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The GTT newsletter - OCTOBER 2014 - n°2

Message from the GTT CEO

Delivering more advanced technologies

In this issue of GTT Inside, we focus on some of the latest AIP's received from Class Societies for GTT technologies: REACH4™ (Refueling Equipment Arm CH4) bunker mast design received an AIP from BV; five Class approvals (ABS, BV, CCS, DNV and LR) were received for Multi-gas vessels using membrane technology conceived for the transport of multiple gases including ethane, ethylene, propane, butane, propylene and of course methane.

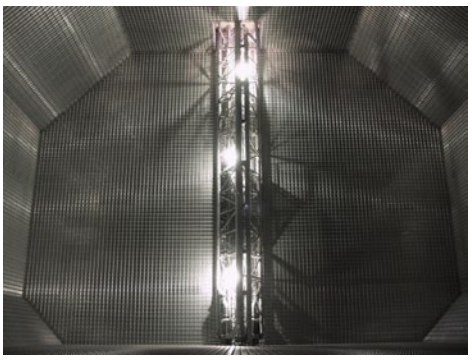
Finally, an AIP for a small scale, 4.000m³ bunker vessel from BV. GTT also signed a licensing agreement with Gabadi (Spain) who becomes our first licensed outfitter, which recognizes their ability to produce GTT membrane modules destined for LNG "clean" fuel tanks.

We hope you find the information in GTT Inside valuable.

Philippe Berterottière, Chairman & C.E.O.

NEWS / GTT charts the course for multi-gas vessels with membrane designs after receiving five AIPs

As a result of the shale gas revolution in the US, there is an abundant supply of ethane. In order to use this ethane, it must be transported. Consequently, interest in ethane as a cargo is on the rise, giving way to the need for dedicated vessels. The recently-placed orders for ethane exports have emerged and with them, the selection of containments systems for Very Large Ethane Carriers (VLECs) is underway.



The five AIPs (Approval in Principle) received from Class Societies (ABS, BV, CCS, DNV and LR) confirm that membrane technology is in a solid position among the current of containment systems, and is ideally adapted for the transport of all types of Liquid Gases.

GTT Membrane technology has long been a preferred choice in the LNG shipping market, and it is also a viable solution for use on Very Large Ethane Carriers. GTT has provided designs for sea transport of Ethylene and Liquefied Petroleum Gases (LPGs) since 1964, with carriers ranging from 1.100-120.000m³ (ex. Pythagore, Descartes, Annabella etc.). The GTT Cargo Containment System is supported by the hull-structure, providing a competitive advantage in terms of volumes to be transported. Membrane presents a flexible solution (adaptable to any cargo space available) and ethane's higher density, in its liquid state, is well within the membrane tank capabilities (some verification of insulation reinforcements may be required). In addition, GTT's systems provide cost advantages and additional safety features.

Clearly, membrane technology addresses the growing market needs. In addition, our existing CCS is not limited only to the transport of ethane and LNG, but is also applicable for other liquefied gases, such as ethylene, propane, butane and propylene.

The AIPs awarded to GTT's proven membrane technology demonstrate its ability to emerge as a safe and efficient means of transporting multiple types of cryogenic gases in their liquid state.

GTT has already received orders for several multi-gas carriers. ■

Focus

TECHNOLOGIES / SloShield™ update

Following the launch of SloShield™, LNG-cargo sloshing monitoring system, GTT and Cryovision have been working hard to allow customers to access this new performance-enhancing tool under the best possible conditions.

Cryovision can install in existing LNGCs while at sea, bringing the impact on the ship schedule to zero. The company also wants this technology to be easily available for ships under construction.

This is why GTT is starting discussions with shipyards so that new-builds are delivered "SloShield™-ready", with the most labour-intensive parts of the installation, like cabling, being integrated into the ship's construction process as a standard. Ship-owners could then have SloShield™ installed in a shorter time, at an even more competitive price, either at delivery or any time during the vessel's life. ■

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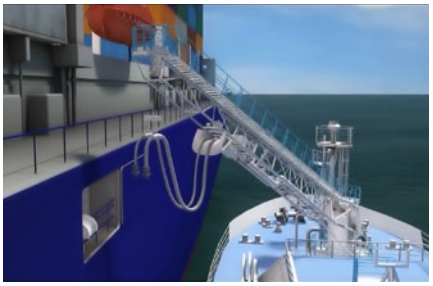
INNOVATION / GTT receives Approval In Principal (AIP) for REACH4™ LNG bunker mast from Bureau Veritas



GTT announced that it has received an AIP from Bureau Veritas for its innovative bunker mast design, REACH4™ (Refueling Equipment Arm, Methane [CH4]).

The use of LNG (Liquefied Natural Gas) as a fuel for all types of transport vessels is evolving, and with it comes the requirement for basic equipment to ensure safe and simple LNG bunkering.

GTT has drawn on years of experience with LNG to create a bunker mast system called REACH4™. It is designed to fit on the LNG bunker vessel, permitting a simple and safe transfer of LNG fuel to a client vessel. Developed by GTT engineers, this new system applies well-proven methods for conventional fuelling adapted to constraints specific to LNG. GTT's REACH4™ is well-suited to bunker most ships, whatever their bunker station arrangement.

With safety being of utmost importance, REACH4™ will be fitted with break-away couplings for safe and reliable emergency disconnect. A patented configuration prevents rapid disconnect and keeps the breakaway couplings in a fixed position on the mast to ensure a simple and safe deployment.

GTT is currently in discussions with numerous partners, both equipment manufacturers and end users, to ensure that the final design is adapted to the needs of the market as a whole. The system is already being integrated in bunker vessels designs. ■

LNG BUNKERING / New AIP from Bureau Veritas for GTT 4,000m³ bunker vessel design

In the current context of the progressive adoption of LNG as a fuel for commercial vessels, GTT is capitalizing on its long experience in LNG containment by developing solutions along the whole supply chain dedicated to ship bunkering with LNG.

After receiving the recent Approvals In Principle (AIP) from major classification societies for its design of a 2.200m³ bunker barge for the US market and of the REACH4™, bunker mast, GTT has received a new AIP from Bureau Veritas (BV) for its 4.000m³ LNG bunker vessel with an especially cost effective design.

Equipped with Mark III Flex membrane tank design and also fitted with a storage capacity of 1.000m³ MDO (Marine Diesel Oil) as additional bunker fuel for delivery, the 4.000m³ LNG bunker vessel has an improved compact design offering the highest degree of safety in operation. It is particularly adapted to perform well in congested areas such as channels and ports.

This new bunker ship will be able to refuel safely client vessels and will be equipped with the REACH4™ bunker mast to assure safe and efficient fuel transfer as well as appropriate BOG (Boil-Off Gas) management solutions. ■

Focus

LICENSES / GTT grants new outfitter license to Gabadi S.L.

On the occasion of SMM in Hamburg, GTT and Gabadi S.L. have signed a Technical Assistance and License Agreement (TALA), making Gabadi the first outfitter licensed by GTT.

GTT licensed outfitters can propose solutions to non-licensed shipyards for the integration and construction of GTT membrane containment systems in a vessel.

The outfitter, in close collaboration with GTT, will carry out material procurement and full installation of the GTT detailed tank design.

GTT intends to create a network of such outfitters in order to facilitate access for all yards to the GTT technology.

Gabadi received its outfitter's approval after successfully completing the qualification process including a dedicated training of its employees by GTT and after having demonstrated their ability to build tanks of all types of GTT membrane containment systems.

The Spanish outfitter will work on the construction of new ships, especially for small LNG carriers and LNG bunkering projects. Gabadi will be able to assemble GTT's membrane type Liquid Gas Containment Systems for shipyards, guaranteeing high quality work and rapid construction. ■

Save the dates

GTT will be at **COIFAIR, Beijing, 23-24 October 2014.**
Please come and visit us at **booth C17 & 18**

Seminars in **Pudong Shangri-La Hotel, Shanghai, China:**

- **25 November 2014: Small-scale LNGC and fuelled vessel Seminar**
- **26 November 2014: Joint CIECC - GTT Seminar about Onshore LNG Membrane Tanks**