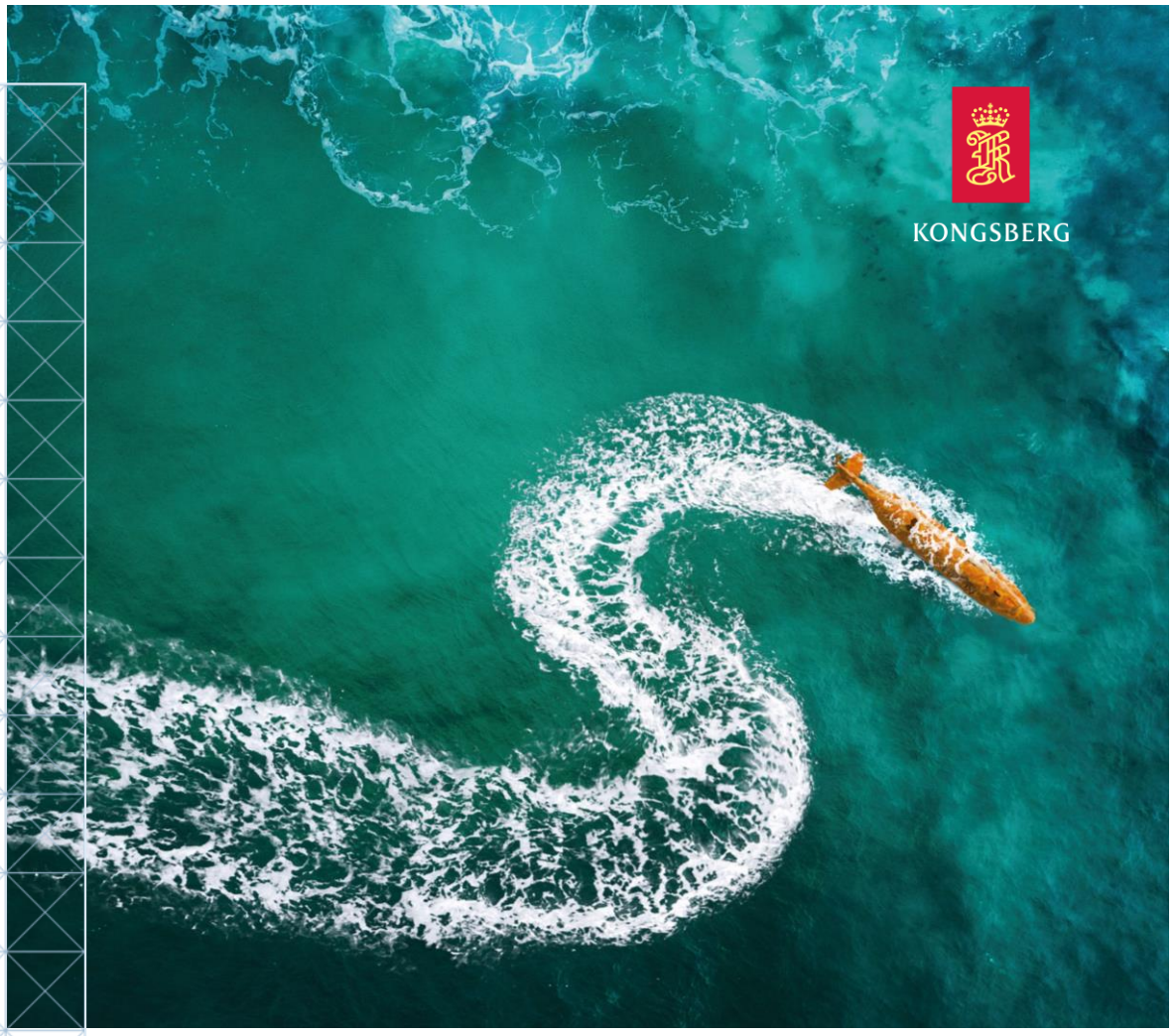
HUGIN® SUPERIOR



HUGIN® Superior

HIGHLIGHTS

- Superior position solution, the highest accuracy among the HUGIN deep water vehicles
- Superior data coverage, up to double swath SAS over other HUGIN deep water vehicles
- 6000 m depth rating
- Swappable batteries for rapid turn-around
- More than 72 hours of endurance
- Full sensor suite included in standard package

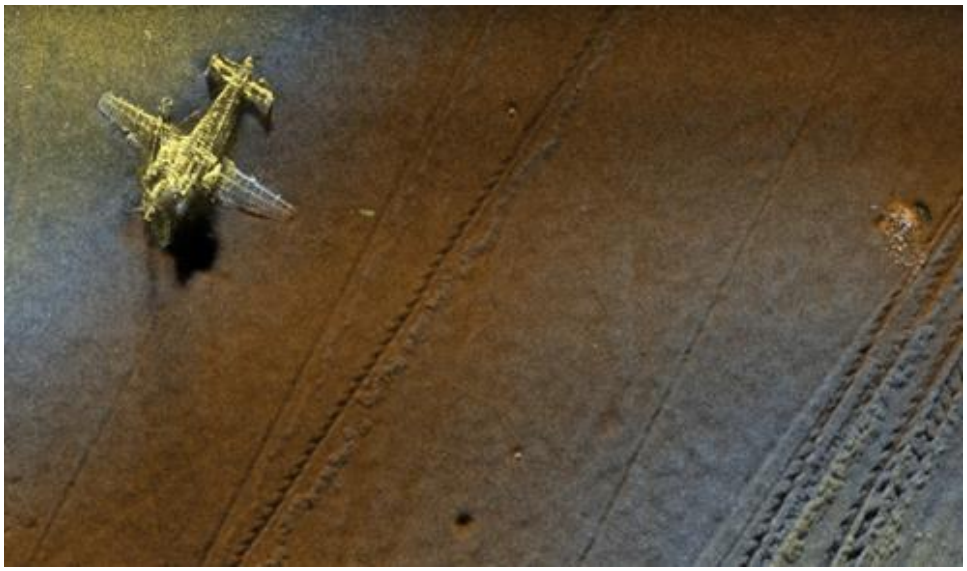
The HUGIN Superior Autonomous Underwater Vehicle (AUV) System is our most advanced deep water AUV. The vehicle provides superior data quality and superior navigation accuracy down to water depths of 6000 metres.

HUGIN Superior carries a comprehensive suite of payload sensors, facilitating geophysical, hydrographic, environmental, and defence applications. Carrying the new HISAS 1032 Dual Receiver synthetic aperture sonar, HUGIN Superior can generate SAS imagery and bathymetry across a 1000-metre swath.

The introduction of the improved EM2040 MkII multibeam echosounder, a wide-aperture colour UHD camera and laser profiler, sub-bottom profiler, self-compensating magnetometer, and environmental sensors combined with the dual-receiver HISAS increase the options for a wide variety of mission types from a single platform. Upgraded on-board data processing, hardware encryption options, and a faster backbone network allow for secure and rapid access to the entire dataset after recovery.

HUGIN Superior builds on the class-leading performance of the HUGIN family of AUVs and adds further improvements. Autonomous navigation performance is better than 0.04% of distance travelled, adding value to the data sets by increased position accuracy. Terrain navigation and autonomous pipeline tracking are standard capabilities for HUGIN Superior. These provide yet further performance improvements for unsupervised operations.

HUGIN Superior generates a greater data volume, positioned more accurately, and requires less supervision. The result is lower operational cost with improved accuracy.



Technical Specifications

Depth rating
- 6000 m

Weight and dimensions
- Diameter 875 mm
- Length ~6.6 m
- Weight in air ~2200 kg

Vehicle speed
- 2-5 knots
- Typical operating speed 3-4 knots

Energy and endurance (typical numbers)
- Lithium polymer batteries, swappable for fast turn-around
- 67 kWh energy capacity
- 62 hours endurance with all sensors running
- 76 hours with HISAS, EM, and SBP (90% on)
- 6-9.5 hours charge time
- Battery blocks are UN 38.3 certified for transport by air, sea, and land

Navigation
- Kongsberg Sunstone Aided Inertial Navigation System (AINS)
- Navigation grade IMU
- Doppler Velocity Log (DVL) with bottom and water track
- Surface GPS with L2 and SBAS options
- High accuracy depth sensor
- 0.04% of distance travelled (CEP50) straight line
- USBL positioning and aiding using Kongsberg HiPAP systems
- Single-transponder positioning
- Terrain-referenced navigation
- Imaging forward-looking sonar (FLS) for advanced terrain following, collision avoidance, and under-ice functionality

Communication
- cNODE acoustic communication (low and medium frequency options)
- UHF 2-way radio link
- Iridium emergency localization beacon, including battery backup
- Iridium over the horizon (OTH) 2-way satellite link
- Wi-Fi (IEEE 802.11g - Optional)

Payload sensors
- Kongsberg HISAS 1032 Dual RX SAS w/ in-mission processing
  - High resolution: 5x5 cm SAS imagery, 20x20x20 cm SAS bathymetry @ 200 m
  - Long range: 500 m @ 2.5 knots, 300 m @ 4 knots
  - High area coverage rate: ~4.5 km^2/hour
  - HISAP real-time full-swath SAS imagery generation
- EM 2040 MkII multibeam echo sounder
  - Triple frequency: 200/300/400 kHz
  - Wide swath: Up to 150° on flat bottom
  - Dual swath (dual ping), multiple detections, and water column data logging options
- EdgeTech sub-bottom profiler (1-6, 2-16, 4-24 kHz options)
- CTD sensor
- Direct time-of-flight sound speed sensor
- Digital still image colour camera with LED lighting
- Laser profiler
- Magnetometer
- Environmental sensors: Turbidity, CO_2, CH_4 and O_2

Software options
- HUGIN Operator System (HuginOS) software
- AUV Control Processor and Payload/Autonomy Processor
- Sunstone navigation software
- Autonomous pipeline tracking using HISAS and EM multibeam
- Sunstone Postea navigation post-processing
- Reflection post-mission visualisation package
- SITAR in-mission and/or post-mission automated target recognition (special export license required)
- HISAP post-mission SAS imagery and bathymetry processing
- APEX advanced GPU based SAS data manipulation

Topside equipment compatibility
- Operator and payload control computers
- Mobile Mission System
- Post-mission analysis computer
- Vehicle battery charger
- Maintenance trolley and lifting spreader
- GNSS navigation system
- HiPAP acoustic positioning and communication system
- DNV 2.7-1/2.7-3 certified offshore containers available for mobile/deployable systems
- Launch and recovery stinger for deck or container installation

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