THE OCEAN CLEANUP by Boyan Slat

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Boyan Slat

- Founder and CEO of The Ocean Cleanup.
- A Dutch inventor and entrepreneur.
- His main aim is to create technological solutions to global problems, especially climate change and pollution.

AIMS OF ‘THE OCEAN CLEANUP’

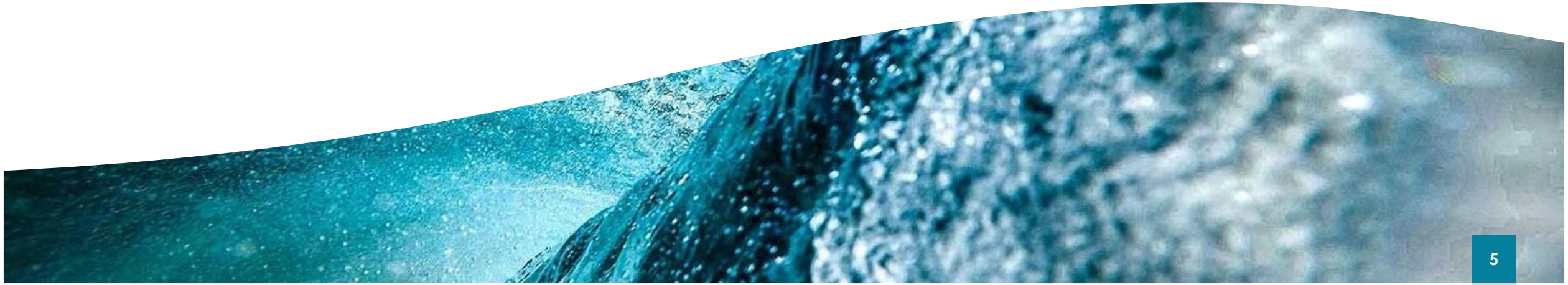
DEVELOPMENT OF ADVANCED TECHNOLOGIES TO GET RID OF PLASTICS IN THE OCEAN

AIM TO CLEAN UP 90% OF OCEAN PLASTIC POLLUTION

- Each year, millions of tons of plastic pollute the oceans which mainly spills out from rivers. With out an action to prevent this pollution, the plastic will effect our ecosystems, health and economies.

- With the developed Technologies and solutions created, The Ocean Cleanup focuses on closing the source of pollution and cleaning up already polluted oceans and rivers all around the World.

Oceans:
Cleaning Up the Garbage Patches



OVER 5 TRILLION PIECES OF PLASTIC CURRENTLY LITTER THE OCEAN

These plastic accumulates in five ocean garbage patches. And the largest one is the Great Pacific Garbage Patch. Cleaning up this largest by using unconventional methods like vessels or nets would approximately take thousands of years and billions of dollars to complete.

However, with the passive systems developed by the Ocean Cleanup, the estimated time to remove the 50% of the Great Pacific Garbage patch is 5 years which also decreases the overall cost.

CLEANING THE GARBAGE PATCHES

- **Creating a garbage free coastline**

- Since the most challenging pollution material is plastic which is already spread and travels in all directions, the cleanup technology focuses on the plastic and ways to remove it from the ocean effectively.

- The system of cleanup includes a long floater that stays on the surface of the water and the skirt that hangs and placed beneath the floater. The floater prevents the system from sinking while the skirt prevents the accumulation from spreading or escaping and directs it into the retention system.

CLEANING THE GARBAGE PATCHES

- **Using natural oceanic forces as an advantage**

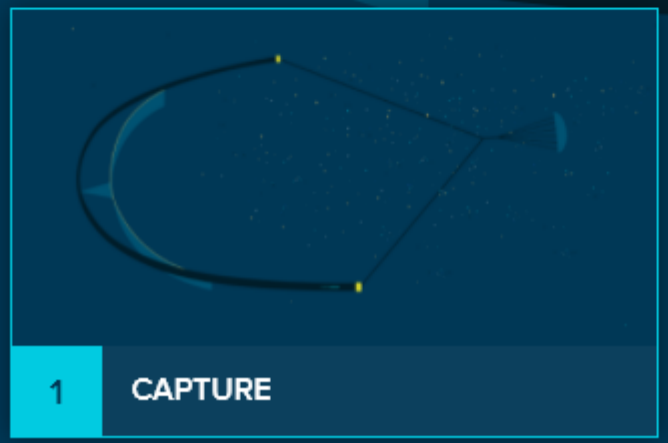
- This type of system and an area of this size would require too much energy if it was an active system, so to create a more energy efficient system, a passive design is created. The system relies on the natural forces to follow and navigate the patches. This method also enhances the systems durability in strong and harsh ocean environment.

- The system and plastic are directed and carried by the natural forces like wind, waves and current. In order to create a speed difference between the plastic and the system, a sea anchor is used to slow down the system to capture the plastic in an easier way.

HOW IT WORKS

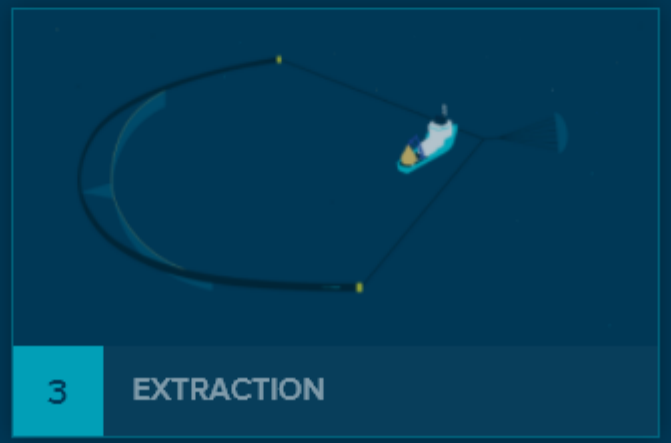
Concentrate the Plastic & Take it Out

The combination of natural forces and a sea anchor create a drag, which makes the system move consistently slower than the plastic, while allowing the plastic to be captured.



1 CAPTURE

2 ACCUMULATION



3 EXTRACTION

https://theoceancleanup.com/oceans/

The system autonomously navigates the garbage patch for extended time periods, catching and retaining plastic in the center of the system.

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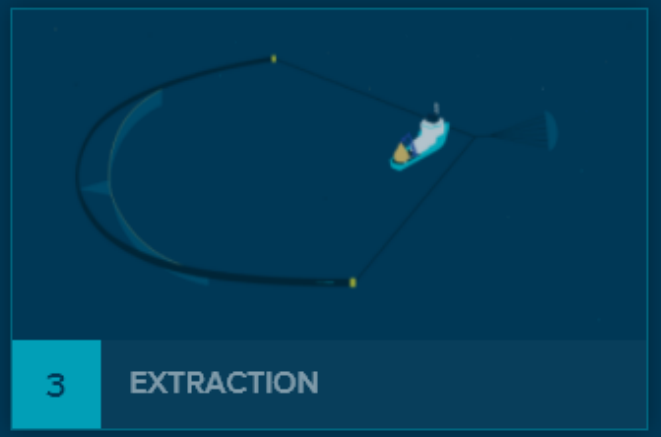
2 ACCUMULATION



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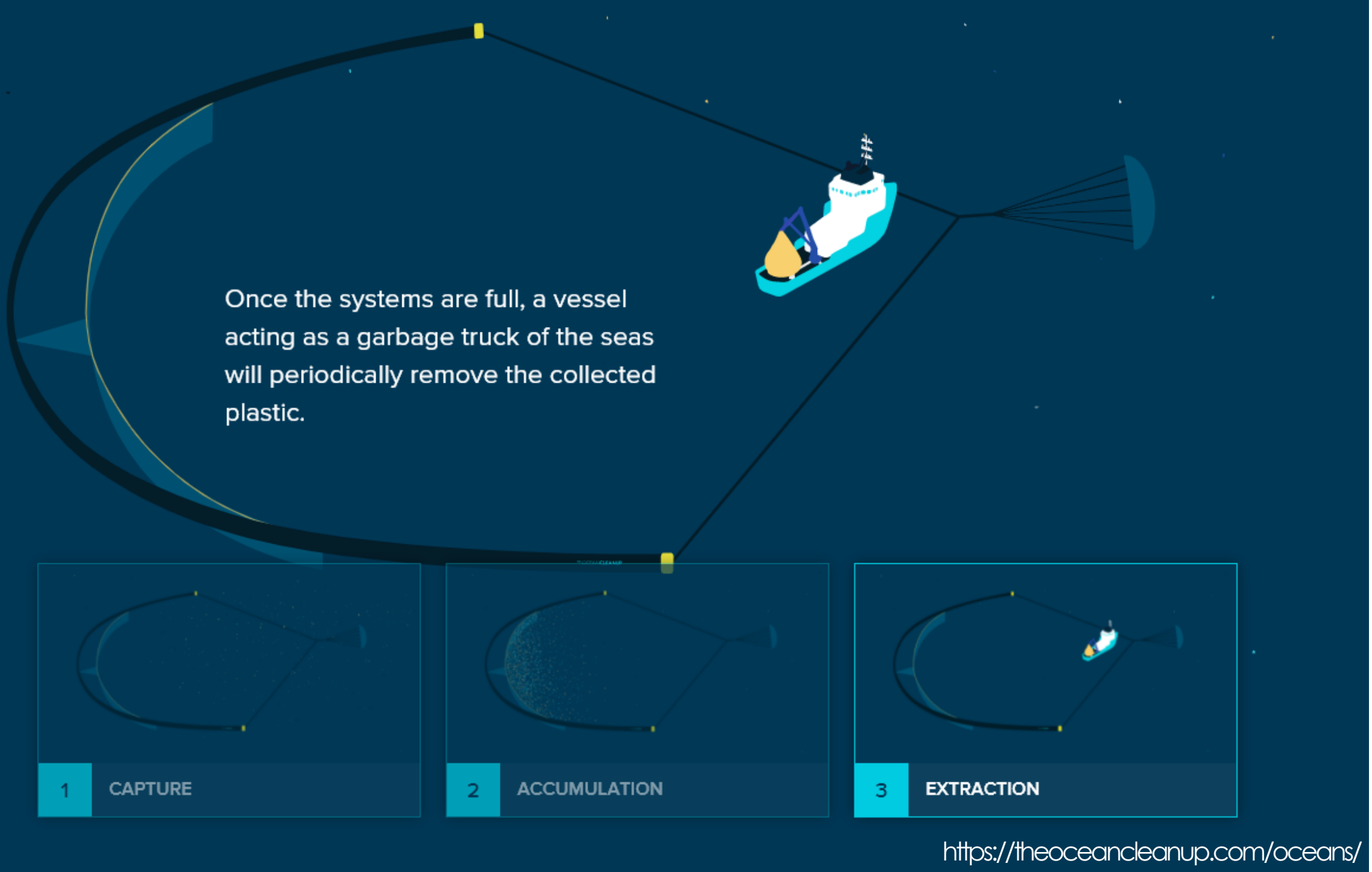

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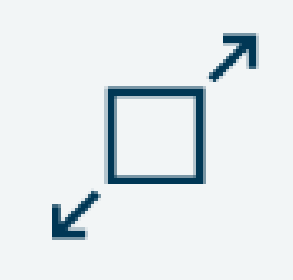
Autonomous

Algorithms are used to locate the optimal deployment locations. Also the condition, performance and trajectory of the system is controlled with the help of real-time telemetry.

Energy Neutral

Since the system is passive which relies on the natural forces, there is no need for external energy source. All the electronics used for tracking and monitoring of the system are powered by solar energy.



Scalable

The fleet of the system is modular so it can be scaled up or down gradually.

Safeguarding Sea life

‘Protecting the natural environment is at the heart of what we do. It is the driver behind our efforts to remove large amounts of plastic pollution from the World’s ocean.’

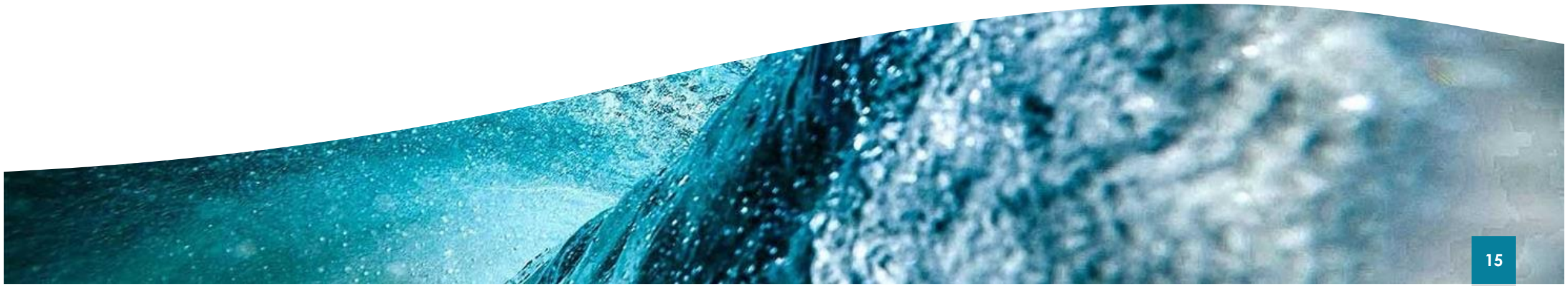
Starting from the first mission of System 001, for 116 days a team of scientists and experts monitored and observed to understand and see the environmental impact of the system and minimize potential harm to marine life if there is any. During this period of observation, they did not encounter any substantial interference with the system and the marine life. Before any plastic is removed or extracted, people check to see if there is any harm done.

Surviving Storms

- Since the cleanup systems are meant to be used for long periods of time, the durability of the system is important to consider and work on. The system is designed as a flexible one to be limber enough to follow the waves. When the system is subjected to high current speeds, it can drift since it is free floating.

- However, the lacking points of the system when faced to a harsh ocean environment are still identified and worked on.

Rivers:
Intercepting In Rivers



%80 OF RIVER PLASTIC STEMS FROM 1000 RIVERS

- Rivers are the main source of pollution since they direct the waste from land to the ocean. With the research made, there are 1000 rivers which cause the 80% of the pollution.
- In order to get rid of the plastic in the ocean, the tap needs to be closed which is the plastic coming from the rivers. As a solution, Interceptor is designed to extract the plastic which is a 100% solar powered system and can be applied to the majority of the most polluting rivers.

https://www.youtube.com/watch?v=bm1rH70wfJo&feature=emb_logo

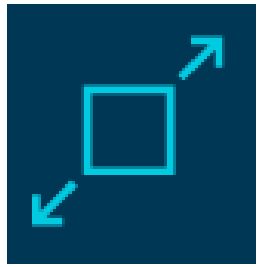
Explaining the Interceptor I Cleaning Rivers

Connected

The local operators are notified automatically once the dumpsters are full. All the Interceptors are internet connected which helps to gather information about the performance and the collection data.

Energy Neutral

Natural current of the river is used to collect the plastic. All the electronics used are powered by solar energy.



Scalable

Designed for mass production and can be applied to anywhere in the World.

One Interceptor can extract

50,000 KG

of plastic per day

The Interceptor can

work 24/7

and continue to collect plastic after the dumpsters are emptied

Each Interceptor has

50 M3

CAPACITY

which allows for efficient emptying cycles

CENGKARENG DRAIN

Jakarta, Indonesia

KLANG RIVER

Klang, Selangor, Malaysia

THANK YOU

References

https://theoceancleanup.com
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