magline

Male UAS

Platform description

Power Plant

Based on Rotax 915 EFI enmgine, Magline has developed a complete power plant with external Generator (500W to 1500), Safety Start Up System, With variable pitch prop.

Engine packages can be swapped by a fresh unit in les tan 10min, allowing for maintenance crews to go through the process of maintenance on a banck, where the entine engine is monitored and calibrated for another long run.

MTBOs are 1500+ hours. Magline delivers complete engine packages for substitution to avoid any downtime due to maintenance or overhaul proceses during operations.

Avionics

Full autonomous FCU allows for 100% autonomous flights with 1000+ WP and 100 flight plans stored on board. Redundant IMUs (x3) avoid saturation of the FCS.

All components are Line Replacement Units (LRU´s) awappable in a short time frame, for proper diagnosis to be done in a convenient environment (depot-level).

Interfaces with all systems aboard, and it is operated by a single pilot from GCS. Training takes less than 15 days, on a completeHIL & SIL simulation environment built.

Structure

Unveiled in 2020, delivered first roll-out late Dec 2021 in Bandung, Indonesia.

1st units manufactured in PTDI, Indonesia, are made out of aerospace grade aluminium materials. A second versión in Composite Materials is under development.

Rolling chassis includes all necessary built in robust components for deployment in unpaved ruways, due to the use of 6” certified wheels and tyres sets.

Advanced equipment

Avionics equipment

Quattro Autopilots are instegrated at any level of advanced features (DGPS, Iridium Sat Link) always allowing full automated autoland.

Avionics box is isolated, and damped from external vibrations allowing for catapult launch. Box can be quickly interchanged in a 3 minute quick process.

Aditional payloads can be quickly integrated as box provides power and serial communication military connectors to external equipment.

Safety Parachute

Safety parachute can be operated during emergency phases or else can be operated as normal operating procedure in areas where landing strip touchdown safety would be compromised.

Parachute is spring operated and can be re-armed after every ejection.

Advanced Software

Simulation

Quattro Autopilots provide a sw simulation suite, Quattro Engineering Tool, that enables engineers to set up a complete flight environment that will replicate a complete flight (SIL & HIL).

Diagnosis equipment can validate the calibration curves and optimum parameters of the flight control system. Additional sw tools

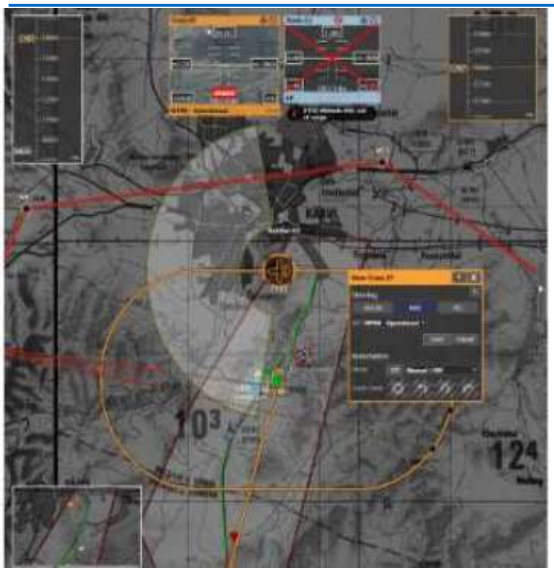
QET is capable of operating real life missions with flight planning capability, maps, and other features to complete a system setup process.

Operations

VS is Stanag 4586 compliant and delivers the necessary operations features for a complete misión development, unifying aircraft and payload operational capabilities.

Quattro Autopilots are operated by means of Vigilant Spirit SW suite, from US Airforce Wright Patterson sw development team.

A complete plugin toolbox is available for advanced users to develop their own sw features based on C# code language to enhance VS capabilities.



High performance equipment

Standard Equipment (Payload) Configuration
4 Axes payload for enhanced surveillance capabilities.
Sat Comm backup link enabled as safety data link to enable control of the aircraft in case that RF terrestrial comms are lost.
DGPS with Aling ™ feature provides improved accuracy down to 2cm and heading accuracy down to 0,2º

Optional equipment

Sigint / Commint sensors
Life Seeker

Optional Equipment
System allow for quick interchangeabiility of Tactical grade Gimbals, that can include 4 axes super daylight 0.3° FOV gimbal
SBTS: ELINT/Commint Additional payloads available for cargo bay, to include Sat Comms for video, Sigint and Commint equipment (with installed antennae array).
BLOS capabilities: Onboard electronically steerable high gain antenna, allows for high bandwidth satelite link via Inmarsat, or high gain 2.4 GHz tracker antenna to the Ground Station for incrased operational ranges beyond RF link capability.

Sat Comms & BLOS
Real Time Video & Data Link

Comms & Control

Communications

Mimo equipment up to 80W onboard in 4 channels, extend the range in LOS to 300+ km, thanks to the TX Eigen Beamforming technique.

Dual dish (4ch) tracker is laid out for long range tracking option, & Omnidirectional Hydra system for máximum coveragle all around a ground station (up to 150km).

Ground Station

Modularity has been built in the system, in a way that a small 2U rackable unit is necessary to conduct operations with any IP Communications system able to broadcast in Multicast, allowing for instantaneous availability of the strongest comms systems amongst all available.

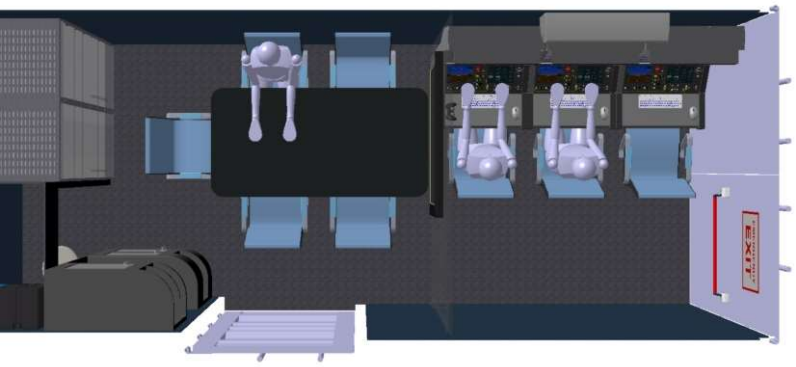
All systems are accesible by the aircraft operator or the payload operator, who can switch roles during a mission ar hand over control to a HQ based control room if required.

Operations Support

Main Operations Base

Reporting to a Command and control center, MOB is equipped with equipmet for independent mission support on stage.

1x 20 Container is an advance maintenance and repair shop, while a second 20´container´serves as a Control Center, Mission briefing and planning independently from any other ground facility.



Equipment

Container #1: Ground Control Station
Computer racks, Video receiver system, Consoles, Antennae (Tracker and Onmidirectional), Lavatory, A/C, Briefing area. Mission Command Console, Payload Command Console, PED Console.

Container #2: Maintenance Shop
Electronics test bench, Test kits, Optical cleaning kit, Engine test box, Bench tools, Hand tools.

Conops

Main Operations Base

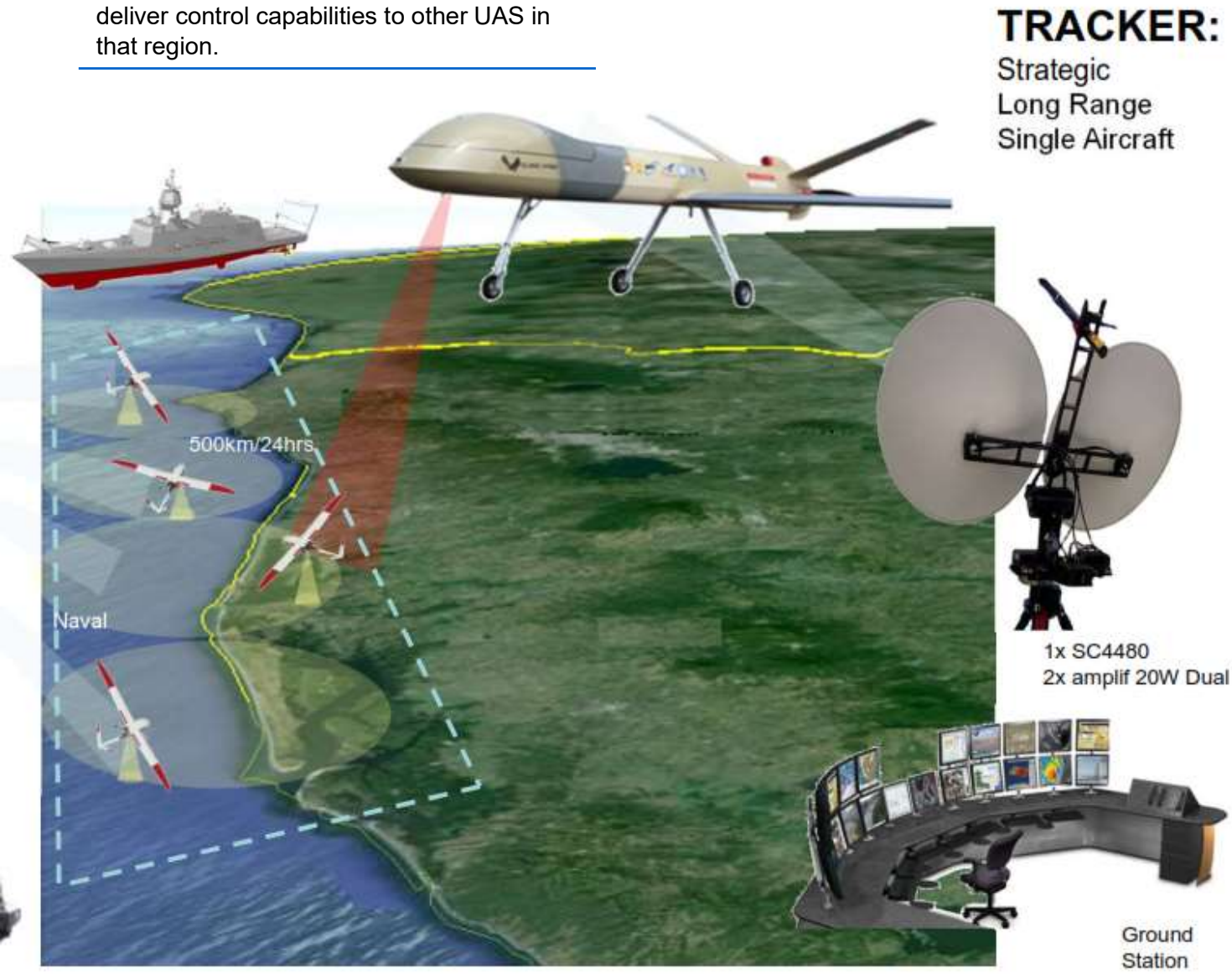
Reporting to a Command and control center, Male UAS is capable of delivering secure encrypted data to the C3 Command/Control/Communication center, which can share mission data within a secure intranet to allow decision makers to react to a situation.

Either from a MOB Operating base (Head Quarters) or from a advance operational base, male UAS can be sent to hundreds of kilometers away on 24hr missions to monitor the operations scenario and to deliver control capabilities to other UAS in that region.

Conops

Missions range from surveillance in wide áreas to coast line monitoring, at altitudes above 10.000ft.

24 hr mission time allows for 1/3rd rule operation time to get to the operation scenario, 1/3rd to loiter above stage, and 1/3rd to return home (with reserve fuel).



System Technical Specification

Product Benefits

Ease of Maintenance, High Flight Time

Higly operable with low training hours

Low Cost Tactical ISR Capabilities

Modern FCS / Avionics GS / Detection Systems

General dimensions

Length: 12m

Windspan: 16m

Payload area dimensions

Length/Height/Width: 600mm x 350mm x 275 mm

Characteristics
Structure
Autoclave cured Carbon-Kevlar Composite Structure
Aerospace grade materials & manufacturing processes
High tensile strength fibers, matrix & bonding adhesives
Power Plant
Rotax 915 Piston engine with extended MTBO and service.
INS/GPS
Modern Robust Controller Quattro Autopilot, with triple INS.
Autopilot
Quattro Autopilot (Applied Navigation)+Quattro Nodes
Operations capability
Offshore operations
Wheeled launch in unpaved runway
Recovery Options
Ballistic Parachute 5m/s descent rate
Pyrotechnical operated replaceable cartrigde
Payload
i2tech Multipurpose Gimbal
Fixed array of EO stabillized still cameras large format 6x39 Mpix
Elint/Commint
Sat Coms
3G/4G alternative Comms

Spec Sheet
Range
250 km in direct LOS (@ 2000m)
... km with Sat link BLOS (@ any altitude) -backup-
up to 250 km for video in LOS (with 80W)
Max Operational Height
12,000ft
Max Speed
250kmh
Operational Speed
150kmh
Payload Capacity
300 Kg
Operations Weight & MTOW
1100 Kg / 1350 Kg
Endurance with standard fuel
24Hrs (@ max payload)
Endurance with extended fuel
N/A (drop tanks not yet available)

Male UAS Product Portfolio

Low Maintenance UAS, interoperational

Modern Structure, Avionics, Engine and Payload plant for modular ISR Tactical operations

For additional information
Magline Composites y Sistemas S.L.
POLIGONO AERONÁUTICO
+34 976 83 6098
50830, Villanueva de Gállego, Zaragoza, SPAIN
www.magline.es
info@magline.es

magline