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## SYSTEM DESCRIPTION

### INTERCEPTOR™ TYPE 50

**GENERAL**
- **Type**: Version 2.0, 42 m³ storage
- **Release**: 2019
- **Series size**: 3
- **Basic functions**: Concentrating and extracting floating river waste, Storage of waste on transportable barge with dumpsters
- **Classification**: Built according to Bureau Veritas classification hull drawings
- **Owner**: The Ocean Cleanup Interception B.V. (Rotterdam, NL)

**POINTE Dimensions**
- **Length**: 24 m
- **Width**: 8.1 m
- **Air draft (unloaded)**: 4.4 m (excl. navigation light / optional wind turbines)
- **Draft (unloaded)**: 1.35 m
- **Mass**: 50 metric tonnes

**MAIN CONVEYOR**
- **Type**: Stainless steel mesh conveyor belt
- **Size (WxL)**: 1.5 x 9 m
- **Mesh size**: 30 mm
- **Belt velocity range**: 0.1 to 0.6 m/s
- **Extraction capacity**: ~40 m³/h (max. waste influx)

**SHUTTLE CONVEYOR**
- **Function**: Distribute waste over dumpsters
- **Type**: Stainless steel mesh conveyor belt
- **Size (WxL)**: 1.6 x 3.2 m
- **Storage volume**: ~2 m³

**BARGE DIMENSIONS**
- **Debris storage volume**: 42 m³
- **Nr. of dumpsters**: 6
- **Mass**: 14.4 / 25 metric tonnes (incl. dumpsters, excl./incl. debris)
- **Length**: 12.4 m
- **Width**: 4.24 m (incl. fenders)
- **Max. draft (loaded)**: 0.74 m
- **Max. air draft (unloaded)**: 1.98 m

**POWER SYSTEM**
- **Solar Power system**: 24 solar panels, 7.7 kWp
- **Wind turbines (optional)**: 2 x 1 kWp
- **Battery**: Lead-acid (AGM) 36 kWh

**BARRIER**
- **Manufacturer**: Bolina Ltd.
- **Height**: 600 mm + 300 mm net
- **Length**: Adjustable (10 to 160 m)
- **Safety**: 20 metric tonnes weak link

**MOORING SYSTEM**
- **4-point mooring configuration**
- **4 x 28 mm stud link chain**
- **Anchor type depending on site specifications**

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**Technical Description**

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The system consists of the following parts:

1) **Main Floaters + Superstructure**
   Catamaran-like structure, consisting of 2 floaters with a total length of 25m, connected to each other by a steel superstructure. Functions as cover + protection of inner structure.

2) **Barge + Dumpsters**
   Fits precisely in between the two floaters of the pontoon, and carries 6 dumpsters in which all debris is collected.

3) **Shuttle Conveyor**
   Moves the collected debris from the Main Conveyor to all dumpsters. Divides the collected debris in such a way that the Barge + Dumpsters are loaded equally.

4) **Main Conveyor**
   Moves the collected debris from Barrier onto the Shuttle Conveyor.

5) **Barrier**
   Collects all floating debris in the river. The flow of the river automatically guides all the floating debris to the entry point of the Main Conveyor of the Interceptor.
2.1 Main Floaters + Superstructure

- Three Unique Floater designs, Front, Mid and Rear
- Front and Rear floaters mount mooring chain stoppers
- Front floater supports the main conveyor
- Barrier Support frame transfers load from barrier
- Secondary support frame for cabinets and access walkway
- Fendering + Kickboards mounted to side of all floaters
- Total Pontoon Width = 8.1 m
- Total Pontoon Length (Type 75) = 30.7 m
- Freeboard = 0.55 m
- Draft = 0.75 m
- Provide overall structure to system.
- Mounting points for:
  - Roof Panels
  - Solar Panels
  - Navigation lights
  - Wind Turbines
  - Shuttle Conveyor Track
- Minimal unique components used to form roof construction
- Turbines / Complexity of Nav. Lights are modular and can be installed where required
2.2 Barge + Dumpsters

Barge

- Catamaran construction of floaters with structural cross beams that act as alignment features for dumpsters
- Modular construction for different capacities
- Fendering all the way around barge, including nose
- Multiple mooring points for securing barge in pontoon and towing between quay

Dumpsters

- Dumpster capacity of 7 m³ to orange line
- Lifting points for fork lift
- Four lifting points on corners and two extra on sides to facilitate tipping on shore.
2.3 Main Conveyor

- 1.5m Width, 70% Open Area, 0.3 m/s – 1 m/s.
- Transport particles > 30 mm.
- 70mm Flights to aid transport of debris
- Stainless Steel Construction
- EPDM Rubber edge shields to avoid side obstructions
- Mounted between shuttle tubes and front floater support
- External lower support frame to aid water flow.
2.4 Shuttle Conveyor

- Capacity of 2m³ of Debris
- Removable retention flaps to avoid spillage of light debris
- Load cells on each wheel to quantify debris mass
- Encoder / End stops to provide shuttle position data
- Coated Steel frame for shuttle frame
- Stainless Steel Belt and guides
2.5 Barrier

- Bolina Modular Debris Boom
- Net installed to avoid overtopping of debris
- Cable routed at the rear side of the barrier to take the load of the mooring
- Red ‘Self Powered’ Navigation lights installed along the barrier to signify obstruction to waterway
- Radar deflectors installed along the barrier to provide extra warning of obstruction to passing vessels
- Connected to the structural member at the front of the Pontoon
  - Smooth ‘decoupled from tension’ section guides debris to conveyor
  - 5-10m section fixed to the structural member on land
  - End of this section is brought on to the deck of a vessel to attach main beam
  - Tapered section to make up for rigid mounting to pontoon

- anchors and piles for mooring
- mooring lines

Plus all other auxiliary equipment delivered by The Ocean Cleanup.
3 OPERATIONAL PROCEDURE

Once the Interceptor™ is fully loaded with collected Debris, the following procedure is started:

1. Offloading vessel present
2. Decouple barge from system and couple to vessel
3. Load full dumpsters to quay
4. Replace by empty dumpsters
5. Sail empty barge to system and couple barge to system
6. Sail offloading vessel back to quay
7. Debris loaded in waste trucks while extraction operation continues