

MOBULA 8

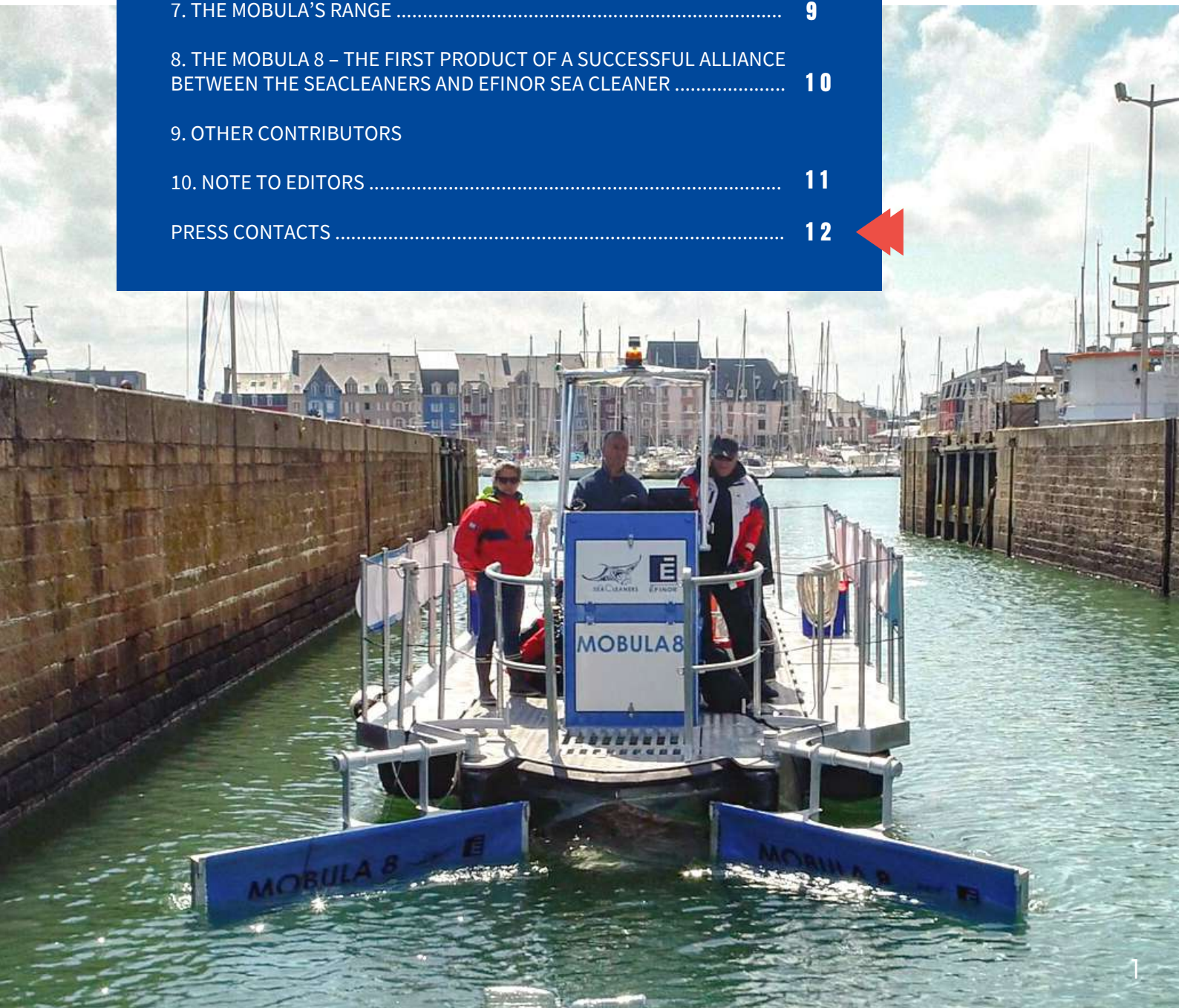
PRESS RELEASE

BY THE SEACLEANERS &
EFINOR SEA CLEANER



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- The Mobula 8 is the new multi-purpose decontamination boat codeveloped by The SeaCleaners association and its partner, the French SME EFINOR Sea Cleaner

- It is designed to **fight against the most widespread types of pollution**, and is equally capable of collecting floating debris, micro waste* and oil spillings

- A **truly self-sufficient waste collection station**, the Mobula 8 is a focal point of unique solutions for collecting solid and liquid waste and cleaning contaminated areas

- It is designed for **decontamination projects** in calm and protected waters, such as coastal areas, lake areas, mangrove swamps, rivers, canals and at sea up to 5 miles from the coast.

- Its first port of call is Indonesia **at the end of autumn 2021**

*for the purpose of scientific study

1. WHERE DOES PLASTIC POLLUTION COME FROM?

Over the last decade, plastic pollution in the ocean has proven to be a major environmental problem, with considerable impact. It affects ecosystems, marine biodiversity and human health, and has devastating consequences for the tourism and fishing industries.

There are two sources of plastic waste in the ocean: human activity on land, and at sea. **80% of all plastic** found in the marine environment was originally used on land. It mainly comes from streams and rivers, water treatment waste, coastal leisure activities and illegal dumps located near coasts or rivers (1).

(1) François Galgani et al. *Pollution of the oceans by plastics and microplastics*. 2020.

Plastic is the most common type of ocean waste, making up **50 – 95% of all waste and 100% of floating waste**. Several natural phenomena, mainly currents and eddies, are responsible for transporting floating plastic across the ocean.

The amount of plastic floating on the surface of the ocean is currently estimated to be more than 269,000 tonnes. This figure is constantly increasing, as we estimate that a total of 8 – 12 million tonnes of plastic end up in the marine environment each year (2).

(2) United Nations Environment Programme (UNEP).

2. WHY CLEAN UP RIVERS?

Studies on ocean plastic pollution show that rivers are one of the main ways plastic travels from land to the ocean. The exact amount of plastic waste in rivers remains unknown, but we estimate it to be between 1.15 and 2.45 million tonnes per year (3).

The transportation of plastic via rivers is largely influenced by local conditions (e.g. environmental and structural). In Europe, the average flow of plastic is 2,500 pieces per hour, while in Asia it is 73,000 pieces per hour (4).

Approximately 65% of plastic discharged into the oceans from rivers comes from the 20 most polluting rivers in the world, and nearly all of these are in Southeast Asia (4).

Furthermore, waste in rivers is concentrated and easily collected. It is less degraded by seawater and UV rays than marine waste and is easier to recycle – whether this is for material or energy recovery.

(3) Laurent Lebreton et al. *River plastic emissions to the world's oceans*. 2017.

(4) CJ van Calcar and THM van Emmerik, *Abundance of plastic debris across European and Asian rivers*, 2019



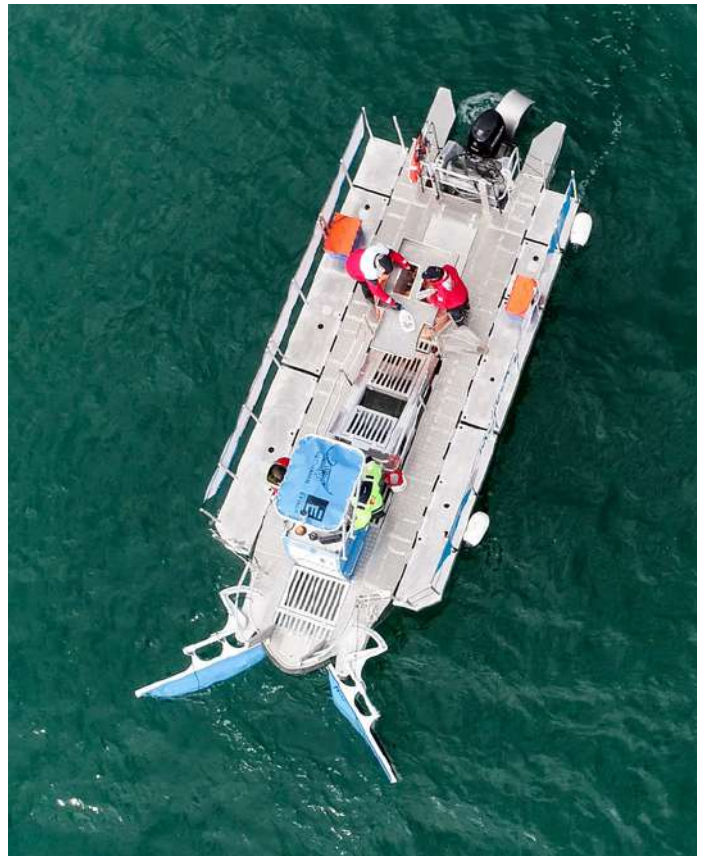
The SeaCleaners therefore hopes to act early by using the **Mobula 8** to collect waste in rivers, estuaries and near ports. The latter are strategic areas of intervention because different waste streams are located near to one another, namely river waste, maritime transport waste and land waste from nearby towns and villages.



3. HOW DOES THE MOBULA 8 RISE TO THE CHALLENGE?

- Simultaneously collects **debris, micro waste* and oil spillings**
- Surface cleaning capacity of **15,000 m² per hour**
- Can collect floating waste, both liquid and solid, up to **0.4 m below the surface**
- Collection range of **4 m**, thanks to funnelling apparatus installed at the front
- Micro-waste collected for scientific purposes from **30 microns to 2 mm**
- Suction up **2,5 to 4 m** upstream of the vessel
- Solid waste storage capacity of **5 – 8 m³** (2,400 kg) in big bags
- Liquid waste storage capacity of **600 litres**
- Hazardous waste stored in dedicated boxes

* collected for the purpose of scientific study



THE ADVANTAGES OF THE MOBULA 8

Designed for collection projects, including those in the least accessible areas

Can be operated by a skeleton crew of 3 people (1 pilot and 2 operators)

Can be transported by truck (in a container), drastically reducing costs and speeding up deployment

Quick to intervene; switches from navigation mode to decontamination mode in less than 3 minutes for rapid action

Platform enlarged by inflatable fenders to increase the boat's stability

REDUCED ENVIRONMENTAL IMPACT

- The Mobula 8's structure is made of aluminium, a strong, weather-resistant material that can be recycled indefinitely
- It is light and does few large-scale movements, reducing its fuel consumption
- A life cycle analysis of the boat was carried out by global leader **Capgemini Engineering** (formerly Altran). The study showed that the Mobula 8 represents an environmentally efficient solution, i.e. that the environmental impact associated with the boat's construction, the extraction of raw materials, its propulsion, its overall consumption, its maintenance and the recovery of collected waste are lower than the environmental benefits generated.

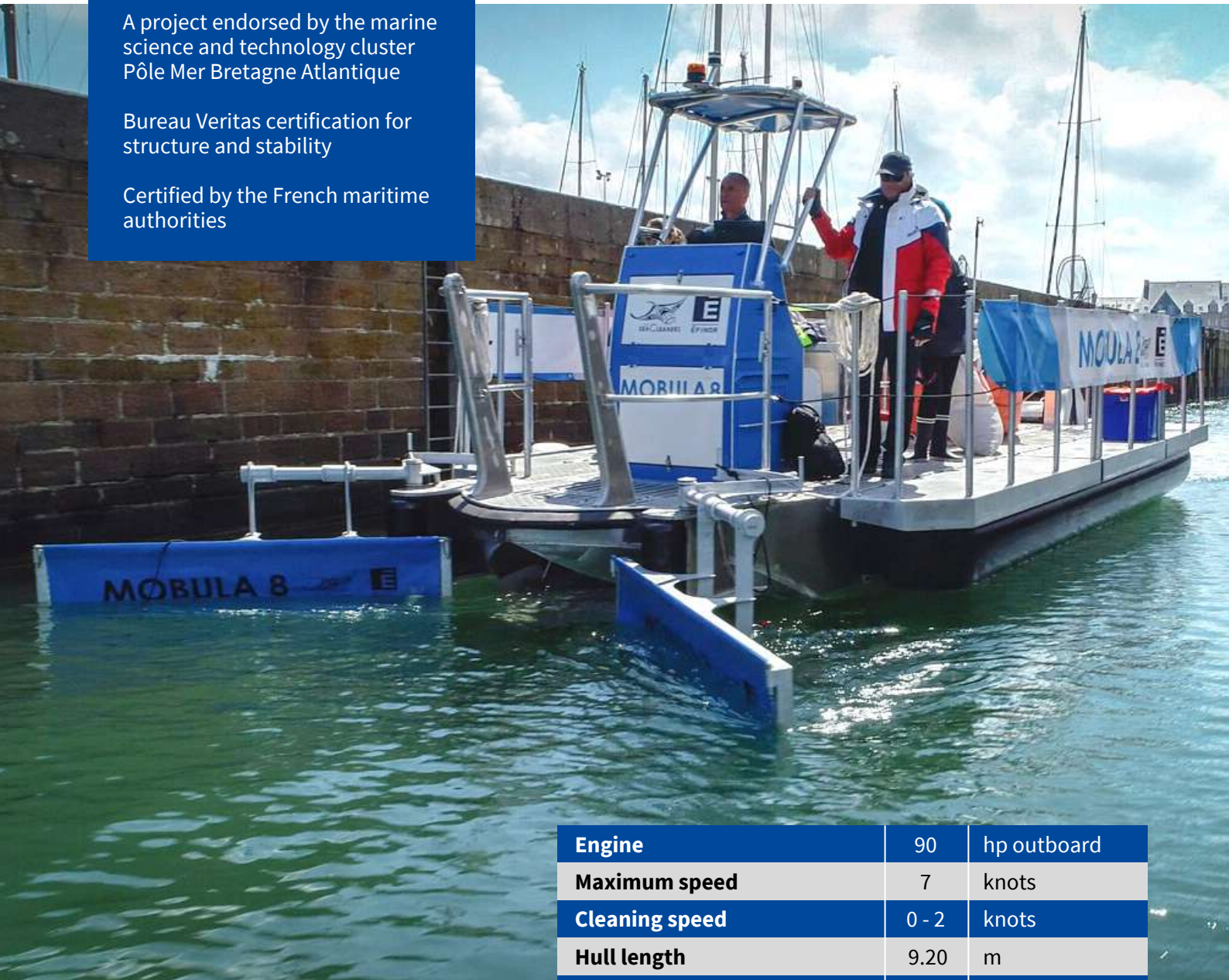
SUCCESSFUL, PATENTED TECHNOLOGY BY EFINOR SEA CLEANER:

Effectiveness proven by OHMSETT and CEDRE tests

A project endorsed by the marine science and technology cluster Pôle Mer Bretagne Atlantique

Bureau Veritas certification for structure and stability

Certified by the French maritime authorities



Engine	90	hp outboard
Maximum speed	7	knots
Cleaning speed	0 - 2	knots
Hull length	9.20	m
Hull width	3.80	m
Lightship weight (with floats)	2,400	kg
Mean draught	0.80	m

DETAILS

The vessel is equipped with a net for recovering micro waste (especially microplastics) for scientific study. Different mesh sizes can be used depending on the shape of waste found, from 500 to 2,000 microns.

4. WHERE WILL THE MOBULA 8 BE USED?

At the end of 2021, the Mobula 8 will be sent to Indonesia, where 5 of the 20 most polluted rivers in the world are located.

Twenty potential sites for calm water intervention have been identified for clean-up activities by The SeaCleaners' Operational Hub. These activities will be co-led by associates, businesses and local communities.

As well as its clean-up mission, the Mobula 8 is also paving the way for future collection campaigns carried out by the MANTA*, The SeaCleaners' flagship project. Its aim is to identify, locate, qualify and quantify areas where the pollution is most dense and difficult to access, and where MANTA campaigns for collecting marine plastic waste are likely to be more appropriate.

*see 9 for more information on the MANTA



5. HOW IS THE COLLECTED WASTE USED?

THE MOBULA 8'S CONTRIBUTION TO A CIRCULAR ECONOMY

Thanks to our partner **Capgemini Engineering** (formerly Altran), two parametric studies have been carried out to determine the economic and environmental impact of different decontamination and waste recycling solutions envisaged by The SeaCleaners.

These studies showed that, by contributing to the implementation of a circular economy on land, the Mobula 8 was an economically viable solution with a minimal environmental impact.

HOW DOES IT WORK?

Firstly, the aquatic waste collected by the Mobula in rivers, canals and estuaries will be transported to sorting centres, where waste from different waste streams is also treated (e.g. land waste, collected by trucks in towns and villages located near the port, and boating waste).

The sorting centre will then separate the plastic and non-plastic waste.

The plastic waste will either be recycled or converted into energy using low tech waste-to-energy units, while the non-plastic waste will be sold to appropriate recycling facilities. The electricity produced will also be sold and reintroduced into the local market.



ECONOMIC AND SOCIAL GROWTH

Through this project, The SeaCleaners not only plans to help clean up the environment, but also to help stimulate the local economy by creating jobs.

Partnerships with local recycling associations will be established, and “small players” in the informal economy, who earn money by collecting and selling waste, will be able to contribute, either by continuing their work or by working on the Mobula and earning a full salary.

The SeaCleaners aims to complement the use of the Mobula by encouraging local waste recycling activity. These solutions, which are low tech and accessible, generate local revenue, helping to create a social solidarity economy.

6. THE SEACLEANERS' WORK IN INDONESIA: ONE EYE ON THE SEA AND ONE EYE ON SPACE

Deploying the Mobula 8 in Indonesia is part of the larger framework of The SeaCleaners' long-term mission in this country, which is the fourth most populated country in the world and is bearing the brunt of plastic pollution.

This is also where the first MANTA clean-up campaigns will be carried out in 2024.

The SeaCleaners will open its first non-European branch here in 2021.

The SeaCleaners is working in Indonesia with **CLS (Collecte Localisation Satellites, a subsidiary of the French Space Agency CNES)** to identify polluted areas using satellite data. This work will help guide the Mobula 8 and prepare for MANTA operations.

We are also working with the **IRD (the French National Research Institute for Sustainable Development)** to define areas where marine waste is building up by modelling plastic waste drifts.

Finally, we are studying dispersion across the surface of the ocean, and the accumulation of floating material in the semi-enclosed seas of Southeast Asia, through a 3-year CIFRE PhD thesis co-supervised by the IRD and the elite technological university **IMT Atlantique**.



7. THE MOBULA'S RANGE

The Mobula 8 will be supplemented by its larger counterpart the Mobula 10, a 10 m multi-purpose decontamination boat that is capable of operating in rougher sea conditions, and of going from island to island to collect waste.

Both will be embarked at the rear of the MANTA, but each will have their own specific tasks:

- **The Mobula 8** will operate in calm and protected waters (5 nautical miles from the coast), such as lake areas, rivers, mangrove swamps, etc.
- **The Mobula 10** will instead operate in rougher waters, such as coastal waters up to 20 nautical miles from the coast, in rivers with strong currents, etc., and will be used to support the MANTA by collecting peripheral waste in areas where waste has accumulated

Other developments are being investigated.



Inspired by the eagle ray

The Mobula range takes its name from the mobula ray, also called the eagle ray. These rays closely resemble manta rays, but are distinguished by their mouth being situated below the body rather than at the front. The biggest species is the Mobula mobular, a Mediterranean ray that can reach 5 m in size, weigh a tonne and perform spectacular jumps above the water. Similarly, Mobula 8 and Mobula 10 resemble the MANTA, The SeaCleaners' flagship decontamination boat. They have a common goal and mission of collecting plastic waste, while also being smaller and more agile, capable of operating in narrow and shallow areas.

8. THE MOBULA 8 - THE FIRST PRODUCT OF A SUCCESSFUL ALLIANCE BETWEEN THE SEACLEANERS AND EFINOR SEA CLEANER

It wasn't just their similar names that inspired the partnership between these two associations, but also a desire to share their respective expertise in order to launch a programme for co-developing innovative plastic waste collection solutions. The result was the Mobula 8.

EFINOR Sea Cleaner, based in Paimpol (Côtes-d'Armor, Brittany), specialises in the design, production and marketing of multi-purpose decontamination vessels equipped with patented technology. EFINOR Sea Cleaner has 10 years of research and development under its belt, as well as over 100 references in 30 countries in the field of multi-purpose decontamination boats.

Meanwhile, The SeaCleaners (a public interest association formed under the law of 1901) was founded in 2016 to fight against plastic pollution. Through its MANTA INNOVATION* (SAS) division, The SeaCleaners develops innovative technological solutions for collecting and recycling floating plastic debris – one of these being the flagship MANTA project.

EFINOR Sea Cleaner and The Sea Cleaners use their partnership to develop collection solutions that complement the MANTA, allowing intervention in narrow and shallow areas where movement is limited.

EFINOR Sea Cleaner and MANTA INNOVATION are selling these co-developed solutions (including the Mobula 8) to public and private organisations wishing to take part in marine decontamination campaigns.

*MANTA INNOVATION, The SeaCleaners technical hub



EFINOR



The SEA CLEANERS

9. OTHER CONTRIBUTORS

Two leading French organisations have also contributed to the Mobula 8's development: Technip Energies and the IRD.

Technip Energies shared its expertise during the Mobula 8's design phase and while integrating new decontamination solutions.

Technip Energies is a leading engineering and technology company working towards energy transition, with leading positions in Liquefied Natural Gas (LNG), hydrogen and ethylene, as well as an increasing market presence in blue and green hydrogen, sustainable chemistry and the management of CO₂. The business benefits from a robust project delivery model, which is supported by an extensive range of technology, products and services.

The French National Research Institute for Sustainable Development (IRD) has allowed the project to be certified by Pôle Mer Bretagne Atlantique.

The IRD is a multi-discipline French public research body and a participant in international development. It uses an original model: equal partnership with developing countries. The IRD's research priorities adhere to the UN's Sustainable Development Goals (SDGs), and aim to support development policies and the innovation of solutions adapted to the environmental, economic, social and cultural challenges that humanity and the planet face.

10. NOTE TO EDITORS

About EFINOR Sea Cleaner

EFINOR SEA CLEANER is a subsidiary of the industrial group EFINOR, which was founded in 1988, and sells cleaning and decontamination vessels. As both the designer and manufacturer, the company has developed unique, innovative and patented technologies used by all its vessels. It can collect floating solid waste and liquid waste such as hydrocarbons.

Their teams work together on research and development projects to propose alternative, more environmentally friendly methods of propulsion. It was in this context that, a year ago, they presented the fully electric WASTE CLEANER 66, the smallest unit of the range.

<https://seacleaner.efinor.com/> ←

About The SeaCleaners

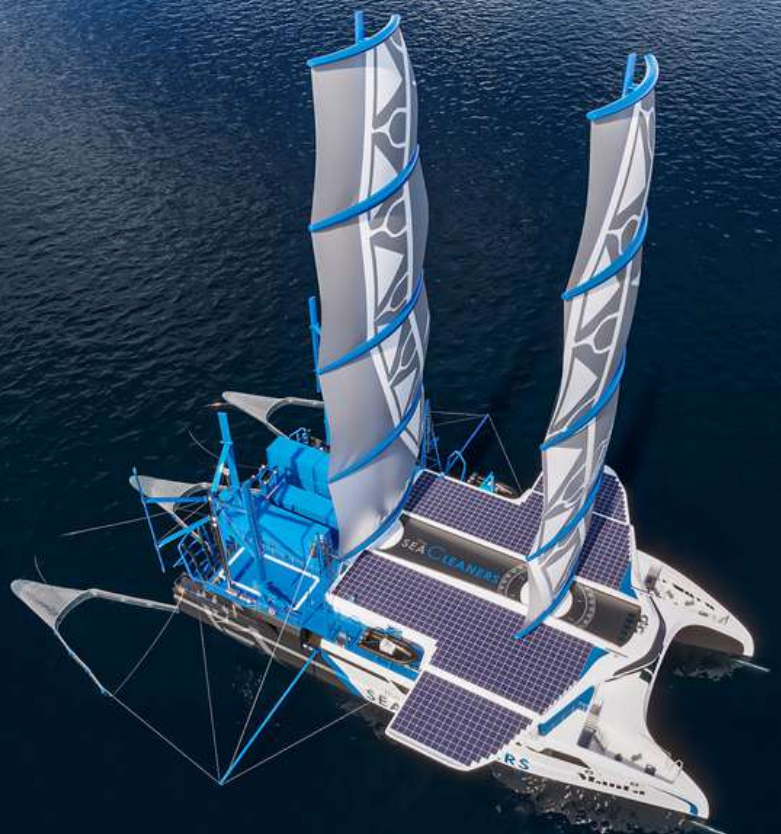
Created in 2016 by the French-Swiss navigator and explorer Yvan Bourgnon, the public interest association The SeaCleaners offers concrete solutions for plastic pollution, both on land and at sea, through corrective and preventative missions.

The SeaCleaners has Observer Status on the UN Environment Programme and is supported by the Prince Albert II of Monaco Foundation and the CCI France International network. It has four missions:

- Protecting the environment by collecting floating waste, and gathering land waste using its teams of volunteers
- Education initiatives aimed at the public and at policy makers, alongside raising awareness in affected populations
- Scientific research
- Promoting the transition towards a circular economy

www.theseacleaners.org ←

Notably, The SeaCleaners is also developing a pioneering solution for collecting and recycling floating plastic debris; the MANTA, an innovative vessel equipped with an onboard factory, which will be launched in 2024. This giant of the seas will be the first deep-sea vessel capable of collecting and treating large amounts of floating ocean waste before it breaks down and permanently enters the marine ecosystem. A true technological triumph, the Manta will be powered by several types of renewable energy technology, minimising its carbon footprint.



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