PenguinMR

UNMANNED AERIAL SYSTEMS (UAS)

COST EFFICIENT AND RISK-REDUCING MARITIME DATA ACQUISITION
Usually, operators in need of an RPAS for testing multiple types of sensors or payloads are required to design, construct and set up the complete aircraft system themselves. With the PenguinMR, we deliver a turn key solution with a flight ready aircraft. The payload can be mounted to a standardized payload frame on an interchangeable plate, enabling the user to have several payloads instead of tying an aircraft to a single payload.

Each PenguinMR is test flown and adjusted to minimize variations between aircraft. Manufacturer airframe or engine deviations are compensated for, and the engine is adjusted and broken in for maximum performance and reliability.

The PenguinMR is fitted with a performance enhancing low noise exhaust system. This system has proven reliability, with hundreds of flight hours. The quiet running system has a detectability range of less than 1000 meters.

The PenguinMR platform is equipped with high speed UHF communications for VLOS C&C. For EVLOS and many BLOS missions, the long range VHF radio and GPRS system provides redundant communication platforms, while Iridium Satellite communications are used for areas where no other system provides coverage.

**Performance**

- **Flight time:** 4-16h
- **Payload capacity:** 3kg
- **Climb rate:** 750 fpm
- **Operational ceiling:** 12000ft AMSL
- **Dimensions:** Wing span 3.3m, length 2.3m
- **MTOW:** 21.5kg
**PenguinMR components**

01 **LONG RANGE VHF**

The long range VHF radio enables long range communications with PenguinMR for C&C. For all VLOS, EVLOS and a large part of BLOS missions this link provides sufficient communications for reliable operation. A robust FEC protocol and TDMA channel access allows efficient channel utilization and a long range telemetry and command link.

02 **STANDARDIZED CONNECTIONS AND SETUP**

Our own developed interface/service module distributes power and communication to all communication links, as well as to connected payloads. On/off control of payloads can also be provided even for payloads with internal own power supply. Air safety is ensured in case of component failure by fused outputs.

03 **AIR SAFETY**

Transponder integration: ADS-B transponder, enabling all ADS-B equipped aircraft, as well as all ATC units with radar or ADS-B to know the position, speed and heading of the RPAS using their existing systems. Use of airplane approved components whenever available increases reliability and fault tolerance of the PenguinMR. All components have faced intensive testing, both individually and together as a complete platform.

04 **VEHICLE CONTROL STATION**

The VCS is a newly developed control station integrating all components required for RPAS operations. Integrated air band VHF connecting the operators to other air traffic as well as each other through a wireless intercom system simplifies operations. The control station establishes a dedicated work area for the pilot. Communication links are added in the form of external modules that all connects through standardized connectors. All links are merged into one in order to simplify flight operations for the internal pilot.

05 **PROVEN UNDER DUAL RPAS OPERATION**

The PenguinMR platform has been proven as a solid platform for dual RPAS operation. Flying multiple RPAS simultaneously enables efficient operations collecting more data in a shorter time, or utilizing the benefits of payloads positioned in different locations at the same time.
A LEADER IN UNMANNED SOLUTIONS

Norwegian Maritime Robotics, developer and supplier of the PenguinMR, is a leading provider of innovative unmanned solutions for maritime operations and data acquisition. The company develops and delivers Unmanned Surface Vehicle solutions (USV), the OceanEye® moored balloon surveillance system as well as Unmanned Aircraft Systems (UAS). Main markets are the oil & gas and military/governmental applications. With technology developed in close collaboration with civilian, governmental and military partners, Maritime Robotics focuses on delivering high-quality system solutions and products that are cost-efficient, reduce HSE risk exposure and are highly deployable, in any conditions.

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