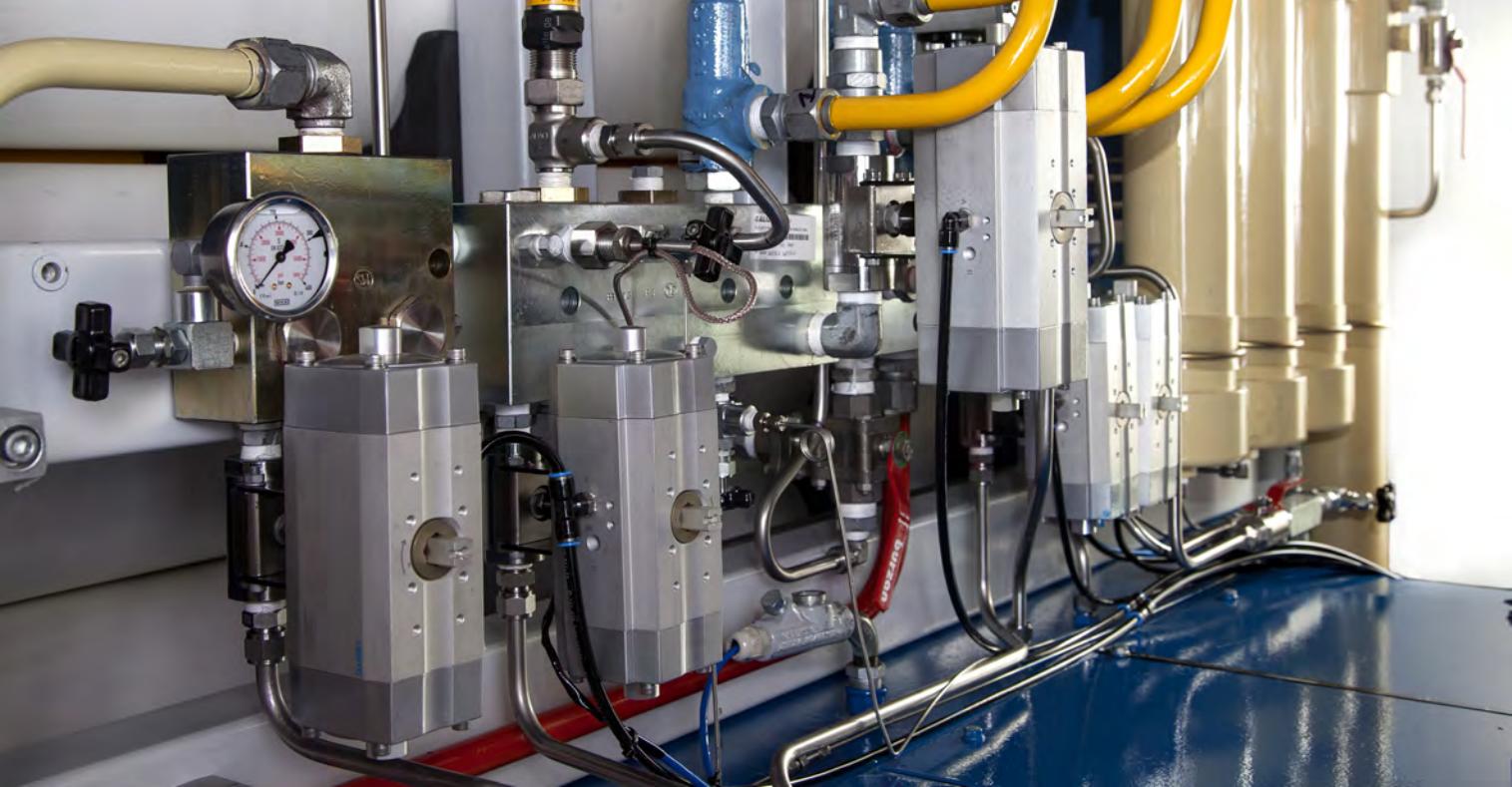


# CRYOBOX•

Interview

The Cryobox technology will change the LNG paradigm

**GALILEO**



® **INTERVIEW**

Exclusive interview with GNC Galileo's CEO

# "The Cryobox technology will change the LNG paradigm"

Immediately after the launch of this Nano LNG-Station, Osvaldo del Campo reviews the details of its operation and why it will break new ground in the market. Among its features, it offers a cost-effective solution, with an adjustable LNG production capacity, which can reach up to 12 tons per day (7,000 gpd – gallons per day). It also produces CNG. This solution will allow the South America-based Buquebus to be the first sea transportation company to become its own fuel supplier. In this article you will learn about the applications it offers as well as the markets it is ideal for.

## What are the main projects that Galileo is currently running?

We always have an agenda busy with cutting-edge technology. We are engaged in both operational and technological projects. Regarding the latter, the most relevant issue is the launch of our Cryobox® product, which is unique in the world: the first industrial-scale nano station available for LNG production. We understand that LNG is an alternative fuel that is being increasingly adopted as a CNG complement in many applications, for long-distance road / maritime transport, or virtual gas pipeline transport. Within this context, we are

introducing this product line and extending our LNG portfolio, pushing the boundaries forward of both –Virtual Pipeline® and natural gas for vehicle applications.

## What are the countries with the greatest potential for natural gas use?

Currently, this fuel has ideal conditions to become popular everywhere. In fact, there is an ideal framework of conditions in terms of prices and sustainability, and their own evolution over time forecasts a promising future for natural gas. Depending on their geographical features, some countries will turn to LNG or CNG,

or both. There are countries that receive all their natural gas -or most of it- via LNG, such as Spain, where a Cryobox® to produce LNG may not be required because they have it at the port. But we understand that North America and Central Europe, where consumption mostly takes place away from the coast, will become a very significant niche market for this type of product.



Osvaldo del Campo



#### What are the prospects for Cryobox®?

The launch of this product has caused much excitement within the media. There is a great number of people showing interest, many of them already in a preliminary stage of enquiry and others in more advanced stages. The truth is, Cryobox® opens a very important path since the investment costs decrease significantly, mainly because it allows for scalability business. Cryobox® makes investments grow as the project develops and in a very short period of time.

In contrast, the other available technologies confine themselves to extremely ambitious and rigid plans, which oblige decision-makers to make predictions about the size of their business for 5, 7 or 10 years from then on, which hinders planning and achievement of goals. This naturally involves a high-risk component for those leading the business.

On the other hand, Cryobox® minimizes this hazard as it is a medium-size unit whose demand can be quickly saturated and when that happens, a second unit can be added and so on and so forth. The most important issue is that the investment cost of all this, per unit of gas produced, is still cheaper than other large-scale technologies. This will completely change the LNG paradigm, which will ensure a completely different scheme.

#### How does the installation process work?

In spite of featuring some different components, Cryobox® shares the same platform and logic as our Gigabox® and Microbox® product lines. This allows for the use of the same installation platform for both electric and stand-alone natural gas-powered versions.

Unlike CNG, LNG projects are conditioned by the gas compositions available in each location. To offer a solution to this problem we have developed an entire line of modular treatment plants, which makes it possible to pre-condition this gas for the Cryobox® to liquefy it, thus offering an integral solution.

#### What characteristics does this product offer in terms of versatility?

We should highlight the dual nature of LNG stations: both CNG and LNG can be produced at the same time in the same unit. The other key factor is the modular concept, a feature of Galileo's entire product line. From the customer's perspective, as the business grows, modules can be added accordingly, multiplying the investment as the demand increases. This is essential for new projects where a market is emerging and the business size is difficult to predict.

#### Could you please describe this dual production process?

CNG is produced before the production of LNG. When these units are installed, a large LNG tank is required, which accumulates the volume that the unit produces. If there is CNG demand, the unit uses natural gas for CNG production. If not, it produces LNG and stores it in a tank. It is noteworthy that current L-CNG stations or dual stations start from a pretty absurd point, which is producing LNG and then getting CNG from vaporization. We simplify things and produce CNG or LNG based on demand.

#### What kind of applications do you think the Cryobox® technology will be ordered for?

We imagine fleets, stations on motorways offering both CNG and LNG, major stations producing LNG for small-scale distribution using Virtual Pipeline® systems for other stations and industries. We also imagine the fueling of specific facilities, such as vessels or fishing ships. This offers a highly competitive tool. For example, in Argentina, the cost of transportation is one of the essential factors of the market products to bear in mind. The fact that ships can operate on LNG radically changes the cost structure of industries dramatically.

## What does Cryobox® offer to the market?

It is a new product, the result of years' research and development. This product integrates virtually everything that we had available, we are proud to contribute the market with a new technology that has been fully tested. We are very optimistic and feel confident about the impact of this technology. This launch positions us in a most positive way as we have a product that no one else can offer.

## What fuel volume will Buquebus nano stations produce?

**Editor's note:** This company will have seven Cryobox® nano stations for LNG production, both developed and patented by Galileo. This technology will feed with LNG the turbines of the "Francisco", the world's first high speed passenger RO-RO ship, which will daily cross the Río de la Plata between Argentina and Uruguay.

They will produce the equivalent of 100,000-110,000 cubic meters of LNG per day, which will allow the ship to cover all the routes scheduled for one day. Although this is a state-of-the-art vessel in terms of energy efficiency and speed, it requires large volumes of fuel. It is a huge ship powered by two turbines and it is faster than any other in the Rio de la Plata, and has a cost-efficient and sustainable operation.

The liquefaction plant we are installing for Buquebus is not located in the Buenos Aires neighborhood of Puerto Madero (from where the ships departure) due to the limited space. The plant is far from the port so natural gas will be carried on trucks. Then, the trucks directly join the ship just as in diesel filling procedure.



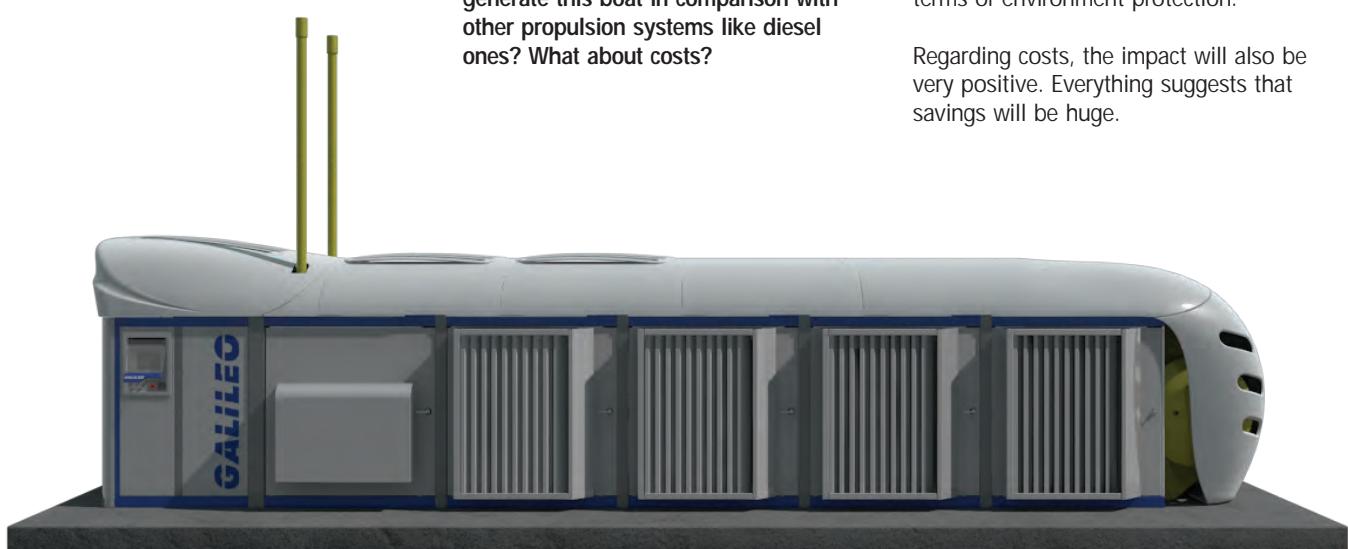
It is a large plant and we are using seven Cryobox® units with large-scale storage tanks which make possible a large number of days in terms of driving range. We believe that the project will be fully operational by the end of the year.

**What is the emission savings that will generate this boat in comparison with other propulsion systems like diesel ones? What about costs?**

We have not yet quantified it but it is very significant. We all know the benefits of natural gas as a fuel and its minimum impact on the environment.

In addition, it will be burned in an efficient turbine, which makes the process the purest. It causes no black smoke or particles. All this generates advantage in terms of environment protection.

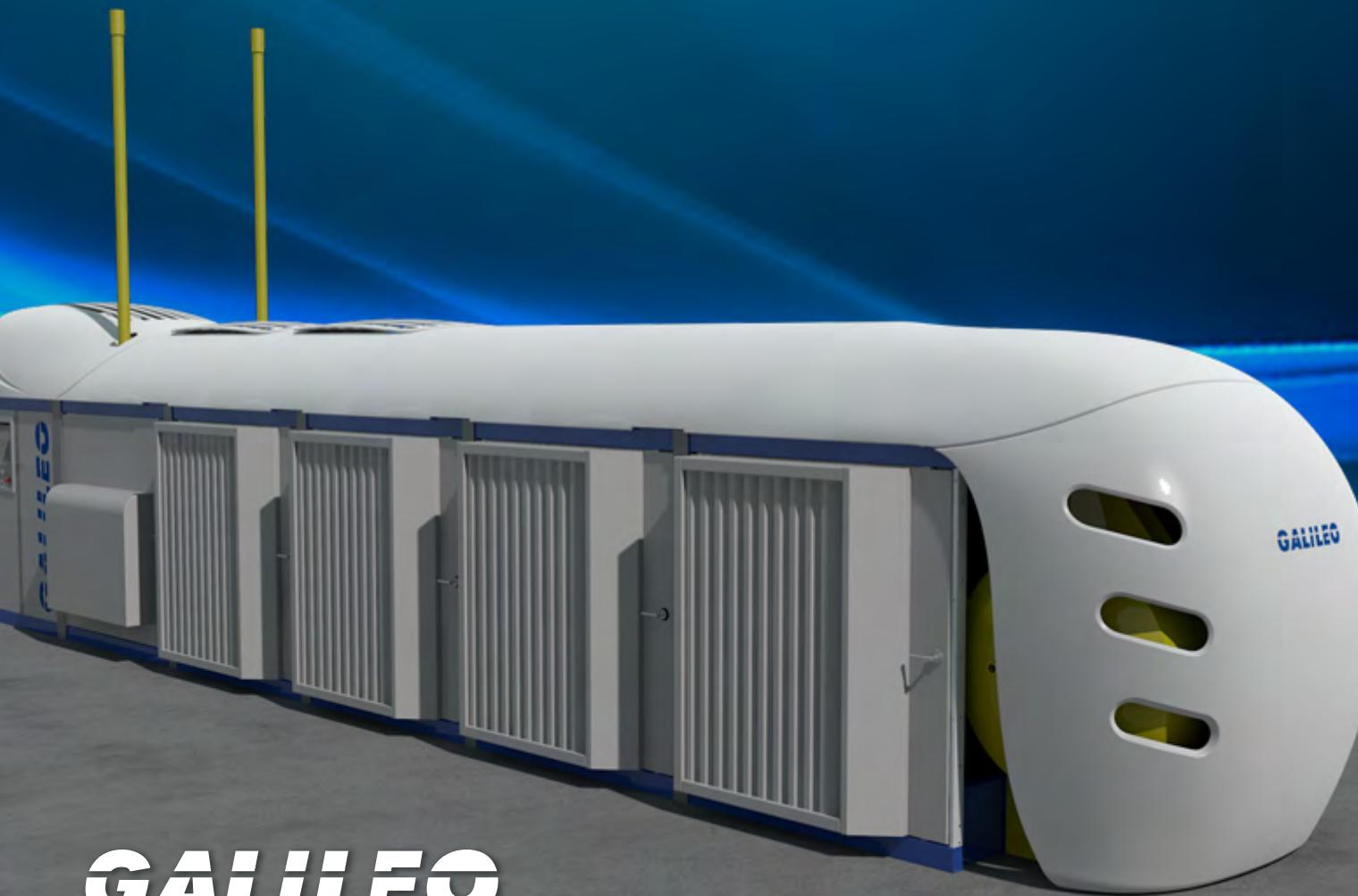
Regarding costs, the impact will also be very positive. Everything suggests that savings will be huge.



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