

## **GHENOVA INGENIERÍA HAS DESIGNED FOR THE GALICIAN GOVERNMENT AND REGANOSA A SHIP THAT WILL PROVIDE LIQUIFIED NATURAL GAS IN THE IBERIAN ATLANTIC COAST**

The galician government and Reganosa has received from Ghenova Ingeniería the design of a ship that will provide liquified natural gas (LNG) able to transport 10.000 cubic meters of this fuel. The project is a part of different studies and works that are been developed to create the Iberian northwest LNG Hub and facilitate the implantation of LNG as a maritime fuel, in line with the european directive for the development of alternative fuel.

The Boston Consulting Group estimates that in 2025 the consumption of maritime LNG is supposed to be of 89 million tonne. In consequence, it will be register a very important growth in demand. In Spain there are fifteen civil ships in construction, seven are remolcadores tugs, two ferris and two cables that will move with LNG. There are 73 units of liquefied natural gas powered fleet in operation in the entire world, adding 80 that are in construction confirmed until 2022.

To be able to attend in a flexible and efficient way the needs of the ships that will be fill with LNG, is important to complete the supply chain. For this, the galician government, in collaboration with Reganosa, assigned the design of the supply ship, which its intended to serve in the Iberian Atlantic coast.

The ship's design fulfills a fundamental mission in the logistics chain, provide versatility to serve the greatest number of potential plaintiffs. It should be noted that in the northwestern Atlantic coast of the Iberian Peninsula, as many other european coasts, there is only one LNG importation terminal, in Galicia's case is in the Ferrol's port and is property of Reganosa.

The galician government and Reganosa's proposal means developing a necessary logistic supply chain of LNG and establish a hub from which to serve the greatest number of final (end) consumers, can be both intermediate storage terminals located in other ports or ships using LNG as fuel, allowing supplies in operation.

LNG as fuel is demonstrating to be the solution adopted by most shipowners when hiring new constructions operating in the SECA zones, those where there is a restriction of emissions of greenhouse gases to the atmosphere. As a result the supply of LNG from ship to ship will be a logical solution and highly demanded by the market. Also, to ensure the supply staging points or small terminals it will be crucial to ensure the supply chain.

The design ship has 119.35 meters long and 20.5 wide, with fifteen crew members. It can carry 10,000 m<sup>3</sup> of LNG, but with only 5,000 tonnes of death weight. It has been designed to allow operations on their own in adverse conditions and with the capacity to navigate uninterrupted to the ports of the northern Europe.

From the operational point of view, setting bombs and the means arranged for the liquefied natural gas transference guarantee the ship a wide range of flow rates that allow servicing a large number of different sizes of vessels, which is almost bound by disparity of potential recipients of LNG as fuel. It has been equipped with all the necessary systems to provide both terrestrial terminals and ships on route, with different connection points on both sides and through flexible hoses operated with a crane.

On the ship's design has collaborated with Ghenova Ingeniería specialized firms with an European reference level, such as the French technologist GTT, which has participated in the definition of system storage and transference. It has achieved a storage solution based on GTT Mark III Flex tanks, which allows a significant reduction on weight and size of the ship compared with other systems of the cargo, improving the energy efficiency of the ship and, consequently, reducing the emissions. For dimensions and capacities, it's about a vessel reference in the use of this technology for LNG supply.

In line with the quest for the most effective configuration from an environmental perspective, the ship has a design with a generating gas / diesel-electric system with azimuth thrusters, which provides the following benefits:

- High energy efficiency.** The engine generators selected operate at its optimal regime with a management system of the LNG vaporization that allows its use as fuel.
- Operational Versatility.** Possibility to use in require situations diesel as fuel ensuring the possibility of refueling at any port and relevant maintenance tasks.
- Maximum maneuverability.** Azimuth thrusters used in the design and the use of bow thruster, give the ship a high maneuverability, not requiring external assistance in the operation and provide it with dynamic positioning capability.

Seeking for a greater energy efficiency, the ship has an innovative design in its forms, which has helped the Vicus DT company, for which we have simulated different operating modes using numerical analysis techniques of hydrodynamic behavior (CFD).

During the past two years, in Galicia has been developed a study to create a LNG hub in the Northwest, work in which has cooperated the galician government, the University of Santiago, the Port's Authority of Ferrol-San Cibrao, Navantia and Reganosa. This initiative was possible thanks to the support of the European Commission, through the Ten-T Program. This European support has been reinforced in another line of research that has also an important galician role. It's about a project for the LNG development as fuel CORE LNGas hive, enrolled in the CEF Program. This initiative has a 33,3 billion euros budget, of which the European Commission finances 50%. Local participation is through the regional government, Reganosa, the three universities and the port's authorities of Galicia.

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