

Cleaning and monitoring
our world's waters,
protecting our future.

WASTESHARK



ranmarine

An underwater photograph of a vibrant coral reef. The scene is dominated by various types of coral, including branching and brain corals, in shades of brown, tan, and grey. Numerous small, bright orange fish are scattered throughout the water, swimming around the coral. The background is a deep, dark blue, suggesting the depth of the ocean. The overall lighting is soft, highlighting the textures of the coral and the movement of the fish.

What floats our boats?

Our **Vision**

Designing compelling technology to protect the waters across our planet.

Our **Mission**

Our mission is to empower people and organizations across the planet to restore the marine environment to its natural state

Our data-driven autonomous technology creates this opportunity by cleaning and monitoring our waters

About us

RanMarine Technology is a drone technology company from The Netherlands.

We specialize in building & selling remote controlled and autonomous drones called Sharks which act as an intelligent tool swimming through water, extracting unwanted material and gathering data about the marine environment; thus helping customers to clean and monitor their waters.

RanMarine sells two products:

The WasteShark eats plastics and other litter; detects chemicals in the water and extracts alien and pest vegetation. The patented design makes it one of the most technologically advanced waste-management tools in the world. Equally effective in ports, marinas, rural waterways and urban environments, the WasteShark leaves zero carbon footprint while it works.

Modelled on planet Earth's biggest fish, the Whale Shark, our drones are designed to be efficient, long-lived, non-threatening and unobtrusive.

The DataShark is a learning machine, designed for round-the-clock water analysis. It scans and monitors the environment, sending data back to central command and communicating with other drones in the water continually collecting data about the marine environment.

WASTESHARK

All-purpose waste and data collection marine drone, for use in urban, rural, industrial and leisure environments.

The **WasteShark's** patented design has been created to efficiently clean up marine waste from near coastal waters, lakes and urban waterways. Able to navigate trafficked water and turn on tight angles, the WasteShark is one of the most advanced, agile and robust waste-management tools on the market.

Autonomous operation

With the autonomously operated WasteShark, the user is able to set the desired route of the vessel via our online portal (GPS waypoint); these routes can be saved and re-run as often as the user feels is needed. The WasteShark uses GPS routes to navigate to the desired areas and to return home. LiDAR can optionally be added to the device to increase both safety (collision avoidance) and enhanced data captured from the environment.

Manually operated (RF control / no autonomy)

Manual operation implies the vessel is controlled by an operator based onshore with line of site control over the craft (up to 500m). While this version of the WasteShark is connected to our data platform to enable the user to view onboard technical data, it cannot be programmed to a desired route.

Environmental Data

WasteSharks (manual and autonomous) can be equipped with environmental data sensors which capture an array of water quality health parameters. Data can be accessed in realtime via RanMarine's online platform.

*Please see our Data information page for more options.

How Does it Work?

Inspired by nature and blending technology, form and function, the WasteShark is designed to swim through water and eat its prey with minimum effort and maximum efficiency.

The WasteShark has been designed to perform in some of the harshest environments on earth, from the below freezing temperatures of the sub-Arctic to the consistent heat of the Equator.

RanMarine set out to design a vessel that can operate in any climate effectively, allowing our customers the ability to perform a once mundane and tedious operation with ease and precision.

EASE OF USE & OPERATION

We have specifically built the WasteShark with as few moving parts as possible, enabling maximum operational uptime and minimal maintenance cost. The WasteShark is a tool that can easily be deployed by one or two operators and can easily be launched from quaysides, shorelines, vessels and jet-ties.

By employing the WasteShark over current waste-collecting methods, our clients reduce the safety risks of putting personnel on the water; for the first time water-waste operators' can be safely land-based, whilst being more effective over a greater area than before.

While nets can perform certain tasks, detritus that is not within reach cannot be collected and is lost. While larger vessels can be used, these are often too big to operate in smaller, less accessible trash-chokeholds. These vessels are also significantly more expensive, in both capital outlay and operational running cost, than our drones

Built for Purpose

BUILT FOR PURPOSE TOOL

The WasteShark is built to be agile in the water; quick enough to cover large areas, small enough to enter hard to reach spaces and responsive enough to be at the operators total control.

OPERATORS VERSUS AUTOPILOT

The WasteShark is able to operate in two modes depending on the task at hand. Under manual operation, the WasteShark can be guided via handheld controls at the determination of the operator.

On an Autopilot setting the route and area of coverage can be set out via a handheld touchscreen using GPS and Waypoints; once the operator is happy with the route and area set, they can deploy the Drone on its course and leave it to do its job. At anytime this can be manually overridden or operations intervened. Autopilot allows operators to set up a number of areas of waste collection with many drones at any one time, with complete peace of mind.

Autonomous Navigation

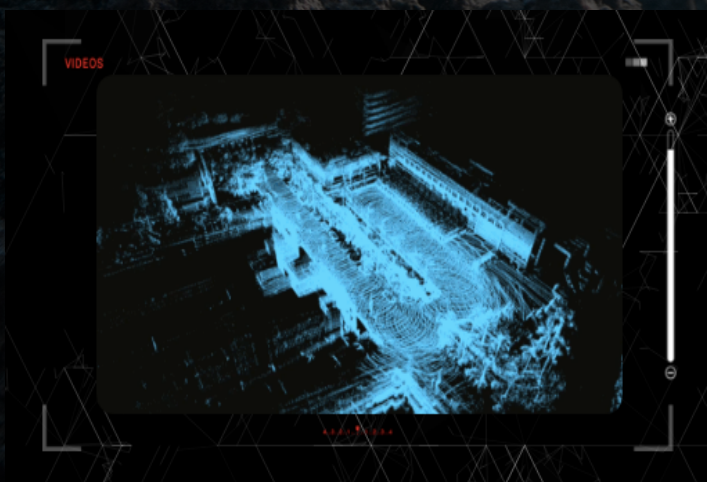
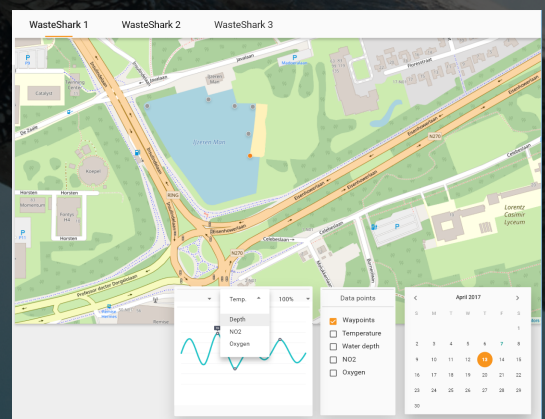
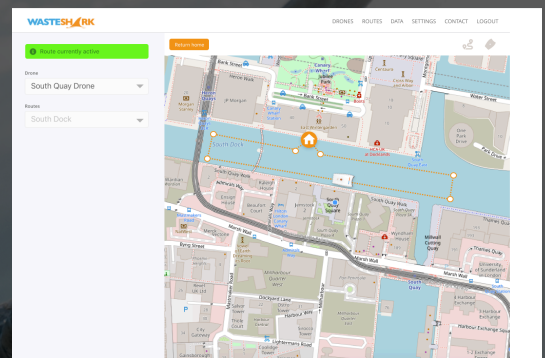
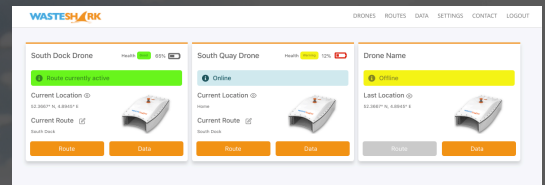
RanMarine new proprietary navigation software offers our customers a simple and easy interface to manage their drone fleet. Signing into RanMarine's secure customer web-portal allows you to operate and manage your drones from anywhere in the world, in real time.

Via secure servers and 4G communication, plotting your drone's path (via GPS waypoints), checking on its status and health as well as saving desired routes has never been easier both from your office or in the field via mobile devices.

Additionally our drones can be fitted with 3D **LiDAR** technology (advised for high traffic environments) giving the WasteShark situational awareness and maximizing safety on the water.

RanMarine has specifically designed its operation software to be user friendly and easily integrated into any work environment or field operations.

Prior to deploying drone (s) your team will attend our **SharkSchool** and be fully trained on the use and deployment of the drone.



Sensors and real time data

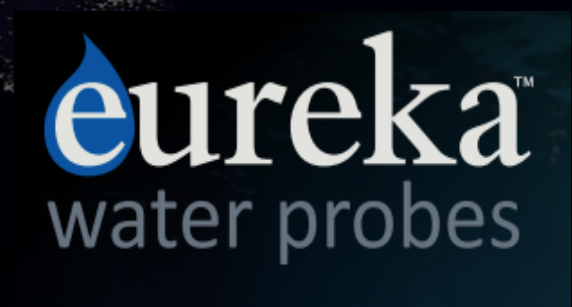
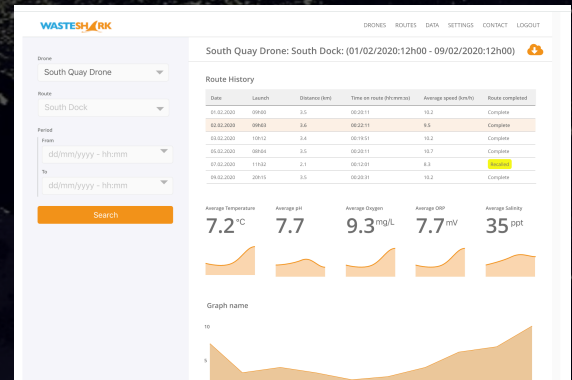
The WasteSharks data enabled capabilities allows each drone to be equipped with a variety of water health quality sensors and probes.

Partnering with Eureka Water Probes, our drones facilitate the data harvesting of numerous data points including temperature, pH, conductivity, optical DO, and turbidity (with optional depth and ORP).

The captured data is sent via secure 4G communication to our customer portal and can be accessed in real-time in either downloadable raw format or averaged real-time data sets.

All data is geo-tagged and timestamped to give an accurate picture of the water quality health within your ecosystem.

Available sensors include temperature, optical DO, pH, ORP, conductivity, depth, level, turbidity, fluorometers including chlorophyll a, chlorophyll red, phycocyanin, phycoerythrin, fDOM, fDOM II, rhodamine, fluorescein, crude oil, refined fuels, optical brighteners, and tryptophan/BOD, CO2, ammonium, nitrate, sodium, calcium, bromide, chloride, TDG, PAR, dual PAR, and transmissivity.



Fast Facts

SIZE

156 x 108 x 45 cm Tare 50 kg approx Buoyancy 400 kg

PAYLOAD CAPACITY

160 liters (Internal basket)

SWIM TIME

6 - 8 hours per deployment (environment dependent)

TERRITORY

Smart Cities and the built environment – waterfront property, canals, lakes, lagoons, bays, beaches.

EFFECTIVE RANGE

500m (manual) to 5km + (autonomous)

OPERATING ENVIRONMENT

Ambient temperature from -5°C to +60°C with swells to 1.25 metres

PRODUCTIVITY

Can clear half a ton (500 kg) of debris per day

USEFUL LIFE

15+ years expected minimum



WasteSharks can be purchased and configured to be either manually or autonomously operated. Our Team will assist you on deciding the best type of **WasteShark** for your particular needs and environment.

Technical Specifications

Autonomy

Parameter	Value
Length	157cm
Width	109cm
Height	52cm
Draft (Depth Underwater)	20cm
Weight	72kg

Maximum Speed	3km/hr
Thrust (per Thruster)	5.25kgf
Thrust (Reverse) (per Thruster)	4.1kgf
Maximum Operating Time on One Charge*	8hrs
Maximum Charging time	5hrs
Camera Video Range**	300m
Remote Control Range**	500m
Basket Volume Capacity	160L
Basket Weight Capacity	60kg
Range (Distance Travelled on One Charge)*	12km
Coverage Capability*	10,000m ² /workday
Recommended Coverage Area per Shark*	25,000m ²
Trash Collection Capacity*	500kg/workday

Communication Protocol	4G
Range	5km +
Collision Avoidance	LiDAR (3D)
Range	60M
Data Enabled	Yes
GPS Way-pointing	Online Portal
Sensor Data	Online Portal
*Annual subscription fee applies	

Wave Height (Max.)	0.5m
Wake Wave Height (Max.)	1.5m
Wind Speed (Max.)	40km/hr
Water Speed (Max.)	3km/hr
Water Depth (Min.)	30cm
Outdoor Temperature (Max.)	50 °C
Outdoor Temperature (Min.)	-15 °C
*Can operate in saltwater, freshwater and brackish water	
*Exercise caution operating at night	

Frequently Asked Questions

WHAT IS IT? WasteShark® is a drone (an unmanned autonomous vehicle) designed for urban, inland and near-coastal waters.

WHAT DOES IT DO? The WasteShark is designed to act as buoyant and mobile waste clearing and environmental data collection tool.

WHAT WASTE DOES IT CLEAR? Depending on configuration, Plastics and micro-plastic (to 3mm), general trash, oils and chemical pollutants, invasive surface plants and species (e.g. jellyfish)

WHAT DATA DOES IT COLLECT? We focus on water quality health data, such as oxygen, nitrogen, turbidity and temperature, along with PH levels and nutrient levels. This can be expanded to depth and quality bathymetry data.

CAN IT BE BIGGER, SMALLER OR FLY? After many years testing various shapes and sizes we believe we have found the perfect form to function in its environment. Big enough to make a material impact on the environment but small enough to get into those tight places where plastic and waste often ends up.

WHAT IS IT MADE OF? We use high quality composite fiber to ensure a robust product that looks elegant and sleek in the water

HOW DOES IT WORK? **Autonomous (defined path or random walk inside a defined area) or manual** (remote control by operator with handheld control unit)

HOW DO I GET IT IN/OUT THE WATER? Either manually or with a small crane or lifting device, or using RanMarine Technology's Slider tool.

DOES IT CRASH INTO THINGS? No, the autonomous versions have Lidar and a set path missions that are set to avoid both static and moving objects in the water; with RF controlled versions operators always have line-of-sight of the vessel and potential collisions.

DOES IT HURT ANIMALS? No – there is zero reported animal injury anywhere in the world. Animals can easily out-swim the drone, and there is nothing in the drone that can trap or disable an animal.

DOES IT POLLUTE THE ENVIRONMENT? No. WasteShark produces zero carbon or greenhouse emissions, and no light or noise pollution.

WHAT IF IT GETS FULL OR RUNS OUT OF BATTERY? WasteShark has a “return to home” feature that activates if its belly is full or its battery is running low (Class A). An SoC onboard the Class M version alerts the user to battery charge.

RanMarine continuously updates its FAQ section. Visit: www.ranmarine.io

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