www.usmtas.com

TAS GLOBAL

TASGLOBAL CO. LTD.

23, 189-beongil, Saenggok-ro, Gangseo-gu, Busan, Korea
T +82-51-731-0056 **F** +82-51-416-1056
E sales@usmtas.kr

TASGLOBAL-SG PTE. LTD.

110 Tuas South avenue 3 #03-14 THE INDEX Singapore(637369)
E tasglobalsg@usmtas.com, sales@usmtas.com

Member of the GIA for Marine Biosafety

Ministry of Oceans and Fisheries

TAS GLOBAL

Technology and Service

Innovative Partner of the Global Marine Industry

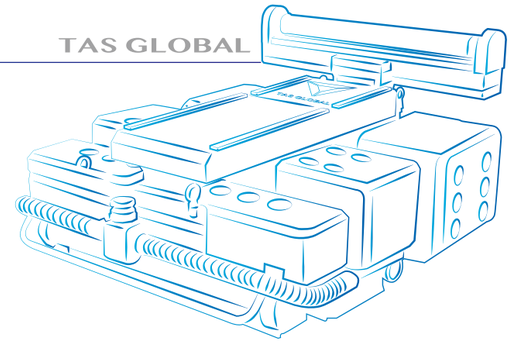
Innovation in onshore shipbuilding technology and ship operational efficiency have reached its peak.

Employing divers to remove biofouling, which increases fuel consumption by ships, is actually both uneconomical and very harmful to the environment.

To counter this, the **International Maritime Organization (IMO), in 2011 approved the Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatics Species (Biofouling Guidelines)** So, TAS GLOBAL **became the first Asian member of the Global Industry Alliance (GIA) for Marine Biosafety under the GloFouling Partnerships, which is a private partnership initiative and consultative group of the IMO, in 2022.** With **TAS GLOBAL CEO Kim Yu-sik as chair of the GIA,** we are tirelessly working to protect the environment.

Making Eco-Friendly Contributions to the Marine Industry for a Better Tomorrow

TAS GLOBAL Co., Ltd. was founded to contribute to the marine industry through robotics innovation.



2014~2017

- 11 2017 KR Certificate Approval, In-water Survey
- Article in Money Today: "TAS GLOBAL Develops and Brings World's First Hull Cleaning Robot to Market"
- 12 2016 Awarded certificate for exemplary startup operation by Busan Metropolitan City Mayor
- 10 2016 Selected as partner of Hyundai Heavy Industries
- 03 2016 Selected as Busan Star Company
- 12 2015 Obtained New Excellent Technology (NET) Certificate from the Ministry of Trade, Industry and Energy
- Head office relocated to Busan Center for Creative Economy & Innovation
- 8 2015 Obtained robotic performance certificate from the Korea Marine Equipment Research Institute
- 8 TAS GLOBAL was founded by CEO Kim Yu-sik to manufacture machines for removing and inspecting marine organisms underwater (341, Hangang-daero, Yongsan-gu, Seoul)

2018

- 09 Received Advanced Technology Award at the 3rd Korea Oceans & Fisheries Industry Awards in 2018
- Received Korea Institute of Marine Science & Technology Promotion Award
- 07 Head office relocated to 96, Nakdongnam-ro 533beon-gil, Gangseo-gu, Busan
- LR Certificate Approval, In-water Survey
- 04 ABS Certificate Approval, In-water Survey
- 03 DNV Certificate Approval, In-water Survey
- NK Certificate Approval, In-water Survey
- ISO 9001, production and services launched for unmanned underwater robots
- Busan CBS, "TAS GLOBAL Develop the First-Ever Underwater Robot for Ships, Creating Boundless New Market"

2019~2020

- 11 2020 Selected as one of Korea's top 1,000 technological innovations
- 10 2020 Received Minister of Trade, Industry and Energy Award at the Machine and Robot Industry Awards 2020
- 09 2020 Became the first Asian company to join the GIA, a private partnership initiative and consultative group of the IMO.
- Received Minister of Oceans and Fisheries Award at the 4th Industrial Revolution Power Korea, 2020
- 12 Signed contract for underwater work with Hyundai Ocean Services Co., Ltd.
- 09 Increased capital to 1.37 billion KRW, secured a 1 billion KRW investment from Hyundai Investment Partners through redeemable convertible preferred shares (Company valuation: 2.7 billion KRW)."
- 05 Selected as one of 53 promising startups by the Ministry of Oceans and Fisheries

2021

- 12 Signed joint project contract with MOLA (Singapore)
- 11 Signed MOU for commercialization of digital hull cleaning robots with Hyundai Global Service and KCC
- Head office relocated (23, Saenggok-ro 189beon-gil, Gangseo-gu, Busan)
- 10 CEO Kim Yu-sik elected chair of Global Industry Alliance (GIA) for Marine Biosafety under GloFouling Partnerships
- 09 Obtained Inno-Biz certificate
- 05 Selected as the Korea Green Energy "Excellent Company"
- Selected for Underwater Hull Cleaning Robot International Standardization of research project worth KRW 16.3 billion (2021-2025)
- 02 Workship Global 01 launched

2022

- 11 Appearance on KTV (Korea National Broadcasting) show "Heading Towards the Blue Ocean: Korean Maritime Start-up"
- Participation and presentation at the Philippines-based PEMSEA (Partnerships in Environmental Management for the Seas of East Asia) as the Korean Delegate
- 09 Selected as a prospective Ocean Star Company by the Ministry of Oceans and Fisheries
- 07 Signed a framework agreement with Maersk for underwater operations
- 04 Participation as the Chair of the Global Industry Alliance (GIA) at the London IMO International Conference
- Selected as the leading company for R&D research by the Korea Institute of Ocean and Science Technology Promotion

2023

- 08 Invited to visit by the Madagascar government
- 07 Contracted for underwater operations on Royal Caribbean Cruises ships.
- Contracted for underwater operations on 6 newly built vessels from Hyundai Heavy Industries
- 06 Participation and demonstration at the International Ocean Forum Exhibition organized by the Ministry of Oceans and Fisheries
- Establishment of TASGLOBAL-SG, a Singaporean branch office
- 01 BV Certificate Approval, In-water Survey

About TAS GLOBAL Co., Ltd.

Patents and Certifications

Patent Certificates

Class Certificates (ABS, DNV, LR, KR, NK, BV)

Trademark and Service Mark Registration Certificates

Awards

Customized Robot System for Underwater Hull Cleaning

Robot Cleaning System for Underwater Hull Cleaning

- The world's only hull cleaning ROV with an magnetic caterpillar and underwater anti-skid feature.
- Strong transport capability that can overcome underwater resistance with 200-meter hose (inner diameter 6.5 cm) for pressure maintenance and an optical composite cable of 3.5 cm diameter.
- Filter system capable of IMO D-2 biological treatment and purifying particles of 10μm or larger.

Composition of Robot System

- Robot | Power, communication cable | Marine pollution filtration system | Control monitoring system | Power generator

Optimal Cleaning Process for Coating Protection

Cleaning Process

- Optimal cleaning tools selected based on the biofouling state of the ship to Minimize abrastion of the ships.
- Cleaning tools used to minimize loss of coating from the hull. Materials and tools are of LOF 4 or lower.

Types of Cleaning Tools

Working Tools

- Materials using filter foam sponge urethane cleaning tool. Commercialization below LOF4 is achieved by minimizing coating peeling through tool development.
- Minimize paint damage by selecting the best cleaning tool depending on the condition of the vessel.

Filter foam sponge	
Size	220Ø x 840(mm)
Purpose	Slime removal

Dual sponge	
Size	225Ø x 840(mm)
Purpose	Slime removal

MC Nylon + Urethane	
Size	217Ø x 840(mm)
Purpose	Barnarcle removal

Silicon Brush	
Size	220Ø x 840(mm)
Purpose	Slime removal

Technology and Service

Eco-Friendly Underwater Hull Cleaning

System That Removes Both Biofouling and Non-Biofouling

- TAS GLOBAL has independently developed a portable fouling purification system that sets a global standard for environmental protection and underwater hull cleaning.
- Our purification system, connected through a hose to the main body of the robot, removes microorganisms and microparticles in three steps.

• Weight	Approx. 400kg
• Speed	0.5 m/s
• Dimension	1.22 x 1.96 x 0.59m(W x D x H)
• Draft	20m
• Etc	6 Cameras, 12 LED

• Filtering capacity	
• Primary filter	3~5mm
• Secondary filter	30~50μm
• Tertiary filter	5~10μm

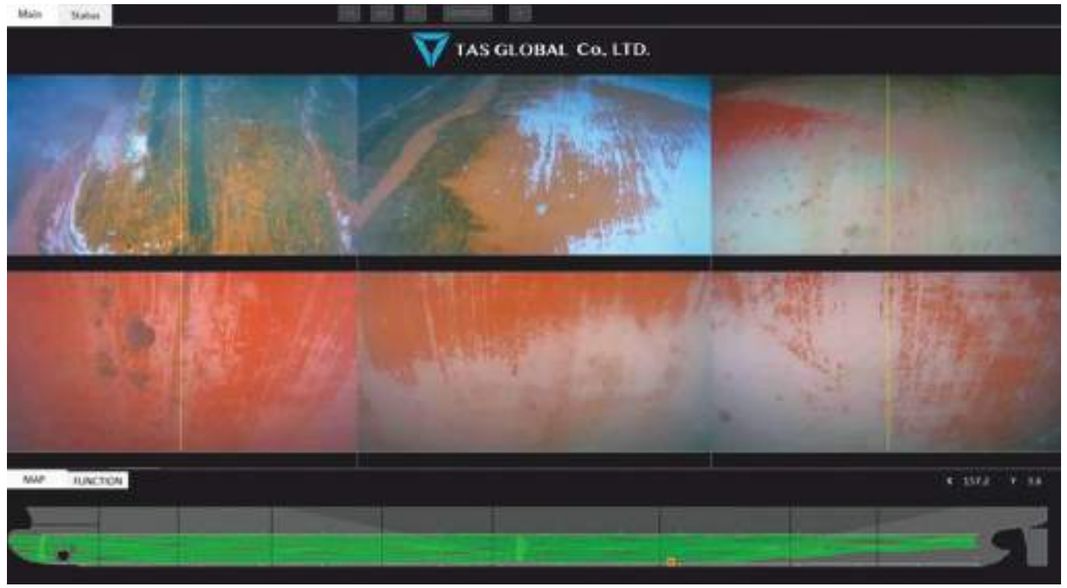
Speedy and Efficient Hull Cleaning

- For an LOA 350 m ship, it takes 8 ~ 10 hours to clean portside, starboard & bottom with 2 ROV's

Cleaning Quality Check

Verify cleaning quality through videos recorded on all sides by the cleaning robot

- To address the difficulty in verifying cleaning quality by traditional cleaning methods involving divers, our 6 cameras on the robot records videos of all cleaning processes.
- The robot is equipped with three high-definition cameras each on the front and rear side. They are used not only to identify fouling and robot control but also to check the cleaning quality after each cleaning.
- The system enables unprecedented accurate verification of the cleaning quality on all sides.



Research and Development of International Standardization for Establishing and Advancing Proven Technologies

1. More quantification, transparency, and institutionalization of eco-friendly underwater hull cleaning robot technology with higher underwater cleaning efficiency than traditional methods involving divers.
2. International standardization research intended to enhance economical feasibility and environmental protection.

Proven Underwater Hull Cleaning Robot Technology

- High-quality, high-speed cleaning technology.
- Tested in areas of severe cold, in narrow pier spaces, and in strong sea currents.


Busan New Port, with visibility of 20-30cm


Narrow pier


Severe cold


Strong sea current

GLOBAL NETWORK

A Safety-Oriented Company That Complies With All Safety Regulations and Laws

- One on-shore manager is assigned to every 2 divers in compliance with Article 39 of the Occupational Safety and Health Act, and Article 547 of the Regulations on Occupational Safety and Health Standards
- All divers wear a diving mask or diving helmet equipped with an emergency air supply container, an emergency air supply valve, and a check valve
- On-shore managers and underwater workers are all equipped with communication devices

Equipment and Personnel

New-type hull cleaning robots

Two 8-ton crane trucks for hull cleaning robot

Industrial divers wearing full gear

New-type filter systems

Workship for hull cleaning robots

Equipment prepared in compliance with the Occupational Safety and Health Act

Partners

MAERSK · HMM · CMA CGM · stx Marine Service · EVERGREEN LINE · YANG MING · Wilhelmsen · EUKOR

INCHCAPE · 해양경찰 · Ministry of Oceans and Fisheries · 대한민국해군 · KRISO 선박해양플랜트연구소 · KIOST 한국해양과학기술원 · Hapag-Lloyd · KLCSM · POS SM

H-LINE SHIPPING · LATSCO · SSI INTERNATIONAL · BEN LINE AGENCIES · Chellship · OSM · MOL

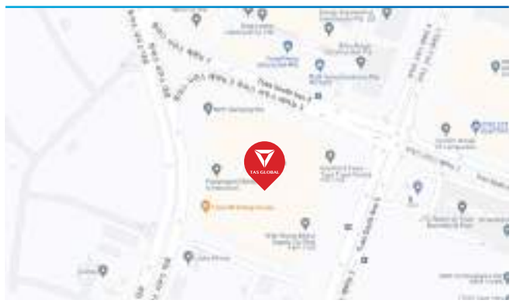
BEN LINE AGENCIES · eaglestar · SAMSUNG HEAVY INDUSTRIES · HYUNDAI HEAVY INDUSTRIES CO.,LTD. · HYUNDAI GLOBAL SERVICE · Hyundai Oilbank

TRIDENT · KCC · msc · SEVEN ISLANDS · AL · Chellship · UMAR · WSR · V.Ships

Headquarters(Korea)

ADRESS 23, 189-beongil, Saenggok-ro, Gangseo-gu, Busan, Korea
TEL +82-51-731-0056
FAX +82-51-416-1056
E-MAIL sales@usmtas.kr

Singapore Office



ADRESS 110 Tuas South avenue 3 #03-14 THE INDEX Singapore(637369)
E-MAIL tasglobalsg@usmtas.com, sales@usmtas.com

Technology and Service

TAS GLOBAL

At TAS Global, we put our employee's health and safety first. We believe that the safety and happiness of our employees lead to greater contributions to both our customers and society.