



COMPANY PROFILE 2025

AUTONOMOUS SURVEY AND
ENVIRONMENTAL MONITORING SYSTEMS

WWW.MAKI.NZ
WAIKATO NEW ZEALAND

ABOUT MĀKI

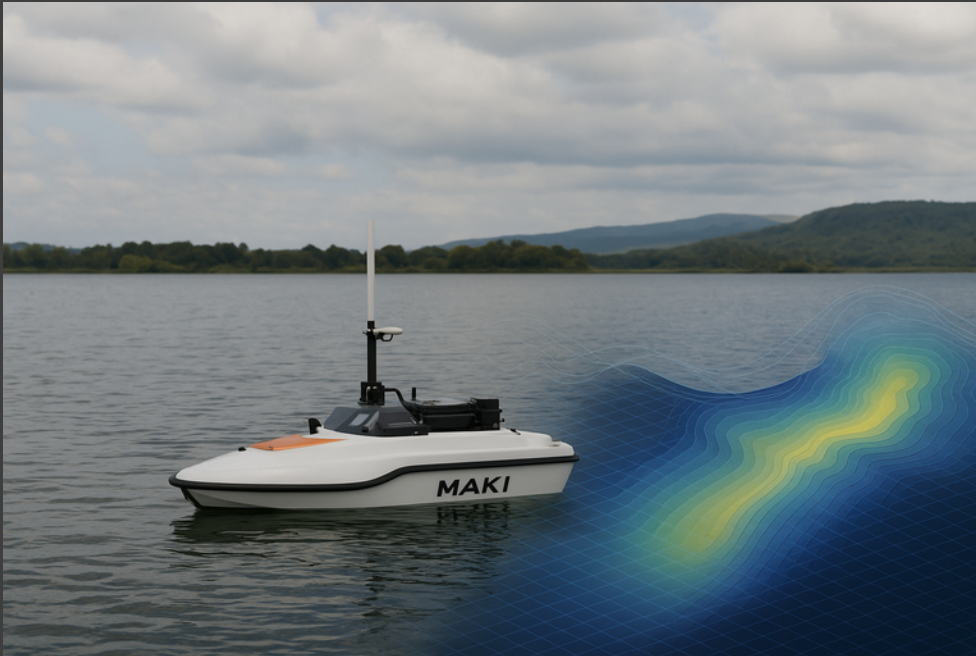


We are a New Zealand-based engineering technology company specialising in autonomous marine and environmental monitoring systems. We design and build integrated solutions that combine advanced hardware, software, and data intelligence to support research, environmental management, and infrastructure monitoring.

Our technologies include custom-built unmanned surface vessels (USVs), underwater ROVs, IoT sensor networks, and AI-driven data platforms. These systems enable accurate, efficient, and safe data collection across lakes, rivers, and coastal environments.

Founded on innovation and sustainability, MĀKI's mission is to make cutting-edge engineering technology accessible to organisations managing natural and built environments, transforming how environmental data is captured, visualised, and understood.

CAPABILITIES



MĀKI delivers integrated engineering and technology solutions across autonomous systems, software, and environmental intelligence. Our expertise spans mechanical and electronic design, data integration, and AI-driven analytics, enabling precise, efficient, and adaptable systems for monitoring, inspection, and research. From concept to deployment, every MĀKI innovation is built in New Zealand to perform reliably in challenging environments, on water and beyond.

Key Capabilities:

- **Autonomous Systems**
- **Survey & Mapping**
- **IoT & Data Integration**
- **Software & Control Systems**
- **Monitoring & Sampling Services**
- **Research & Collaboration**

AUTONOMOUS SYSTEMS

MÄKI designs and builds custom autonomous systems that combine advanced engineering, intelligent control, and practical field performance.

The water sampling vessel shown here is one of our purpose-built platforms, developed in-house to collect high-quality environmental data with precision and reliability.

It features a specially designed winch system that enables vertical column sampling and profiling, allowing sensors and sampling probes to capture data from multiple depths in a single deployment.

Every MÄKI vessel can be tailored to suit specific client requirements, from environmental monitoring and research to industrial and infrastructure applications.

Our modular design approach allows for custom payloads, sensors, propulsion systems, and mission parameters, ensuring each solution is optimised for its intended environment and operational goals.

[Learn more](#)



Specifications

Dimensions	Length $\approx$ 1.5 m · Width $\approx$ 1 m · Weight 15–20 kg (depending on setup)
Winch System	15 m depth range · 3 L sample volume · 1–5 L/min adjustable sampling speed
Sampling Capability	Vertical column profiling with precision winch for multi-depth data capture
Installed Instruments	Trilux 2000 (Chl-a, Phycocyanin, Turbidity) · DO/pH/Temp sensor · Single-beam sonar (multi-beam optional)
Custom Integration	Supports additional sensors or payloads on request
Data Output	Customisable data format compatible with client analysis platforms
Environmental Stability	Highly stable design · Recommended for < 20 kn winds · Minimum depth 200 mm
Speed & Range	Max 10 km/h · Cruise 4.3 km/h · Control up to 2.5 km (remote) / unlimited (cell network)
Navigation & GPS	Loitering mode · $\sim$ 0.5 m accuracy · RTK-enabled for cm-level precision

KEY CAPABILITIES

SURVEY AND MAPPING

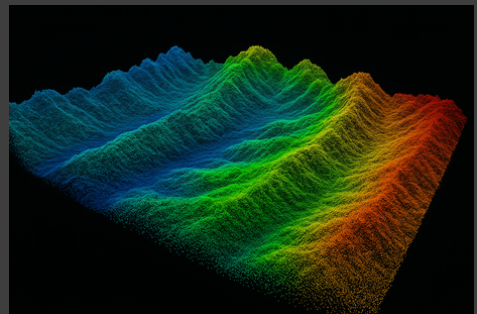


MĀKI provides advanced survey and mapping solutions that combine high-precision sensors, autonomous navigation, and intelligent data processing. Our systems are capable of performing detailed bathymetric, topographic, and structural surveys in freshwater and coastal environments, delivering reliable spatial data for analysis and decision-making.

Using multi-beam and single-beam sonar, RTK-enabled positioning, and photogrammetry techniques, MĀKI's platforms capture accurate 3D representations of underwater and surface terrain. These datasets are processed into contour maps, digital elevation models, and visual outputs tailored to client requirements. Whether for environmental assessment, sediment analysis, or infrastructure inspection, MĀKI's survey technologies provide fast, repeatable, and cost-effective results with exceptional spatial resolution.

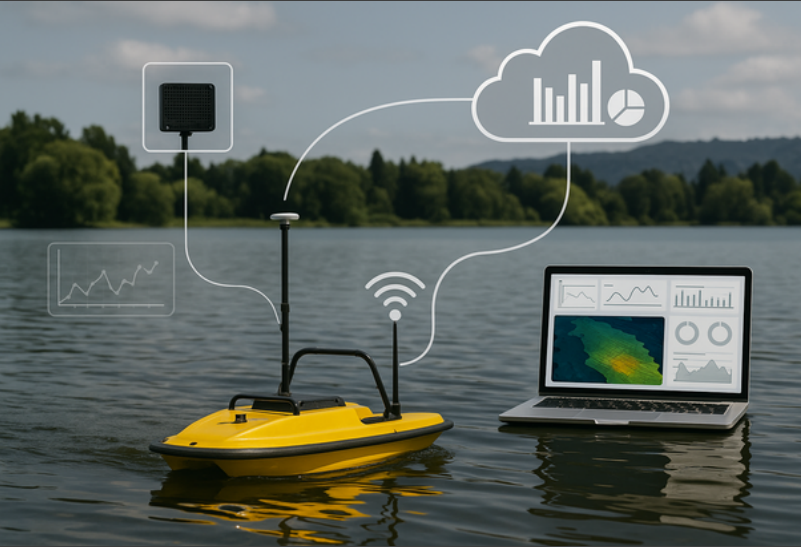
[Learn more](#)

- **Bathymetry**
- **Topography**
- **Asset management**
- **Topo-bathymetry**



KEY CAPABILITIES

IOT & DATA INTEGRATION



MĀKI designs and implements intelligent IoT and data integration systems that connect sensors, autonomous platforms, and cloud-based analytics into a seamless network. Our systems enable real-time data acquisition, telemetry, and remote control across diverse environmental and industrial applications.

Each deployment is tailored to the client's data requirements, from standalone wireless sensors to integrated networks linking multiple vessels, monitoring stations, and databases. MĀKI's platforms collect, store, and visualise data through secure cloud interfaces, allowing for live dashboards, automated alerts, and advanced analytics.

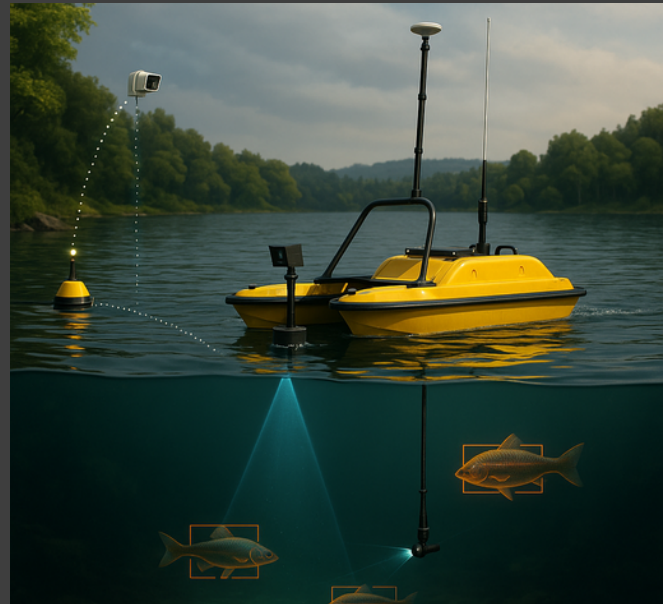
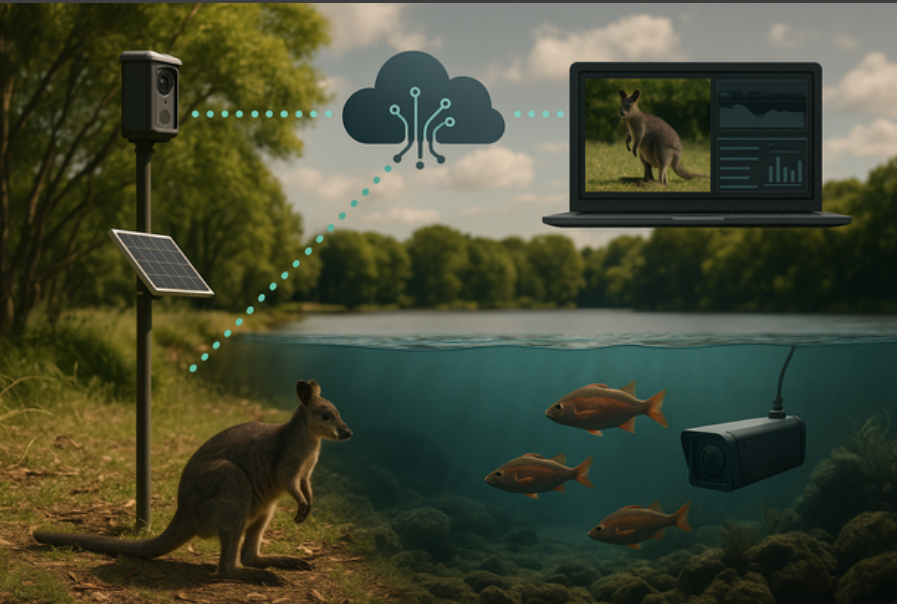
This integrated approach ensures data continuity from field instruments to decision-makers, reducing manual processing while increasing precision and insight. Whether monitoring water quality, asset performance, or large-scale environmental conditions, MĀKI's IoT architecture transforms complex field data into accessible, actionable intelligence.

[Learn more](#)



KEY CAPABILITIES

SOFTWARE & CONTROL SYSTEMS



MÄKI develops intelligent software and control systems that unify autonomous hardware, IoT networks, and AI analytics. Our technology enables end-to-end visibility, from mission planning and data capture to cloud-based analysis and reporting.

A key innovation is MÄKI's customised IoT AI camera system, designed to detect and monitor pest animals such as wallabies. Using onboard AI and edge computing, these systems operate reliably in remote areas with limited connectivity and power, supported by efficient data handling and solar operation.

The same architecture supports underwater monitoring, where optical and sonar-based AI systems track fish and aquatic activity. All data is processed through MÄKI's secure platform for real-time visualisation and integration into environmental databases.

Combining intelligent software with robust engineering, MÄKI delivers scalable, autonomous systems that make environmental monitoring smarter and more efficient.

[Learn more](#)

KEY CAPABILITIES

MONITORING & SAMPLING SERVICES



MÄKI provides professional monitoring and sampling services that combine advanced autonomous systems with expert field operations. Our team conducts on-site data collection for clients, including in remote or hard-to-access locations, delivering accurate and repeatable results under challenging conditions.

Using MÄKI's autonomous surface vessels (USVs) and IoT-based platforms, we monitor key parameters such as temperature, dissolved oxygen, pH, turbidity, and chlorophyll-a. Our custom winch-based sampling system enables detailed vertical profiling and multi-depth sampling within the water column.

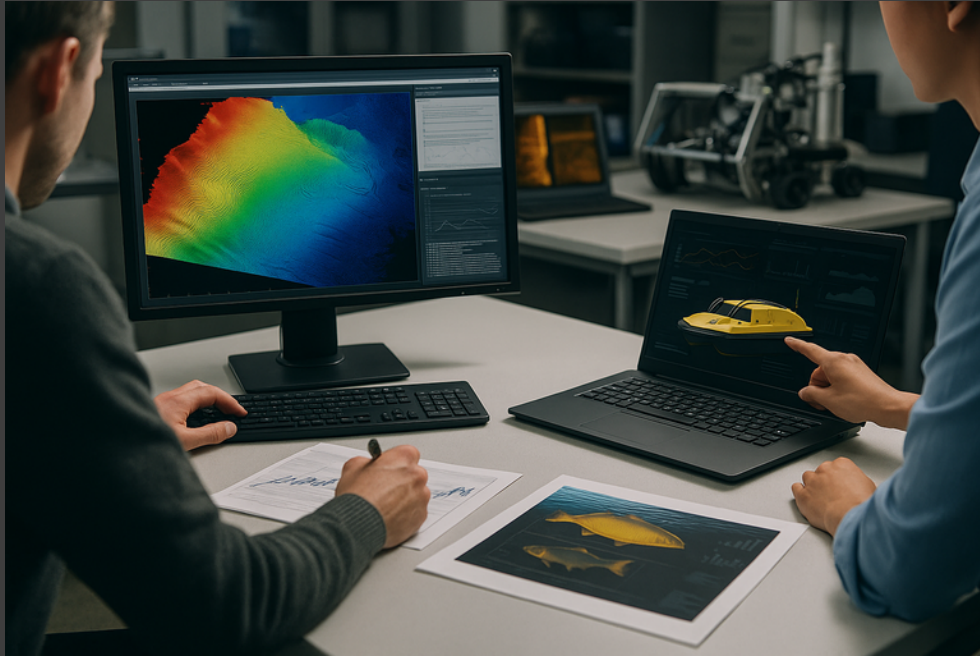
MÄKI also offers routine monitoring programmes, such as monthly or seasonal surveys, and can perform specialised monitoring and sampling tailored to specific client requirements. Each mission is designed for precision, efficiency, and long-term data reliability to support research, compliance, and environmental management.

[Learn more](#)



KEY CAPABILITIES

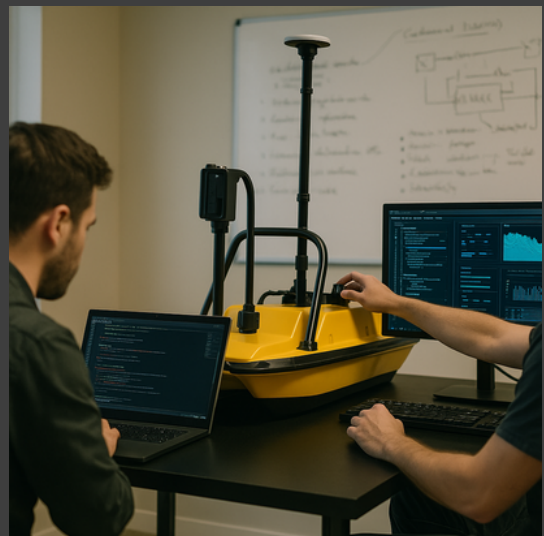
RESEARCH & COLLABORATION



MĀKI works closely with regional councils, universities, and industry partners to develop and validate new technologies for environmental monitoring and automation. Our collaborative projects focus on improving data quality, system efficiency, and accessibility for freshwater and coastal research applications.

Through partnerships with organisations such as Waikato Regional Council and Auckland University of Technology, MĀKI's engineering and software teams contribute to studies involving autonomous sampling, IoT integration, and AI-based sensing. These collaborations ensure our systems are scientifically validated, field-proven, and adaptable to real-world environmental challenges.

MĀKI welcomes new research and development partnerships that combine scientific insight with engineering innovation, helping create smarter, data-driven solutions for the protection and sustainable management of aquatic environments.



KEY CAPABILITIES

CASE STUDIES



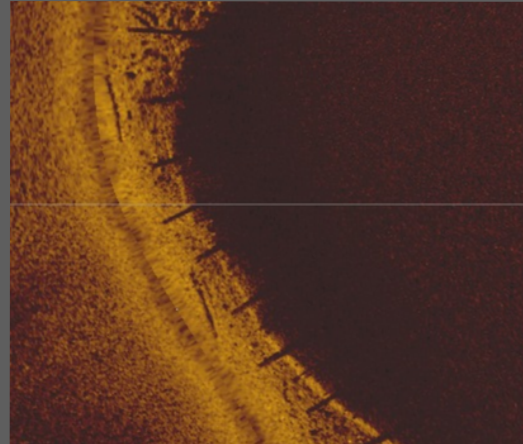
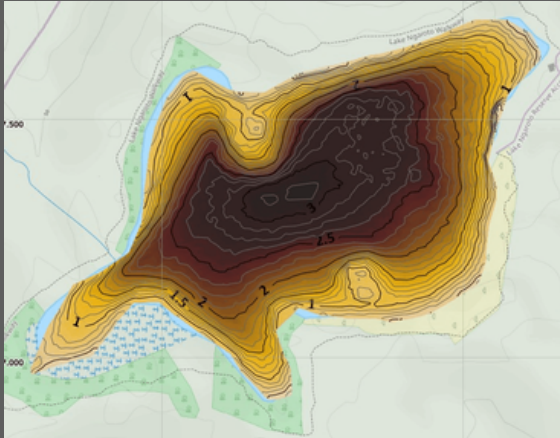
MĀKI's systems are applied in real-world projects across New Zealand, supporting environmental monitoring, research, and infrastructure management. Each case study demonstrates how our autonomous technologies and data systems deliver practical, reliable results in challenging environments.

From lake bathymetry surveys and vertical water-column profiling to AI-based monitoring of pest animals and aquatic life, MĀKI's work highlights measurable outcomes and field-proven performance. Our case studies showcase how engineering innovation and intelligent data integration translate into meaningful results for clients and the environment.

- **Bathymetry mapping - Waikato Regional Council**
- **Topo-Bathymetry and Sediment calculation for - Otorohanga District Council**
- **USV water monitoring and sampling - Waikato Regional Council**
- **Side-scan Sonar Survey - Maraetai Power Station**

01

Bathymetry Mapping Waikato Regional Council



MĀKI completed high-resolution bathymetry surveys across 26 lakes in the Waikato region, using autonomous vessels equipped with multi-beam and single-beam sonar. The data produced detailed underwater terrain models, supporting sediment analysis, habitat mapping, and long-term lake management.

[Learn more](#)

02

Topo-Bathymetry and Sediment Scanning Otorohanga District Council

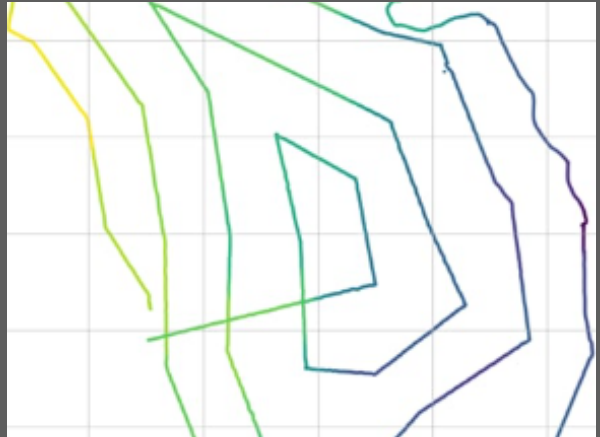


MĀKI carried out topo-bathymetric mapping at Aotea Harbour and sediment volume scanning of settling ponds in Otorohanga town centre. Using a combination of autonomous sonar mapping and drone-based topography, MĀKI created detailed 3D models that helped optimise sediment management and maintenance planning.

[Learn more](#)

03

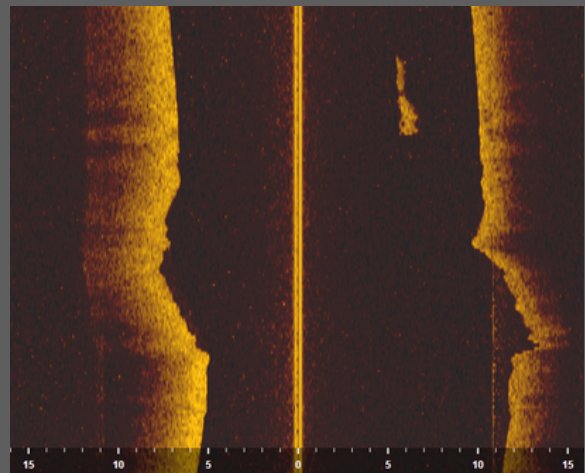
USV water monitoring and sampling Waikato Regional Council



MĀKI's autonomous surface vessel performed routine water quality monitoring and sampling in remote lakes across the Waikato region. The system collected real-time sensor data and multi-depth samples, improving dataset reliability and reducing the need for manual fieldwork.

04

Side-Scan Sona Survey Maraetai Power Station



MĀKI conducted a side-scan sonar survey of the inlet canal at Maraetai Power Station, capturing detailed imagery of sediment layers and underwater structures to support inspection and maintenance planning.

DEVELOPMENT ROADMAP



MÄKI 3-in-1 Integrated Autonomous Platform

MÄKI is developing a next-generation autonomous platform that integrates a USV, ROV, and drone into one intelligent system. Acting as an “aircraft carrier,” the USV transports and supports both aerial and underwater vehicles, enabling pilots to operate the ROV and drone wirelessly without requiring on-site vessel control.

Powered by solar and hybrid energy systems, the platform is designed for extended missions, continuously charging all components (USV, ROV, and drone) for long-range endurance. The drone autonomously returns to its dock for recharging, while the ROV can be deployed and recovered seamlessly from the USV’s central bay.

This system will transform data collection and environmental monitoring, delivering more effective, efficient, and sustainable operations. Although the engineering challenges are complex, MÄKI thrives on solving difficult problems, driven by a talented team committed to innovation and technical excellence.

CONTACT US



Let's explore how MāKI can support your next monitoring or research project.

MāKI provides a range of engineering and environmental monitoring services, alongside customised technology solutions for clients across New Zealand. We welcome enquiries from councils, research institutions, and industry partners seeking reliable data collection, mapping, or automation systems. Whether it's a new project, ongoing service, or collaborative development, our team is ready to deliver precise, efficient, and sustainable results.

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