

# TECHNOLOGY

AT WORK, SERVING THE SEA



RanMarine Technology™ is a drone technology company from The Netherlands. We specialise 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.



## RANMARINE TECHNOLOGY

# 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.



## 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 jetties.

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-choke-holds, These vessels are also significantly more expensive, in both capital outlay and operational running cost, than our drones

## 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.

“Water and air, the two essential fluids on which all life depends, have become global garbage cans.”  
Jacques Cousteau

# 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, rivers,  
lakes, lagoons, bays, beaches,



## EFFECTIVE RANGE

1 km with extension up to 5 km available

## 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



# FAQ'S

## 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.

## DO I NEED A LICENCE TO PILOT IT? No

RanMarine continuously updates its FAQ section. Visit: [www.ranmarine.io](http://www.ranmarine.io)

# TECHNICAL OVERVIEW



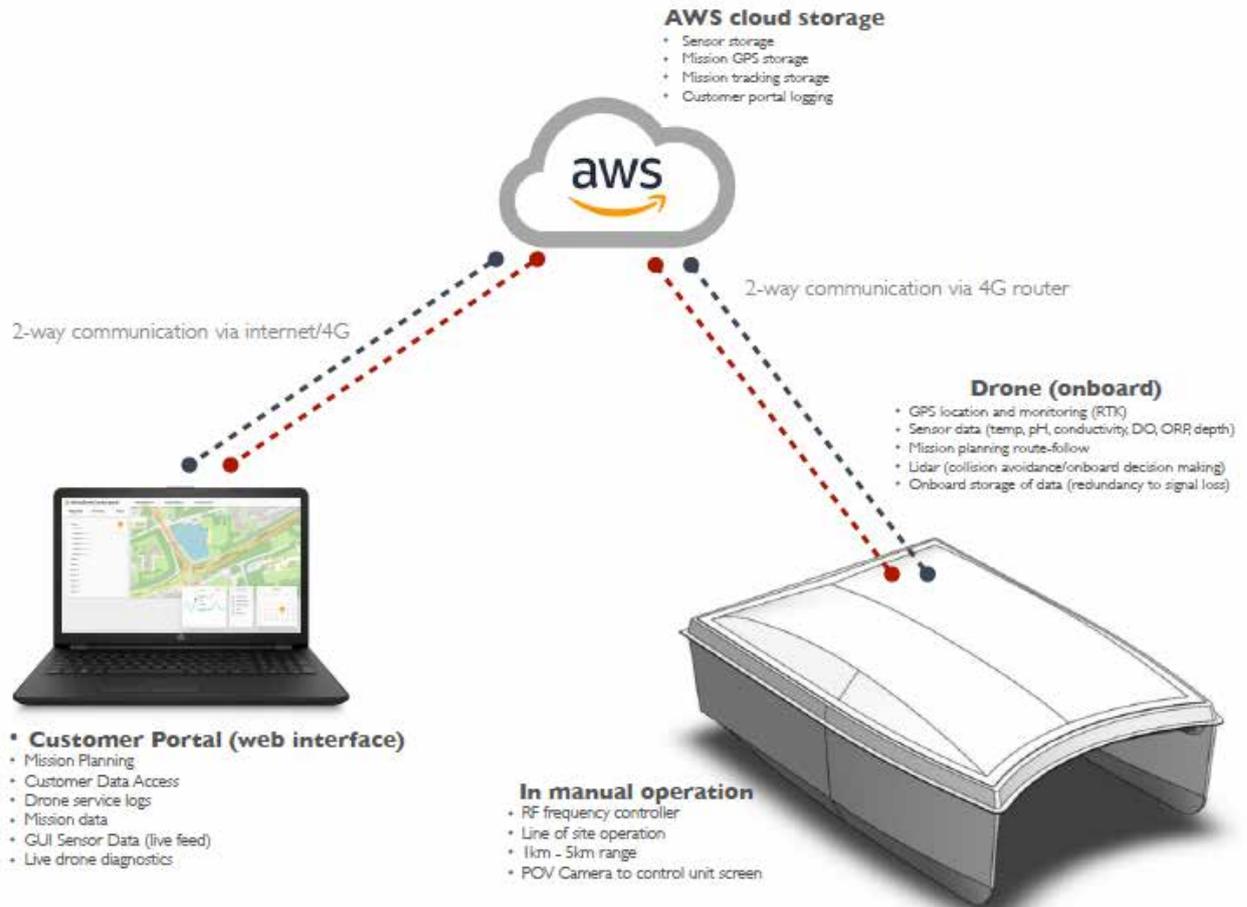
## WasteShark Class A

Control	Mission Planning (+ RF manual control)
Weight	60kg
Speed	7 Knots (Unladen)
Dimensions	1556 mm x 1078mm x 450 mm
Basket	Removable
Capacity	160 liter
Operational time	8 hours
Batteries	4 x Lithium Iron Phosphate (LiFe PO4)
Thrusters	3 (rear mounted)
Hull	Composite Fiber
Environment	-5 to 60 degrees Celsius
Camera	FOV (16:9) 130 degrees / color
Charging	12v (charger supplied)
BMS	State of Charge / Auto balance

## WasteShark Class M

Control	Radio Control (RF)
Weight	60kg
Speed	7 Knots (Unladen)
Dimensions	1556 mm x 1078mm x 450 mm
Basket	Removable
Capacity	160 liter
Operational time	8 hours
Batteries	4 x Lithium Iron Phosphate (LiFe PO4)
Thrusters	3 (rear mounted)
Hull	Composite Fiber
Environment	-5 to 60 degrees Celsius
Camera	FOV (16:9) 130 degrees / color
Charging	12v (charger supplied)
BMS	State of Charge / Auto balance

# RanMarine Autonomy



# RanMarine WasteShark Configurations

WasteShark	Waste Collection	Manual	Autonomy	Collision Avoidance	Data
M	◆	◆			
M +	◆	◆			◆
A	◆	◆	◆		
A+	◆	◆	◆		◆
A Pro	◆	◆	◆	◆	
A Pro +	◆	◆	◆	◆	◆
DATA		◆	◆	◆	◆

## M:

Manual operation, no data.

## M+:

Manual operation plus data inbuilt data sensors (Temp, pH, conductivity, DO, ORP, depth) with online live-data portal.

## A:

Autonomous (waypoint mission planning) and manual capability with online live-data portal.

## A PRO:

Autonomous with collision avoidance (LIDAR) and manual capability with online live-data portal.

## A PRO+:

Autonomous with collision avoidance (LIDAR) and manual capability. Inbuilt data sensors (Temp, pH, conductivity, DO, ORP, depth) with online live-data portal.

## DATA:

Autonomous or manual capability with inbuilt data suite (temp, pH, conductivity, DO, ORP, depth, turbidity). No waste collecting capability. Additional sensors and costing available on request - as shown but not limited : Nitrate, ammonium, chloride, sodium, TDG, calcium, bromide, chlorophyll a, BGA, Rhodamine, Crude Oi, I Refined Oil, CDOM/FDOM, flourescein and optical brighteners tryptophan. pollution.

# PRODUCT CATALOGUE

## WasteShark®

Class M	Manual drone, no data capability
Class M+	Manual drone with data capability
Class A	Autonomous drone (waypoint mission planning), no data capability
Class A+	Autonomous drone (waypoint mission planning) with data capability

## Accessories

Data sensors - Available as specialist arrays (ref above) or in any other combination as desired  
 Other customisation - Your logo/branding on the Shark, LED lighting, algae basket, microplastic basket, etc  
 Secure case - custom built, durable, reusable, lockable – enables safe transport and storage  
 Slider portable device for moving Sharks in/out the water; easily assembled and transported

## GET IN TOUCH

### Drone Solutions Authorised Dealer

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Website: [www.ranmarine.io](http://www.ranmarine.io)



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