



*advanced marine solutions*

RO-RO RO-PAX EQUIPMENT

## CARGO ACCESS EQUIPMENT



Since 1976 Navalimpianti Tecimpianti has been design and fabricating Cargo Access Equipment for ferries and Ro-Ro vessel.

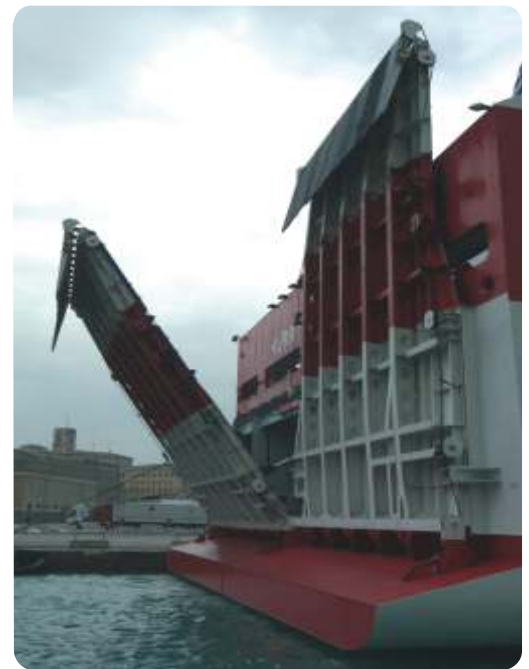
Products line includes,

- Bow Doors, Bow Ramps & Inner Doors
- Ramps: stay on quay or suspended type for stern, bow and quarter
- Shell water-tight and/or weather-tight doors
- Internal ramps, deck covers and doors
- Hoistable car decks and car decks ramps

Our solutions for Cargo Access move toward a wide range of products tailored for the needs of our customers, from the flexibility of the cargo spaces up to the handling of each type of vehicles allowing efficient and cost-effective systems.

All equipments meet the most recent safety regulations and the highest level of efficiency for easy operations. Navalimpianti Cargo Access Equipments, with integrated and

original designed hydraulic and automation systems, assure problem free working life and easy operations. Our specialized staff assists owners and shipyards providing “turn-key” contracts, commissioning and after-sale services.



## BOW ACCESS



**N**avalimpianti Tecimpianti Equipments for bow access are designed and manufactured to fulfill Rules and Regulatory body requirements and to obtain Ship-owners satisfaction in respect of dimensions, strength and safety.

Bow doors may have different arrangements: double leaf hinged doors, opening outwards and sliding backwards, parallel to the shell, or single top hinged visors opening upwards.

In both cases, doors are linked to the hull structure by hinged arms connected to the maneuvering cylinders. Bow doors, when closed, are flush with shell plating and are equipped by locking device and cleatings.

Bow ramps may be of folding type. The deployment is achieved by hydraulic cylinders with a further set for locking.

Inner doors may be top or side hinged and properly locked to assure watertightness.



## STERN RAMPS



Cargo access facility on RoRo vessels includes stern ramps for loading and unloading trailers, cars and for passengers boarding.

Navalimpianti Tecimpianti stern ramps are designed in accordance to the ship dimensions and to any possible quay heights; therefore, they are manufactured for optimum operational efficiency.

Standard stowage and deployment is achieved by hydraulic cylinders but if requested, wires and winches system may be provided.

When closed, the ramp is locked by hydraulic cleats to assure watertightness: rubber gasket and stainless steel plates provide the necessary seal.

Ramp dimensions are optimized in order to guarantee drive and gangway free space, with the location of maneuvering cylinders and cleatings arrangements on the sides.

Stern ramps design may be with open

girder frame or closed box. Scantling is according to the Classification Society requirements according to the vessel loads specification.



## SIDE RAMPS



**N**avalimpianti Tecnimpianti side ramps are designed for loading and unloading vehicles and trucks when high degree of cargo access flexibility is requested. The correspondence to any ship dimensions and to the range of quay heights assures high operational efficiency.

Stern ramps may be of folding type, built in two sections with flaps, with open girder frame or closed box design.

Stowage and deployment are achieved by hydraulic cylinders and in closed position, the ramp is locked by hydraulic cleats to ensure watertightness.

Ramp dimensions are optimized in order to guarantee drive and gangway free space, with the location of maneuvering cylinders and cleatings arrangements on the sides.

Navalimpianti Tecnimpianti side ramps are designed and manufactured to meet Class society rules and requirements.



## QUARTER RAMPS



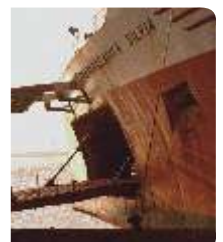
**N**avalimpianti Tecimpianti cargo access system committed to RoRo vessels is completed by quarter ramps that gives the benefit of embarking and disembarking with the ship docked alongside the quay, without needing dedicated shore facilities.

Navalimpianti Tecimpianti quarter ramps are designed in accordance to the ship dimensions and to any possible quay heights; therefore, they are manufactured for optimum operational efficiency.

Quarter ramps may be of folding type with open girder frame. Scantlings is according to the Classification Society requirements, on the basis of the vessel loads specification.

Stowage and deployment is usually achieved by wires and winches and the hydraulic cleating system guarantees the locking of the ramps in closed position.

When closed, the ramp acts as weathertight door.



## SHELL DOORS



**N**avalimpianti Tecimpianti offers a complete range of shell doors to fulfill the needs of loading and offloading passengers, crew, provisions and spares.

Doors are shaped according to the vessel's hull and are completely flushed in the metal surface. A supporting frame may be included in the door design for a simple "weld in" installation. In this case, the structure is tailored according to the strength requirements, deck thickness and framing dimensions. Door hinges may be positioned at each one of the four sides and a minimal space is required when the door is open. Frame and door may be pre-fabricated and pre-tested in the factory.

Successful operation is usually assured by an electro-hydraulic system: accessories, control stands and power packs may be supplied as separate items or integrated in the

supporting frame.

Navalimpianti Tecimpianti integrated design of structure, hydraulic and automation guarantees the maximum resistance during the operational life of the door, reducing maintenance problems.



## HOISTABLE & TILTABLE RAMPS



**N**avalimpianti Tecimpianti hoistable & tiltable ramps assure a great flexibility of vehicles transiting between two different deck levels. In addition, ramps may be raised or lowered while carrying trailers and cars, according to the specific load requirements.

The difference between the two ramps arrangement consists on the flaps and hinges position. Hoistable ramp has one side hinged to the ship structure and flaps at the other side; tiltable ramp features flaps and hinges at each end in order to allow loading and offloading in both directions along the ramp, according to the operational requirements.

Our standard structure design, with longitudinal reinforced beams and common transversal girders, meets Classification Society requirements, ship loads specification and sea-going conditions.

Ramps operation is assured by hydraulic cylinders and steel wires system.

In stowed position ramps are flush to upper deck, locked by hydraulic cleating system. Water and/or gas tightness may be ensured if requested.





## INTERNAL COVERS AND DOORS



**N**avalimpianti Tecimpianti internal facilities for RoRo vessels include covers and doors available in different arrangements to meet customer's applications.

Internal covers are designed to close fixed ramps opening and the structure configuration may be side or end hinged, depending on vehicles mobility and space arrangement inside the ship.

Side-hinged covers require transverse and vertical stowage area. Maneuvering cylinders are arranged under the cover on the hinged side. Structure may be built in one or two sections with open girder frame, completed by fire insulation if requested.

End-hinged covers are operated by two hydraulic cylinders, one at each side, with open girder structure built in one section with flaps at the end.

In any configuration, when closed, covers are flushed with the surrounding deck and assure the same load capacity. Watertightness

and/or gas-tightness may be provided. Navalimpianti Tecimpianti internal doors are the optimal solution to provide inside access to cars, trailers and people through different deck levels and ship compartments.

Doors may be of various sizes, according to specific requirements, side or top hinged. The structure is of open girder type and may be completed by fire insulation. When closed, the doors assure water and/or gas tightening.



## CAR DECKS



**N**avalimpianti Tecnimpianti car decks are designed for the vertical storage when not in use or, alternatively, for quick vertical adjustment, permitting the loading of cars and the arrangement of wheeled cargos of variable height.

In the design and manufacturing of car decks, Navalimpianti targets are low weight and system flexibility. For this purpose, two different lines of product have been developed: hoistable and folding type car decks. In both case, car decks may be completed by access ramps.

Car deck travel is performed by means of jigger winch that may be positioned inside the panels structure, under the fixed deck or at the ship side, and platforms are suspended by means of hangers, usually pre-stressed wire ropes. During the vertical movement, panels are guided into strong tracks in order to reduce the torsion stress on structures.

Each single car deck can be locked at different working level by means of

hydraulic locking devices and/or mechanical supports.

For fast ferries application light alloy may be used to reduce the structural weight.



## ELEVATORS



**N**avalimpianti elevators provide solution for transferring provisions, vehicles, pallets and forklifts between different deck levels when longitudinal spaces are limited.

Our Elevators are available in a wide variety of structural and functional configurations to meet customer's applications and may be equipped with

safety rails, acoustic and visual alarms, emergency stop. They may be operated by lifting jigger winch and sliding guides: plates and rollers assure motion also at sea conditions.

The locking system, hydraulically operated, is activated during the stopping at each deck.

For the sealing of the elevator trunks, horizontal hatch covers flush deck type or weather proof internal doors may be supplied.





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