

Ship-Shore Links

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SmartPort



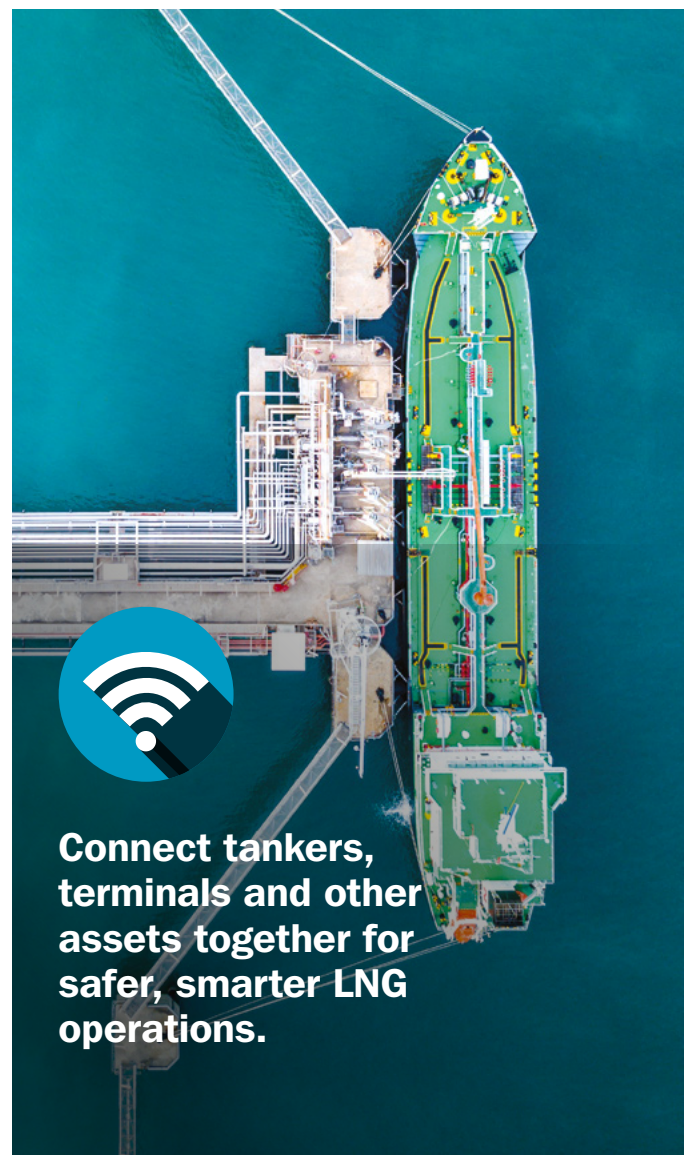
SMART SOLUTIONS FOR LNG TRANSFER

In the transfer of Liquefied Natural Gas (LNG), petrol and chemicals, downtime is at a premium and safety is paramount. It is critically important that operations are undertaken with comprehensive, consistent information made available to all parties.

The interface between terminal and vessel, or vessel and vessel, must be closely monitored and managed through compatible systems and common processes that are recognized and understood by personnel on both sides of the operation.

Smart solutions play a huge role in the LNG arena in ensuring accurate, instant and consistent data sharing between all involved parties.

SmartPort by Trelleborg is a technology platform that connects disparate, data-driven assets, giving stakeholders a holistic view of operators to power communications and decision making.



Connect tankers, terminals and other assets together for safer, smarter LNG operations.

SHIP-SHORE LINK

The Trelleborg LNGC Ship-Shore Link (SSL) system is one of a range of products that can be supplied standalone for existing tonnage or for integration with other key safety and monitoring systems. As the leading worldwide supplier of SSLs, Trelleborg solutions assure compatibility with existing systems and are future-proofed to allow interfaces for external systems.

KEY FEATURES

Easy operation:

Operator-friendly, high-resolution, color touchscreen display which can be cabinet- or console-mountable, with menu-driven graphic operation.

Adaptable hardware:

Available in a range of cabinets to suit installation conditions, with extreme climate hardware available, suitable for low temperature operations.

Data management:

Trelleborg's SSLs feature data logging functionality to allow for operational and event analysis and inform future strategy and scenario planning.

Fully supported:

A worldwide network of experienced technical agents and associates provides support, and ongoing technical training is offered to both customers' and associates' engineers worldwide.

TANGIBLE BENEFITS

Our newly designed integrated system provides the ultimate flexibility to today's evolving systems, while remaining compatible with the existing installed base, through:

- Emergency Shutdown Link (ESL), Universal Safety Link (USL) connections available
- Simple electronic reconfiguration to match respective terminal
- Enhanced diagnostics capability
- Micro-controller based main system
- Future-proofing to allow interfaces to external systems e.g. DCS
- Fiber optic, electric and pneumatic connections, which are totally independent to conform fully with ISO 28460
- The optional functionality required to connect to bunkering systems

EMERGENCY SHUTDOWN LINK

The transfer of hazardous liquids in a marine environment necessitates the use of linked Emergency Shutdown (ESD) systems. This has long been the case for the transfer of LNG and Liquefied Petroleum Gas (LPG). As well as having the primary purpose of stopping pumps and opening or closing valves automatically, visual and audible alarms should be raised by the ESD system.

Trelleborg's ESL is primarily aimed at LPG, oil and liquid chemical transfer operations. It supersedes and is an improvement on earlier pneumatic systems which are slower in operation addressing the OCIMF guidelines on ship shore links for product tankers and therefore less appropriate as an ESD solution.

KEY FEATURES

A flexible solution:

Suitable for ship-to-ship, ship-to-shore and shore-to-ship applications, and can be used in LPG, liquid chemical, oil transfer and some LNG fueling applications.

Fully compliant:

Suitable for use in hazardous area applications. Built on a simple design principle, it meets all relevant current industry requirements and recommendations.

Compatibility built in:

Backwards compatible with existing installed systems, the system is also compatible with Trelleborg's USL which is installed in many LNG applications.

Ship-to-ship functionality:

A key feature is that the ship's ESL systems incorporate the same electronics as the shore system, allowing direct ship-to-ship functionality not usually seen in other systems of this type.

TANGIBLE BENEFITS

Trelleborg's ESL represents a high-quality, best-in-class solution, providing reassurance to facility and vessel owners, and giving operators flexibility by:

- Enabling all systems to operate in master or slave mode
- Offering proven, worldwide compatibility
- Providing compatible shore-side and ship-side sections
- Connecting safe area control units to their respective ESD systems, to ensure the correct and safe shut down of equipment in the event of an emergency

UNIVERSAL SAFETY LINK

Trelleborg's ISO20159 compliant Universal Safety Link takes longstanding industry practice and recommendation in the large-scale sector and distils this same methodology specifically for small-scale.

With clean burning properties and lower operating costs for emission compliance, the marine transportation industry is turning to LNG as a fuel. The safe control and operation of small scale LNG transfers and fueling (also known as bunkering) pose special challenges requiring innovative technical solutions. LNG's deep cryogenic risk requires careful handling in large and small quantities.

KEY FEATURES

Consistent overview:

Allows a single operator to monitor and control both sides of the transfer process and ensure that measurements remain within safe criteria and shut down the process automatically and safely without risk of damaging surge pressures, should these criteria be exceeded.

Complete compliance:

Provides main and back-up safety link systems for LNG transfer as recommended by ISO 28460 and adherence to all hazardous area guidelines.

Empowers the interface:

Overcomes problems of inter-compatibility between LNG-fueled vessels and onshore LNG terminals, and is compatible with Trelleborg's LNG SSL systems via adaptor.

TANGIBLE BENEFITS

Trelleborg's USLs represent a secure, safe and highly compatible system that empowers the small-scale supply chain, through:

- A primary system with high integrity, secure digital transmission and robust signal path
- A common system architecture and interface
- Reducing workload and training costs
- Reducing workload on staff during the transfer operation
- An intrinsically safe ESD backup system
- Assured inter-compatibility of safety link systems throughout the small scale and fueling supply chain
- Future-proofed systems for new process data
- Assisting safety and monitoring of simultaneous fuel oil bunkering if required
- In-built system test and diagnostics

INTEGRATED ESDS & SSL SYSTEM

Trelleborg has been involved in the supply of SSLs since 1996 and is the leading supplier throughout the world, having received contracts for over 500 LNG Carriers, FSRUs and over 125 LNG / LPG Condensate Terminals.

The extensive knowledge and experience gained as a result of this significant reference list has led to the development of our combined Emergency Shut-Down System and Ship-Shore Link (ESDS and SSL) system - the most advanced in the market.

KEY FEATURES

Assured compatibility with existing systems:

Trelleborg's combined ESDS and SSL system can be supplied as a standalone system for existing tonnage or for integration with other key safety and monitoring systems.

Assured compatibility across locations:

The ESDS and SSL has been developed with proven worldwide compatibility.

Digital capability:

Communicates high speed voice, data or video across the link.

Improved functionality:

Improvements have been identified in installation, operation and maintenance when incorporating the functionality of the ESDS and SSL within a single enclosure. Diagnostics capability has been enhanced, as has operator feedback.

Full compliance:

Fiber optic, electric and pneumatic links are totally independent to conform to ISO 28460. The ESDS is designed to be IGC compliant covering ESD, TPS1, TPS2, GBSC and GLC.

TANGIBLE BENEFITS

Trelleborg's Integrated ESDS and SSL system assures worldwide compatibility, operational safety and reliability, all with the assured support of the pioneers of integrated ESDS and SSL systems.



**Collect information
and analyze data,
to increase operational
efficiency and
enhance decision
making in LNG.**



SmartPort by Trelleborg

SmartPort by Trelleborg powers the critical interface between ship and port, on land and at sea. Visit our website to access our case studies and white paper, plus the entire suite of SmartPort solutions.

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GET IN TOUCH:

Website | trelleborg.com/marineandinfrastructure

Email | marine_infra@trelleborg.com