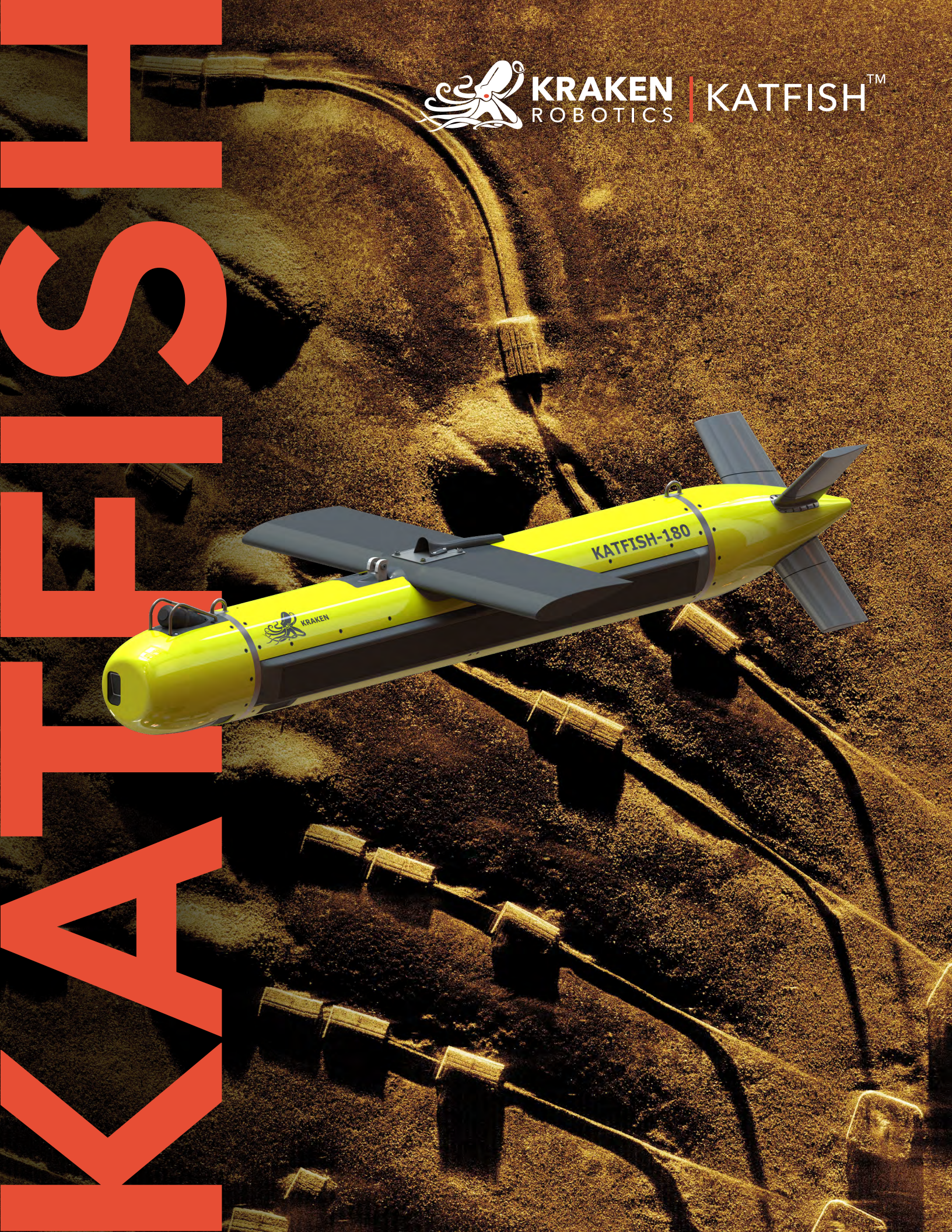
KRAKEN ROBOTICS | KATFISH™

KATFISH



Driving Innovation Beneath the Surface

Kraken Robotics, Inc. is transforming subsea intelligence through 3D imaging sensors, power solutions, and robotic systems. Our products and services enable clients to overcome the challenges in our oceans – safely, efficiently, and sustainably.

Kraken's synthetic aperture sonar, sub-bottom imaging, and LiDAR systems offer best-in-class resolution, providing critical insights into ocean safety, infrastructure, and geology. Our revolutionary pressure tolerant batteries deliver high energy density power for UUVs and subsea energy storage.

Kraken Robotics is headquartered in Canada with offices in North America, South America, and Europe, supporting clients in more than 30 countries worldwide.

Safety & Quality First

Results Matter

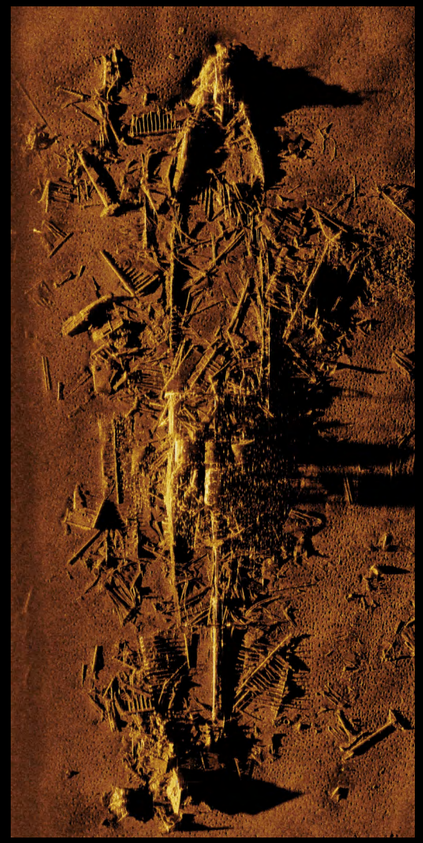
One Team, Many Individuals

Thinking Globally, Acting Locally

Innovation

Setting a New Standard for Underwater Exploration

Kraken's KATFISH actively stabilized synthetic aperture sonar (SAS) towfish system delivers ultra-high-resolution data of up to 2 cm x 2 cm. The KATFISH towbody leverages articulated tailfins and an intelligent autopilot to compensate for motion, enabling high-quality data collection and large area coverage rates.



Survey Faster
- Operate at speeds from 4-10 knots
- Survey at altitudes from 5-25 meters at depths of 300 meters
- Survey ranges up to 200 meters per side
- Multibeam nadir gap-filler
- Area coverage rate up to 3.5 km²/hr

SAS Data in Real-Time
- 3 cm x 3 cm constant SAS imagery resolution
- 25 cm x 25 cm 3D bathymetry resolution
- Simultaneous dynamically focused sidescan sonar imagery
- Instride detection and classification

Ultra-High Resolution Post-Processed Data
- 2 cm x 2 cm constant post-processed SAS resolution

Autonomous Launch and Recovery System
- Decrease risk to assets and personnel through unmanned launch and recovery from USV LARS and ISO20 LARS
- Rapidly deploy on vessels of opportunity, from 11-meter class USVs to any vessel that can accommodate an ISO20 footprint

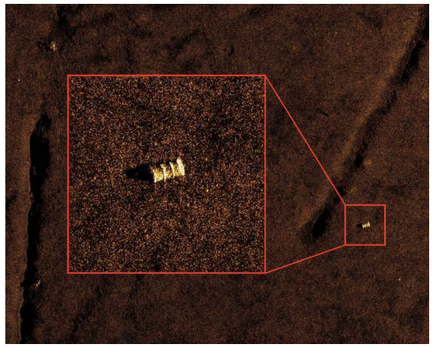
KATFISH Key Applications

KATFISH integrates Kraken SAS, our high resolution synthetic aperture sonar, on a smart, stable towfish platform to produce constant resolution up to 200 m per side.

The actively stabilized towfish allows for autonomous flight at a constant altitude, or depth setpoint, above the seabed over dynamically changing terrain, using terrain following and avoidance algorithms. Based on a proven military design, KATFISH is portable and air shippable to facilitate rapid deployment, allowing for autonomous or manual operation from small and large vessels, including unmanned surface vessels.

The system has been deployed worldwide for a variety of applications, rapidly revealing what hides on the ocean floor in high definition.

Defence



Mine Countermeasures (MCM) and Unexploded Ordnance (UXO) Operations

Naval forces face increasing threats from naval mines and unexploded ordnance. Kraken's KATFISH is trusted by navies worldwide to detect and classify ferrous and non-ferrous mine-like objects and UXOs.

Maritime Security / Critical Underwater Infrastructure (CUI) Inspection

Marine infrastructure requires surveillance and defence to ensure national, economic, and environmental security. Kraken's KATFISH helps protect and monitor essential subsea assets including:

- Pipeline Inspection
- Communication Cables
- Seabed Installations
- Change Detection

Route Survey / Rapid Environment Assessment

The ocean highways are getting busier, and adversaries are looking for ways to interrupt trade, aid, and military operations. KATFISH is used to monitor harbours and transit routes, ensuring safe passage for vessels.

Offshore Energy

Field Mapping

KATFISH optimizes surveys, reduces operational risk, and improves efficiency, mapping the seafloor in high resolution for a variety of applications including:

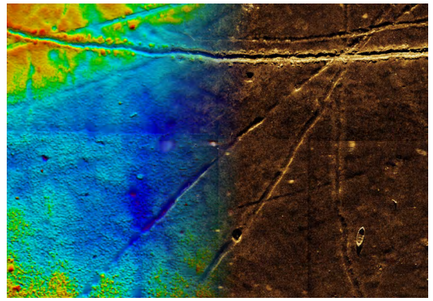
- Pre- and Post-Construction Survey
- Change Detection

Subsea Infrastructure Survey

Kraken utilizes KATFISH to deliver precise, repeatable surveys of offshore assets. From pipelines to manifolds, we provide clear insight into condition, alignment, and integrity to reduce uncertainty, support maintenance, and ensure safer, efficient operations across the lifecycle of subsea infrastructure.

- Damage Assessment
- Change Detection
- Pipeline Inspection

Marine Research



Marine Archeology

KATFISH helps researchers explore the submerged remnants of human history, uncovering shipwrecks, lost settlements, and artifacts.

Oceanographic Survey

KATFISH transforms oceanographic surveys with advanced Synthetic Aperture Sonar (SAS), delivering ultra-high-resolution seabed imagery and co-registered bathymetry for:

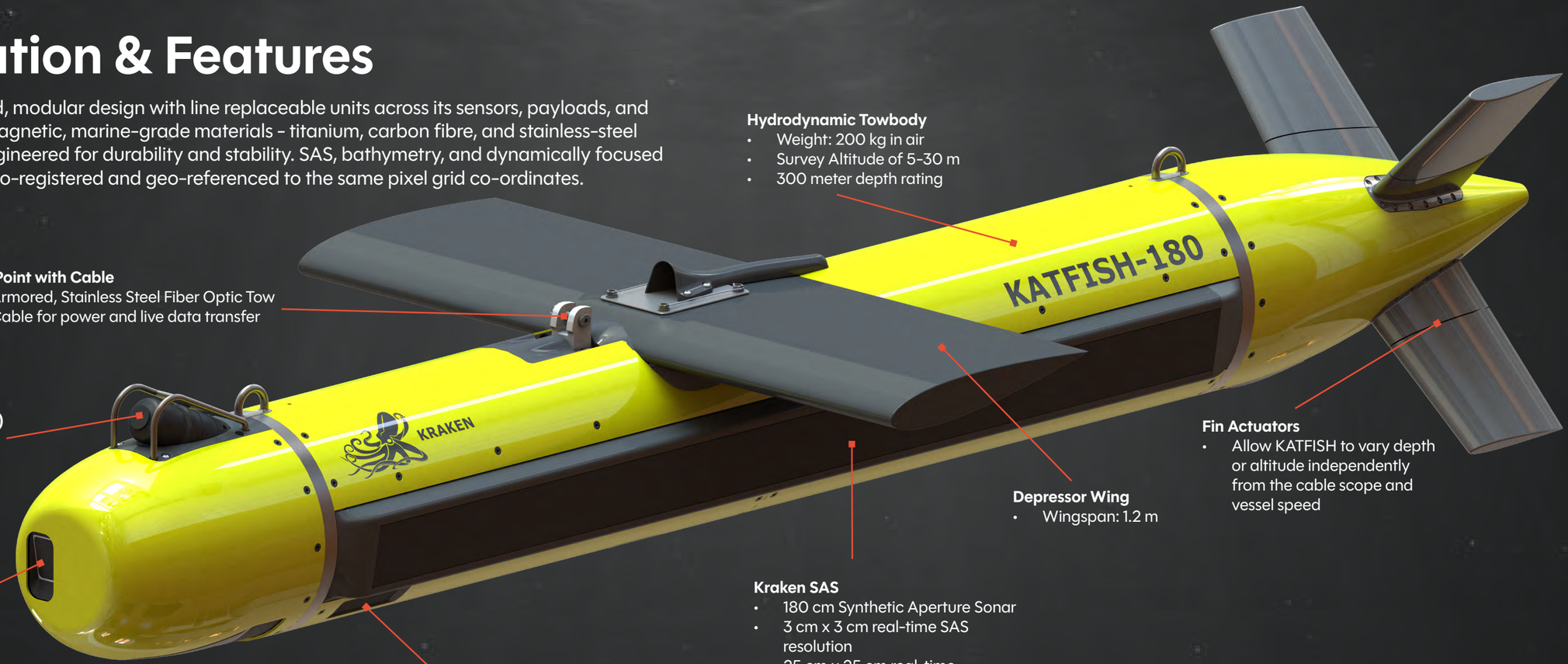
- Bathymetric Survey
- Geological Survey

Environmental Monitoring

Human activity continues to reshape our ocean environments, demanding precise and scalable tools to track change. KATFISH delivers ultra-high-resolution imaging, empowering change detection surveys and monitor of fishing or dredging operations.

Configuration & Features

KATFISH uses a wet-flooded, modular design with line replaceable units across its sensors, payloads, and actuators. Built from non-magnetic, marine-grade materials - titanium, carbon fibre, and stainless-steel hardware - the system is engineered for durability and stability. SAS, bathymetry, and dynamically focused sidescan imagery are fully co-registered and geo-referenced to the same pixel grid co-ordinates.



Hydrodynamic Towbody
- Weight: 200 kg in air
- Survey Altitude of 5-30 m
- 300 meter depth rating

Tow Point with Cable
- Armored, Stainless Steel Fiber Optic Tow Cable for power and live data transfer

Ultra-Short Baseline (USBL)
- Acoustic Positioning System

Forward Looking Sonar (FLS)
- Obstacle Avoidance

Kraken SAS Gap Reducer

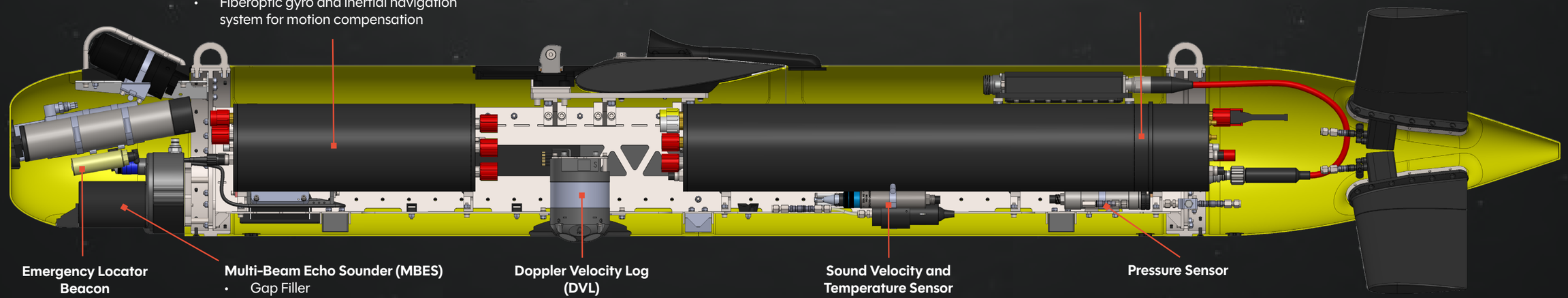
Depressor Wing
- Wingspan: 1.2 m

Fin Actuators
- Allow KATFISH to vary depth or altitude independently from the cable scope and vessel speed

Kraken SAS
- 180 cm Synthetic Aperture Sonar
- 3 cm x 3 cm real-time SAS resolution
- 25 cm x 25 cm real-time bathymetry resolution
- 2 cm x 2 cm post-processed SAS resolution

Sonar Bottle
- Sonar power amplifiers and power supplies
- Fiberoptic gyro and inertial navigation system for motion compensation

Vehicle Control Computer Bottle
- Power distribution and communication
- Inertial navigation system



Hull Diameter: 0.3 m

Emergency Locator Beacon

Multi-Beam Echo Sounder (MBES)
- Gap Filler

Doppler Velocity Log (DVL)

Sound Velocity and Temperature Sensor

Pressure Sensor

Towbody Length: 2.9 m

Launch and Recovery Systems

The KATFISH system consists of an actively controlled intelligent towfish, SAS imaging & bathymetric sonar, Launch and Recovery System (LARS), intelligent winch, towcable, overboarding frame, operators' console, and visualization software. The towfish is designed to be deployed from either manned or Unmanned Surface Vessels (USV). The entire system is designed to be quickly installed and removed from vessels of opportunity.

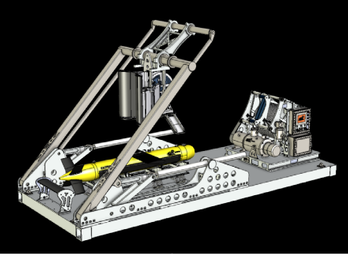
Manual or Autonomous LARS

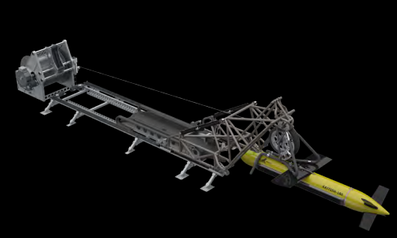
The IS020 LARS and USV LARS systems are designed to launch and recover the KATFISH without human intervention after the initial command is received.

KATFISH has been designed from the ground up to be operated onboard Unmanned Surface Vessels (USVs) via a remote operator console. All KATFISH software tools and operator tools can be operated over a remote link using Line of Sight Radios, satellite communications, or even cellular networks, all made possible with Kraken's fault tolerant and high-latency tolerant back end communication software stack.

The launch and recovery processes are continuously monitored by sensors and a video link. Video of the docking head and winch are provide to aid in the situational awareness of the operator. The intelligent control system of the winch performs all major functions.

LARS Specifications





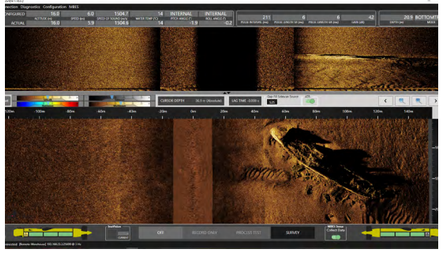
	ISO20 LARS		USV LARS		
LARS Dimensions	6.05 m L x 2.44 m W x 3.32 m H		6.00 m L x 1.20 m W x 1.65 m H		
KATFISH Operational Depth	200 m (Standard)	300 m (Optional)	100 m	200 m	300 m
Tow Cable Length	1000 m	1500 m	500 m	1000 m	1500 m
Total System Weight with KATFISH	4700 kg	4880 kg	1880 kg	2060 kg	2240 kg
Mounting	4 x ISO1161:2016 Twist-Lock Connections		ISO 1161 Socket		
Material	Stainless Steel, Aluminum (low magnetic signature)		Titanium (low magnetic signature)		
Power	440 VAC 3 phase 50- 60hz, 25kW; Via the Power Distribution Unit (PDU)		340VDC, 20 kW. Optional: 440/380 VAC 3 Phase 50-60hz.		
System Components	Winch, PDU, pendant controller, remote operation		Inboard or on deck control cabinets, Generator, Hydraulic power unit, Liquid heat exchanger		
Operation Parameters	Designed for modular, rapid mobilization on vessels of opportunity with IS020 footprint; LARS operation up to Sea State 4; Freeboard up to 2.5 m		Designed for integration on USVs from 11+ meters; LARS operation up to Sea State 4; Freeboard up to 1.2 m		

Operating Software

KATVIEW - Towbody Operation

KATVIEW is the primary interface for commanding, controlling and monitoring the KATFISH towbody in real-time during operations. KATVIEW enables operators to:

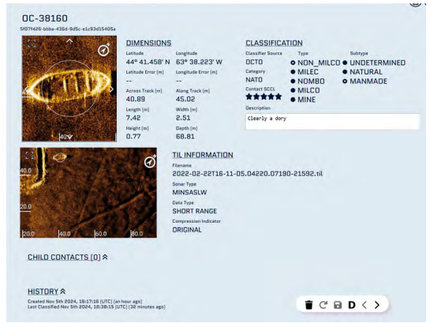
- Monitor all system parameters
- Control depth, heading, attitude, cable length, and launch & recovery
- Power devices
- Run automated pre-dive testing
- Diagnose faults
- Monitor forward looking sonar and activate obstacle avoidance



SASVIEW – Control, Visualization and Target Detection

SASVIEW manages sonar acquisition and beamforming, displaying 3 cm x 3 cm SAS imagery in real time. Operators can adjust parameters such as pulse length, gain, and ping rate, or load a planned survey to automatically calculate optimal settings. SASVIEW allows operators to:

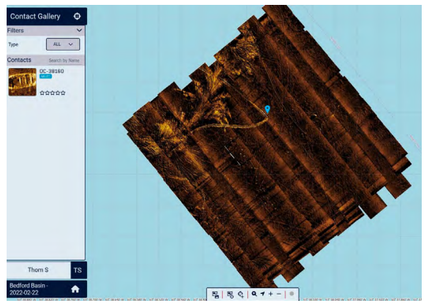
- Enable or disable sonar acquisition
- Perform real-time data quality checks
- Detect and mark targets
- Slow down or pause the waterfall
- Zoom in on targets of interest
- Jump to a previous time in the data



OCTO – Sonar Target Classification and Identification

As targets are detected via SASVIEW, the full-resolution data appears in OCTO for review and classification. Data can be exported to a JPG or a mission report. OCTO also enables operators to:

- Detect targets
- Manage, filter, merge, and sort targets
- Inspect, measure, and classify targets
- Generate target reports



INSIGHT - SAS Post-Processing Tool

INSIGHT is Kraken's SAS post-processing software that can be used for re-beamforming the raw data into SAS imagery. It outputs geo-referenced SAS image tiles in industry standard formats (GeoTIFF, XTF, XYZ). Output of the processor consists of high-quality SAS imagery and bathymetry, with constant resolution to the edges of the swath.

Safety and Reliability

Robust Design

Transmitter and receiver arrays are all manufactured with 1:3 composite ceramic which allows very fine and predictable control of the beam patterns. The array modules are all fully encapsulated in polyurethane, with no metal to plastic bonds exposed to seawater. All connectors are wet-mating with a polyurethane-molded body that is also bonded to the array modules. This provides a robust solution in highly cathodic environments.

Quality Assurance

Design and Factory Acceptance Testing (FAT) of KATFISH takes place in Kraken's facilities in Newfoundland, Canada, certified to ISO 9001 standard. Kraken's Quality Assurance Program ensures that each KATFISH passes a FAT, an endurance test, and an environmental stress screen test. The system also goes through Sea Acceptance Testing (SAT) at a variety of water depths, surveying a variety of targets including shipwrecks, pipelines, and geological features. Kraken's quality production process follows the AS9003 standard.

Safety Features

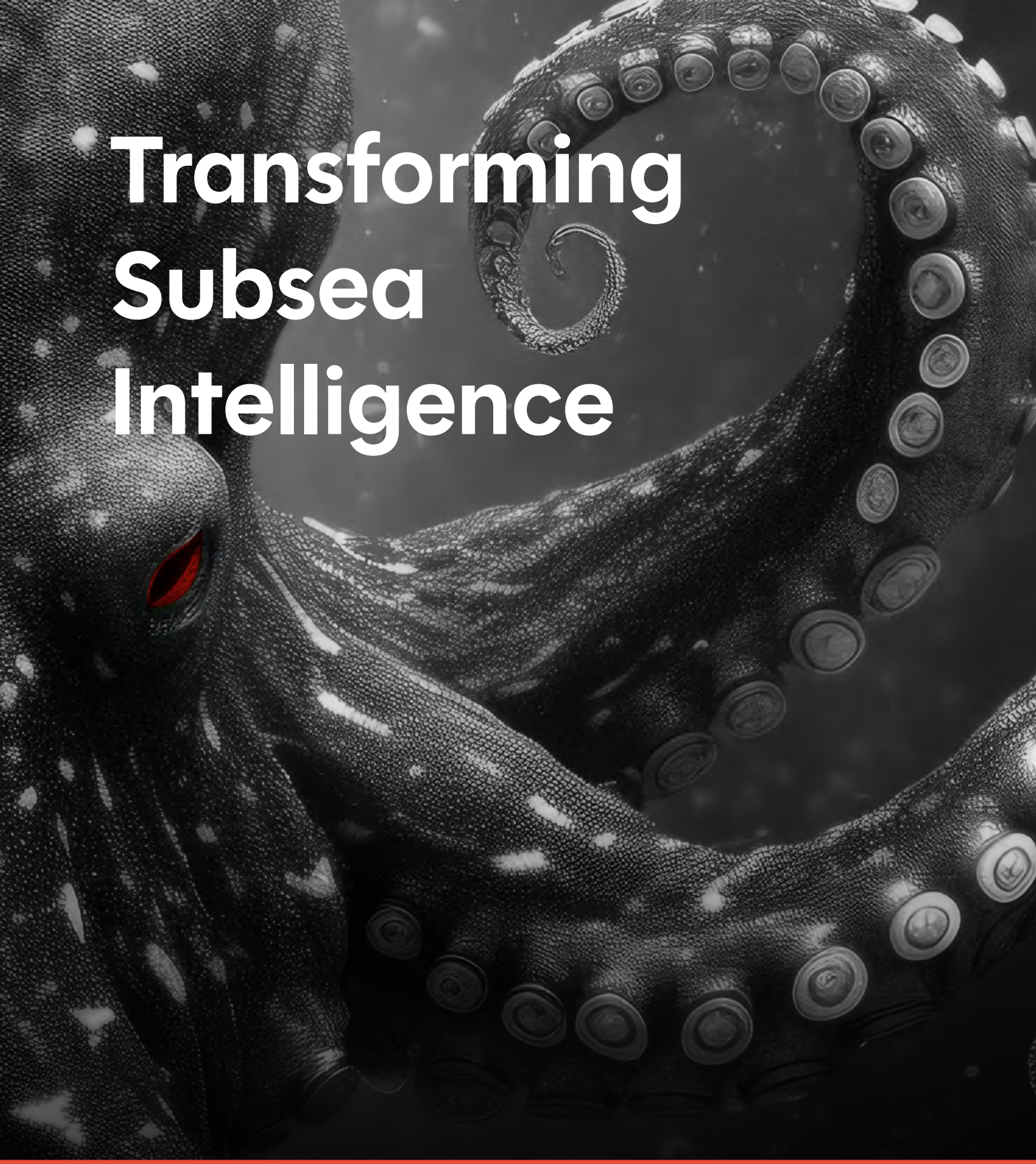
KATFISH includes a robust obstacle avoidance system, which incorporates a forward looking sonar in the nose of the KATFISH to detect obstacles on the seafloor and features such as wrecks and fast rising slopes. The obstacle avoidance system calculates both the distance to the seabed as well as the seabed slope and estimates whether there is a collision risk in real-time. For increased redundancy, the tow cable includes a second fibre optic line to ensure connectivity if the primary fibre fails. If vessel power is lost, the winch brake engages automatically.

System Health Monitoring

KATFISH performs a series of self-tests during initialization and the user is alerted when the system is ready to survey. As the system is brought through the pre-dive and launch procedures, the Fault Detect - Fault Response system continuously monitors all subsystems to ensure the vehicle is operating within normal parameters.

System Maintenance

The KATFISH is designed to be a low-maintenance system, consisting of stainless-steel hardware and carbon fiber fairings affixed to a titanium super-structure. All major line replaceable units in the KATFISH are field-replaceable, including sonar transmit and receive arrays, actuators, and various sensors.



Transforming Subsea Intelligence

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