

# **SMS-SME**

Systematic Cargo Access / Securing Solutions

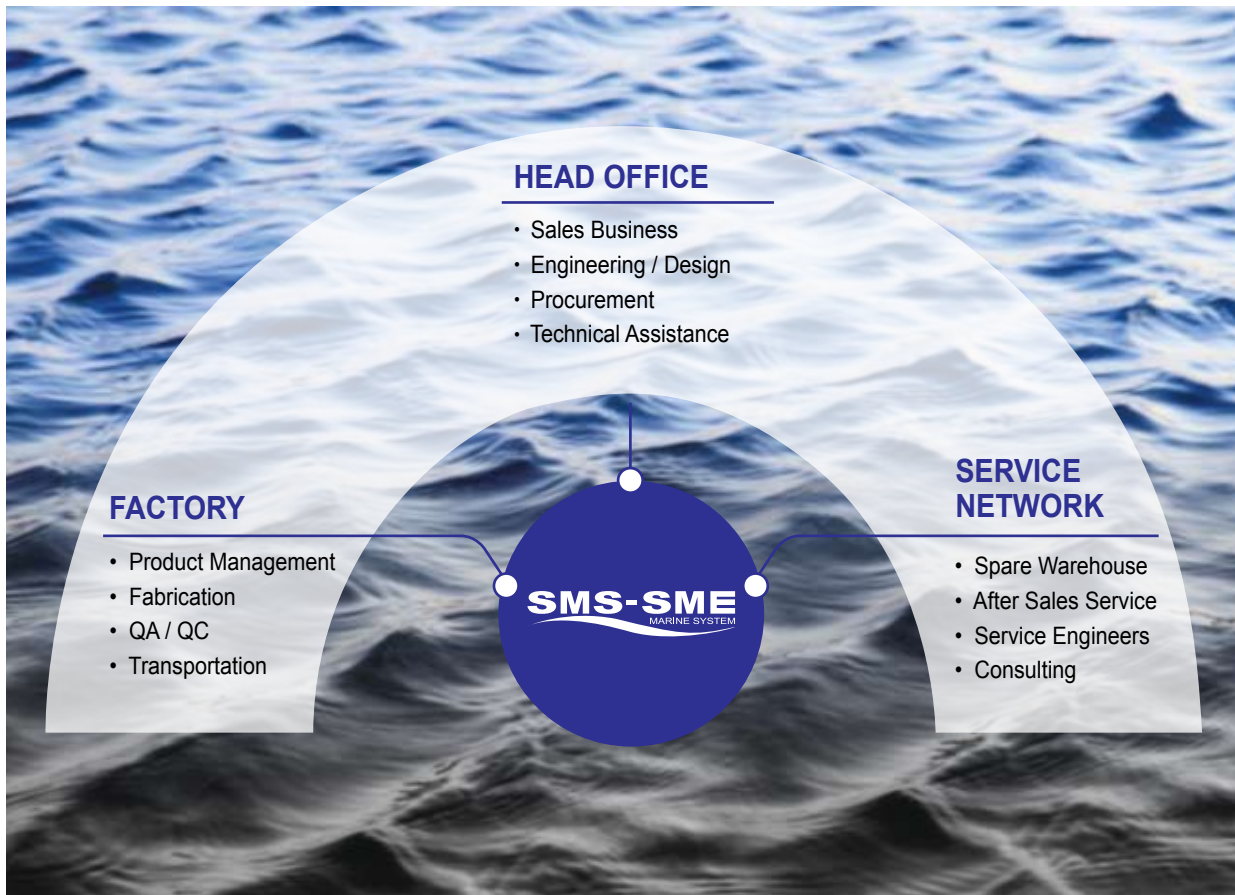
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[www.sms-sme.com](http://www.sms-sme.com)

**SMS-SME**  
MARINE SYSTEM

# SMS-SME

## New name of Seohae Marine System



SMS-SME is a leading technology-based company, engineering and supplying various dry cargo access / securing equipment such as Hatch Covers, Lashing Bridges and Ro-Ro Equipment as main products to shipyards in Korea, China, Japan, Taiwan, India and USA. The delivery record has reached more than 2,000 ships to worldwide ship owners and users.

The supply range of Hatch Covers is not limited but available for various vessels up to DWT 400,000 Bulk Carriers, and up to 20,000TEU of Mega container ships owned by World-Wide major ship owners and operators, and the range of Ro-Ro system includes 8,700 unit PCTC and Ro-Pax.

SMS-SME produces about 5,000 tons steel structures per month at Mokpo factory which has 150,000m<sup>2</sup> area including large in-factory paint shop with about experienced 450 employees under the quality control of ISO 9001:2009 DNV GL. SMS-SME components are usually genuine Korean, European and Japanese origin, so as to offer long life and reliable products. The prompt after-sales services are also ready from head office, factory and worldwide service networks.

SMS-SME is moving forward with the Strengthened Strategy of Full Satisfaction of Customers by close hearing of customer's requests, offering the customized engineering / design and high quality products as well as quick action & full service from the beginning of the project to operation after delivery.

SMS-SME website is always available at [www.sms-sme.com](http://www.sms-sme.com) for more information and guidance.

# Turnkey Solutions

## Turnkey Solutions from Engineering to Completion



**ENGINEERING & DESIGN**  
**PROCUREMENT**  
**MANUFACTURING**  
**INSTALLATION**  
**COMMISSIONING & COMPLETION**  
**FOLLOW-UP MANAGEMENT**

SMS-SME is the most experienced, comprehensive and trusted turnkey supply company of dry cargo access / securing system in Singapore. SMS-SME turnkey supply system spans the range of complete engineering, designing, raw material procurement, manufacturing, assembling, and servicing of customized systems. Expertise in all aspects of turnkey supply of dry cargo access / securing system makes SMS-SME the industry's total system solution provider.

60,000 ton capacity per year of Mokpo factories can provide total solution from initial design to installation and completion with all products within customer's requested time. Also, turnkey system provides our products to the shipyards with fully tested and ready to install upon delivery which can be a tremendous advantage to shipyards since it eliminates the needs for shipyards to manage the projects.

SMS-SME manages all the steps from beginning to the end, in order to match our services to customer's needs including providing worker, supervision and delivery. SMS-SME experts analyze existing systems to identify opportunities to build up the performance and reliability. Through various projects and accumulated experiences, SMS-SME has already provided products to worldwide shipyards as a turnkey system.



# Head office

## in Singapore



SMS-SME is operated from headquarter in Singapore and supported by a worldwide network of associate companies and agents. SMS-SME has provided innovative system solutions and products designed to meet the most exacting requirements for all type and size of the ships.

As a major supplier of turnkey equipment including engineering/design, productions and installations, SMS-SME supplies high-quality dry cargo access / securing systems to shipyards and ship owners/shipping companies in the world. So as to lead the technology of the system through innovative improvement of designs focused on safety, comfortable operations and cost saving, SMS-SME actively participates in leading-edge industry research program and technical committees. Improvement work is currently refining system designs to meet future demands for safe, economical and environment-friendly shipbuilding and ship operations.

Last 25 years, SMS-SME has always served customers with state-of-the-art technology as a technical partner and has now pride of the works because most of customers were very satisfied with the quality and the performances of the systems. SMS-SME in particular built up a good reputation with delivery of good products to shipyards and ship owners. With the aim to work closely to customers, SMS-SME always makes every effort to provide intelligent and innovative solutions that will improve the quality, safe operations and easy maintenance of the products.

# Factory

## in Mokpo, Korea



As the rising demands for a complete set supply, SMS-SME operates three factories in Mokpo, at the southwest part of Korea. With these factories in Mokpo, SMS-SME offers customers complete systems from design to installations and completions, which is total solution. Through practical experiences in ship hull block fabrication and cargo access / securing systems, SMS-SME is establishing the most comprehensive and advanced production system available.

The location benefit enables customers to eliminate additional costs, liability issues and time delays. Also SMS-SME provides a reliable quality through all standard processes and guarantee the products with intended performance so that SMS-SME can be associated with multiple vendors to accomplish various part of complete tasks.

SMS-SME operates own quay/terminal near the factory for steady and safe delivery of the steel structure products within required time by the customers (Just In Time delivery each block by block).



# Lashing Bridge and M&R Platform



Lashing bridges are installed on container ships and designed to restrain racking forces from container stack loads and create safe spaces for reefer container monitoring, maintenance and repair.

SMS-SME has concentrated on developing lashing bridges for

- Easy loading/unloading of containers and Hatch Covers
- Easy & Safe lashing/unlashing work of containers
- Easy & Safe access
- Easy & Safe reefer container monitoring, maintenance and repair.
- Easy installation on board



Based on SMS-SME Patent design of A-bracing type lashing bridge, new type of lashing bridge was developed which improves an operating aspects and saves the initial investment. Also, the vibration mode and natural frequency was improved to avoid a resonance from engine/propeller. The free vibration analysis was carried out and it was discussed and confirmed by several major shipyards. The new lashing bridge has finally been being applied to whole size of containerships up to mega-containerships. New type of One-side A-bracing structure can take whole lashing forces generated by container stack and ship's motion through lashing from 1st, 2nd and 3rd or higher tier of containers, especially for mega-containerships.



SMS-SME also provides reefer container M&R (Maintenance & Repair) platforms separately or combined with lashing bridge. Reefer containers on higher tiers can be easily monitored and repaired from the platform just in front of reefer container unit.

# Hatch Cover

## Pontoon type Hatch Cover



Pontoon type Hatch covers are available as single or multi panel units with non-sequential operation by using flap sealing system.

Hatch cover structures and supporting fittings are designed to withstand very great downward forces on the container foundation from heavy container stack loads in dynamic condition up to 120 ton/20 ft , 240 ton/40 ft(45 ft) and 300 ton/Russian stowage or more, while the panel weight is limited by the capacity of the terminal crane.

SMS-SME hatch cover structure was improved to accommodate any loads, to minimize stress concentration which may be one of the reasons of local crack. The global and local structure was optimized by using modern CAE (FEM) analysis considering better productivity, less welding distortion, and minimum weight to reduce initial shipbuilding cost & operating cost by less lightweight of the ship.

Any kinds of vital components such as tightening rubber packing, bronze type, engineering plastic type support pads and non-sliding type support pads (SANDWICH pad) are available for the hatch covers for all range of container ships. The fittings were developed and improved with aim at the highest performance, reliable quality and long lifetime, and already proven through several hundred containerships.





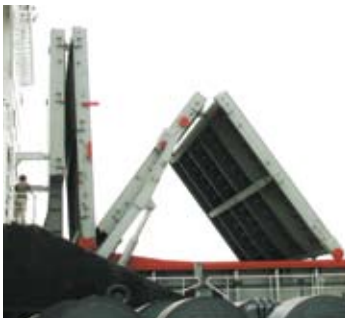
# Hatch Cover

## Folding type Hatch Cover



### Single Folding type Hatch Cover

SMS-SME folding type hatch covers are smoothly operated by specially designed control valves, hydraulic cylinders and rolling wheels travelling on the track way. Operation of hatch cover is non-sequential. Manual or automatic cleating system secures the panels in closed position. Weather-tightness of hatch cover is kept by sealing system.



### Multi Folding type Hatch Cover

Multi-folding type hatch covers are provided to minimize the stowage space in open position. Leading pair is operated by hinged arms on the 1st end panel and the trailing pair is sequentially operated by bell crank arm. Each pair is drawn along the longitudinal hatch way and opened to its vertical position.



### Multi-purpose carrier Hatch Cover

SMS-SME can also provide specially combined design & supply of folding type, tween deck pontoon type or piggy back type hatch covers on the same vessel depend on the ship's route or cargo kind. Such combination type is adopted on the mixed cargo carrier such as bulk & container cargo, or heavy lift carrier with folding type on weather deck & pontoon type hatch cover on the tween deck cargo resulting high value performance. These hatch covers are supplied with our long time experience & genuine components.



# Hatch Cover

## Rolling type Hatch Cover



### Rack & Pinion Driven Hatch Cover

Side Rolling type hatch covers are operated by a rack and pinion driven system which has a rack gear transversely located in the middle of the underside of each panel. A pinion gear is positioned outside of the side coaming and engaged with the rack gear. Each panel is fitted with own rack and pinion driven system to allow independent operation. Auto-roll mechanism with auto-cleats is adopted by many ship owners for easy and comfortable operation without manual cleat operation.



### Chain Driven Hatch Cover

Side Rolling type hatch covers are also can operated by a chain driven system. The operating chains are connected crosswise to the arms of both panels giving simultaneous operation. One-sided operation type and both-sided operation type are available by a low speed hydraulic motor mounted on the side of longitudinal coaming. Auto-roll mechanism with auto-cleats is also available and recommendable to this type of hatch cover.



### Piggy Back type Hatch Cover

Piggy Back type hatch covers are adopted on multi-purpose carriers when the available deck space is insufficient to accommodate rolling covers in open position. This system always comprises two panels as a pair, one panel is lifted high enough and the other panel is rolled underneath to support/carry on the lifted panel back. Then both panels are rolled back-and-forth. Lifting of both panels is achieved by hydraulic cylinders and rolling by hydraulic motors.



# Ro-Ro Equipment

## Stern / Side / Bow Equipment



### Stern Ramp / Door

SMS-SME stern ramp/doors are optimized and designed to match with the ship's dimensions and the various ranges of quay height considering the most effective operation condition. The operation of the ramp is achieved by two directional hydraulic cylinders arranged on each side. The ramp in the close position acts as a weather-tight door. Cleats and locking devices secure the ramp/door to achieve the required tightness.



### Side Ramp / Door

Two or three-level side ramps allow convenient cargo access / securing under various ship drafts and port conditions. They are operated by hydraulic winches and working levels can be adjusted by jigger winches for smooth and accurate operation.



### Bow Ramp / Door

Bow door is opened parallel to side shell or upwards. Detachable type bow ramp is also used as a collision bulkhead door even though another collision inner bulkhead door is necessary for conventional type. Automatic control includes sequential operation by PLC or manual control. Bridge indication is provided for the door in closed/locked condition.



# Ro-Ro Equipment

## Internal Equipment



### Liftable Car Deck

SMS-SME has been specializing in the design of inner ramps for Ro-Ro ships and especially developed a thin car deck system which is an up-to-date car deck ramp applicable to PCTC. The thin car decks can guarantee increased stability and reduce the ship's weight so that they allow the shipyard/owner to have an optimized ship design. Standard modular systems also offer easy installation, minimal maintenance and cost saving.



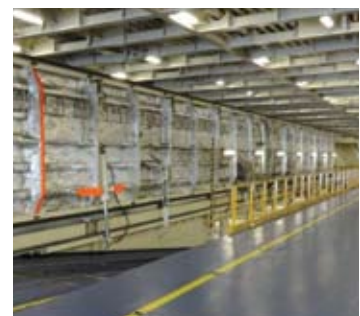
### Inner Ramp / Door

Several types of inner ramp/doors are provided vehicles to access between the decks or to give flexibility of vehicular mobility between two different deck levels. On large ocean-going Ro-Ro designs such as ocean going vehicle carriers and Ro-Ro container liners, it may be necessary to provide doors in any transverse bulkheads to ensure efficient cargo operations and safety of the ship in damaged condition.



### Ramp Cover

Special hydraulic ramp covers are provided in order to have a reliable load distribution on various decks in the ship and/or separate the cargo area etc on Ro-Ro vessels and Ro-Pax ferries.



Ready to support you all the time  
with our advanced system



SMS-SME always provides ship-builders and owners with a consistent service during the entire life of ships while keeping our ear to the specific requirements from customers. Support and service activities are supervised from SMS-SME office in Singapore & Korea to service centers at strategic locations around the world.



# SMS-SME Service

## A/S

SMS-SME customer services are organized to provide high-quality and worldwide support whenever and wherever customer needs. For the best supports and services with SMS-SME products, SMS-SME has been building a system to minimize the response time and building up the global service network which is expanding. Through SMS-SME international network partners, SMS-SME is able to offer comprehensive and competitive technical assistant at anytime and anywhere. If needed, SMS-SME engineers are available to provide remote diagnostics, advice and service assignment planning. SMS-SME service engineers have long experience in cargo access equipment, and have dealt with situations ranging from new installations to conversions. This knowledge is used to provide the best solution to all repairing requests. SMS-SME is able to assist customers quickly and effectively with qualified engineers and high quality spare parts.



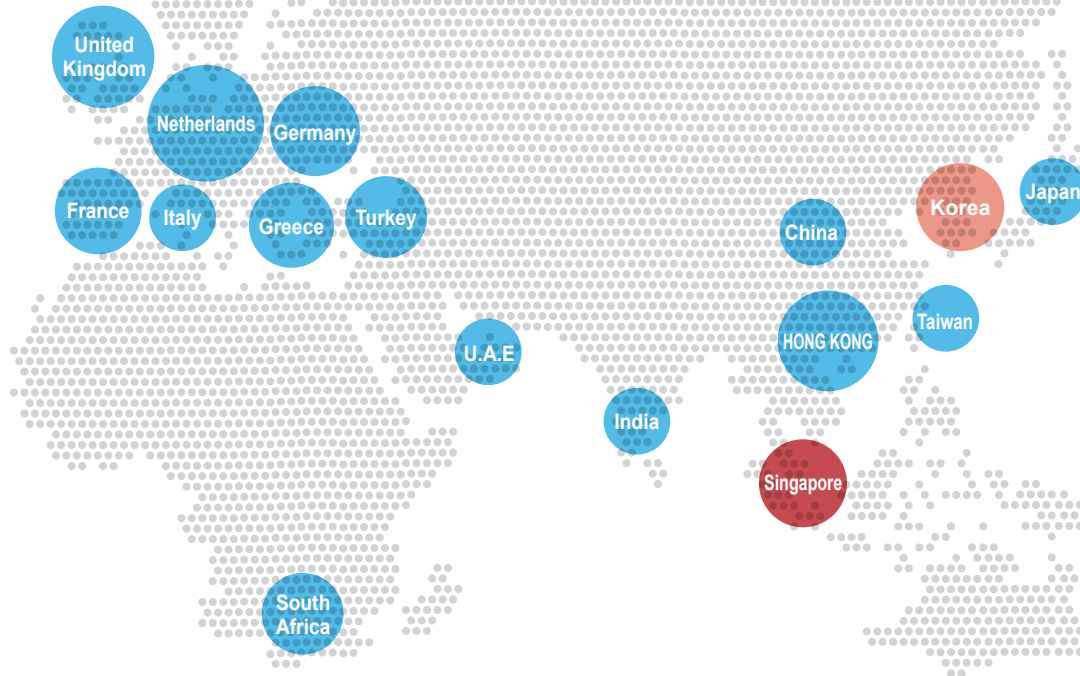
## Consulting Service

SMS-SME Technical Consulting Division and Design Department has been offering consulting and customized technical assistance so as to offer advanced service to customers. The consulting service are not limited to the basic analysis of cargo loading / unloading system but extended to hull structure evaluation, strength analysis, weight calculation etc to worldwide shipyards. SMS-SME consulting service gives customers the best result of effective design for safe and economical operation as well as cost saving through high productivity, easy installation and less material etc.

## Spare Parts

Timely part replacements and maintenances are important for cargo access / securing equipment operation such as Hatch Covers and Ro-Ro equipment. To support our product's optimal operation, SMS-SME are offering main components at the best price and best quality in the shortest time. In order to achieve customer satisfaction, SMS-SME is furnished with the computerized stock monitoring and warehouse management system. Using the worldwide service network, SMS-SME can deliver any parts to clients wherever and whenever they are needed.

# SMS-SME Service Network



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