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*Safety your happy!
Environment our happy!*

KOT

KOREA OCEAN TECH
WWW.KOREAOT.CO.KR



- Water Proof Pad (Welding/Flexible)
- Water Proof Cap (Marine Force)



- Pilot Ladder Fixing Equipment
- Accommodation Ladder Fixing Equipment
(2018 NET NO.2018-03)



- D.O.S.A(Discharging Oil/Supply Air)
(2018 NET NO.2017-09)



- SFEX PRODUCT

Protecting human lives, protecting property,
and protecting nature are the values and beliefs that

KOREA OCEAN TECH

has cherished the most.

Greeting

Korea has become an advanced country in the global shipbuilding, shipping, classification and marine facilities fields. However, safety and salvage capacity is insufficient.

There was a marine pollution accident in 1995 at Yeosu port of southern coast, following the stranding of the M/V Sea Prince MV. Again in 1998, M/V Kyung Shin sank in Pohang. M/V Chamsuri 357 of Korean Navy sank in 2002 during sail-back after being bombed. Sinking of M/V Hubei Spirit MV in 2007 and subsequent contamination became a global scale disaster that occurred in Korea. M/V Captain Vangelis L met a collision accident in Busan in 2014. And many more naval accidents occurred including that of the M/V Sewol Ferry. At that time, Korea failed to take proper measures to minimize casualties, property damage, and marine pollution.

Even if we have to learn lessons from these accidents and make necessary adjustments, similar accidents continue to occur. We have not been able to take prompt and effective measures for settlement of accidents and rescue yet, thereby damages due to accidents keep growing.

Especially in the case of large-scale rescue operations, Korea has been making huge amount of expenses for using technology and equipment of Dutch and Japanese companies.

A typical example is M/V Kyungshin that sank in the coast of Pohang in 1998. 600 tons of oil in the tanker was collected by foreign companies at the expense of over 25 billion KRW (\$23M USD).

In order to solve these problems, our company has been established with experts with decades of experience in maritime, research, inspection, and professorship. We have developed technologies and equipment to address "safety, environment and salvage issues" at sea.

Under current circumstances, if we can systematically organize and apply the technology and equipment developed by KOT at accident scenes in Korea, Korea can certainly become an advanced country in the salvage field very soon.

We promise to further develop ourselves into a company dominating a higher rank in international competition at this field.

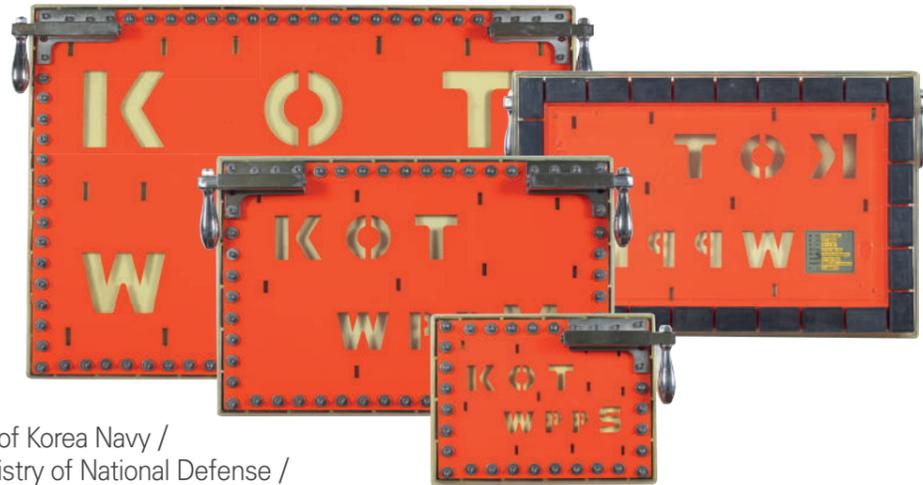
History

- 2012. 02
Submission of agenda and demonstration at IMO / MPEC 62, 63 (waterproof / oilproof equipment)
- 2012. 04
Demonstration and detachment/ attachment operation test of Water Proof Pad by SSU
- 2012. 11
Patented equipment for emergency blocking of vessel hole
- 2012. 09
Acquired UK patent for Water Proof Pad / Acquired DOSA120 KR Test Certificate / Supplied Oil Leakage Preventing Device to Korea Coast Guard
- 2013. 08
Patented residual oil removal device combined with marine drill
- 2013. 11
Awarded Korea Gold Prize for Invention Patent
- 2013. 12
Patented low pressure liquid spill stopper
- 2017. 04
Germany & Norway Classification (DNV GL) Performance Certification for Water Proof Pad, Pilot Ladder Fixing Equipment, Accommodation Ladder Fixing Equipment
- 2017. 11
Supplied water proof equipment for two battle ships of Korea Navy
- 2014. 03
Established Korea Ocean Tech Co., Ltd.
- 2018. 01
Acquired NET (New Excellent Technology) new technology certification for "Technology for the Removal of Hazardous Substances from inside Sealed Ship Tanks Using Double Cylinder."
- 2018. 03
Development of IMO agenda (Pilot Ladder Fixing Equipment and Accommodation Ladder Fixing Equipment)
- 2015. 03
Established a research and development department
- 2018. 04
Supplied Water Proof Pad, Water Proof Cap to newly built Ilchulbong ship of ROK Navy.
Supplied Water Proof Pad, Water Proof Cap to newly built Soyang ship of ROK Navy.
Supplied water proof equipment to ROK Navy SSU.
- 2018. 04
Standardization of Water Proof Equipment by International Standard Organization (ISO) (ISO TC8/SC1)
- 2018. 06
Acquired NET (New Excellent Technology) new technology certification for "Pilot Ladder Fixing Equipment"

Water Proof Pad (STANDARD/WELDNG)

Water Proof Pad Nude (FLEXIBLE)

| Exterior Water Proof Pad | One-touch waterproofing of the hole of a ship using magnets



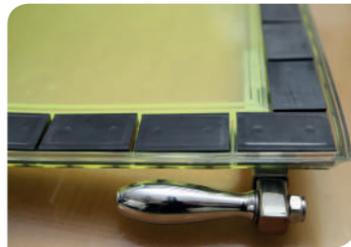
Supplied products to new ships of Korea Navy /
Selected as pilot product by Ministry of National Defense /
Use by Korea Navy.

One-stop water proof equipment to prevent sinking of battle ships and merchant ships.
The best way to waterproofing and leakage prevention at the occurrence of ship holes.
Semi-permanent waterproofing by welding following attachment.
Best choice for ship and human accidents / environmental protection

Product Features

Instant waterproofing (within 1 minute).
Strong adhesion force (3,650 Gauss).
No detachment at vessel speed of 20 knots.

Gasket type self double sealing.
Waterproofing of curved surface and waterproofing of multiple holes.
Welding after attachment, waterproofing - semi-permanent repair possible.



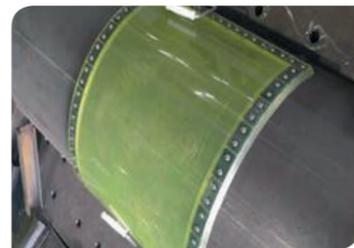
3650 Gauss (EA)



Double gasket sealing



detachable handle (lever principle)



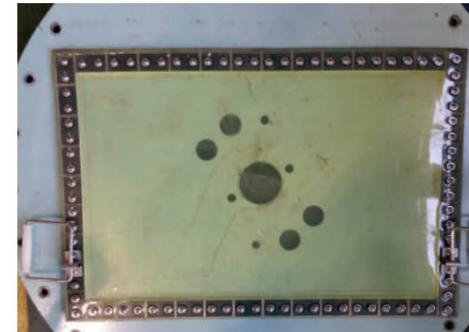
Curved surface attachment.

- Waterproofing the ship hull, ship side or ship bottom from outside by blocking seawater inflow through holes and cracks.
- Prevention of seawater from entering the hole formed due to the attack of the ship.
- Prevention of oil leakage when oil tank is damaged.
- Sea chest waterproofing in cases of strainer cleaning and replacement of valves in the vessel.

Specifications

Range : Hole size 200 mm, depth 10 m (standard medium)
Composition : Body (stainless steel plate), urethane, magnet
Size : Large 928 * 633, Medium 651 * 427, Small 377 * 290mm
Type : Standard/Flexible

Picture of the side

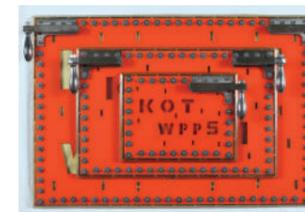


Indoor attachment test



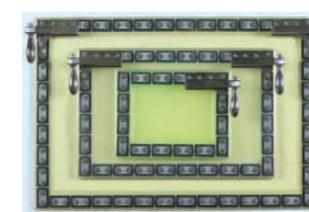
Product components

Standard type Water Proof Equipment (welding after attachment)
WPP(STANDARD)



Set configuration
WPP Large - 1 piece
WPP Medium - 2 pieces
WPP Small - 3 pieces + 1 safety glove

1 set of flexible type Water Proof Equipment
WPPN(FLEXIBLE)



Set configuration
WPPN Large - 1 piece
WPPN Medium - 2 pieces
WPPN Small - 3 pieces + 1 safety glove

Inside of a set



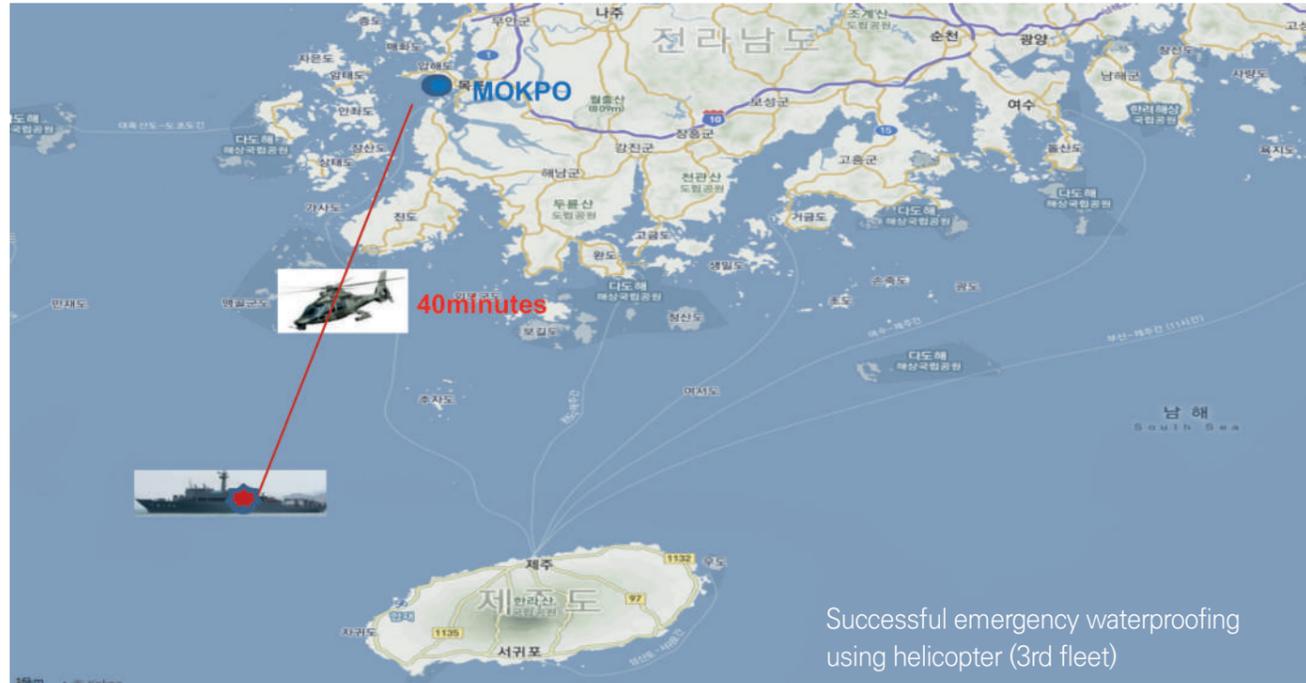
Water Proof Pad (STANDARD/WELDNG)

Water Proof Pad Nude (FLEXIBLE)

| External application example of Water Proof Pad |

Testing Scene

| Test on the site |



- Jeju Coast
- X Fleet Large Speedboat. Occurrence of bottom hole.
- Water Proof Pads were supplied by helicopter in Mokpo. Following external waterproofing, welding was carried out successfully from inside to seal the holes.

Hole sealing equipment demonstration and detachment/attachment operation test result

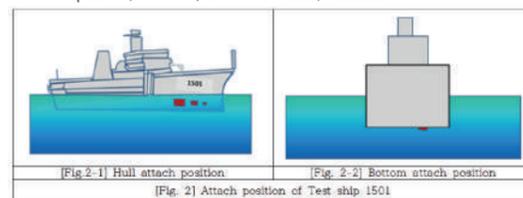
- Outline
 - Demonstration of a new method for patching a hole opening using vessel hole sealing equipment, and the result of operation test of the adhesion force of the equipment.
- General Information
 - Date: March 3, 26, 2012
 - Location: Jinhae Port, Zone B
 - Vessel: Daewon (Target ship), Auxiliary ship (lip, rubber boats), a high speed ship.
 - Test equipment
 - 4 mounting types (50 × 30/67 × 40/50 × 100 / round-30), two valve types
 - Demonstration contents
 - Creation of holes (20 cm) by artificial underwater cutting.
 - Hole blocking using a magnetic hole blocking equipment.
 - Confirmation of equipment adhesion force by operating ship in the state of attachment of hole blocking equipment.
 - * Based on towing speed (10 kts), cruising speed (15 kts), operational speed (23 kts)
- Results
 - Speed: 3 minutes from ready state until hole blocking
 - Leakage rate: Very little leakage, which does not interfere with operation or result in sinking
 - Risks: No problem with the safety of the professional diver in the work
 - Adhesive force: Speedboat operation after attachment to the side, detachment
 - speed result is same as below part. Mounting type (permanent magnet type)
 - Round type (diameter 30cm): 12kts
 - 50 × 30: 17kts
 - 67x40 / 50x100: 23kts
 - Optional magnet type: 14kts

Speed
- 3 minutes from the time of diving

Leakage rate
- Very little leakage, which does not interfere with the operation or result in sinking

Risks
- No problem with the safety of the professional diver

Adhesion
- After attaching to high speed ship, by maneuver size
Detachment test results from 12kts to 23kts
- Round (diameter 30cm): 12 kts
- Square (50 * 30cm): 17 kts
- Square (67 * 40/50 * 100 cm): 23kts



Test and field

Korea Navy ship waterproofing (rescue team).



Field work meeting

ship oxygen perforation

hole blocking

commander confirmation

Navy ship navigation test (25 kt).



Attachment

Departure

20 knots

25 knots

Coast Guard application test



Manual attachment flowchart

Waterproof success check

Coast Guard ship navigation test (18kt)



Waterproofing and onboard welding



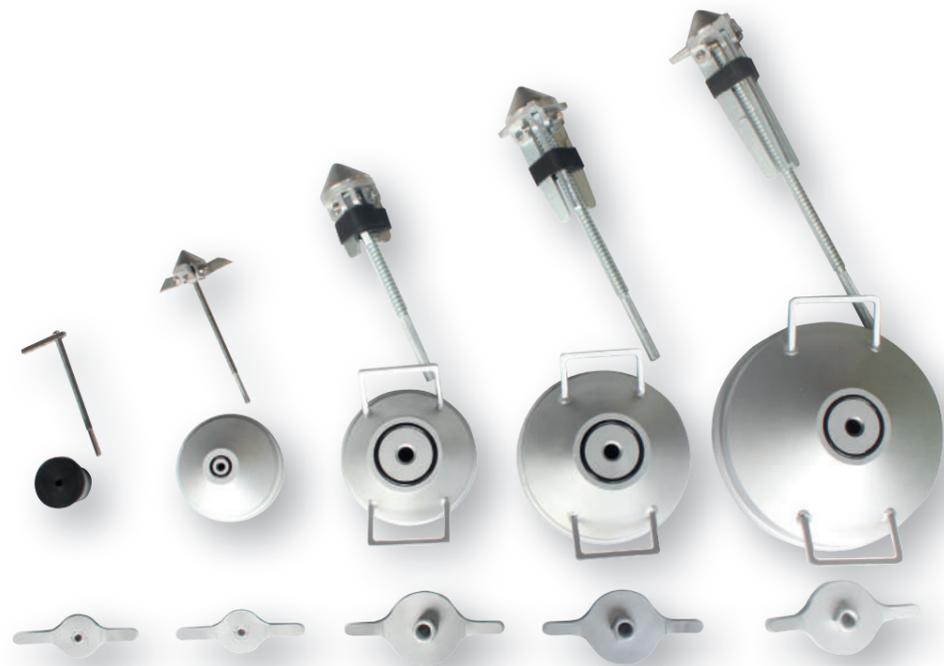
Water Proof Cap

(1", 3", 5", 7", 10")

| Internal waterproof cap |

After pressing and fastening at the hole area, tighten the gasket with a locker (locking lever). Water Proof Cap

Water proof cap.



Product Features

Instant waterproofing when holes & cracks occur on marine vessels.
Onboard waterproofing.
Hole waterproofing at 10 m water depth.

Shape : Folding anchor type.
Configuration : head, bar, locker (lock nut), cylinder, gasket.
Size : 1", 3", 5", 7", 10" by hole size.

Inside attachment test



Detailed attachment description



Moved after wings folded at hole region



Adherence to ship hull and fixing.



Combination of cylinders



Tighten with lock nut (with locker)



Final tightening with locker lever

Product configuration



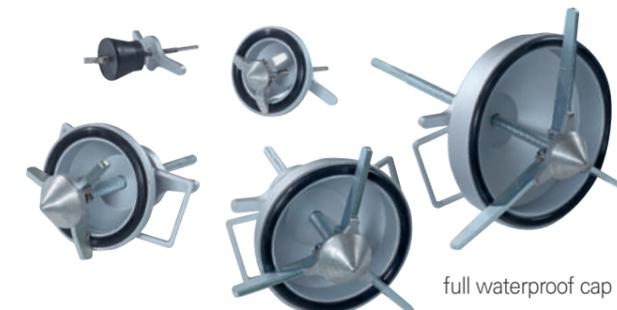
5, 7, 10 inch form



3 inch waterproof cap



1 inch waterproof cap



full waterproof cap



ship waterproof cap bag

Pilot Ladder Fixing Equipment

| Pilot Ladder Fixing Equipment | A device that fixes Pilot Ladder and Accommodation Ladder to the hull using strong permanent magnets



Purpose of Development

If the pilot is boarding/unboarding in the event of a thunderstorm or rainstorm, Pilot Ladder and Accommodation Ladder move in four dimensions. As a result, pilots are often killed or missing. The International Maritime Organization has ordered these ladders to be securely and completely fixed to the hull. However, there is no technology and equipment, so we develop technology and equipment to solve it.

Provision clause :
International Convention SOLAS Chapter 5
Regulation 23 Ship Security Act Regulation 26



Manual

Automatic

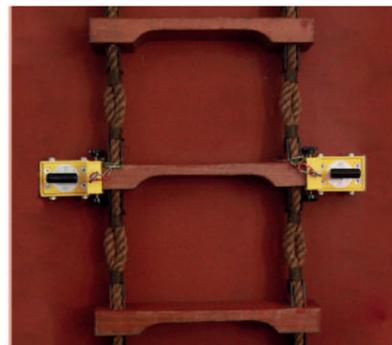
Specifications

Manual
Model: PLF-100
Size: 148 (L) x83 (W) x152 (H) mm
Magnetic force: 530kgf (EA)
Weight: 5.4KG
Maximum load: 110kg

Auto
Model: PLFA-100
Size: 160 (L) x115 (W) x200 (H) mm
Magnetic force: 530kgf (EA)
Weight: 7.62KG
Maximum load: 110KG

Product Features

Attach the footrest to the groove of the fixing device.
Pilot Ladder fixed onto the hull.

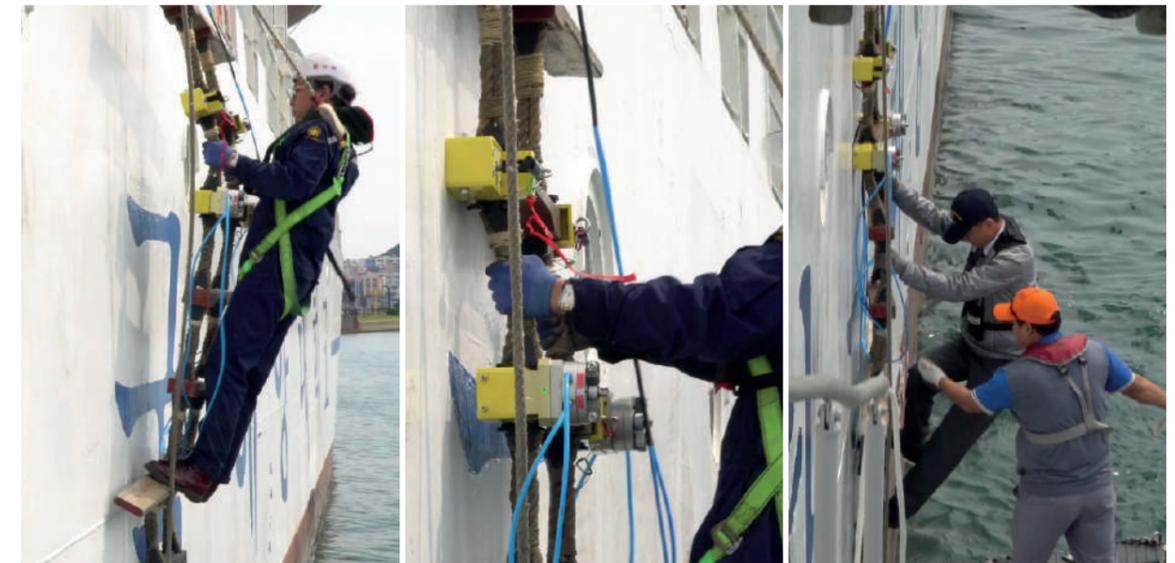


Pilot Ladder Fixing Equipment attachment

Horizontal move (Rolling) to left/right, no detachment at 15 degrees.
On-site manual operation or remote control by air pressure



A pilot who is boarding a ship



Magnet off

Magnet on

attachment

How to use Pilot Ladder Fixing Equipment

1. Attach the footrest to the groove of the fixing device.
2. Hold the magnet handle and turn it to the right to turn the magnet on.
3. Rotate the top four bolt handles to secure the fixing equipment.
4. Biner is wrapped around the rope and fixed to the eye bolt (to prevent loss when the magnet is off).
5. Repeat the above steps for the remaining equipment.

Product configuration

- Two magnetic locks
- One hex wrench
- 2 knob bolts (extra)
- 2 biners

Manual



Automatic



Controller



Accommodation Ladder Fixing Equipment

| Accommodation Ladder Fixing Equipment |

Move the ON / OFF lever to the fixed device with permanent magnet then fix Accommodation Ladder (gangway) to hull



Before/
after
product
use



•Magnet OFF, a lot of shaking



•magnet ON, no fluctuation

Product
photos



Manual



Automatic

Specifi
cations

Model : ALF-2000
Size : 265 (L) x210 (W) x430 (H) mm
Magnetic force : 400 ~ 600kgf
Weight : 19KG
Maximum load : 280kg

Model : ALFA-100
Size : 200 (L) x140 (W) x340 (H) mm
Magnetic force : 400 ~ 600kgf
Weight : 16KG
Maximum load : 280KG

Product
Features

2,000kg weight of Accommodation Ladder fixed onto the hull
Perform side rollers and Accommodation Ladder at the same time
Horizontal move (Rolling) to left/right, no detachment at 15 degrees.
On-site manual operation or remote control by air pressure

REQUIRED BOARDING ARRANGEMENTS FOR PILOT



In accordance with SOLAS Regulation V/23 & IMO Resolution A.1045(27)
INTERNATIONAL MARITIME PILOTS' ASSOCIATION
H.Q.S. "Wellington" Temple Stairs, Victoria Embankment, London WC2R 2PN Tel: +44 (0)20 7240 3973 Fax: +44 (0)20 7210 3518 Email: info@impahq.org
This document and all IMO Pilot-related documents are available for download at: <http://www.impahq.org>



RIGGING FOR FREEBOARDS OF 9 METRES OR LESS

COMBINATION ARRANGEMENT FOR SHIPS WITH A FREEBOARD OF MORE THAN 9 METRES WHEN NO SIDE DOOR AVAILABLE

A PILOT LADDER WINCH REEL

B

All pilot ladder winch reels should have a means of prevention from being accidentally operated.
The brake and lock must be operative on manually operated winches.
Power winches must have an operative safety device to lock the winch in position.

C

Discharging Oil & Supply Air (DOSA)

| D.O.S.A New Excellent Technology |

New Technology
(2018 Ministry of Maritime Affairs & Fisheries) Certified Products

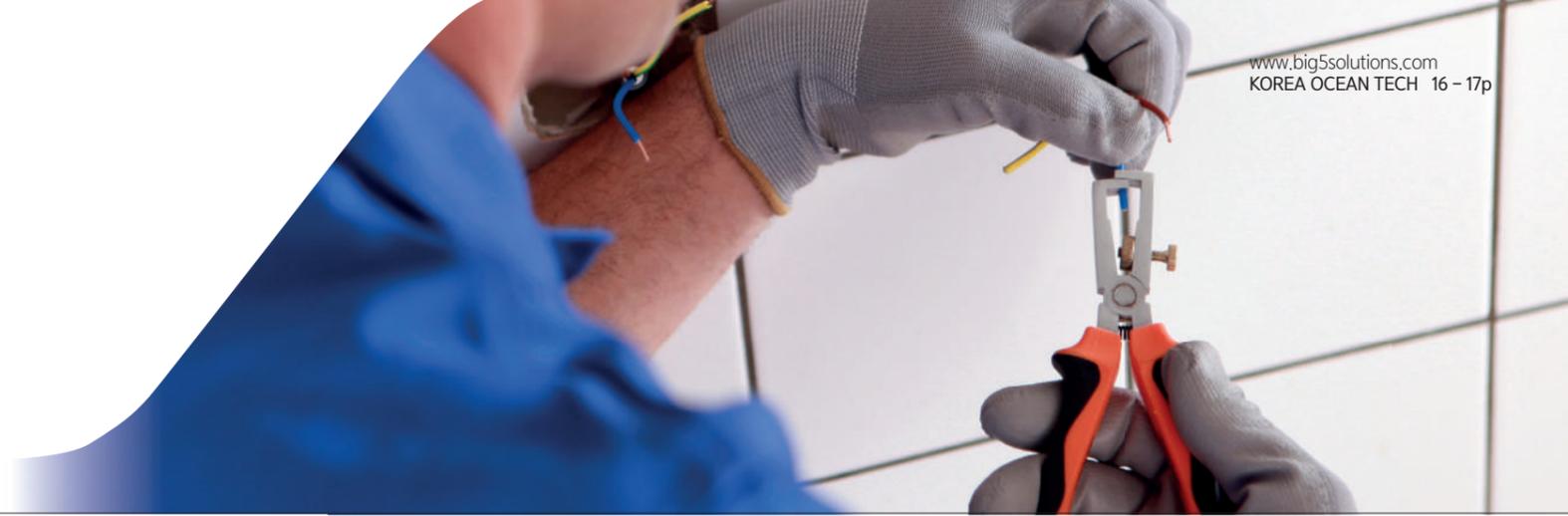
Technology that makes hull refloat by removal of harmful substances in the tank of sunken vessel, and supplying air into the tank.



<p>Product Information</p>	<p>Sealed tank of sunken vessel is perforated. Double cylinder DOSA is installed to supply air (fresh water) and remove water (oil). Technology to salvage ships with generated buoyancy.</p>	<p>DOSA</p>
<p>Product Features</p>	<ul style="list-style-type: none"> •No oil spills at all during oil removal. •New Excellent Technology certification by Ministry of Oceans and Fisheries. •Sunken ship oil tank deck. One perforation at the top, middle, and bottom of the hull. •Double cylinder unit (DOSA) fixed to the hull. •Air vents sealed. •Hot water (fresh water) supply. Discharging hazardous substances (oil, chemicals, etc.). •Air supply and ballast water discharge. •Domestic/International, unique technology and products. 	
<p>Structure</p>	<p>DOSA double cylinder structure.</p>	<p>seawater discharge oil discharge</p>
<p>Test scene</p>	<p>Sinking condition Drilling in tank Fixing DOSA Supplying air and removing residual oil Floating hull (salvage)</p>	

<p>Application</p>	<p>Removal of contaminants by D.O.S.A method Lifting of hull by buoyancy air supply using D.O.S.A</p>	
<p>Usage</p>	<ul style="list-style-type: none"> • Discharging of hazardous liquid substances such as vessel oil and cargo oil. • Salvage the vessel by buoyancy after the discharge of hazardous liquid substances. 	
<p>Core Technology</p>	<p>D.O.S.A outside D.O.S.A inside</p>	
<p>Hole drilling equipment</p>	<ul style="list-style-type: none"> •100, 120, and 150 mm perforations •Each hole can be made within 30 minutes • Adherence to the hull with strong magnetic force 	<p>Outside of Hole-drilling equipment Bottom of Hole-drilling equipment</p>

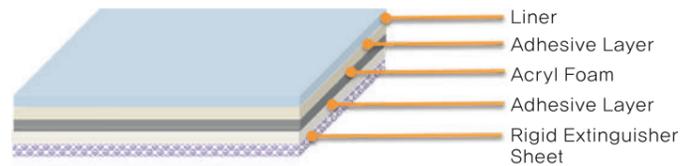
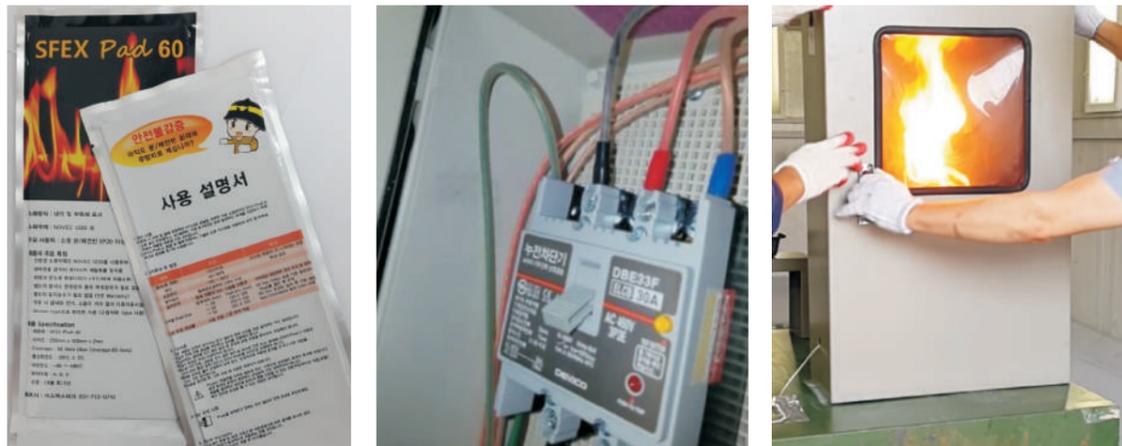
SFEX Pad/ SFEX Inside



Medium, small size, Absolute strength of problem solution for the ship front

Product Features

- Rapidly cooling the ignition source to prevent fire outbreak (cooling + non-catalytic effect).
- Automatic fire extinguishing in response to flame and temperature. (120 ± 5 ° C)
- Separate sensor or power supply unit is not required (stand-alone method).
- No maintenance is required.
- Excellent in multi-use facilities with little smell, smoke, and noise during operation.
- Easy to install as a sticker type (using high adhesive tape)



SFEX Pad

Product use: Fire prevention for distribution board, switchboard, air conditioning room, control box

Part name	SFEX Pad 60	size(mm)	250×100×2
weight	60g	operating temperature	120±5°C
total thickness	2.65mm	adhesive strength	>3,000gt/25mm(on SUS)
operating temperature range	-40~80°C	materials	Acryl Polymer
operating method	automatic extinguishing method	extinguishing method	cooling and non-catalytic
extinguishing area	60 Liters	Warranty	60 months after opening

Fire prevention automatic fire extinguishing multi-outlet (patent registration number: 10-1887396-00-00)

consent

- Detect the cause of fire such as arc, overload, and tracking. Wiring mechanism with built-in fire-extinguishing function for automatic extinguishing.
- Includes a separate fire extinguisher unit at the junction point inside the socket. Fire-proof socket that can prevent fire at ignition points.
- Excellent fire extinguishing power due to cooling and extinguishing system.. Excellent properties for initial fire suppression.

product				
Product Name	2 sockets	Spinning 2 sockets	Exposure 2 sockets (screw type)	Exposure 3 sockets (screw type)
material	PBT/P.C	PBT/P.C	PBT/P.C	PBT/P.C
Rating	AC 250V, 16A	AC 250V, 16A	AC 250V, 16A	AC 250V, 16A
Characteristic	Built-in automatic fire extinguisher unit	Built-in automatic fire extinguisher unit	Bidirectional wire drawing structure/Can be installed on the front side after wiring (screw type)/ Connection 1.5 ~ 4.0 (pin type)/ Built-in automatic fire extinguisher unit	
Standard number	KS8305			

Multi outlet

product					
Product Name	4 sockets safety cover type	Main four separate sockets	Safety cover with 6 sockets	6 individual mains sockets	Aluminum
Product composition	Rotating plugs/ Protection against electric shock/ Standby power interruption/ Individual switches/ Built-in automatic fire extinguisher unit				
material	P.C				
Characteristic	Heat resistance/ Excellent flame retardancy/ Built-in earthing device for preventing electric shock/ Power saving switch/ Built-in automatic fire extinguisher unit				
Rating	AC 250V, 16A				
Code length	3m				
Certification	KS8305				

SFEX Line / SFEX Sleeve

SFEX LINE | SFEX Capsule Built-in flammable gas permeability. Flexible line type fire extinguishing equipment using fiber



Sfex line model photo



Sfex line construction example

product composition

Model	Length (cm)	Diameter (cm)	Coverage (liter)	Required Length(cm)
SFEX Line 150	150	4	~200	300
SFEX Line 250	250	4	~400	500
SFEX Line S250	250	7	~700	700
SFEX Line S540	540	7	~1000	1080

Comparison of other products

	SFEX Line	Existing fire extinguisher
Configuration	Flexible rope type (internal extinguishing capsule) (capsule function = storage tank + temperature sensor + nozzle)	Storage tank + temperature sensor + nozzle + wiring
Distance from ignition point	Can be freely installed close to the ignition point (can be installed near the fire point - early extinguishing)	Attached to the top (it takes time until the bottom ignition starts)
Malfunction	No malfunction due to polymer chemistry	Possible sensor malfunction Hardening of the nozzle may cause gas leak Possible leakage from joint with storage tank
Workability	Easy to attach (use adhesive ring)	Requires operation such as rivet drilling during installation
Maintenance	It does not require maintenance cost	Periodic pressure check and gas replenishment required

Conquer the ignition point! Wire Connection Fire

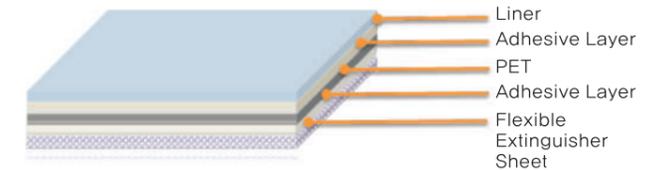
Product Features

- Preventing fire at terminal and wire connection area (Extinguish and semi-fireproof + insulation)
- Fire suppression in case of recurrence due to tracking and terminal contact failure.
- Fire extinguishing is possible even when the panel door is opened.
- Minimize the influence of peripheral devices by using environmentally friendly fire extinguishing agents
- Easy to install, no additional maintenance costs



Product Usage

- Preventing fire at Medium/Large distribution board and connector.
- Preventing fire at control panel, solar inverter and connection barrier.
- Preventing fire at the connection area of outdoor unit air conditioner



SFEX Sleeve

Product Name	SFEX Sleeve	size(mm)	30×1,000×1
weight	30g/m	Operating temperature	120±5
Total thickness	2.15mm	Adhesion	>2,000gt/25mm(on SUS)
Operating temperature range	-40~80℃	material	Acryl and nano ceramics materials
How it works	Automatic fire extinguishing (stand-alone)	Extinguishing method	Cooling and anticatalyst
Extinguish area	60 Liters	Warranty	60 months after opening

SFEX Stick / SFEX Technology

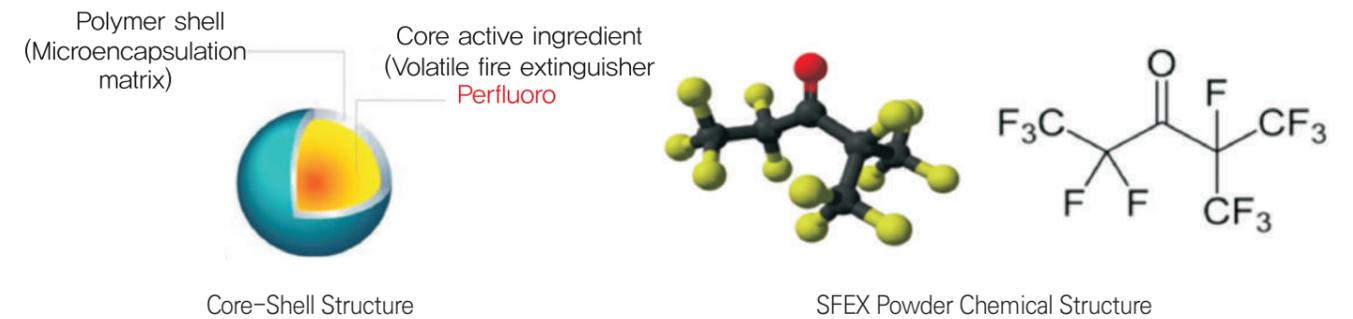
Simple and perfect kitchen fire Class K complete fire extinguisher



- K-class fire extinguisher for throwing (patent application)
- In the case of fire caused by cooking oil, fire extinguishing within 3-7 seconds after throwing.
- Minimum operating requirements for fire suppression.
- Acquired KFI (Korea Fire Service Industry Institute) certificate.
- Existing fire extinguishers are aimed at the flame at the nozzle after removal of the safety pin fixture and require grip handle operation. However, the SFEX Stick requires only minimal action for fire fighting (throwing)

SFEX Technology

- Development of new concept of extinguishing agent through microencapsulation (cooling effect) and non-catalyst compounding technology.
- SFEX Power: Polymer Powder with extinguishing agent.
- Extinguishing agent: C6F12O (Perfluoro: 2-methyl-3-pentanone).
- Eco-friendly fire extinguishing agent developed as a substitute for harmful environment such as Halon and Freon.



SFEX Stick

Product Name	SFEX Stick 96	size(mm)	50x300x18
weight	190g	Operating temperature	All cooking oil ignition temperature
Applicable Capacity	2 Liters	For storage purposes	-40~80°C
Extinguishing method	Automatic fire extinguishing system	Solution	Additives other than potassium carbonate
How it works	Throwing	Warranty	60 months after opening

• Product use: Cooking facilities such as restaurants, corporations, schools, military units, ships, etc. Fire extinguishers General kitchen appliances



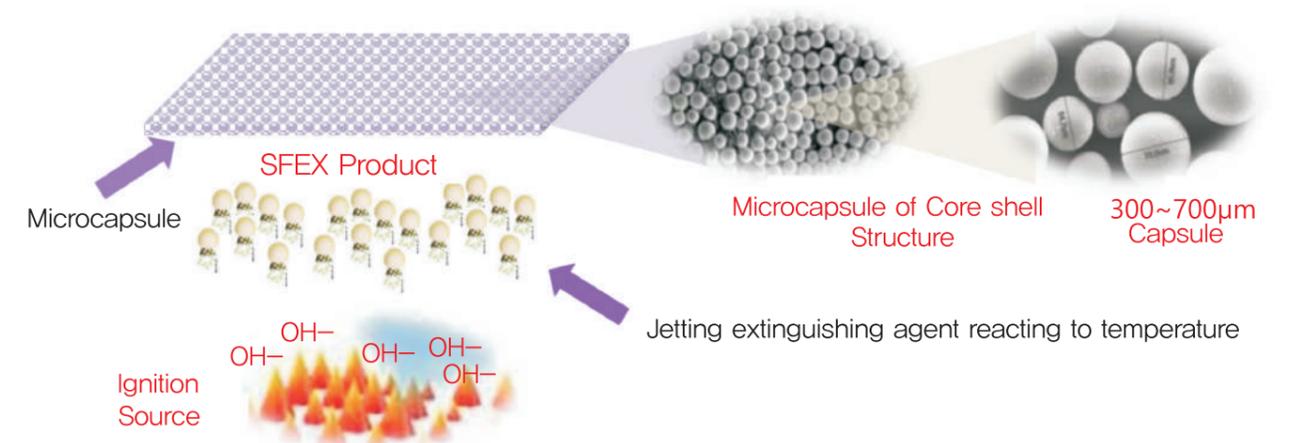
Fire in Kitchen Vessel



SFEX Stick throwing



Immediate suppression as soon as thrown (no re-ignition)



patent / authentication



patent



authentication

