



## Solution for

### Water Surface Quality Management

Integrated management with robots to monitor · clean up · data on pollution in the marine and water bodies

**SHECO**



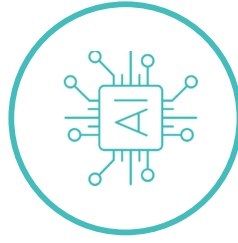
# Service Introduction

Based on robots and AI, Sheco's technology automates water quality management processes that are traditionally handled by manpower.



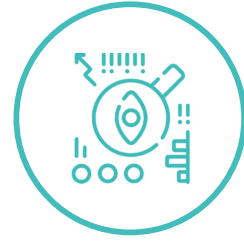
## Robot

The robotic solution makes it easy to remove "surface floating contaminants." With an "All-in-One configuration / remote control / impeller recovery method," operators can quickly and conveniently clean work sites with minimal contact with contaminants.



## AI

Pollution recognition AI is optimized to capture "surface contaminants." It is equipped with a polarizing filter that removes sun glitter for clear, noise-free transmission, and can be mounted on a special CAM that can be connected to drones, cameras, and ships. If any abnormalities such as pollution are detected, an alarm is sent to the control room for constant monitoring.



## GCS

GCS is a system that supports the control of drones, robots, and AI. It is built as a separate website and can be easily utilized on PCs, tablets, and phones, and displays data on 'robots / AI / tasks' in real time. You can share pollutants detected by AI on the screen, specify the robot's work path, and control the situation on site while the work is in progress.



## LARS

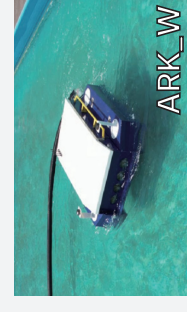
The LARS system is the basic equipment developed to operate SHECO's robots. It is divided into 'electromagnet / portable / station' and supports easy operation of robots in various environments. In the case of the robot station, it can be installed in water resources → linked with GCS to operate robots in the control room, and it can also support robot charging, recovery, and contaminant storage.

# Key Functions

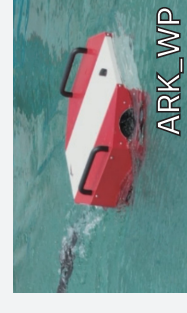
Suitable products that can be customized for different water resources.



Wireless



Wired



Super-compact

- Non-absorptive recovery
- Boats and ships not required
- Minimizes worker contact with contamination
- Recover contaminants in liquid and dust form



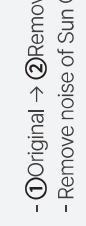
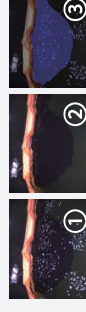
Installation (Cam)



Drone



Mount (Ship)

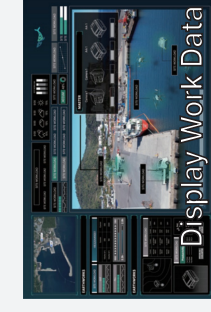


- ①Original → ②Removal → ③Recognition
- Remove noise of Sun Glitter over 92%

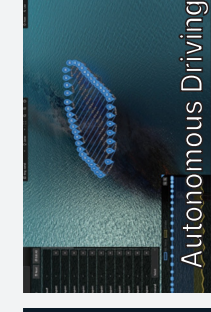


## Pollutant Recognition AI CAM

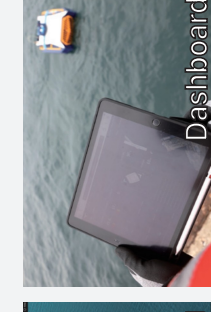
- GCS integrated control
- Easy operation with ships & vehicles



Display Work Data

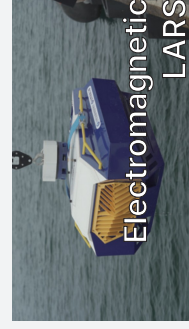


Autonomous Driving



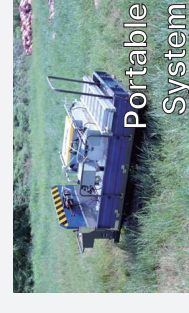
Dashboard

- View real-time data from drones, robots, and AI stations
- Monitoring and working with drones & robots
- Specify and modify routes in real time
- AI CAM operation and AI-linked pollutants emergence alarm and response control



Electromagnetic LARS

- Dual Control Safety Lift
- Maximize Utilization of wireless Robot & Machine



Portable System

- Ease of surface loading of heavy equipment
- Easy to enter difficult areas such as mud, gravel, bushes, etc.



Robot Station

- Situation Room Robots - Task Management
- Robot Charging: Contaminant Emissions Management



# Core Technology

Sheco digitizes the old industry with robotics and AI monitoring technology to improve the overall water quality of its marine and water industry operations.

## 1. Robotics

Collect contaminant in marine water bodies & real-time filtering system

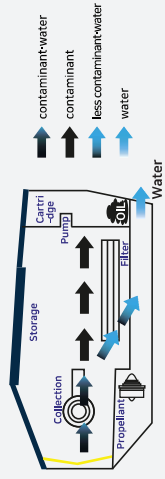
### Hardware Technology

1/3 size than existing equipment.  
Endure 1.5M wave condition.  
Recovery Rate: 30,000L/H



### Real-time Separation Technology

Real-time oil separation in 1.1M size  
Discharge clean water under 5PPM

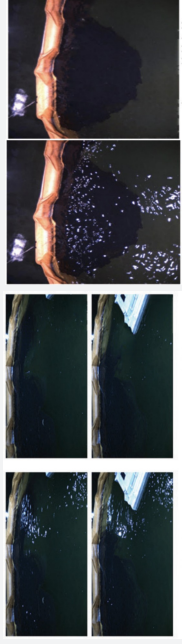


## 2. AI

AI pollutant recognition based on monitoring system

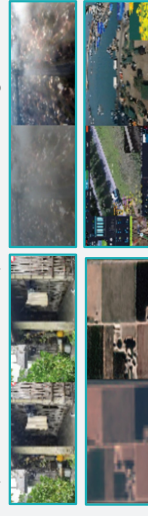
### Detected Pictures

Oil recognition is possible even in dark and glossy (ripple) environments due to light reflections



### Minimize Ocean Disturbance Environmental Noise

World-class deraining & defogging techs based on AI. Segmentation techs for recognizing human, ship and marine structure. Super resolution for recognitions.



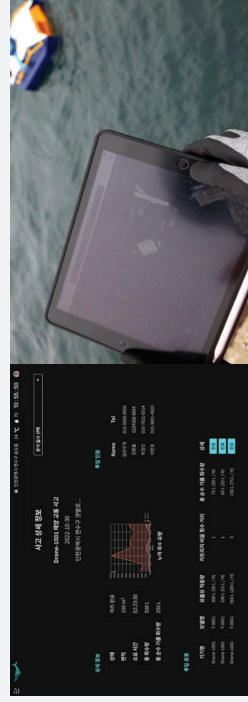
## 3. Data

Build a world-class data collection infrastructure

### Build a World-class Data Collection Infrastructure

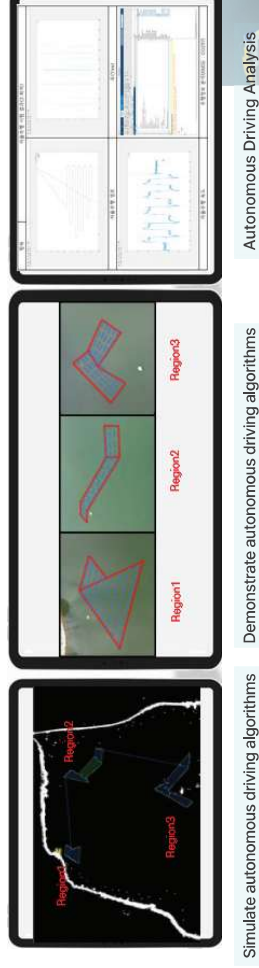
Korea's first oil and marine debris data collection from 12 government vessels nationwide. POC for 'suicide prevention near weir' using AI monitoring in the second half of the year (K-water).

POC for paint recognition using AI camera in the second half of the year (Samsung Heavy Industries).



# Robotics & Control System

GCS, autonomous driving, and data-driven "robot control & management systems"



Simulate autonomous driving algorithms

Demonstrate autonomous driving algorithms

Autonomous Driving Analysis

- Real-time robot status, accident information, and environmental information can be checked in real time through GCS
- It is possible to give autonomous operation commands to the robot and check the driving route in real time.
- GCS and autonomous operation solution reduces the number of manpower by 70%.
- Strengthening continuous response capabilities and improving national control capabilities through data objectification of spilled oil accidents
- ESG data can be sent through monitoring of work information on the Sheco Ark.  
(Total time spent, number of works, total amount recovered, list of works by task, accident location and end time, etc.)

# Benefit

Solve existing problems that happen, and prevent problems that will happen.



60%

Cost Savings



4,800T /year

Reduce CO2



1~2 People

Non-experts

Job creation



1/5

Time Savings



ESG Management

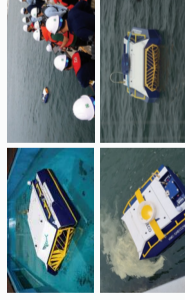
Smartization

Easy Maintenance

# Product line

Customized Hardware & Software solutions for responding a variety of pollutants

## Sheco Ark Series



### Ark-M

Sheco Ark-M is a compact size recovery robot used in small-scale oil spill accidents. It was developed to help even non-experts to deal with oil spills efficiently by "automating dangerous manual operations without any large equipment."

<b>Weight</b>	Around 130kg
<b>Size</b>	1,000 x 1,440 x 660 mm
<b>Wave</b>	0.5m (Max 1.5m)
<b>Speed</b>	1m/s
<b>Recovery</b>	30,000L/H
<b>Separation</b>	Discharge clean water under 5ppm (Real-time separation)
<b>Cartridge</b>	20L
<b>Battery</b>	Electric battery (8hours)
<b>Operation</b>	Electromagnetic LARS
<b>Pollutant</b>	HNS, dust, low viscosity oils including Bunker A



### Ark-W

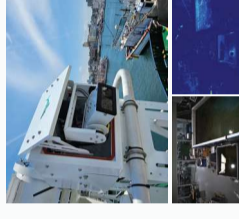
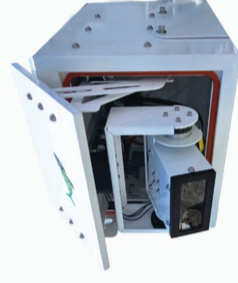
The Sheco Ark-W is a wired product that transports contaminants to offshore or a collection bin via a hose connected to the bottom of the unit, reducing work time and replacing manpower in high oil spill and contaminant volumes.

<b>Weight</b>	Around 150kg
<b>Size</b>	1,150 x 1,400 x 1000 mm
<b>Wave</b>	0.5m (Max 1.5m)
<b>Speed</b>	1.2m/s
<b>Recovery</b>	30,000L/H
<b>Pumping</b>	Hose pump (50m)
<b>Operation</b>	Reel equipment & powerpack
<b>Pollutant</b>	HNS, dust, low viscosity oils including Bunker A



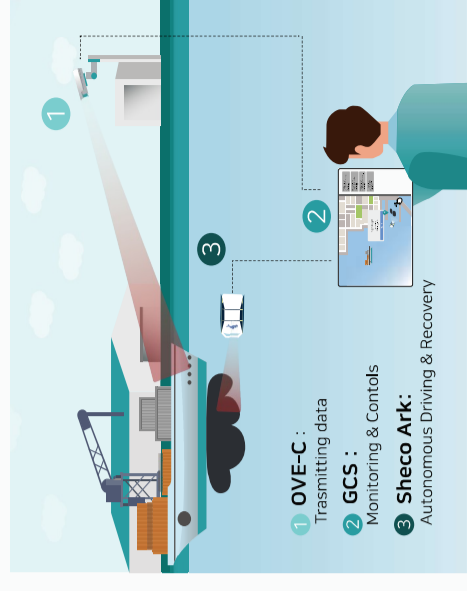
### Ark-WP

The Sheco Ark-WP is a wired product that transports contaminants to offshore or to a collection bin via a hose, reducing work time and replacing manpower in small oil spill and contaminant volumes with its super-compact size.



## Pollutant Recognition AI CAM (OVE-C)

Sheco has AI technology that can remove disturbing environments such as sun glitter, fog, and rain. In addition, it overcomes the limitations (time, cost, input environment, manpower, etc.) by drone and human surveillance. 'Ove Cam' enables efficient accident preparation.



## Electromagnetic LARS (LARS-E)

A crane module that utilizes electromagnets to launch & recover equipment directly to the water surface from ships, docks, railings, and more, making it easier than traditional cranes.



**Wireless On/Off**  
ON/OFF via self-developed application

<b>Lifting</b>	Around 300kg
<b>Size</b>	1500 mm X 1500 mm X 1700 mm
<b>Duration</b>	10 hours
<b>Operation</b>	Bluetooth & Applications
<b>Battery</b>	Li-ion Battery 1Set (1Set /3EA)
<b>Weight</b>	23kg



## Portable Crane (LARS-S)

This mobile crane can be used in environments that are difficult to reach for large equipment, such as rivers, reservoirs, and dams. The tracked wheels allow the crane to move over mud, gravel, and other uneven surfaces.



**Operation**  
Wireless-remote controller (AA Battery)

<b>Load</b>	Around 360kg
<b>Size</b>	2300 mm x 1220 mm x 1070 mm
<b>Duration</b>	3 hours
<b>Operation</b>	RF-based remote controllers & mounted controllers
<b>Battery</b>	Ni - MH Battery 1Set (1Set / 4ea)
<b>Weight</b>	600kg

# Integrated Water Quality Management System

Manage decontamination, monitoring, and data integration

## DATA

Customized Recovery Suggestion  
(Weather, environment, pollutant type, etc.)  
Recovery Simulation & Curation  
Predict & mitigate for pollutants

## Data Base



## Control Room Management & Control

Data collection and AI data analytics

Derive optimal control measures

## Autonomous Management

## Monitoring

AI Image Recognition Monitoring  
(Situational awareness, contaminant analysis)  
CCTV, ships, drones, water robots

Pollution Response Model  
(Transmitting Work Video & Work Details)

Robot Status Information  
(standby / maintenance / return to route checking)  
(transmit travel route / driving status information)

Pollutant Recovery  
(Transmitting Work Video & Work Details)

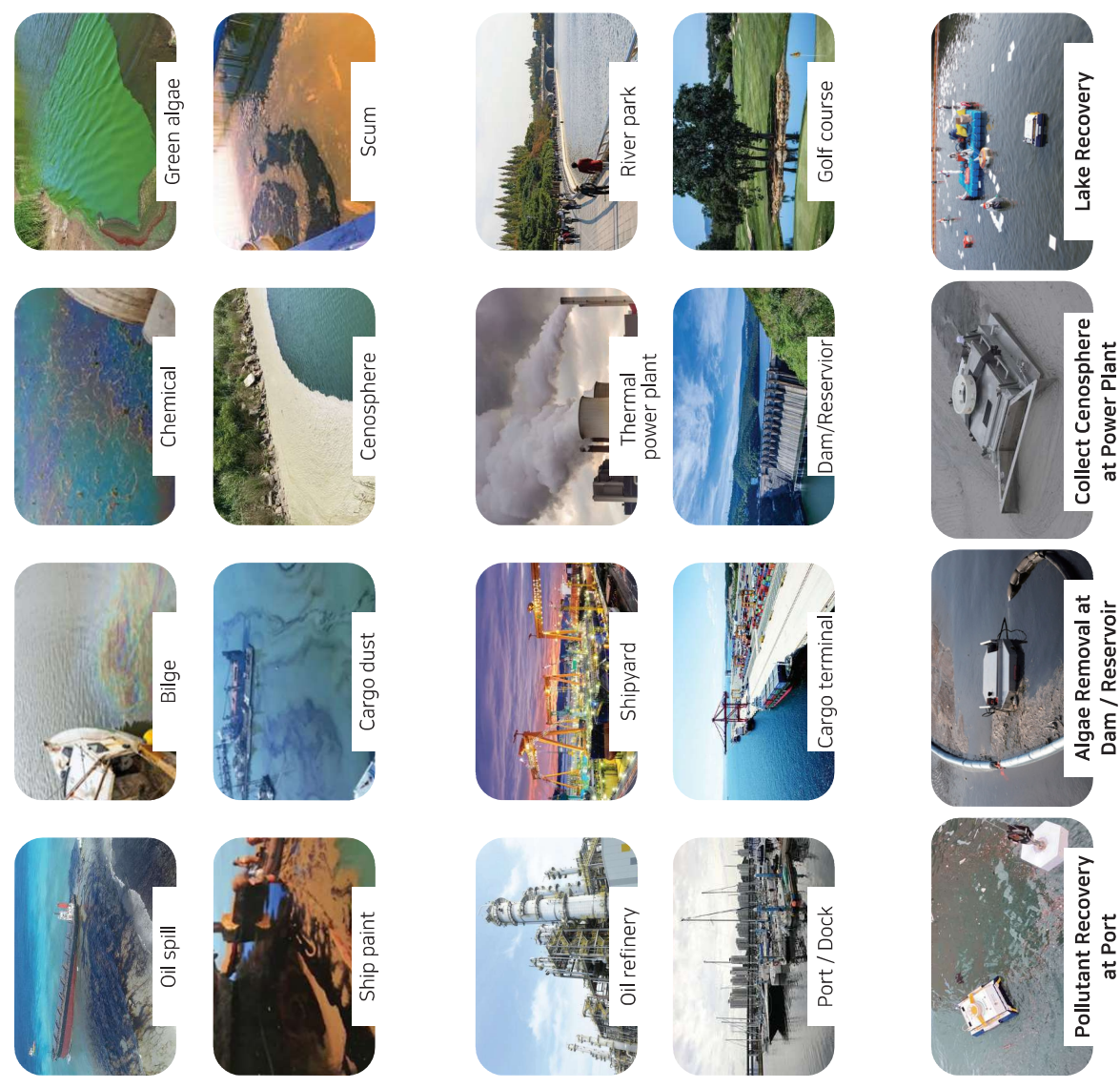
## Recovery

Send Field Status  
(Incident status, weather & maritime information transmission)



GOING GREEN WITH ROBOTICS

# Application



Recoverable Pollutant



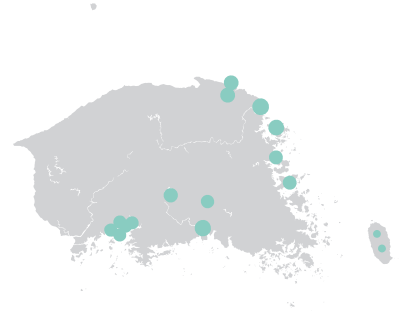
Application



Utilization

# Networks

## South Korea



**South Korea**

- In-house tank
- Vessel Traffic Service Center(VTS)
- Korea Coast Guard (Incheon)
- Korea Coast Guard (Jeju)
- Korea Marine Environment Management Corp.
- KOEM (Incheon)
- KOEM (Masan)
- KOEM (Busan)
- KOEM (Jeju)
- Hyundai Motor Group(Leonju)
- Hyundai Motor Group(Ulsan)
- SK Innovation(Ulsan deck)
- Samsung Heavy Industry
- Maritime Affairs and Fisheries(Masan)
- K-water (Daejeon)
- Korea Rural Community Corporation(Jeju)
- Local Response Group(Jeju)
- Shinhan Financial Group(ESG Evaluation)
- Driving Municipal Smart City Initiatives

## Global



**Saudi Arabia**

Invited 42 companies/institutions to complete technology demonstrations, product sales, and joint R&D

- ARAMCO
- National Center for Environmental Compliance(NCEC)
- King Abdulaziz City for Science and Technology(KACST)
- King Abdullah University of Science and Technology (KAUST)
- ALPHA NABO
- AlphaNabro KSA(Local Agent)

**UAE**

Completed technology demonstration to ADNOC, product sales, joint R&D

- ADNOC
- BEEAH
- BEEAH TANDEEF
- ALPHA NABO
- AlphaNabro UAE(Local Agent)

**Canada**

Canadian Nationally Funded Project (MPRI-CRP)

- Memorial University
- Nunavut Government

**Singapore**

Product distributors and resellers in discussion

- MarinTeknik
- Maritime & Port Authority Of Singapore (MPA)

**Indonesia**

Product distributors, joint R&D

- PELINDO (Indonesian national port operation)
- SLUICKBAR (Global Oil Response Company)

## Global Water Clean up Mobility

Share clean ocean and water environment with current and future generations through the advanced technology.



Gilsung Kwon,  
CEO

# MESSAGE FROM OUR CEO

By several club members of a university neighboring the sea. The idea that drives Sheco's dream first began with the meeting of the current CEO, whose major was marine insurance in a department of commerce and trade, and the current CTO, who used to build an unmanned oil recovery robot in a department of mechanical engineering. The two of them wanted to solve the challenges of marine oil spill accidents based on their shared interests and expertise. Thus, they founded Sheco with the idea of 'sharing the clean ocean environment of the current generation with the next generation,' which is encapsulated as the spirit of 'Share + Eco.' Sheco's goal was to automate the cleanup of marine oil spill sites efficiently. With the release of Oil Fence Auto-unfolding Machine and Oil Absorbent Retriever, Sheco, run by the duo, began to develop a marine oil spill recovery robot, which would replace the traditional oil skimmers and oil absorbents. Since 2019, Sheco has released 18 prototypes over 3 years and finally showcased the ultimate Sheco Ark. The company is also developing robots that can respond to "algae, paint, dust, and other pollutants" by applying Sheco's technology to a variety of contaminated sites beyond the ocean. Sheco dreams of fully automating the cleanup process of all marine spill sites to restore the blue ocean of Mother Earth.

## Company Information

For the past 3 years, Sheco has been presenting new solutions that overcome the limitations of existing marine recovery equipment, environment and water purification. In particular, Sheco has been selected as one of the Green New Deal 100 & the innovative 100 companies of the Ministry of Oceans and Fisheries.

### Found

July 1st, 2019

### Field

Marine Recovery & Water Cleanup robot

### Solution

- Building a world-class oil spill data infrastructure
- Contaminant recognition up to 10x cheaper than traditional methods
- Reduce carbon and cost of recovery process
- Replaces human labor at high-risk pollution sites

### Business

Response oil spill accident / Clean-up marine-water business / Water purification / Collect & Recover Floating Contaminant

### Investment

The Wells Investment / Hyundai Motor Securities / SK Innovation / CCEI / Honghap Valley Accelerator / KAIST / MYSC

## Core Values

Future shaped together with people, technology, and ocean.

세계 최고 수준의 사고 현장 유출유 데이터 인프라 구축  
기존 대비 최대 10배 저렴한 비점축식 오염물 인식  
오염물 제거시 발생하는 탄소 및 비용절감  
고위험 오염물 제거 현장의 인력 대체

## HUMAN



### Human

### Worker's Safety

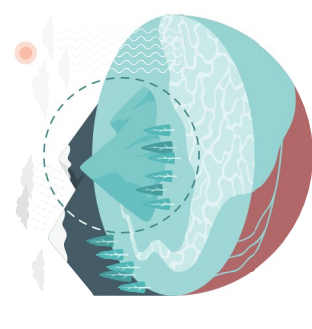
No hazardous work and contaminant-free

## ENVIRONMENT



### Technology

## TECHNOLOGY



### Environment

### Efficiency

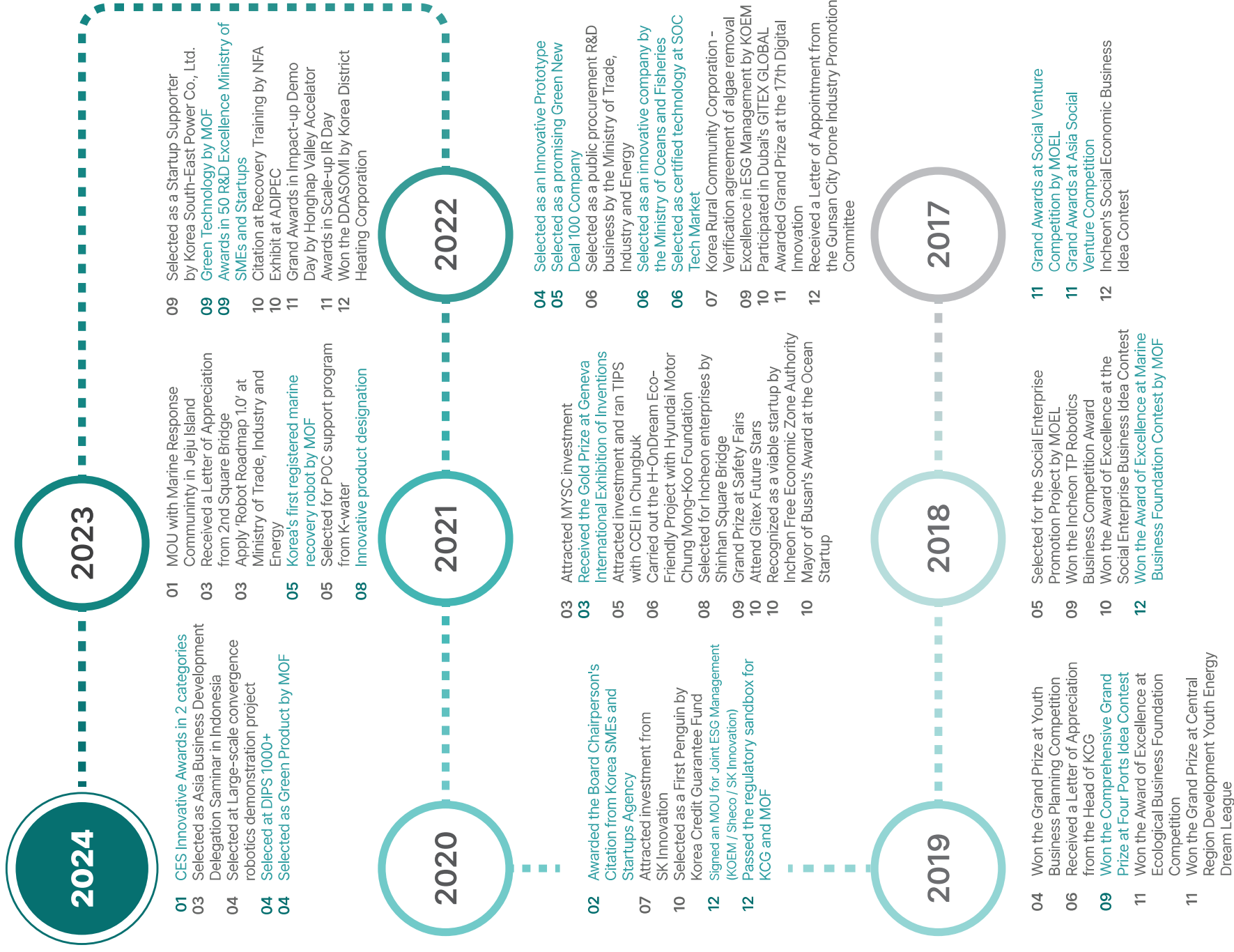
Technology that's easy to use and manage

### Sustainability

Sustainably Structured Marine & Water Pollution Response System

# History

From college club to startup, to global company



# Patent & Application



# Award & Certification

SHECO's water surface management robot has received 4 overseas awards and certifications, 7 domestic technology certifications, and 24 awards including "Development of Robot Technical Standards by the Ministry of Trade, Industry and Energy" and "Revision of the Ministry of Oceans and Fisheries Affairs Law".

	Awards gold prize at International Invention of Geneva		2024 CES Innovation Awards in 2 categories		Letter of Excellence Technology by NCEC Saudi		Green Product by Ministry of Oceans and Fisheries		Grand Prize at Social Venture Competition by MOEL
	Awards in 50 R&D Excellence Ministry of SMEs and Startups		Innovation 100 Company by Ministry of Oceans and Fisheries		Promising Green New Deal 100 Company		Selected as certified technology at SOC Tech Market		ESG Management MOU (KOEM / SHECO / SK (Inno))
	Robot Roadmap 1.0 at Ministry of Trade, Industry and Energy		Defense Advanced Product Designation Certification		Innovative product designation at Public Procurement Service		Grand Awards at Social Venture Competition by MOEL		Regularity Sandbox at Ministry of Trade, Industry and Energy
	Development of Robot Technical Standards by the Ministry of Trade, Industry and Energy		Revision of the Ministry of Oceans and Fisheries Affairs Law (23.4)		Grand Prize at Asia Social Venture Competition		Grand Awards at Social Venture Competition by MOEL		Grand Prize at Four Ports Idea Contest
	Awards in 50 R&D Excellence Ministry of SMEs and Startups		ISO 9001		Excitement at MOF Marine Business Foundation Contest		Grand Prize at Social Venture Competition		Excitement at MOF Marine Business Foundation Contest
	Development of Robot Technical Standards by the Ministry of Trade, Industry and Energy		Won the Comprehensive Grand Prize at Four Ports Idea Contest		Grand Prize at Asia Social Venture Competition		Grand Awards at Social Venture Competition by MOEL		Grand Prize at Four Ports Idea Contest
	Revision of the Ministry of Oceans and Fisheries Affairs Law (23.4)		Grand Prize at Asia Social Venture Competition		Grand Awards at Social Venture Competition by MOEL		Grand Awards at Social Venture Competition by MOEL		Grand Awards at Social Venture Competition by MOEL
	ISO 9001		Grand Awards at Social Venture Competition by MOEL		Grand Awards at Social Venture Competition by MOEL		Grand Awards at Social Venture Competition by MOEL		Grand Awards at Social Venture Competition by MOEL



Scan the QR code above  
to see variety of information.

Sheco, the "Share + Eco" company, is committed to becoming a global leader in innovative technologies for the marine & water environments. We dream of fully automating the clean-up process of all response sites to restore the blue ocean of Mother Earth.

# CONTACT

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## Youtube

Channel 'SHECO'