

# PORT & SHIPPING TECH GREEN SHIPPING SUMMIT

Napoli, 28th September 2018



Gas and Heat | G&H Shipping

Bunkering solution and LNG supply chain:  
Best practices and lessons learned

Speaker: Sara Evangelisti



## GAS AND HEAT ACHIEVEMENTS

*36 years of continuous presence in supplying cargo plants for liquefied gas carriers...*

100

CARGO TANKS

35

CARGO HANDLING AND LIQUEFACTION PLANTS

47

SHIPS

200k

CUBIC METERS



## FOR OVER 60 YEARS, A CONTINUOUS EVOLUTION

Gas and Heat was established in 1996 as a result of the combined experience of Officine S. Marco established in 1948, well-known company active in fabrication and erection of boilers, tanks, piping, pressure vessels and large steel structures, and of the Marine Engineering Service (MES), a ship design company skilled in chemical and gas carriers.

The company designs and builds cargo plants for liquefied gas carriers. When required by the customer, the company is capable to offer the entire ship building.

The main production plant is located in Tombolo ( Pisa) along a canal, which allows the transport of large equipment and components to Livorno harbour.





## LNG IS THE FUTURE

Gas and Heat is strongly committed to serve the fast growing market of replacing traditional oil-based fuels in the marine transportation with LNG.

Small Scale LNG Carriers and Bunker Vessel, LNG fuel systems for LNG fuelled vessels and Small Scale LNG Storage Plants are the sectors which mark the company's present and future focus pursuing on customer-centricity and industry-leading quality.



## OUR KNOW HOW TO SERVE THE LNG SECTOR

Using modern technology and our experience about marine transport of LNG, the company proposes its own products in this specific sector, offering to potential customers three different type of systems:

- Containment and fuel systems for LNG used as fuel in vessels
- LNG carrier and bunker vessel
- Small scale LNG storage plant (1000-10.000 cbm)





# LNG 4 *speed*

The real bunkering solution. **Now.**

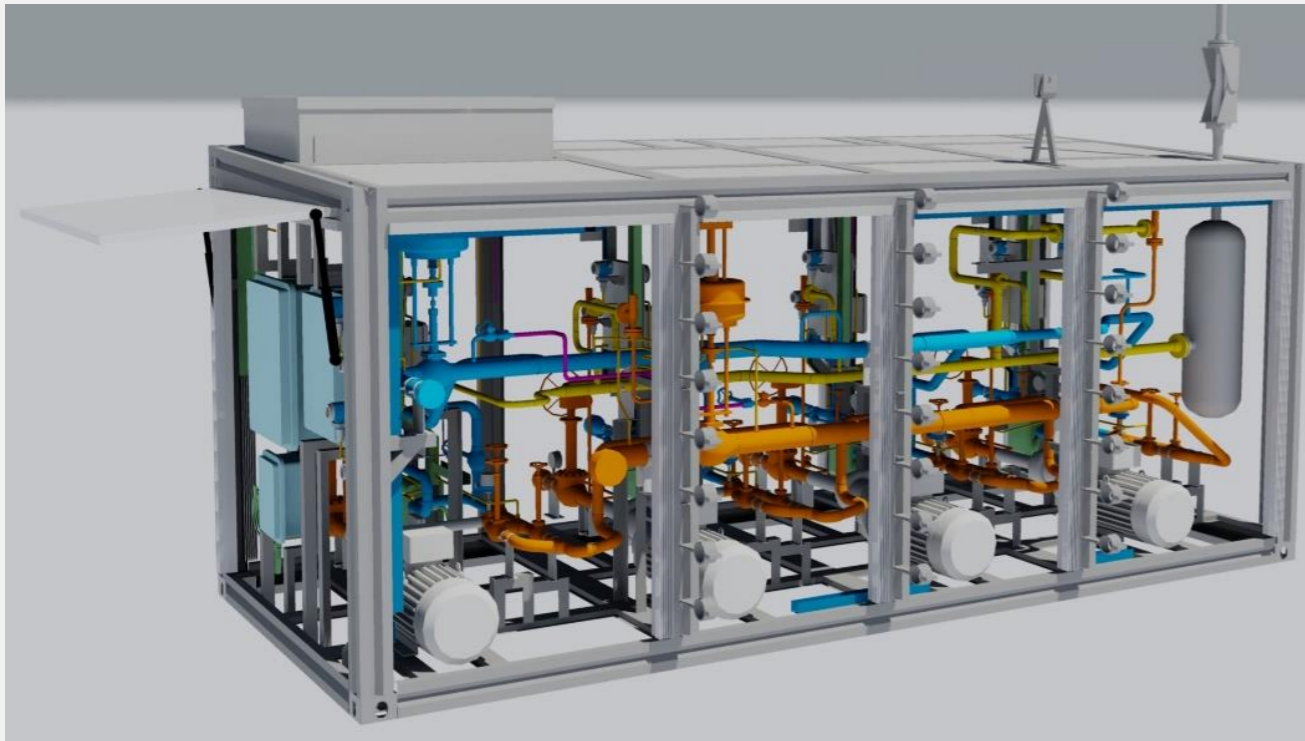


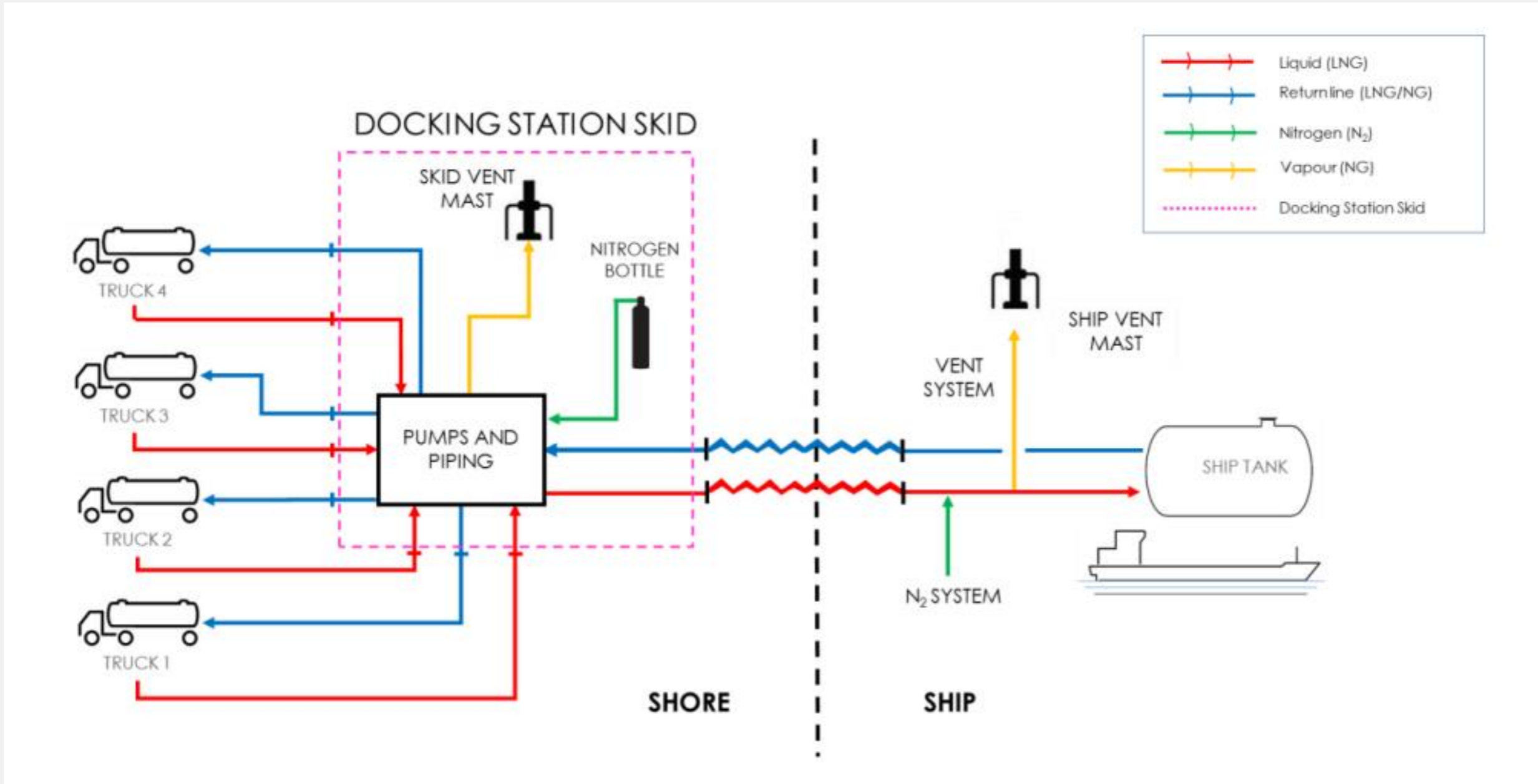
Patented bunkering skid, able to reduce by 4 times the ship bunkering time from trucks.

The LNG 4 speed is a Docking Station Skid (DSS) expressly designed to speed up the truck to ship bunkering of 600 cbm of LNG to a 15000 DWT LNG fueled Chemical Tanker.

Four DSS's have been delivered as the owner required each vessel equipped with her own DSS. The 4 ships operate in Canada and USA.

The skid is locked on board when the ship is in transit and discharged on shore for bunkering whichever port the ship is called at.





First LNG4Speed docking skid Commissioning.  
Turkey – December 2017







### OPERATIONAL TEAM

ROLE		N°	DESCRIPTION
Truck driver	TD	4	Not directly involved in the DSS operations but responsible for each truck task.
Bunkering supervisor (Person In Charge)	BS	1	Supervise and coordinates the bunkering operation, from DSS side and shall be present near the skid for all bunkering duration
Helper	H	1	In assistance to BS at DSS
Chief Engineer	CE	1	Involved during the bunkering phase, monitoring the whole operation from the HMI in ECR.
Manifold watcher	MW	2	To be positioned close to the bunkering station, able to communicate with the PIC, monitoring the manifold, hose(s), hose support(s) and connector(s)

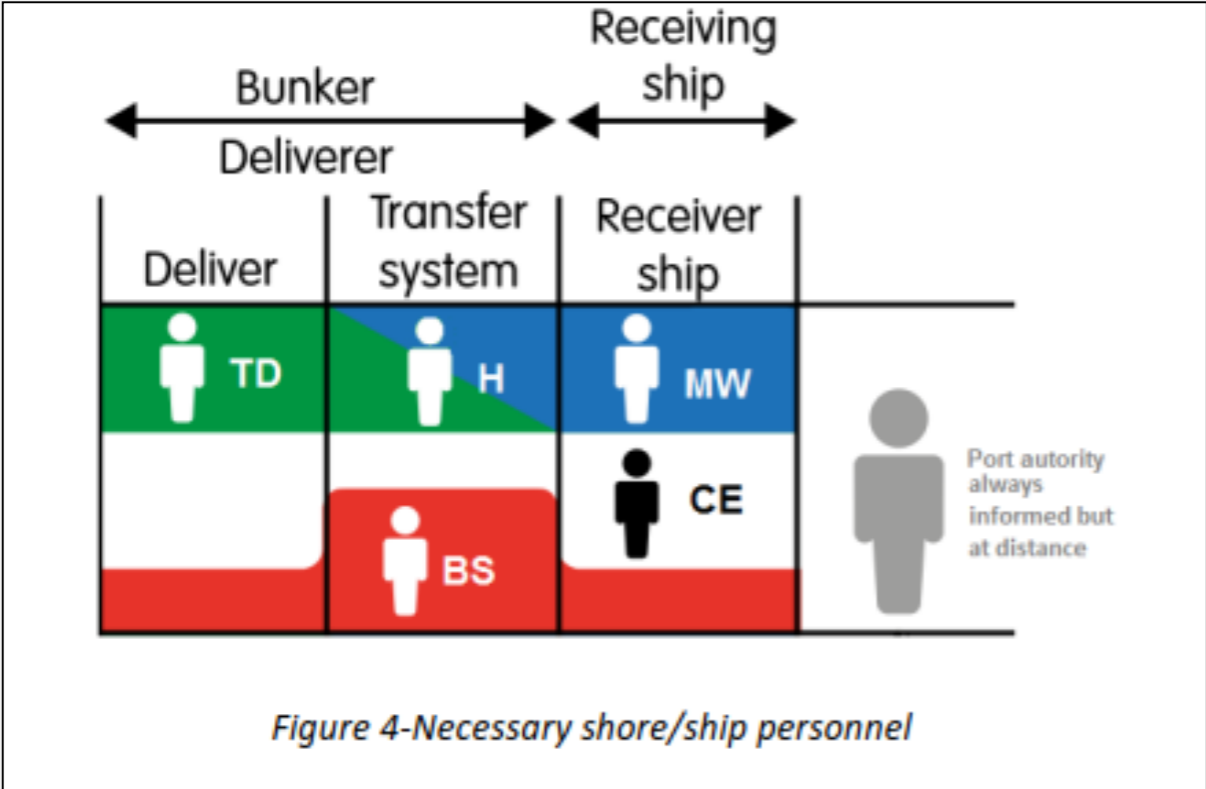
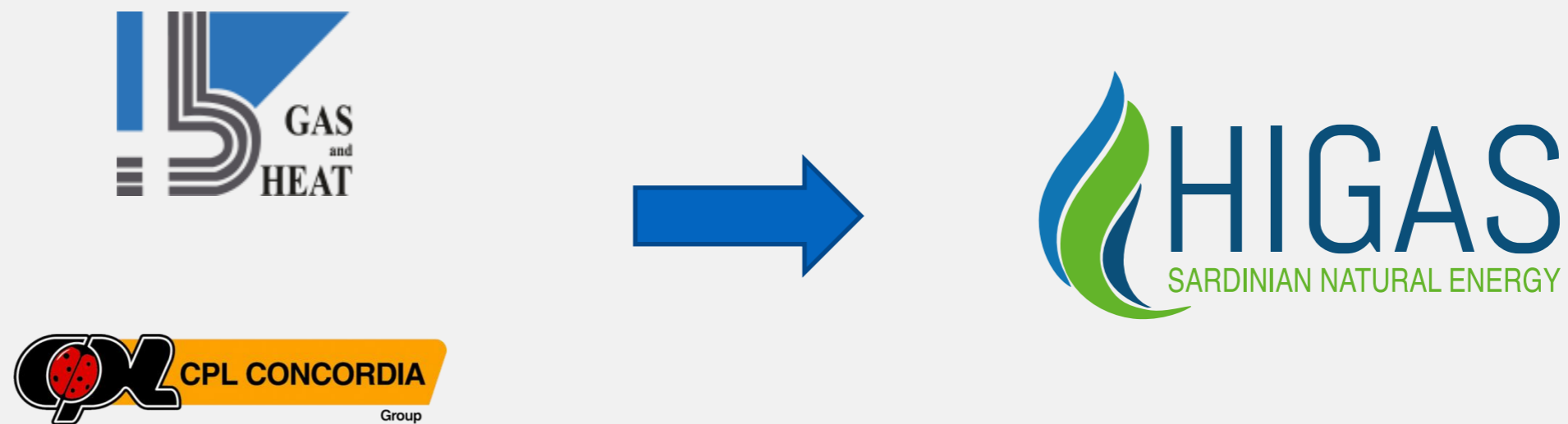


Figure 4-Necessary shore/ship personnel

A qualified and trained team is essential to safely and efficiently operate the Docking skid throughout all bunkering steps.

It is recommended that the bunkering operation should be under the coordination of one Person in charge (PIC) should be suitably trained and qualified to fulfill the role.

In 2014, Gas and Heat and CPL Concordia established Higas, a Joint S.V.P. aiming to the construction of a Small Scale Storage Terminal in Sardinia, suitable to receive, store and supply LNG/NG to the inland users.



In July 2015, Stolt-Nielsen LNG Holdings Ltd. acquired a 10% stake in HIGAS with the option to increase this percentage. Moreover Stolt would procure a ship/ships to supply LNG transportation to the Sardinia terminal.



Work in Progress





- LIQUEFIED NATURAL GAS CARRIER / BUNKERING VESSEL
- Type C tanks, IMO TYPE 2G, DUAL FUEL, Tot. Cargo capacity - 7,500 m<sup>3</sup>
- Loa - 118.00 m; B 18.60 m; Depth 9.20 m
- Depth to canopy deck Abt. 14.10 m
- Draft mld., design / scantling Abt. 5.65
- Speed 13.5 knts
- DNVGL First Class, RINA dual Class
- Malta Flag

Higas Terminal + Stolt Nielsen Bunkering vessel =  
The only complete supply chain of LNG distribution to Sardinia



**Sardinia: The only place in the Mediterranean area where the LNG small scale  
can sustainably start**

## LESSONS LEARNED

- Not only design, but design and construction by the same people: time saving, optimization, design for manufacturing.
- Gas and Heat philosophy to small scale: smart and engineered solutions developed on purpose, to generate the most cost-competitive and sustainable system, increasing the efficiency to eliminate unnecessary costs and complexities.
- Holistic approach: to consider the whole supply chain, from market analysis to detailed design. Experience from G&H Shipping, shipowner company owned by Gas and Heat.



*Thanks for your attention.*

Gas and Heat | G&H Shipping

[www.gasandheat.it](http://www.gasandheat.it)

