Equipping the offshore industries worldwide

With its long tradition of engineering excellence and knowledge base of advanced technologies, TTS is a leading supplier of solutions for the offshore industries.

TTS is a global enterprise that designs, develops and supplies advanced equipment for offshore rigs and vessels. With a worldwide workforce of around 1450, TTS has over 40 years’ experience in the marine and offshore industries. The group has subsidiaries in Norway, Sweden, Finland, Germany, Italy, Czech Republic, Canada, USA, China, Korea, Vietnam and Singapore, and a worldwide network for service and aftersales.

Focusing on engineering and technology, the group’s activities primarily involve design, assembly and testing of equipment. Working closely with our customers, TTS offers intelligent solutions that increase profitability by improving productivity, quality and system capacity. The all-round expertise of the group provides a solid foundation on which to build, and the flexible working relationships within the organisation enable the assembly of complete project teams when expertise in a range of fields is required.

With a large customer base operating in the harsh environment of the North Sea, TTS has developed products known for their rugged construction, with functionality and safety as key factors. These products include:

- Offshore cranes
- Drilling packages and drilling equipment including Rack & Pinion (R & P) technology and mud system packages
- Offshore handling equipment
- Ships equipment

Training

TTS is focused on HES and preventative behaviour, and so offers training packages to cover its offshore products, within controlled environments using simulated operation. Both novice and experienced operators are therefore able to learn the workings of systems in safety.

TTS can also train operators to handle unexpected situations under these controlled conditions, thus reducing risk to personnel and operations.

The provision of standard, yet flexible designs has made TTS one of the leading suppliers of offshore equipment.
Offshore cranes

The quality of onboard cranes is vital in the efficient performance of an offshore vessel, ensuring trouble-free operation and reducing downtime.

TTS’ experience over many years has taught that lifting requirements are always specific to the vessel and its routing, and that proven, standardised solutions can be tailored to meet those exacting requirements.

The mission to find new ways of moving new and existing installations subsea, has challenged TTS to develop better and safer solutions. That is why TTS has rapidly become a chosen partner for safe load handling in rough and deep seas.

Typical applications for TTS offshore cranes are:
- DSV vessels
- Subsea construction and maintenance vessels
- PSV
- AHTS vessels
- Drill ships
- FPSO/FSO
- Research vessels
- Seismic vessels

The TTS delivery programme covers:
- Rescue boat davits
- Service cranes – box boom, knuckle boom and telescopic boom
- Rail mounted cranes for safe deck operations
- Offshore cargo cranes for floaters
- Ship-to-ship operation cranes
- Cranes for subsea operations
- Active as well as passive heave compensated offshore cranes

The challenge to develop better and safer solutions has made TTS a chosen partner for safe load handling in rough and in deep seas.
A broad range of winches for offshore vessels

TTS can supply complete winch packages to almost any kind of offshore vessel. 50 years of hands-on experience has contributed to our superior winch design and tailor-made solutions.

A comprehensive portfolio of winch systems and equipment is designed and supplied by TTS to meet the specialised requirements of all offshore vessels. Design expertise is founded on a wealth of experience from which TTS is able to develop and engineer advanced and reliable winch system technologies. All products are subject to extensive performance tests before leaving the factories, under the responsibility of experienced engineers. With expert staff across the world, TTS is committed to delivering cost-effective, safe and reliable systems to all its customers.

Anchor Handling/Towing winches (AHT)
TTS supplies large AHT winches to almost any size up to 600 tonnes. Delivered with dynamic braking, high torque and reliability TTS can ensure that your AHTS vessel is equipped with advanced winches designed to meet all AHTS requirements.

Offshore winch packages
Complete winch packages are available for almost any kind of offshore vessel. Windlass/mooring winches, tugger winches, capstans and storage winches are delivered either as standard versions or are tailor-made to customer specifications.

Active Heave Compensated winches (AHC)
A complete range of AHC winches is available in various sizes up to 400 tonnes, for subsea deployment up to 3000 meters water depth. Our AHC winches are designed for robust operation in any offshore environment. Precise load handling is critical when mating subsea units on the seabed, and precision becomes even more critical in rough seas or weather. The AHC system is therefore specially designed for load handling from a vessel or rig towards the seabed, as well as for underwater installations and other fixed targets on the seabed. These winches can be mounted either on cranes, on A-frames or on deck.

The following winch types are available to the offshore fleet:
- Anchor Handling/Towing winches
- Secondary winches
- Rope reels
- Storage winches
- Windlass/mooring winches
- Mooring winches
- Tugger winches
- Capstans
- Subsea winches with active heave compensation
- Anchor Handling/Towing winches (AHT)
- Secondary winches
- Storage winches
- Windlass/mooring winches
- Mooring winches
- Tugger winches
- Capstans
- Subsea winches with active heave compensation
- Active Heave Compensated winches (AHC)
Hangar side doors
The purpose of an offshore ROV (Remote Operated Vehicle) side door is mainly to deploy and retrieve subsea vehicles. The door must be designed to withstand operation in heavy seas and rough weather.
TTS designs and supplies the following external offshore doors:
- Side hinged type
- Top hinged type
- Bottom hinged type
- Sliding type
- Folding type
- Inward type
- Outward type
- Observation door/Platform
- Railing door
- Roller Gate door
- Mooring doors
- Winch doors

Hangar aft doors
Offshore vessels often have an enclosed hangar for the storage of equipment or for sheltering offshore operations. The rear deck is then accessed through a door in the aft end of the hangar. TTS offers many door configurations, the most important design principles being compact construction, light weight and operation within a limited free space either on deck or in the hangar.

Moon pool hatch covers
Offshore vessels are often built to comply with specific customer demands and TTS offers a variety of equipment configurations to help meet these needs

The engineering of moon pool hatch covers is based on general hatch cover design principles but with special attention to slamming forces and bottom sea pressure. Tailor-made solutions are available upon request, depending on ship design and purpose.
TTS designs and supplies the following moon pool hatch cover models:
- Foldable type
- Sliding type
- Sidehinged
- Lift away type

TTS develops technical solutions, both standardised and customised, that surpass the demands of quality and durability required by the industry.

External offshore doors
Offshore vessels are often built to comply with specific customer demands and are therefore tailor-made. TTS offers a range of equipment configurations to help meet individual requirements.
Drilling equipment

TTS is a supplier of intelligent rigs, high-performance drilling equipment and world-class control systems to the international energy industries. Our products are used to drill the most challenging wells around the globe.

Competence, drive and experience
TTS delivers advanced control systems, complete drilling packages and multifunctional rigs to the global oil and gas industries. Competence, drive and experience make us a strong supplier with a track record of unique solutions.

The implementation of advanced technologies demonstrates a commitment to developing next-generation products. Our automated drilling equipment allows an entire operation to be remote-controlled from the drilling control room, which results in a safer and more reliable operation.

Complete solutions offshore and onshore
Our products are built using solid technology, and the optimal balance of patented components and solutions combines to create complete drilling systems.

TTS control systems are acknowledged to be among the best in the market, and our patented Rack & Pinion system represents a major step forward in rig technology.

TTS experience offshore also lends a significant advantage when developing land rigs.

Drilling packages
TTS delivers drilling packages for semi-submersibles, jack-ups, platforms and landings. We work closely with drilling contractors and shipyards to develop the optimal drill floor layout, based on a unique product portfolio and a team of highly skilled engineers.

Drilling equipment is delivered together with controls and utilities in one package, ready for integration into any type of drilling operation.

The range of drilling equipment is continuously expanding to include:
- Drawworks
- Top drive systems
- Pipe handling systems
- Drill floor tools
- Driller’s cabins
- Control systems
- Mud systems
- BOP handling equipment
- Derrick/masts
- Hydraulic power units
- Rack & Pinion technology

Our high-performance drilling equipment is delivered together with controls and utilities in one package, ready for integration into any type of drilling operation.
Motion compensation system for helidecks

Increasing the weather window available for safe landing and take-off has a direct impact on the operational efficiency of many types of OSVs. Timely helicopter access to facilitate crew change is crucial for many offshore support vessels, and delays can represent a significant cost driver to the operator. TTS has therefore developed a unique motion compensation system for helidecks, solving some of the critical safety issues of landing a helicopter on moving helidecks offshore.

The Active Roll Compensation (ARC) system is the world’s first motion-compensated helicopter deck application. By combining well-proven technologies with a less-is-more approach, the system has been developed by TTS in close collaboration with experienced offshore helicopter pilots, vessel crew and regulatory bodies.

The first ARC-Helideck system was installed on the world’s most advanced seismic vessel, PGS’ Ramform Sovereign in 2008.

Purpose and benefits

- Reduced probability of incidents and accidents
- Helideck uptime – increasing the weather window available for safe helicopter landing and take-off from offshore vessels
- Improved landing conditions
- Reduced waiting time due to bad weather
- More efficient crew change and load transfer
- Increased vessel uptime
- Increased earnings

Collaborating closely with customers, we focus on identifying new areas where operational challenges can be met, applying our core competences of motion compensation technology, cybernetics, and concept development. Special applications or precise handling modes increase efficiency and safety, and are particularly beneficial for high-end offshore support and construction vessels with high day rates.

TTS uses development tools with excellent simulation features and makes extensive use of real-time system simulation throughout the development process. This allows experimentation with new systems and methods at low cost. Hardware-in-the-loop testing is used to verify optimal system functionality and performance before build-up. This ensures swift and trouble-free commissioning.

One of the successes of customer-driven development in new handling concepts is the 3 DOF heave, roll and pitch-compensated work deck. The platform is in regular use servicing offshore windmill fields both off Denmark and the UK. Here, maintenance costs have been reduced by up to 75% for certain operations following the introduction of the AHC work deck. Other examples are AHC gangways for transfer of offshore personnel, and a 110 tonne SWL heave-compensated work deck for offshore vessels.

Each day brings new demands, new technologies, and new complexities to drilling operations. That’s why TTS is working hard to offer services and solutions that can assist in achieving customers’ goals and improve daily operations.
TTS control systems

TTS has developed a series of state-of-the-art control centres to complement its offshore products. These range from small, one-seater cabins to large well construction centres housing multiple X-COM operators.

Combining advanced technologies with a world-class knowledge base in automation, TTS develops the control systems of the future.

TTS has unique engineering expertise in cybernetics, dynamic machine control, hydraulic and electric drive systems, and mechanical design. This combination enables the development of advanced, custom-made control system solutions. All applications run on a real-time operating system core, making them robust and reliable.

Throughout the development process, extensive use is made of real-time system simulation, including hardware-in-the-loop testing, to ensure system functionality before build-up. HIL testing and simulation also ensure swift commissioning. All TTS systems have remote access features for preventive maintenance and quick problem solving. Skilled professionals can therefore access, diagnose and perform maintenance tasks within the system directly from an onshore location.

TTS’ line of machinery control systems include drilling control systems for:
- Drawworks
- Top drives
- Pipe handling
- Drill floor tools
- Drillers’ cabins
- Mud systems
- BOP handling equipment
- Hydraulic power units
- Rack & Pinion systems

Marine control systems for:
- Cranes
- Active Heave Compensation
- Module handling
- Anchor Handling/Towing winches
- Winches
Norwegian-headquartered TTS Marine ASA is a global enterprise that designs, develops and supplies marine and offshore equipment. Operations are organised into five business divisions: Drilling, Deck Machinery, Marine Cranes, Dry Cargo Handling, and Port and Material Handling. The close, flexible working relationships within the group enable the deployment of complete project teams across a range of fields.

The divisions are responsible for the design of a wide range of equipment including drilling equipment, container terminal technology, cargo handling systems, cargo cranes, hose handling cranes, special load handling equipment, and anchor and mooring winches. Approximately 1450 people are employed throughout the group.

TTS Marine ASA was established in 1966 and has been listed on the Oslo Stock Exchange since 1995.