

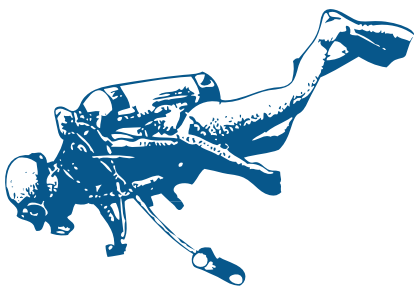
# Master Divers

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# Hull Cleaning

&

# Propeller Polishing



Master Divers

# Importance of Hull Cleanings

According to studies by the UNDP, hull fouling can cause up to 5% reduction in fuel efficiency.

Most ships conduct at least two hull cleanings per year.

Hull cleanings have been banned in most major ports around the world to prevent the local marine environment from being contaminated by alien invasive species.

In Sri Lanka, currently no one provides hull cleaning services inside port limits.



# Current Hull Cleaning Practices



Operations are done at anchorage.

Sensitive to sea conditions. In Colombo, this can only be done for a few months each year

Can only be done during daylight hours

Each operation can take at least two days for larger container carriers.



**In Port Hull Cleaning and  
Propeller Polishing**

In order to provide these services inside Sri Lankan ports, Master Divers has partnered with Tec Hull Clean, to use their novel hull cleaning machines.

THC has developed state of the art hull cleaning equipment that reclaims fouling released into the sea water.

Master Divers has obtained permits to operate this equipment inside port limits by MEPA and the SLPA.



# System Setup

1

## Hydraulic System

Operated by bio-oils, further increasing the environmentally friendly efforts.

2

## Winch Handling System

Custom-built winch handling system that ensures improved umbilical flow and reduces handling weight to minimise risk to personnel.



3

## Filtration System

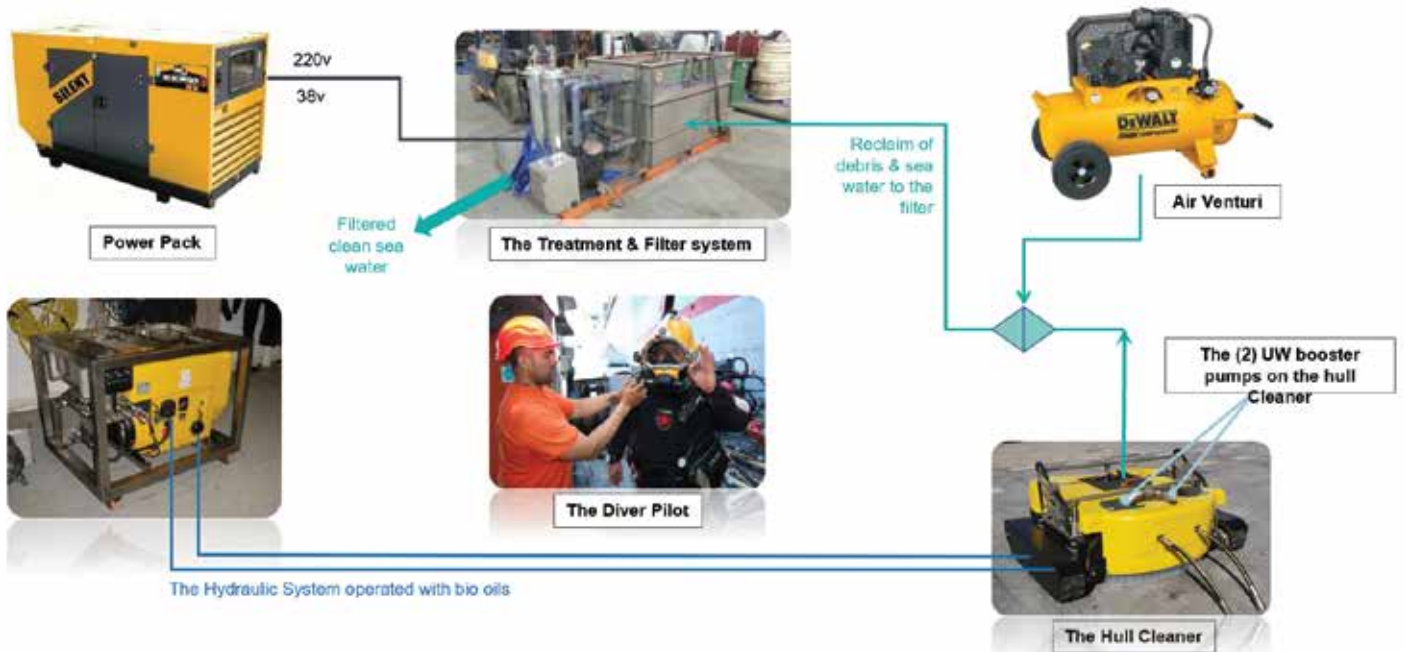
A containerised three-tier debris collection, filtration and removal system can remove micro, macro algae and biocides.

4

## Cleaning Units

Different shape and sized cleaning units to tackle flat and curved surfaces of any kind and size of vessels.

# System Flowchart



## Other Approvals

### Underwater IRM Operators

Our licensees are true partners – testing our technology and giving us feedback to constantly improve.



### Paint Manufacturers

Secured manufacturers' certifications and approvals are in place and valid for our latest generation equipment.



### Technical Research

We work extensively with research teams to constantly improve our technology.





# MEPA Permit



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MARINE ENVIRONMENT PROTECTION AUTHORITY (MEPA)  
State Ministry of Coast Conservation & Low-Lying Lands Development



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நிகதி }  
Date }

30/06/2022

Mr. D.A.D.S. Wickramanayake  
Chairman  
Master Divers (Pvt.) Ltd.  
Maritime Centre  
234/2, Galle Road  
Colombo 3

Hon. Sir,

## Hull Cleaning Operation inside Sri Lankan Ports using the Tech Hull Clean System

This is with reference to your letters received in March 2021 and the subsequent communication regarding the above.

We are pleased to grant your Company the permission of this Authority to carry out underwater hull cleaning of the selected vessel using the Tech Hull Clean System, in the port areas and anchorages in terms of the following conditions.

- 1) You should submit notification to the Marine Environment Protection Authority (MEPA) and the Sri Lanka Ports Authority (SLPA), prior to cleaning of the vessels, and the cleaning may proceed only after obtaining approval from SLPA and MEPA.
- 2) No marine fouling removed during the underwater cleaning shall be released into the sea.
- 3) No in-water hull cleaning and maintenance shall be carried out on hulls which has the storage of paint, coating containing TBT.
- 4) All waste generated during the hull cleaning operations should be disposed using the procedure laid down in the Waste Management Plan.
- 5) Underwater cleaning of heavy growth of hard marine growth shall not be carried out inside the port.

All necessary approvals should be obtained from the Sri Lanka Ports Authority, prior to operating the hull cleaning operation using the Tech Hull Clean System.

Thank you,

Yours faithfully,

Dharshani Lahandapua  
Chairperson

# Method of Operation

The entire THC system is housed in a twenty foot container with an additional umbilical winch.

The THC system will be mobilised on a 33mx13m Master Divers barge.

Two teams of divers will operate the cleaning units and a support team will assist on the barge.

The cleaning operation will occur while the vessel is berthed and loading/unloading operations are ongoing.



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# **Benefits of In Port Hull Cleanings with THC Equipment**

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Hull cleaning and propeller polishing operations can be conducted during cargo loading/unloading operations.

This saves waiting time for the vessels which would otherwise do cleanings at anchorage, wasting valuable sailing time.

THC cleaning equipment come with lights and cameras so that entire cleaning operation can be recorded for verification by clients.

If clients request it, a live stream of the cleaning operation can be shared.

The cleaning system is tested with reputed paint manufacturers , it is verified as safe to use with antifouling paint coatings.

As master divers is located in Colombo harbour, we are capable of mobilising quickly upon request.

