The TTS Port and Material Handling division is an experienced supplier of services, systems and technologies that meet the exacting demands of ports, the shipbuilding industries and other market sectors ranging from cables and aerospace to paper and steel. Significant resources have been invested in research and development, facilitating the division’s most recent innovations in container and RoRo handling operations where focus on the economics of transportation by sea has been sharpened and the intermodal transportation of goods optimised. The expertise to challenge conventional in-port logistics is backed by TTS’ core experience of material handling equipment together with its acquisition of Liftec Oy in 2005.

Since the late 1960s TTS has been an international leader in the design, construction and installation of material handling equipment, shipyard production equipment and heavy load handling systems.

The depth and breadth of accumulated expertise is the result of working side-by-side with customers to develop realistic, affordable products and systems designed to protect their investment.
Shipyard production equipment

Based on experience and know-how gained through deliveries since 1977, the TTS team of creative engineers works in close communication with the customer to create the most cost-effective solutions for shipyards.

Engineers at TTS provide total support, from inception to completion, in the building or modernisation of shipyards. With knowledge of the entire shipbuilding process, TTS recognises the unique problems and challenges encountered during major or minor upgrades. New production technology pays off only when it is developed with a focus on ship design and the construction approach, material flow, productivity and capacity.

All TTS production lines for cutting, welding and the assembly of steel sections utilise efficient material handling systems in order to optimise the production processes.

First hand experience has been gained in many areas including:

- Production systems for cutting, welding and assembling steel sections
- Robotics and computer aided manufacturing (CIM)
- Logistics, material flow and workflow
- Consulting services
- Heavy load systems.

TTS is proud of its experience in the delivery of complex, tailor-made systems, many with consortium responsibility. Over 200 production systems have been supplied to 100 shipyards in 30 countries.
The fast and efficient transfer of cargo in standard containers between ships and land-based modes of transport is the goal of ports throughout the world. The key TTS innovation in this field is the implementation of the cassette as a ‘floating buffer’ between container cranes and the vehicles transporting the container to or from its road or rail carrier. Using this system, containers are disconnected from the equipment moving them, leaving the cranes to work without stopping.

Typical moving equipment comprises translifters (pictured bottom of page); Automatic Guided Vehicles or AGVs (pictured below right); or CP-Trains (pictured right) which shuttle the containers to dry ports. All moving equipment is designed and supplied by TTS. The same profitable concept of disconnection can also be utilised in other areas of the container terminal, for instance at the stacks or at the railway terminal.

The comprehensive range of TTS products and systems designed specifically for this market ensures cost-effective upgrading of any container terminal arrangement, regardless of magnitude or inter-modal complexity. From the installation of overseeing traffic management systems to the supply of heavy load handling vehicles such as straddle carriers, TTS is able to improve the efficiency of any type of container terminal from large transshipment hubs to local ‘gateway’ terminals and mixed RoRo/LoLo terminals.

The goal is to develop technology that substantially improves customers’ profitability and competitiveness.
RoRo terminal products

RoRo terminals can be served by both small RoRo vessels operating over short sea routes and larger multipurpose RoRos working the intercontinental routes. Customised ship to shore solutions are required to enhance the efficiency of these terminals where local tidal variations dictate the need for flexibility in design.

RoRo terminals differ from container terminals in that the cargo to be loaded/unloaded is able to move between ship and quay without the need for cranes or heavy lifting equipment. This, in itself, brings its own challenges to speed and efficiency as the space and time required by freely moving vehicles is less easily designated throughout the process than with the moving and stacking of containers.

Several systems have been developed by TTS to enhance profitability of RoRo ports and the ships serving them. For instance, the cassette and kerb system which is a cargo carrying, handling and securing system for unitised and break-bulk cargo shipped on RoRo vessels. Here, specially designed kerbs are mounted on the deck, providing a space-efficient and fully locking stowage facility.

The efficiency of passenger and traffic access to ships in port is another key TTS market where demand for smooth handling under all conditions sometimes requires linkspans which act as a bridge between ship and port to provide the access way for loading cargo.

TTS also designs and supplies automatic mooring systems which are sometimes used in this market, due to short harbour stops and high costs of personnel.

Ever-changing transport patterns are a constant challenge met by TTS design expertise in the RoRo terminal sector.
Heavy load products

A wide range of products and special projects have been developed by TTS for the handling of large units weighing from 500 tonnes to 25,000 tonnes. The handling equipment is mainly designed for the offshore sector and for shipyards.

Typical products include shiplifts, which give greater flexibility and capacity to repair and newbuilding yards; slipways and side launch systems for small and medium sized yards; rail transfer systems; and the fluid bed PWT system – a newly developed, fast moving and flexible ship or block handling system perfect for smaller ships and mega yachts, giving excellent access to the hull.

The multiwheel translider can be used to handle small ship sections and heavy components. In all TTS heavy load applications, cradles, trestles or pallets are used as load supporting carriers and enable the moving vehicle/trolley to be disconnected from the load.

The development of equipment to move loads weighing thousands of tonnes is backed by decades of experience.
Steel, aluminium and forest industry products

TTS is well known for its ability to analyse technical problems that call for a combination of engineering disciplines to be applied to material handling and manufacturing processes.

TTS offers a range of special applications to improve material flow and logistics. Backed by a commitment to total concept engineering, TTS works closely with leading process suppliers and has vast experience in solving material handling challenges in, for instance, cutting, welding, cleaning and painting applications. Work is carried out cooperatively to ensure that customers gain an integrated solution for processing and material handling, producing material flow that maximises efficiency and improves profitability.

The TTS strength is in developing new solutions, applying new technologies and implementing them successfully.
Bergen-headquartered TTS Marine ASA is a global enterprise that designs, develops and supplies ships’ and shipyard equipment.

Operations are organised into five business segments: Marine Cranes, Dry Cargo Handling, Port and Material Handling, Drilling Equipment and Deck Machinery. These are responsible for the design of a wide range of equipment including container terminal technology, cargo handling systems, cargo cranes, hose handling cranes, special loading handling, anchor and mooring winches, drilling packages and equipment, and cargo access equipment. The close, flexible working relationships within the group enable the deployment of complete project teams across a range of fields.

TTS Marine ASA has been listed on the Oslo Stock Exchange since 1995. About 1500 people are employed throughout the group.