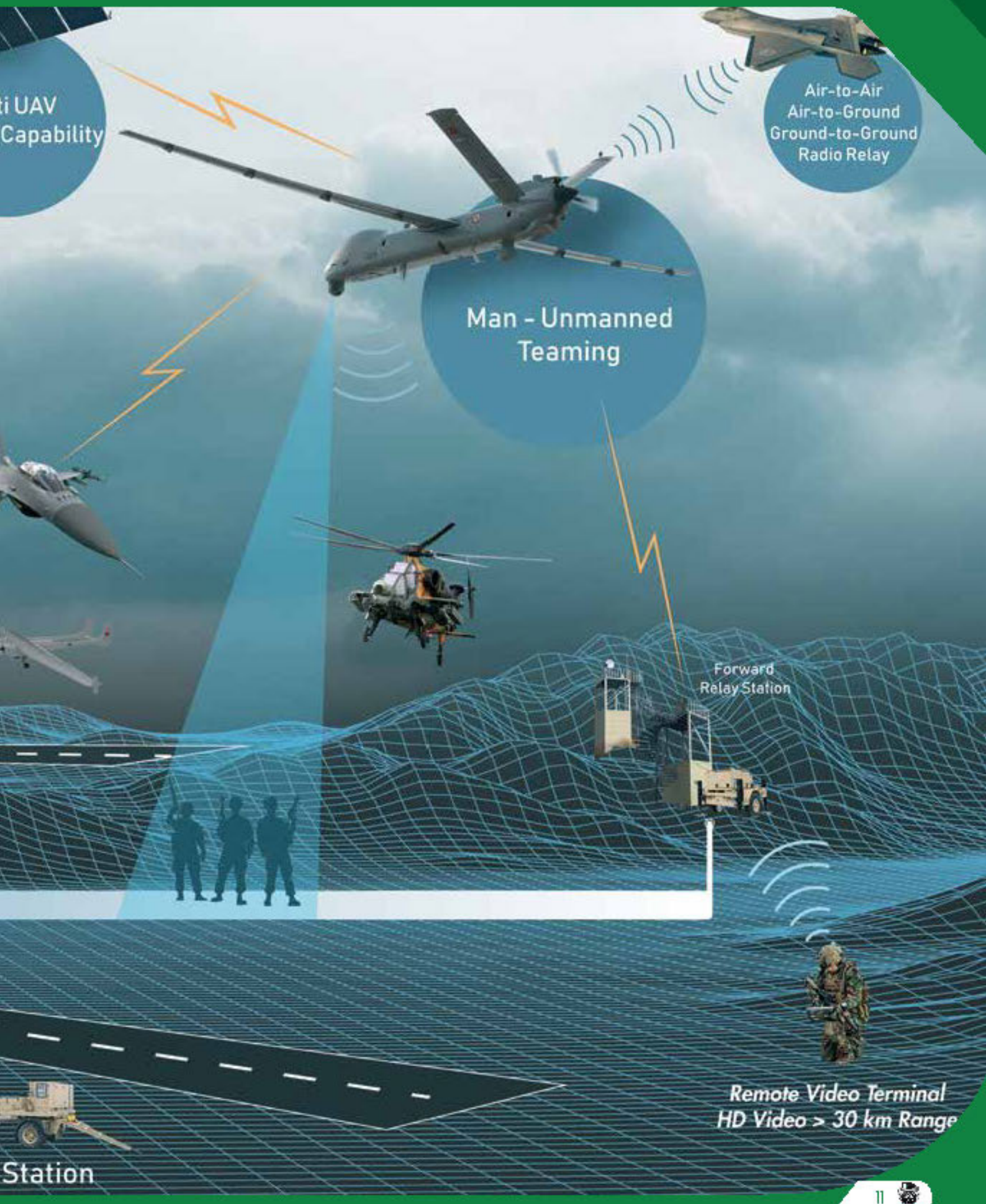
DIMENSIONS



WEIGHTS

Maximum Take-Off Weight	3.300 kg
Maximum Payload Capacity	750+ kg


Mul
Mission
Secure
Communication
Command & Control Center
GDT-2
Fixed Satcom Station
GCS
Link Handover @400 km
GDT-2
GDT
Mobile Satcom

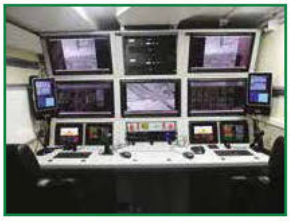

ti UAV
Capability
Air-to-Air
Air-to-Ground
Ground-to-Ground
Radio Relay
Man - Unmanned
Teaming
Forward
Relay Station
Remote Video Terminal
HD Video > 30 km Range
Station

SYSTEM COMPONENTS

AIR VEHICLE (A/V)

Nationally designed Unmanned Air Vehicle which has a composite structure, fully redundant avionics and Beyond Line of Sight datalink that allows operation at satellite coverage.

GROUND CONTROL STATION (GCS)



Fully rebundant and user friendly mission control, planning and monitoring unit which supports fully autonomous flight modes and has operation and simulator mode features.

SATCOM STATION

Mobile SatCom Station enables controlling 2 A/V simultaneously.

MOBILE GROUND SYSTEMS (MGS)

MGS is a mobile system consisting all ground equipment required for the operation. System also includes truck and trailers.

COMMAND & CONTROL CENTER (CCC)

Simulator, training and image storage/distribution capable Command and Control Center takes over and carries out the operation of the A/V with the ability of managing multi A/V simultaneously.

GROUND DATA TERMINAL (GDT)

44 Mbit/sec data download capacity, Ku Band data link system with AES256 encrypted communication and intrinsically redundant architecture.

BACKUP GROUND DATA TERMINAL (GDT-2)

8.5 Mbit/sec data download capacity, C Band data link system with AES256 encrypted communication.

REMOTE VIDEO TERMINAL (RVT)

Passive Video Terminal can be carried by a single user during the mission, has 30 km range.

FLIGHT SIMULATOR

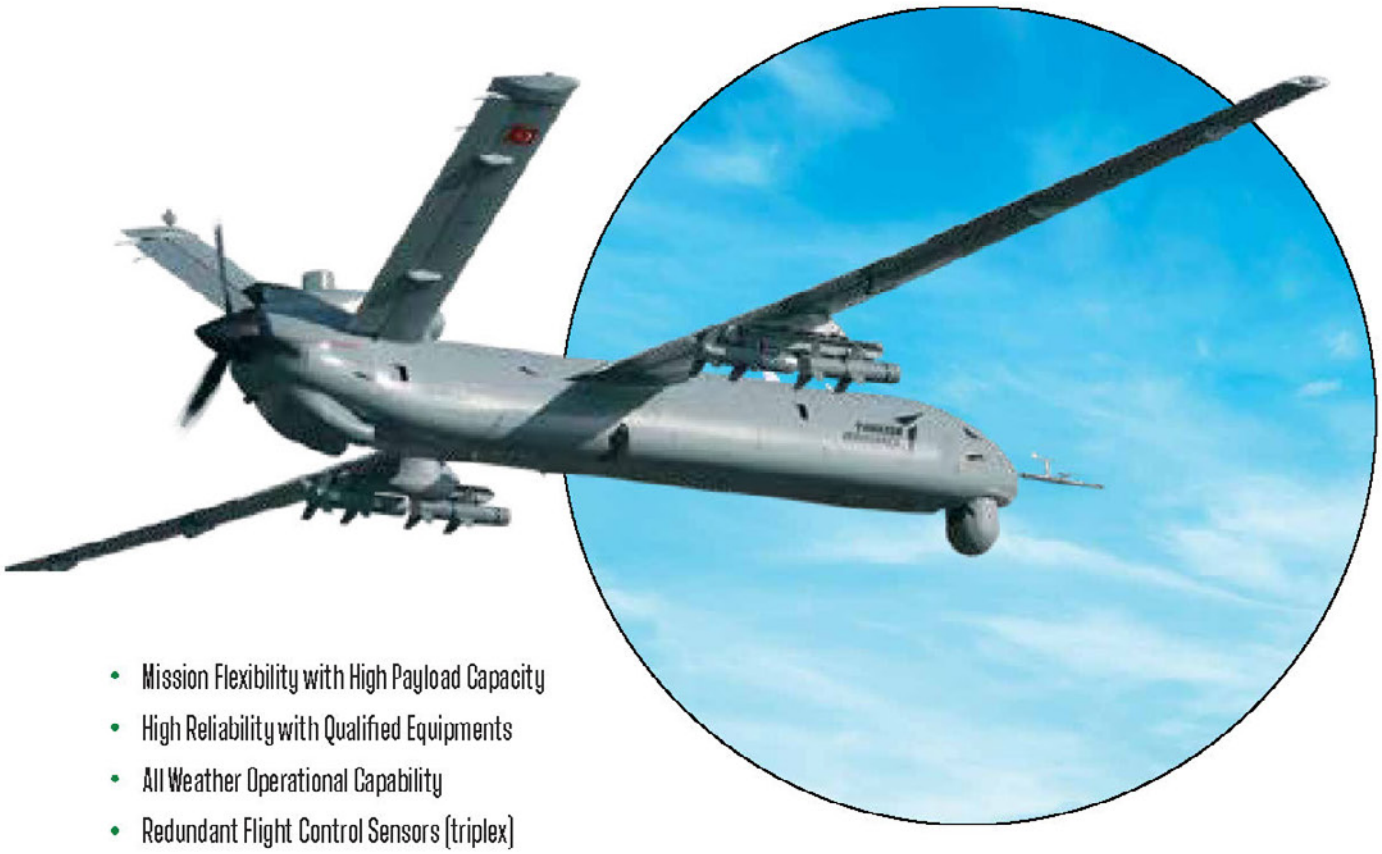
Mobile and fixed simulator system that provides interactive simulations of maintenance, flight and payloads as well as training support.

MOBILE ELECTRICAL POWER SUPPLY (MEPS)

Redundant power supply of ground systems with UPS support; automatic switching and emergency mode features.

AIR VEHICLE

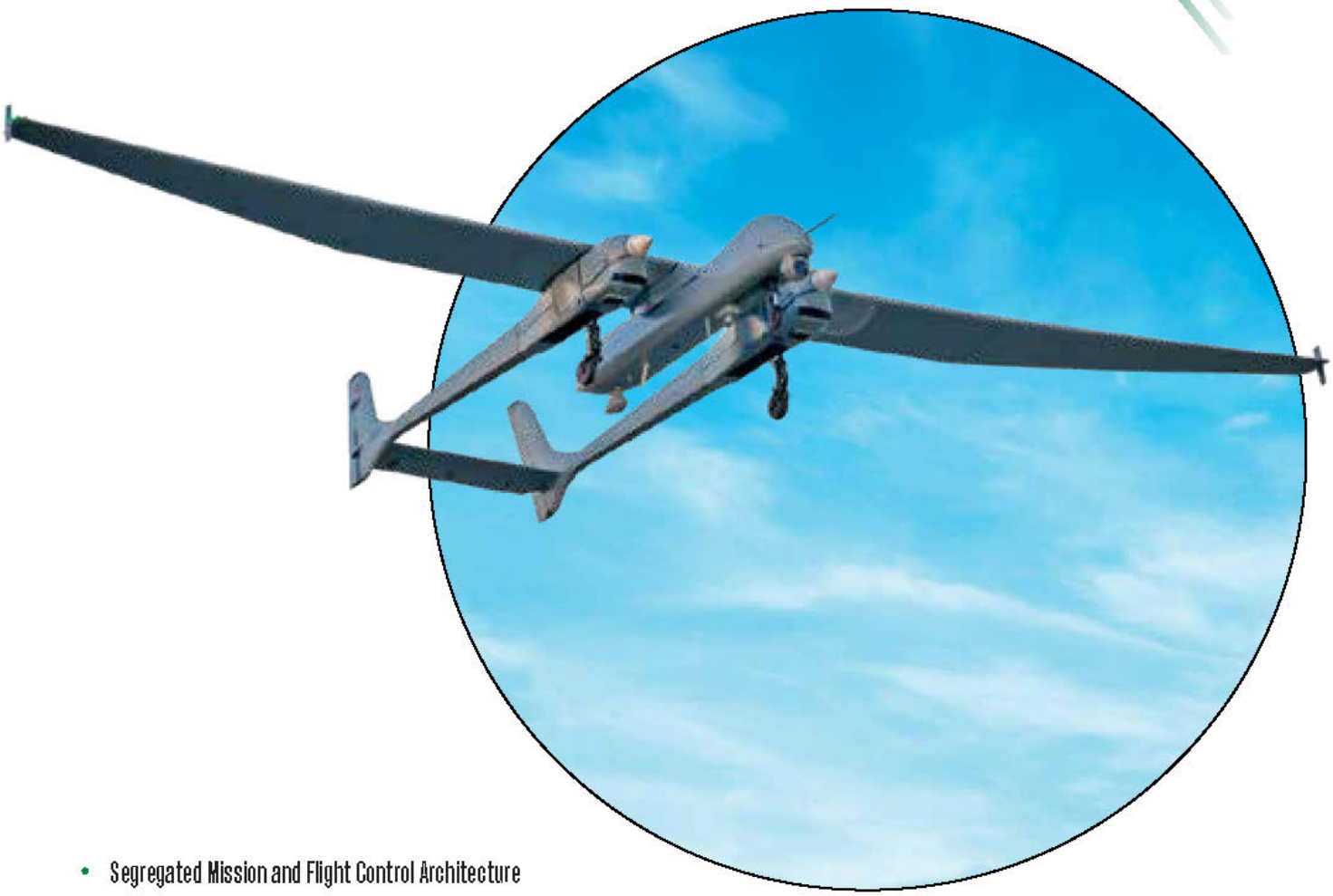
KEY FEATURES



- Mission Flexibility with High Payload Capacity
- High Reliability with Qualified Equipments
- All Weather Operational Capability
- Redundant Flight Control Sensors (triplex)
- Redundant Control Surfaces

Rain Test

- Sustainable Flight Sensor and Payload Heavy Jamming Conditions
- Redundant FCC's
- IFF & ATC Radio
- High Capacity Telemetry and Payload Data Recorder



- Segregated Mission and Flight Control Architecture
- Real Time Operating System
- DO-178B Certified Software
- DO-254 Certified Flight Critical Hardware
- High Level of Flight Safety

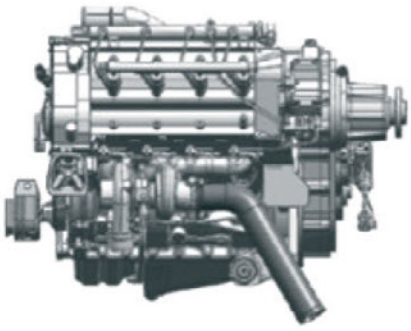
- Autonomous Flight & Navigation
- Redundant Automatic Take-off and Landing (DGPS and radar)
- Dual Redundant Position Source
- Emergency Base Landing (Option for Take-off)
- GPS Independent Operation Capabilities
- INS Fix & Radar Tracker Take-Off/Landing
- Return Home and Landing Capability for Total Link Loss Emergency

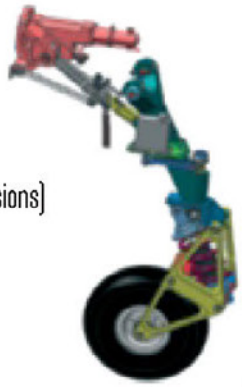
AIR VEHICLE

KEY FEATURES

- Composite Structure
- Internal and External Payload Capability
- Lightning Protection
- Regulated 28VDC Electrical Power
- Redudant Electrical Power Generation
- 2 Engine Driven Alternators (2x3KW)
- Back-Up Batteries for 30-Minute Flight
- Real Time Management on Power Distribution

- ECS Supported Avionic Bays
- De-Ice System
- EMI/EMC Compatibility
- Piston Engine
- In Flight Restart Capability
- JP8 Fuel or Equivalent
- Dual-engine in AKSUNGUR





- Retractable Landing Gear (No masking during ISR Missions)
- Electromechanical Systems
- Emergency Release

GROUND SYSTEMS

KEY FEATURES

- Fixed or Mobile GCS Solution
- GCS and Datalink Compatibility within ANKA UAV Family
- Redundant & Switchable Consoles
- Mission Planning and Analysis
- Real Time and Pre-Programmed Payload Operations

- Redundant datalink
- Handover & GDT Relay Capability
- High Data Transfer Rate (44 Mbps)
- 250+ km LOS Nominal Operating Range
- Spread Spectrum & AES 256 Encryption

- Multiple User
- User Flexibility
- Image Exploitation Function
- Data Record, Dissemination & Playback
- Encrypted Communication (Comsec & Transec)
- External C4I Interfaces
- Flight, Payload & Maintenance Simulator
- Secure LAN/WAN Communication
- Radio Communication Security
- User Friendly MMI
- NATO compliant ACE-III Type Shelter
- STANAG 4586 Compliant
- Very Low Weight 12 Hour Operational RVT

PAYLOADS

Turkish Aerospace is aware that all possible information and sources should be used to achieve situation awareness. The segregated architecture of flight and mission management systems enables Turkish Aerospace to easily integrate new payloads.

Integration of new and different types of ISTAR payloads including EO/IR Camera, Synthetic Aperture Radar (SAR), munitions, IFF, Radio Communication & Relay capabilities to ANKA and AKSUNGUR are completed and delivered to end users. Current end users have several operational variants of ANKA UAV Family. ANKA enhanced its capability with new developing and more powerful engine.

ELECTRONIC WARFARE

- COMINT/DF
- ELINT
- ESM / EA (Electronic Support Measure and Electronic Attack)
- Radar Warning Receiver (RWR)
- ComJam (Communication Jamming)

ISR PAYLOADS

- EO/IR/LD/LRF Camera
- SAR/GMTI-ISAR Radar
- Wide Area Surveillance Camera

WEAPONS

- Precision Guided Bomb
- Laser Guided Rockets
- Anti-Tank Missiles

OPERATION SUPPORT PAYLOADS

- SATCOM
- PLS - Personnel Locator System
- Radio Relay
- Air Launched Decoy
- Digital Data Recorder

EO/IR CAMERA OPTIONS

The mission payload of the ANKA UAV Family is a multi-sensor electro-optical targeting and surveillance system.

The mission suite shares the data link system of flight management to connect airborne and ground mission components. The Mission Computer, interfacing with the FCC, manages the mission equipment and converts the data streams to the formats acceptable to the data link and C4L interfaces on the ground. The mission suite consists of an advanced EO/IR subsystem with IR/TV/Spotter Camera and Laser Range Finder.

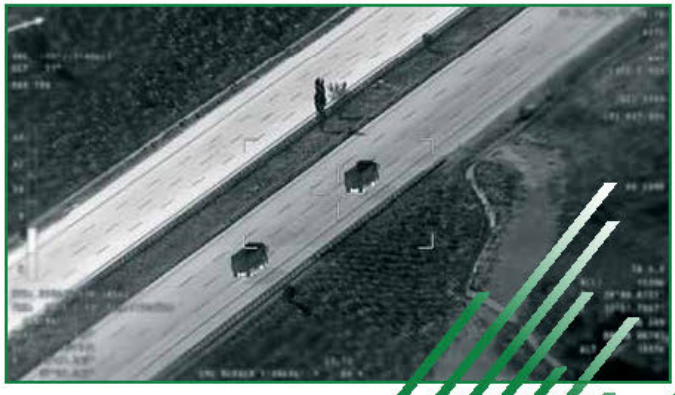
FLIRSYSTEM
Star Safire 380HD

WESCAM
CMX15D

ASELSAN
CATS

HENSOLDT
ARGOS-II HDT

WESCAM
MX25



SAR/ISAR/GMTI RADAR

Synthetic Aperture Radar / Inverse Synthetic Aperture Radar / Ground Moving Target Indicator Radar

The SAR System is designed and developed to operate under all weather conditions including cloudy and rainy weather conditions during day and night. SAR System's state-of-the-art multi-channel antenna enables SAR imaging (Spot or Strip) and Ground Moving Target Indication (GMTI) modes to be executed on the same antenna.

SAR System is for military use in reconnaissance and surveillance applications, and for civilian applications of post-disaster damage assessment, crisis management, city planning and mapping.

The antenna structure and highly integrated SAR electronics provide superior performance in SAR imaging and GMTI missions.

SAR System's multi channel antenna enables SAR/ISAR imaging, Sea Search and the Ground Moving Target Indication (GMTI) modes.

SAR/GMTI System technical characteristics are given below;

- Frequency: 16.250 – 16.750 MHz
- Selectable Resolutions and Scan Rates
- Azimuth Coverage 360°
- Elevation Coverage +10° / -55°
- Unconditioned Air Cooling
- Peak Power > 53 dBm
- Built-in test (BIT)
- Operating Voltage 20-30 VDC
- Weight: < 30 kg

STRIP mode:

- STRIP 1 Resolution: 3m x 3m, Range: 30 km
- STRIP 2 Resolution: 1m x 1m, Range: 25 km
- STRIP 3 Resolution: 0.5m x 0.5m, Range: 20 km

SPOT mode:

- Resolution: ≤0.3 meter
- Range is 20 km for SPOT

GMTI mode:

- Range is 30 km for GMTI
- Minimum target speed 5 m/s (18 km/h)

Multirole UAV Systems

- Operating temperature: -54°C/+50°C
- Operating humidity: RH%90@ 50°C
- Take-off and landing at 15kt side wind, 20kt headwind
- Low pressure environment up to 30,000ft
- Rain and solar radiation resistance
- De-icing capability
- Flight Line Tester for operation support
- Full Mission, Payload and Maintenance Simulator
- Compliant to RTCA/DO-178B, RTCA/DO-254, RTCA/DO-160, MIL-STD-810, MIL-STD-464, MIL-STD-461, STANAG 3153 and MIL-STD 704 standards

WEAPON SYSTEMS

MAM-C
Precision Guided Bomb

MAM-C lightweight Smart Micro Munition has been developed for unmanned aerial vehicles (UAV) and light attack aircraft, and for air-to-ground missions where weight is a critical factor. MAM-C provides high strike precision against static and mobile targets.

Weapon Type	Smart Micro Munition
Warhead Type	Multi Purpose
Guidance Mode	INS and Semi Active Laser Seeker
Damage Radius	≤ 10 m
Max Range	≤ 8 km
Target Hitting Accuracy	< 3 m
Target Hitting Altitude	4.000 ft – 25.000 ft (release altitude)
Launch Speed for max range	Minimum ground speed 25 knot
Weight	6.5 kg

MAM-L
Precision Guided Bomb

MAM-L lightweight Smart Micro Munition has been developed for unmanned aerial vehicles (UAV), light attack aircraft, and air-to-ground missions. MAM-L offers high strike precision and efficiency with alternative warheads against fixed and mobile targets.

Weapon Composition	Smart Micro Munition
Warhead Type	High Explosive, Anti Armor, Thermobaric
Guidance Mode	INS and Semi Active Laser Seeker
Damage Radius	< 25 m
Max Range	≤ 15 km
Target Hitting Accuracy	< 3 m
Target Hitting Altitude	4,000 ft – 25,000 ft (release altitude)
Launch Speed for max range	Minimum ground speed 25 knot
Weight	21.5 kg

MAM-T
Precision Guided Bomb

MAM-T Munition was developed for unmanned aerial vehicles and light attack aircraft for use in critical air/ground missions. With its fixed wing structure and improved warhead, MAM-T provides the user with high strike precision and efficiency against fixed and mobile targets at longer ranges.

Weapon Composition	Smart Micro Munition
Warhead Type	High Explosive
Guidance Mode	INS and Semi Active Laser Seeker
Damage Radius	≤ 35 m
Max Range	≤ 30 km
Target Hitting Accuracy	< 3 m
Target Hitting Altitude	4,000 ft – 25,000 ft (release altitude)
Launch Speed for max range	Minimum ground speed 25 knot
Weight	88 kg

L-UMTAS
Air-to-Ground-Missile

Laser Guided Long Range Anti-Tank Missile System (L-UMTAS) is an anti-tank precision guided missile system developed primarily for integration with helicopter platforms. The laser guidance and tandem armour-piercing warhead features of L-UMTAS ensure its effectivity against both static and mobile targets. The missile can lock onto the target before or after launch.

Weapon Type	Laser Guided Antitank Missile
Warhead Type	Anti Armor
Guidance Mode	INS and Semi Active Laser Seeker
Damage Radius	< 25 m
Max Range	≤ 8 km
Target Hitting Accuracy	< 3 m at launch altitude ≤ 5000 ft
Target Hitting Altitude	1,000 ft – 5,000 ft (release altitude)
Launch Speed for max range	Ground speed 0-150 knot
Weight	37.5 kg

CIRIT
Laser-Guided Missile

2.75" Laser Guided CIRIT Missile is a highly accurate and cost-effective solution for armed helicopters, and is optimized for use static or moving lightly armored/unarmored targets. The next generation CIRIT has been designed to fill the tactical gap between 2.75" unguided rockets and guided anti-tank missiles.

Weapon Type	Laser Guided A Missile
Warhead Type	High Explosive
Guidance Mode	INS and Semi Active Laser Seeker
Damage Radius	≤ 10 m
Max Range	≤ 10 km
Target Hitting Accuracy	< 3 m
Target Hitting Altitude	4,000 ft – 25,000 ft (release altitude)
Launch Speed for max range	Ground speed 0-300 knot
Weight	17 kg

KUZGUN
2 x KUGSUN
Guided Modular Munition

The KUGSUN Guided Modeular Munition Family, is a low-cost new generation 100kg class product developed for multi-use concept with modeular propulsion and navigation/guidance methods and war heads that provide high hit accuracy and a low risk colletral damage.

	KUZGUN-SS	KUZGUN-TJ
Diameter	360 mm	360 mm
Length	1.8 m	1.8 m
Weight	89 kg	100 kg
Max Range	up to 45 km	up to 150 km
Warhead Types	Anti-Armor high Explosive Particle	Anti-Armor high Explosive Particle Effect
Guidance	LAB+ INS/GPS/	INS/GPS/LAB/IR
Target Types	Heavy Armored/Armared Vehicles	Heavy Armored/Armared Vehicles
Platforms	UAV's Light Attack Aircrafts	UAV's Light Attack Aircrafts

SATCOM

Wideband SATCOM up to 20 Mbps

ANKA UAV Family has also Wide Band Satelite Communication System. SATCOM is a Beyond Line of Sight (BLOS) data link, which allows operation at satellite coverage.

ANKA BLOS Range is over 2750 km Radius of Action (RoA) for the Basic Configuration (EO/IR & SATCOM). The range is limited to satellite coverage and operational fuel capacity.

The operational performance of the payloads and quality of the video image may vary depending on the Satellite provider's service capacity.

- Ku Band
- Up to 20 Mb/s return link data rate
- 500 Kbps forward link data rate
- Multi UAV operation with fixed earth station
- 2 simultaneously UAV operation with mobile earth station
- Forward and return link with AES-256 crypto
- User friendly management & control software for satellite

OPERATIONAL SUPPORT PAYLOADS

ANKA UAV Family can perform radio relay mission to provide communication capability between two friendly units. For additional relay capability, apart from the existing radio system, 2 more V/UHF Radio units are located in the aircraft.

By this way, other friendly units (Air-to-Air, Air-to-Ground or Ground-to-Ground) will be able to communicate with each other over ANKA and AKSUNGUR.

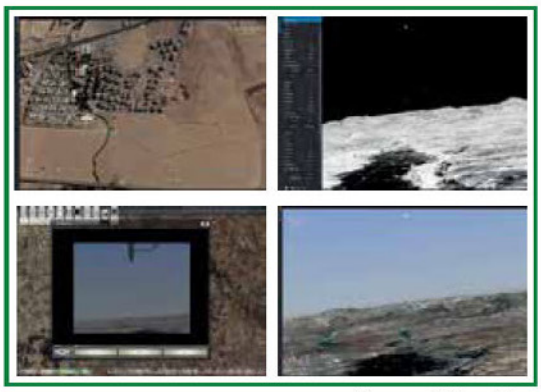
The control of the radios used for relay purposes are done via Mission Computer. The aircraft will provide the radio relay function while at the same time it will be able to provide air traffic information at different frequencies.

Frequency selection, modulation selection and output power selection of communication radios can be made in GCS.

- Wide Band SATCOM
- Narrow Band SATCOM
- Air Traffic Communication Radio System
- VHF/UHF Communication Relay
- Automatic Identification System (AIS)
- IFF (Identification, Friend or Foe) and ADS-B
- Traffic Collision Avoidance System (TCAS)
- Anti-Jamming System
- Emergency Locator Beacon (ELT)
- PLS (Personnel Locator System)
- Traffic Collision Avoidance System (TCAS)
- Digital Data Recorder
- Remote Video Terminal (RVT)
- Airborne Broadband Network & Communication Pod
- Air Launched Decoy

Mobile Simulator

SIMULATOR



Screen of Simulator

Fixed Simulator

Flight Training Simulator (FTS) is a high fidelity mobile UAV training simulator, which allows the ANKA and AKSUNGUR crew to simulate flight through ground control station, ground data links. It provides a realistic operational environment for the ANKA and AKSUNGUR crew on the field Mobile FTS.

HIGHLIGHTS

- Mobile FTS
- Real Ground Control Station Integration
- Trainer Graphical User Interface (GUI)
- ANKA and AKSUNGUR UAV Systems Models
- Image Generator and Database
- Tactical Environment Maps (2D, 3D, DEM)

MAJOR CAPABILITIES

- Flight Training with All Malfunctions
- Payload Training with Animated Targets
- Maintenance Training for Troubleshooting and Scheduled Actions
- Classroom Training
- Exam and Online Trainer Interaction Support
- Weapon System Training

FUNCTIONS

Trainer GUI

- Simulation and Scenario Control
- Malfunction Injection
- Tactical Environment Simulation
- Simulation Recording and Replay
- Reporting and Evaluation

Simulation Models

- ANKA and AKSUNGUR UAV's Equipment Models
- Flight Simulation

Image Generator and Database

- Digital Terrain Elevation Database
- DAY/IR 3D Models
- Outer View 3D Models
- Tactical Environment Maps

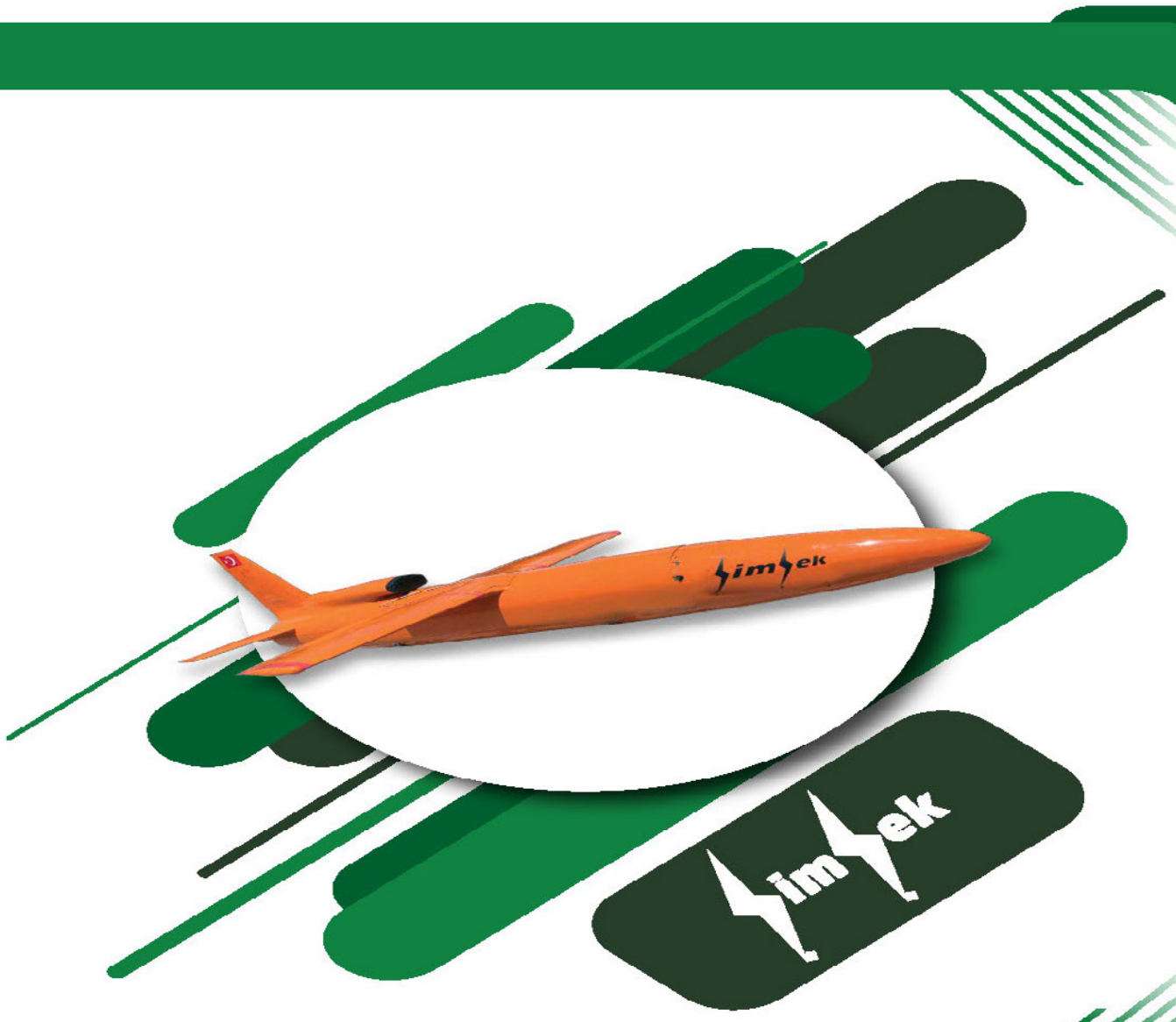
MAINTAINABILITY

The ANKA and AKSUNGUR UAV Systems airframe has several other features for draining, mooring, servicing, grounding, etc. The ANKA UAV Family is built for easy assembly and disassembly of its main parts, so that it can be inserted into or removed from its shipping container for transportation. The wing and tail surfaces can be detached from the fuselage for transportation. A special container type storage crate is used for long term storage as well as for transportation.

Short and long term deployment scenarios are available for ANKA UAV Family which can be transported by ground, sea, and air. All the systems including mobile ground systems can be transported by cargo aircfraft such as C130 & A400M. PHS&T requirements are validated with related Military Standards.

Transportable With Standard 40' Container

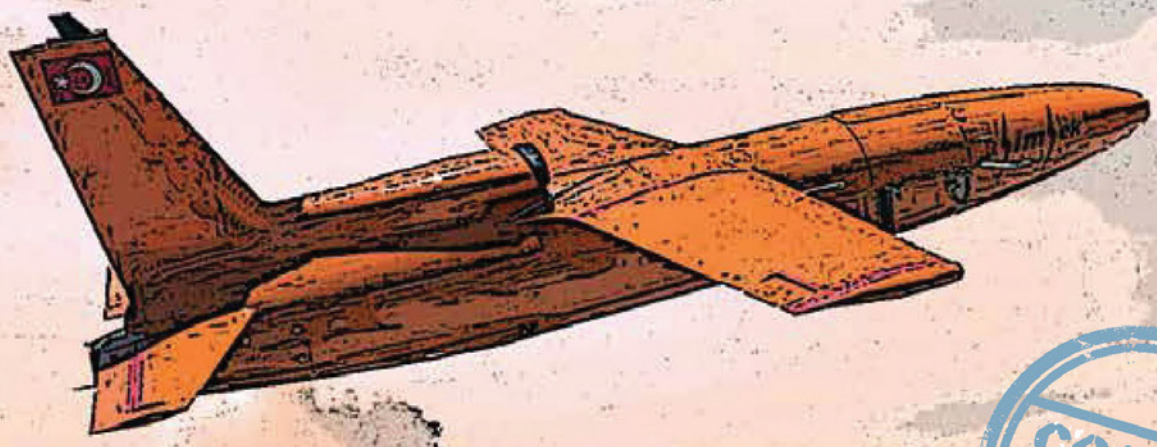
- Maintainable Product Design
- Detachable Wings and Empennage
- Interchangeable and Replaceable Parts Optimization
- No Specific Tool Requirement for Maintenance
- Flight Line Tester for Operation Support
- A400M & C130 Transportable with Standard 40' Container


Şimşek
Şimşek

Şimşek

By taking off from land, Sea or Carrier UAV Platform, and then simulating high speed aerial threats, ŞİMŞEK High Speed Target Drone System is used for Aerial Threat Simulation for Surface to Air and Air to Air Defense Systems Training. It plays the Attacking Hostile Air Platform Role during the Air Defense Training and Tests.

ŞİMŞEK High Speed Target Drone, with its wide variety of playloads and effective flight envelope, can be configured to simulate different type of Aircraft and Missiles.



COMBAT PROVEN

ŞİMŞEK HIGH SPEED TARGET DRONE OVERVIEW

ŞİMŞEK High Speed Target Drone enables autonomous high speed and low altitude threat simulation of aircraft and missiles.

The smart design of the ŞİMŞEK High Speed Target Drone provides the user with ease of maintenance, ease of operation and transportation.

- Suitable for training of surface to air and air to air weapon systems;
- Recoverable and reusable platform;
- Fully composite structure;
- Catapult launched from land, ship's deck or carrier UAV;
- Parachute recovery on land;
- Mission planning, management and playback capabilities;
- Multi flight capability (swarm);
- Various payload capability;
- Ability to return to base and open parachute for recovery at a predefined coordinate in link loss conditions.

OPERATIONAL STATUS

Indigenously developed ŞİMŞEK High Speed Target Drone System is operational and exported.

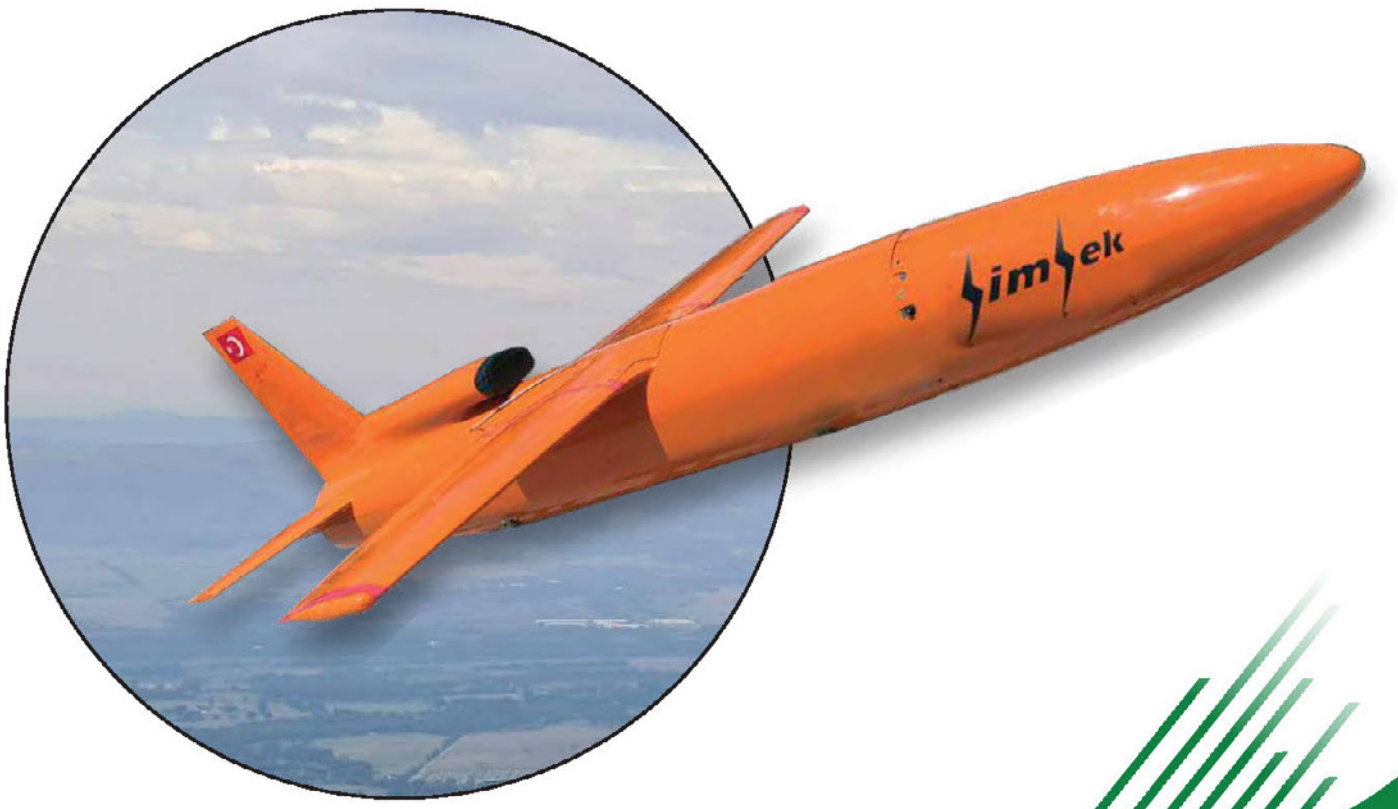
It has a modular structure and can be configured to meet the customer requirements.

ŞİMŞEK High Speed Target Drone System has considerable cost per mission advantages due to its cost-effective design approach.

TECHNICAL DATA

Performance

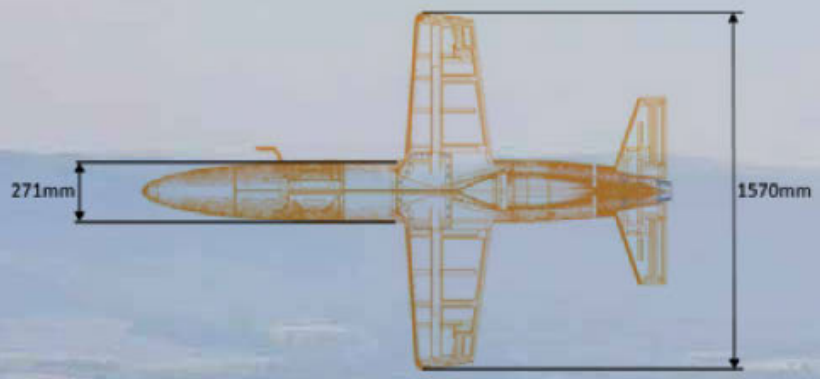
Endurance	45+ minutes
Mission Altitude	50 – 25,000 ft (Mean Sea Level – MSL)
Mission Radius	120+ km (Tracker Antenna) (LOS) 50 km (Omni Directional Antenna) (LOS)
Cruise Speed	90 m/s (180+ kts)
Maximum Speed	180 m/s (350+ kts)
Powerplant	Turbojet Engine

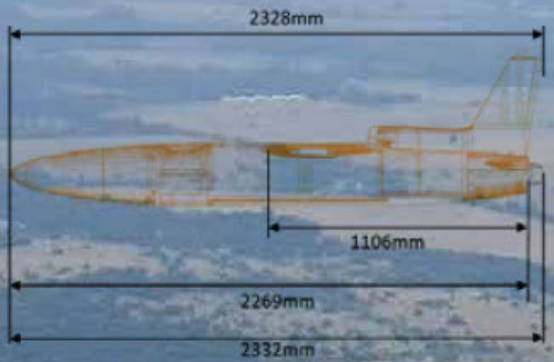


DIMENSIONS

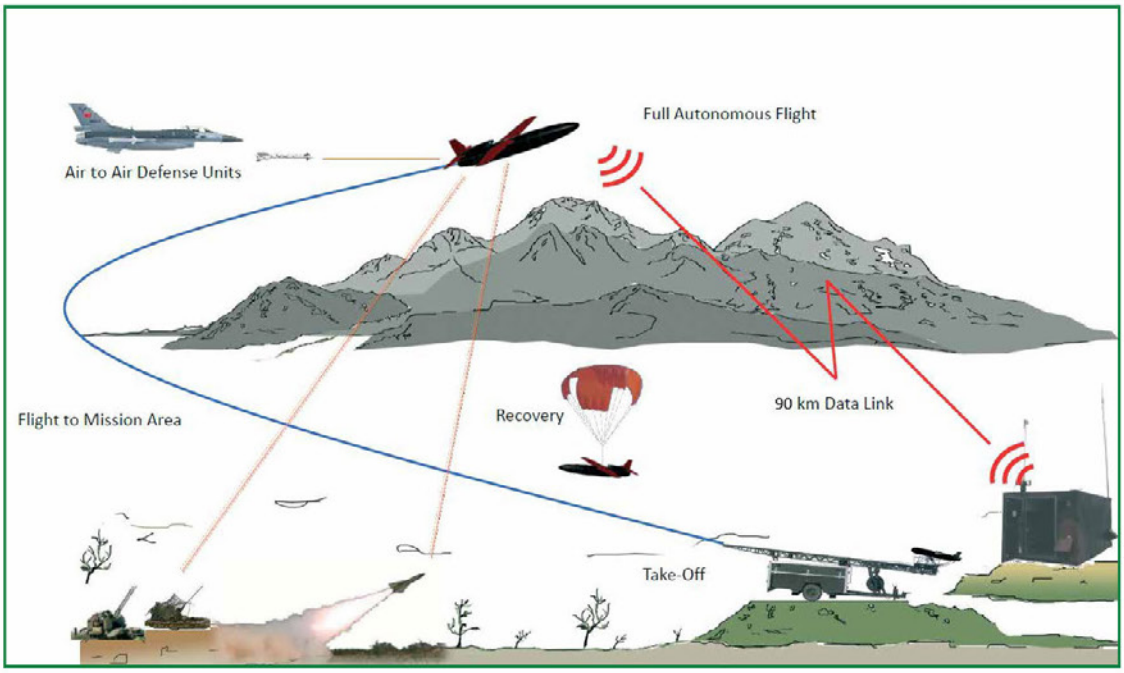
WEIGHTS

Maximum Take-Off Weight	70 kg





MISSION PROFILE



Şimşek Aerial Target Mission Scenario

DATA RECORDING

Flight data, system status and pilot commands as follows are recorded during the mission and upon completion of the mission:

- Altitude
- Indicated Air Speed
- Calibrated Air Speed
- True Air Speed
- Ground Speed
- Gps Coordinates
- Range to Specific Point

During the operation, the flight data can be shared simultaneously with Ethernet. In addition, the data recording and sharing simultaneously can be customized according to customer requests.

SPECIAL FLIGHT MANEUVERS

Sea Skim Mode: Air vehicle simulates the sea skim missiles.

Pop Up Mode: Air vehicle simulates the sea skim missiles with pop up maneuver.

NAV Mode: Air vehicle executes the flight through predefined and uploaded way points.

SYSTEM COMPONENTS

AIR VEHICLE

ŞİMŞEK is a high wing jet powered air vehicle performing maneuvers. It is launched via launcher and is recovered on land by a parachute system. ŞİMŞEK carries avionics, payloads and aircraft systems.

The structure is composed of body, wing, tail and sledge. The composite structure is made up of fiberglass, carbon fiber, epoxy and light weight high technology aviation structures taking radar-absorbance and high "g" loads into consideration for take off and landing.

Autonomous flight control system on ŞİMŞEK and indigenous mission planning software enables fully autonomous altitude, speed, heading and waypoint hold modes and mission planning of aerial vehicle(s) in a range of 120+ km from the Ground Control Station.

ACTUATORS

There are five actuators which are used in ailerons, elevators and recovery system.

FUEL SYSTEM

The integral Fuel System is optimized for high "g" take-offs and maneuvers. JP4, JP8, and Jet A1 type fuels can be used with oil addition. Fuel and refuel operations can be done within 15 minutes.

BATTERY

Air vehicle's power storage is done via one pack 2 block battery. The battery is designed to be easily serviceable and feeds the engine and avionics individually making the effects of a power surge less likely to affect the other systems.

DATA LINK SYSTEM

ŞİMŞEK has Time Division Multipple System (TDMS) data link which is a compact S Band data link based on Time Division Multiple Access (TDMA) communication algorithm, enabling the use of point-point and point-multipoint communication.

FLIGHT CONTROL SYSTEM

Air vehicle uses an indigenously developed Flight Control System (FCS) as the central computing and power distribution unit. Indigenous real-time flight management software runs on the FCS.

Şimşek Aerial Target Parachute System

PARACHUTE SYSTEM

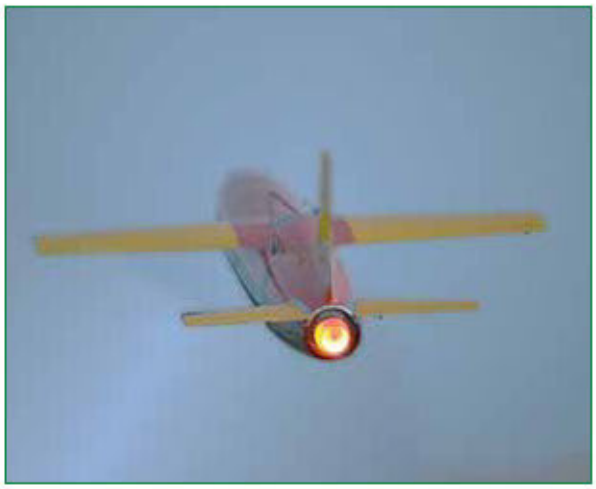
ŞİMŞEK is recovered by high speed type parachute system. Parachute can be opened manually under normal procedures or autonomously under predefined conditions. Parachute release mechanism ensures that when the air vehicle make contact with the ground, the parachute and the air vehicle are seperated from each other, thus preventing damage to the aircraft in high wind conditions.

MISSION SYSTEMS

Air vehicle can be configured with the following mission equipment for realistic mission training. All of the following mission systems are optional and installed on the system depending on the mission scenario. The air vehicle is also able to fly in clean configuration to prevent unnecessary training costs when the mission does not require any specific payload.

PASSIVE RCS AUGMENTER

A Luneberg Lens in the nose section of the Air Vehicle is used for the radar tracking and radar guided weapon missions. Optimum radar frequency and RCS of the air vehicle can be obtained by using different frequency band and size Luneberg Lenses.



Şimşek Aerial Target Engine nozzle IR source

JET PLUM

Engine nozzle is used as IR Signature of the air vehicle.

HOT NOSE

Hot Nose can be used as an IR source for IR guided mission during the head on flight. Typical the frequency range of the IR-tracer is between 3-5 μm.

MISS DISTANCE INDICATOR

A miss distance measurement system is used to compute and display the nearest passing distance and angle of the bullets and missiles from the air vehicle. The MDI has two subsystems as air segment and ground segment. Air segment is called as ASPI (Acoustic Shot Position Indicator) and measures the miss distance and transmits to the ground. Ground segment receives and displays the miss distance in real time. Ammunition can be selected from the table or special ammunition can be created.

ACTIVE RCS AUGMENTER

An Active RCS Augmenter System is integrated and carried in the nose section of the air vehicle. Active RCS augmenter is used to create different RCS values for different frequencies. The frequency band is arranged according to customer requests.

POSITIONING WITH AUTOMATIC IDENTIFICATION SYSTEM

The air vehicle is oriented directly to the target by using Automatic Identification System (AIS) with customized sea skim and pop up maneuvers.

SMOKE GENERATOR

Smoke generator, which is installed on board, is used to support the optical and visual tracking trainings. The status of the smoke generator can be done ON/OFF and desired level from the Ground Control Station during the flight.

CAMERA

ŞİMŞEK High Speed Target Drone has camera with changeable resolution with 30 fps. Real-time camera image is transmitted from the air vehicle to the Ground Control Station during the flight. Camera can be positioned head, tail or both head and tail according to customer needs.

Head Camera View

Tail Camera View

ŞİMŞEK High Speed Target Drone Camera Views

GROUND SYSTEMS

GROUND CONTROL STATION (GCS)

GCS provides the user with the human machine interfaces, indicators and cabinets to control monitor and plan the flight and mission.

Ground Control Station

A Control/Monitoring Layout Example from GCS

GCS human-machine interface enables the user to effectively configure the mission layout of the information by its window based information monitoring system.

POWER SYSTEM

GCS can be powered by mains power or a mobile generator that provides 230 VAC-50 HZ power. To prevent the power surge intrusions, the system is equipped with an online UPS.

NETWORK EQUIPMENT

GCS data interfaces are provided by the Ethernet switch via UDP/IP and IGMP (multicast) protocols.
GCS includes an intercom device for the communication of the air vehicle operator with the launcher operator and the HQ.

LAUNCHER

Şimşek High Speed Target Drone launcher can launch the air vehicle from any launching site including ship boards. Launcher can be easily towed to the launching site and deployed on its own supports.

Şimşek Aerial Target Launcher from Land

Şimşek Aerial Target Launcher from Ship

GROUND SUPPORT EQUIPMENT

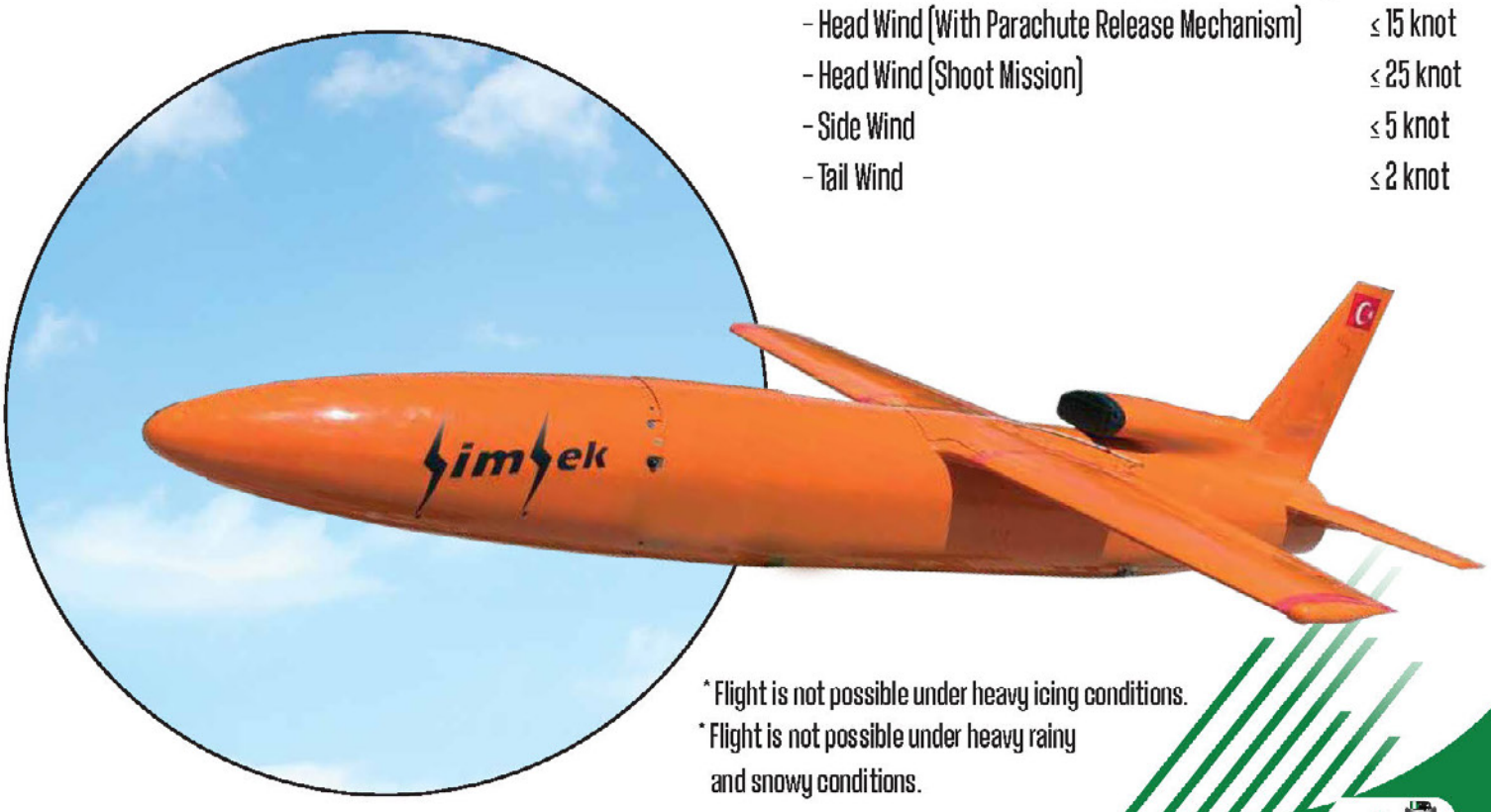
Ground Support Equipment are used to operate Şimşek Aerial Target System, such as:

- Generator
- Wind Sock
- Weather Station
- Fuel Pump
- Battery Charger
- Transportation Stand
- Covers

OPERATIONAL CONDITIONS

Şimşek Aerial Target System is designed and tested according to the below environmental criteria*:

- Storage Temperature: -40°C / +60°C
- Operating Temperature for Air Vehicle: -40°C / +50°C
- Operating Temperature for Ground Control Station: -20°C / +50°C
- Operating Temperature for Launcher System: -30°C / +45°C
- Horizontal Vision: ≥ 7km
- Cloud Based Altitude: ≥ 2500ft
- Wind Limitation:
  - Head Wind (Without Parachute Release Mechanism) ≤ 10 knot
  - Head Wind (With Parachute Release Mechanism) ≤ 15 knot
  - Head Wind (Shoot Mission) ≤ 25 knot
  - Side Wind ≤ 5 knot
  - Tail Wind ≤ 2 knot



* Flight is not possible under heavy icing conditions.
* Flight is not possible under heavy rainy and snowy conditions.

PAYLOADS

- Jet Plum as IR Signature
- Passive Radar Cross Section (RCS) Augmenter (Optional)
- Active Radar Cross Section (RCS) Augmenter (Optional)
- Miss Distance Indicator (MDI) (Optional)
- Hot Nose IR Signature (Optional)
- Camera (Optional)
- Smoke Generator (Optional)
- Controlled Reception Pattern Antennas (CRPA) (Optional)
- Automatic Identification System (AIS) for Target Location (Additional Capability)
- Multi UAV Capability (Optional)
- Launch from Carrier UAV (Optional)

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