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“UNCONVENTIONAL GAS NEEDS UNCONVENTIONAL SOLUTIONS”

Osvaldo Del Campo - CEO of Galileo Technologies



Osvaldo Del Campo, Galileo's CEO, mentioned strong growth expectations in the domestic market

“Unconventional gas needs unconventional solutions.”

Galileo has a set of technological solutions that allows conventional natural gas wells out of operations to be developed with unconventional processes.

“For the last 25 years our company has developed a set of innovative technologies causing a revolution in the different fields we operate. Galileo is a company that grew looking outwards. It is a company whose core business developed in the 65 countries we currently operate. In different fields, CNG was our first field, but later on we escalated the natural gas chain value”, explains Osvaldo del Campo, Galileo's CEO, in his interview with *Energía & Negocios* magazine.

- Vaca Muerta formation needs new technologies to develop. Which products can Galileo offer to satisfy that growing demand?

We have created a set of technological solutions to develop unconventional natural gas. We understand that unconventional natural gas operations need unconventional processes. And this range of technological options would also allow us to develop conventional natural gas wells out of operations through unconventional processes.

Argentina is a country with a great amount of natural gas wells out of operation because they are unprofitable under conventional processes. With this technological set we developed we can make natural gas enter the system. We can also recover the production levels of mature and depleted wells.

- How is this set of technological solutions integrated?

This technological set is currently integrated by four different solutions. The first solution is our wellhead compressors which have been developed in our country for the last five years. They allow us to start or increase production (sometimes doubling and tripling production) in mature and depleted wells.

This increase in production includes both gas and liquids. These wellhead compressors are 100% Argentine technology, just like all the technology developed and exported by Galileo. Today we changed our way of looking ahead and turned our views towards Neuquen province. This technology allows us to cause a great impact on oil companies increasing their current production levels. The main oil companies in the country, such as YPF, PAE and Total, are using our technology to increase their natural gas production. This applies to those wells that are part of the system but have depleted.

We see a great backlog of investments in natural gas production in Argentina. If we want to replace LNG supply of natural gas with national production, then we should add several HP to the system, maybe hundreds of thousands of HP. We developed a module technology to accelerate and simplify the implementation of the second level of compression: the gas gathering plants. And with 100% Argentine and module technology. This way, we significantly decreased the building costs of these plants in different oil companies.

Currently, there are many wells that are disconnected, either definitely or temporary. On the one hand, some wells are not connected to the system, and hence left behind, since they lack the necessary volume to justify the construction of a pipeline. On the other hand, the venting of natural gas is authorized during the drilling of certain wells, causing a great waste of gas that could be otherwise captured.



Osvaldo Del Campo

This is the reason why fifteen years ago we developed, in our country, a solution we called Virtual Pipeline. This solution allows the natural gas to be captured from the well and transported by truck to a processing plant, to the system injection point or to a customer.

Nowadays, we can operate wells that had been abandoned or in exploratory phase. Natural gas is compressed at the wellhead under great pressure. It is then kept within transportation modules and finally shipped. This technology is already been implemented in the country and oil companies regard it as a very interesting solution. This allows the recovery of many cubic meters of natural gas which currently remain out of the system.

But the Virtual Pipeline technology, which is based on CNG, has cost-related distance limitations. That is why we –in fact, the only company worldwide– developed what we call “liquefied natural gas” on a small scale. The technology that fuels Buquebus’ Papa Francisco ferryboat was developed in our country and we export it. It allows natural gas to be liquefied straight from the wellhead. We process, prepare the gas for liquefaction, proceed to liquefy it

and finally transfer it to a cryogenic truck that transports the final product at the same cost as any liquid fuel. This system generates a liquid fuel that replaces any of the existing fuels in a simple way with a tested technology. This technology is changing the gas industry paradigm. And this change of paradigm will allow natural gas to go directly from the source field to the consumer through an alternative technology.

- Which are the market niches you found to introduce liquefied natural gas on a small scale?

Argentina is standing in front of one of the world's largest proven reserves of natural gas. The first we need to do is consume that gas. That is to say that the use of natural gas should increase the current share in the energetic matrix from 40% to 60-70%. The current pipeline system faces great limitations. What was not connected to a pipeline was not eligible from a profitable perspective. Great investments were carried out in our country; however, half of the population has no natural gas supply at home. 100% of the means of transport are propelled by liquid fuels. The experience we had with CNG can be repeated in LNG and in these new technologies. This new paradigm -this new fuel which is easily transported in the country, could generate a great impact on the economy. Cheap energy finds its way and Vaca Muerta's natural gas reserves will become a cheap energy. The distributed generation plants currently propelled by diesel could shift to gas and start production with this new energy. Freight services could consume LNG, extending the agricultural frontier by 300 km and changing the economic matrix of several provinces.

With this technological set we are trying to impose this new concept.

Through the years we have

developed technologies for the whole value chain favoring the use of this gas. This technology we have been exporting worldwide is finally available for us and the market accepted it really quickly.

Today, Argentina produces LNG on a small scale for Buquebus, the first project. But in a few months' time we will launch the first wellhead LNG production process over Neuquen area. That LNG will be available for consumption at half the price of diesel.

These technologies are finally being captured and will become an unconventional alternative to natural gas production and trade. It is not a matter of defining shale and tight gas as unconventional natural gas. We believe that the concept of “unconventional” should reach unconventional, non-traditional production methods.

Currently, we implement wellhead compressors in most of the oil companies, which is a quick solution to increase production. It does not incorporate new reserves. This technology is expanding rapidly, adding to the system many natural gas cubic meters.

- Does Galileo sell this technology only or does it offer the service, as well?

Our group of companies is composed by pure technology firms and service firms integrated in our technological platform. Some oil companies prefer to buy our technology and some others, to buy the service. We can offer wellhead compression, natural gas transportation or liquefaction services. We cover both areas because we understand the market requires so.

- How much do new technologies impact on Galileo's business model?

Galileo has four technological business units. First, our traditional business: CNG stations. Second, the Virtual Pipeline, which transports natural gas. This product was originally conceived to reach what we call “the last mile”. Our first project in the world was implemented in the South of Cordoba province. Every town in Southern Cordoba has been propelled by natural gas for the last thirteen years



El gas es argentino, la tecnología también.

Los argentinos tenemos importantes reservas de gas y ahora también la tecnología para extraerlo y llevarlo a cada consumidor. En Galileo contamos con más de 30 años de experiencia en el diseño y fabricación de equipos de compresión, transporte, tratamiento y regulación de gas. Y, con ella, estamos sustituyendo importaciones y contribuyendo con la independencia energética del país.

Para mayor información, llámenos al +54 11 4712-8000 o siganos en www.galileoar.com

Compresores Wellhead Galileo MX200®, Loma de la Lata, Provincia de Neuquén, Argentina.

GALILEO
Technologies

through our Virtual Pipeline.

Later on we understood this same technology allowed us to connect remote industries or CNG stations, and that is how we started to expand the project. Today, more than 20 countries use our Virtual Pipeline.

We also realized the same logic would apply to the other end of the system: natural gas wells. And so, we developed the wellhead compressors, which are our third business unit.

Four, the latest and most revolutionary technology is liquefied natural gas. We have been conducting research on LNG production on a small scale for more than 10 years. These are the four business units we develop. Until last year, 90% of our business was conducted abroad. Nowadays, we observe a recovery in Argentina and so the business is changing. We are focusing in our country and we inaugurated maintenance plants in the cities of Neuquen and Comodoro Rivadavia. We are making great investments to offer services with our own equipment. We are preparing the necessary infrastructure to base oil development only on Argentine technology. We don't need to import technology to develop Vaca Muerta's natural gas reserves.

- Were these technologies conceived for the domestic market or were they inspired by exports?

Since its inception, the company has growth at an annual rate of 30%. We have always pursued market niches. Until recently, there existed a great demand for our products abroad. We are still more powerful in the Oil&Gas segment abroad. But demand exists in Argentina as well. There is a greater interest in this. Our country is not sustainable with an annual expenditure of 14.000 million Dollars on energy imports, especially when we have enough energy to produce at much lower costs. We are changing our way and with the new charging structure and gas prices, oil companies are interested in increasing the production of natural gas. These solutions are increasingly demanded in our country. Domestic market growth expectations are really important. We expect a strong growth rate and we hope to be able to impose our new concepts: the "unconventional" ones. So far, the reception has been terrific.

What is your opinion about Vaca Muerta's development?

There is a great development taking place. Vaca Muerta needs dozens and dozens of million Dollars to operate the whole formation.

The truth is that Argentina can take their time and gradually start to develop Vaca Muerta. The conditions for this investment flow are not the ideal. However, cheap energy is making its way and investments will certainly come. It will take longer, but it will happen, inevitably. Natural gas is making its way on its own, such as in the '80s with Loma La Lata. This is changing already. There is great movement in Neuquen already and we are only considering the tenth part of Vaca Muerta.

Taking into account that the United States is the only market where unconventional resources are developed and, probably, where all the

necessary technology is to be found, do you feel this as a threat against your business?

We sell to the United States. Our technology is very competitive and in many cases it exceeds the technology available in the US. However, we should stress and make it clear for the country and oil companies: industries need medium and long term projections to support any process. We offer the industry convenient delivery terms, but we will not be able to quintuple our production capacity overnight. This is a gradual process. The development of Vaca Muerta's resources should be accompanied by Argentine companies. Brazil forced the start-up of local companies to operate the

pre-salt project. This was unsuccessful, putting many companies out of business, since they trusted a scenario that finally did not exist. I think it was a very ambitious project with great technological barriers. Many companies were hopeful about Petrobras' plans.

Argentina has a different profile and our industry proved its enormous entrepreneurship. If Argentina finds a way for a constant development, gradually increasing the demand for products and services without disruption, then the project will be entirely developed with Argentine industry.

13 DE DICIEMBRE, DÍA DEL PETRÓLEO

**Hoy celebramos
a los visionarios.**
Qué mejor que cumpliendo
lo que soñaron.

**El gas es argentino.
Ahora, la tecnología también.**

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