



CHASING

***CHASING Underwater ROV
Industry Solutions for
Hull Inspection***

Fast | Safety | Efficient

Difficulties in the Hull Inspection Industry



Commercial diving hull inspection services are subject to weather conditions. Reservations are required in advance. **The waiting and preparation time is long.**



A limited diving depth can be reached by commercial diving teams. It is about 50 meters.



Underwater operations are time-constrained for commercial diving teams. They last for 1-2 hours.



Commercial diving teams are scarce. Hull inspection requires collaboration between 3-4 people. **The operating costs are high.**



Inspections within the small space **restrict divers' movements and leave safety hazards behind.** Inspections on the bulb rubber, water pipe, and ballast water tank are examples.



Underwater factors such as undercurrents, submerged reefs, and low visibility cause **uncontrollable safety risks for underwater operations by divers.**



The unreasonable cleaning plan for biofouling on hulls reduces the fuel efficiency and **increases fuel costs.**

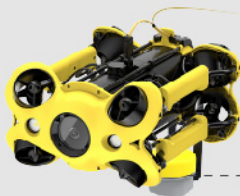


Hulls face safety hazards that are hidden from infrequent hull inspection. Leaving biofouling on a hull for a long time may corrode the hull.

CHASING Recommended Solutions

Plan A

CHASING M2



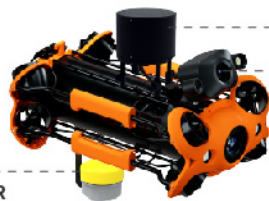
DISTANCE
LOCK SONAR



- The 200 Wh backup battery is replaceable and supports 1 to 4 hours of continuous operations.
- The searchlight improves the underwater visibility and allows the CHASING M2 to capture clearer underwater images.
- The ROV can be used with a ranging sonar. If you enable the ranging and collision avoidance features on the CHASING M2 during hull inspection, operations are greatly simplified. Any staff on the deck can easily get started with the underwater ROV after simple training.
- The external AC power supply system enables long-term underwater inspections. Underwater hull inspection data can be fully collected at a time.
- The CHASING Grabber Arm 2 can remove entanglements from the propellers and other locations.
- The e-reel can retract the tether at a short time.

Plan B

CHASING M2 PRO



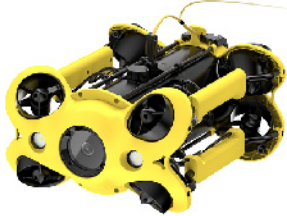

Docking Station

Auxiliary Camera

DISTANCE
LOCK SONAR



- CHASING M2 PRO can be equipped with various accessories, such as a searchlight, ranging sonar, AC power supply system, ultrasonic thickness gauge, and CHASING Grabber Arm 2. It can resolve issues such as low underwater visibility, high operation difficulty in ROVs, long-term operations, hull thickness measurement, and underwater removal of entanglements.
- The high-brightness screen control console adopts the ergonomic design, which enhances the operation and visual experience. It can be operated by multiple people. The anti-glare screen allows you to observe real-time underwater images under direct sunlight.
- The auxiliary camera and the first angle of view provided by the ROV allow you to obtain underwater hull inspection images from multiple angles. This improves the accuracy of hull inspection data.
- The docking station can carry multiple accessories and concurrently carry out operations of multiple tasks. This improves the efficiency and convenience of hull inspection.

Highlights of the ROV Platform		CHASING M2	CHASING M2 PRO
<ul style="list-style-type: none"> • Eight thrusters are arranged in all directions to resist against currents at the speed of 3 to 4 knots. • Replaceable batteries support 1 to 4 hours of continuous operations. • The standard 4000 Lumens LED light facilitates operations in muddy waters. • The HDMI adapter allows you to transmit underwater images to the command center in real time. • The 100-200 meter tether enables long-distance operations. • The ROV is compact and portable and supports single operators. It can be deployed within 15 minutes. • Hull inspection reports can be generated instantly in the app. • It can replace divers for underwater hull inspection. This saves human resource costs and frees hull inspections from restrictions of factors such as the diving depth, time, and weather conditions. • Underwater ROV can conduct ship pre-inspection to obtain underwater data in advance. This improves the safety and timeliness of underwater ship inspection and maintenance by divers. 			
Platform Parameter Differences	Depth	100m	150m
	Current Resistance	3Knots	4Knots
	Battery Life	1-2 hours of battery life 97Wh standard battery and 200Wh optional battery	1-2 hours of battery life 300Wh standard battery and 700Wh optional battery
	Platform Support for Accessories	Single accessory	Multi accessory
Supported Accessories	CHASING EREEL	✓	✓
	CHASING Tether 300 M/400 M	✓	✓
	CHASING 200WH BATTERY	✓	✗
	CHASING 700WH BATTERY	✗	✓
	CHASING FLOODLIGHT	✓	✓
	CHASING Grabber Arm 2	✓	✓
	CHASING DISTANCE LOCK SONAR	✓	✓
	CHASING Auxiliary Camera	✗	✓
	CHASING Adapter Box	✓	✓
	CHASING Control Console	✗	✓
	CHASING AC POWER SUPPLY (100 M Tether/200 M Tether/B)	✓ A 200 Wh battery pack is required.	✓
	CHASING BLUEPRINT OCULUS KIT	✗	✓
	CHASING USBL KIT	✗	✓
	Cygnus Instruments	✓	✓
CHASING Docking Station	✗	✓	

Accessories	Features	Reasons for recommendation
 <p>CHASING EREEL</p>	<p>One click to retract automatically with the maximum speed of 200 seconds to completion (for a 200-meter cable). Automatic wiring, neatly aligned.</p>	<p>Release and collect the tether cable in an orderly fashion to avoid entanglement. Improve storage efficiency.</p>
 <p>CHASING Tether 300 M CHASING Tether 400 M</p>	<p>Tensile strength measured at 100kg with extendable working radius.</p>	<p>The long tether improves the efficiency of long-distance operations. Operators on the deck can inspect the entire ship without frequently moving around. Generally, a 300-400 meter long tether is recommended for a ship longer than 200 meters, such as the VLSS.</p>
 <p>CHASING 200WH BATTERY CHASING 300WH BATTERY CHASING 700WH BATTERY</p>	<p>Replaceable batteries are supported. The 200 Wh battery allows the CHASING M2 to work for 1-2 hours. The 700 Wh battery allows the CHASING M2 PRO to work for 3-5 hours.</p>	<p>Replaceable batteries are used. They are easy to carry and replace. Alternate use of the primary and backup batteries extends the battery life during hull inspection. The power system is more cost-effective than the AC power supply system. On ships that are inconvenient to connect to DC power, you can consider solutions with replaceable batteries.</p>
 <p>CHASING FLOODLIGHT</p>	<p>12,000 lm for clear imaging even in murky waters or nighttime.</p>	<p>The anchorages where ship inspections are performed are usually muddy and have low underwater visibility. Strong lumen lights can increase the underwater view range and visibility for the ROV during hull inspection.</p>
 <p>CHASING Grabber Arm 2</p>	<p>Replaceable tool head with 7kg maximum clamping force.</p>	<p>The two-claw tool head can clear underwater entanglements such as water weeds, seaweeds, and ropes from the key positions on the ship and remove blockages from the propellers, bulb rubbers, and submarine doors.</p>
 <p>CHASING DISTANCE LOCK SONAR</p>	<p>You can automatically detect obstacles in the front, down, left, and right directions. You can keep a fixed inspection distance from the inspected object to prevent collisions. In addition, you can enable the auto-driving feature.</p>	<p>The ranging and collision avoidance features improve the efficiency of hull inspection. During hull inspection, you can set a fixed inspection range to keep a fixed inspection distance from the surface of the ship to prevent collisions. In addition, you can enable the assisted driving mode to simplify remote control operations.</p>
 <p>CHASING Auxiliary Camera</p>	<p>Multiple angles for simultaneous observation with different viewing profiles available.</p>	<p>The auxiliary camera and the first angle of view provided by the ROV allow you to obtain underwater hull inspection images from multiple angles. This improves the accuracy of hull inspection data.</p>
 <p>CHASING Adapter Box</p>	<p>*Note: Select either the adapter box or the high-brightness screen control console.</p>	<p>In hull inspection, the adapter box is used to connect to the AC power supply system. The adapter box is more cost-effective and portable as compared with the high-brightness screen control console.</p>
 <p>CHASING Control Console</p>	<p>The high-brightness screen is 13.3 in. and provides the 1080p resolution. The images on the screen are clear under sunlight. You can operate the ROV and accessories at the same time. You can connect the ROV to the AC power supply system. Rollers are provided on the bottom. It is portable.</p>	<p>The high-brightness screen control console adopts the ergonomic design, which enhances the operation and visual experience. The ROV can be operated by multiple people. The anti-glare screen allows you to observe real-time underwater images under direct sunlight.</p>
 <p>CHASING AC POWER SUPPLY (100 M Tether/200 M Tether/B)</p>	<p>Prolonged power supply to ensure long battery life. A high-brightness screen control console or adapter box is required to be used together.</p>	<p>It meets the requirements for 6-8 hours of long-term ship inspection.</p>
 <p>Cygnus Instruments</p>	<p>The ultrasonic thickness gauge allows you to precisely measure the thinning degree and thickness of the hull plate structure. Based on this, you can determine the corrosion degree and safety hazards of the hull.</p>	<p>The ultrasonic thickness gauge allows you to check the corrosion degree of the internal structure of a hull without damaging the surface of the hull. Then, you can make maintenance decisions based on the results.</p>
 <p>CHASING Docking Station</p>	<p>Support multiple accessories mounted on CHASING M2 PRO.</p>	<p>Concurrent operations of multiple tasks improve the efficiency and convenience of hull inspection.</p>

01 | A chemical cargo ship in Hong Kong used the CHASING M2 for regular hull inspection. The inspections are efficient, safe, and reliable.

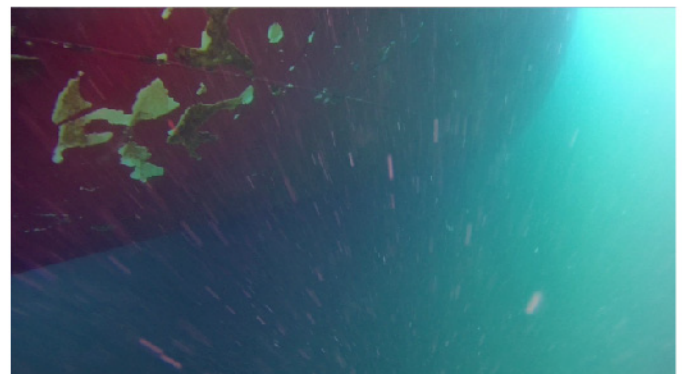
The ships drift in ports all over the world, from Singapore, the United States, Brazil, Turkey, Egypt, and back to Singapore. In the complex sea conditions accompanied by frequent winds and waves, the ships accumulate sediments when passing by different sea areas. The fast currents and undercurrents pose safety hazards. The visibility to naked eyes is low in muddy waters.

Business Challenges:

1. Ships wait a long time for safety inspections. The shipping income is reduced.
2. Ships stay in ports around the world. The waters are complex and full of sediments. The currents are fast and undercurrents flow beneath the ships. Commercial divers are facing uncontrollable safety hazards in underwater operations.
3. Chemical cargo ships require frequent ship safety inspections. Underwater operations by commercial diving personnel are costly.

Client Value

1. Use the CHASING M2 to perform efficient inspections at any time anywhere. You can carry out hull inspections regularly. It takes only 4-6 hours each time.
2. Use the CHASING M2 to perform hull inspections. It minimizes blind spots during inspections. The compact and flexible ROV can easily check the fouling on the hull, mark the hull for waterlines, and check the conditions of the sea box, intake and exhaust ports, rudder, and propellers. Check the adhesion of paint and fouling on the hull to arrange for hull cleaning. Check the performance of the anti-fouling coating on the hull.
3. Use the CHASING M2 for ship inspection. Check whether the sea chest gratings is contaminated. Based on this, determine whether the sea chest, the hull, and the propellers need polishing. After the captain makes decisions based on the inspection results, you can contact divers for repairs. This improves both the repair efficiency and operation safety.



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