



## Newsletter February 2017

### BIOGAS INDUSTRY - 2017 OVERVIEW

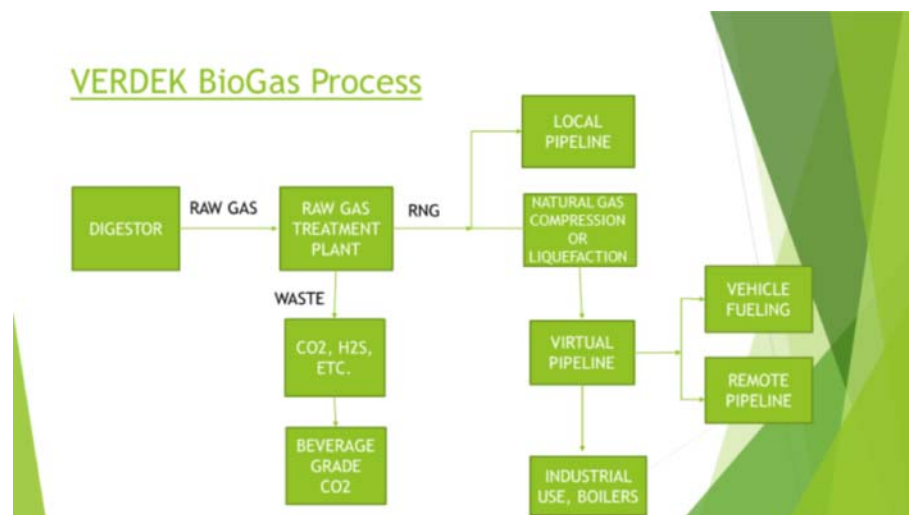
We wish you a great year in the natural gas industry. While we write, oil prices have gone up to \$53 and we see a consistent upward trend. In our first newsletter of 2017 we have decided to discuss the Biogas industry which has shown great growing potential. We see more investments in bio-digesters across the Country and several State governments are encouraging private investments in renewable energy.

The food processing industry has the opportunity to convert its waste into energy, towns can have their food waste, green waste and septic tank sludge treated by locally rather than having it sent for disposal.

We are big producers of waste and the Biogas industry can help converting waste into clean energy; bio digesters generate raw biogas with a content of methane ranging from 50% to 75%.

### VERDEK BIOGAS SOLUTIONS

Verdek offers integrated solutions for Biogas treatment. The flowchart below shows the steps that the raw gas follows from the bio-digester. Our solution efficiently resolves the challenge of cleaning the raw biogas, it requires a small footprint and feature a modular design for easy installation and organic growth.



## **RAW GAS TREATMENT**

Galileo ZTPS treatment modules process the raw gas and separate the RNG (renewable natural gas) which can be used in a variety of applications such as fuel for transportation or energy generation. The waste gas is further processed to extract beverage grade CO<sub>2</sub>. Depending on the location we can offer a variety of handling solutions for RNG produced by the digester.



*Galileo ZTPS - Raw Gas Treatment Plant*

## **PIPELINE INJECTION**

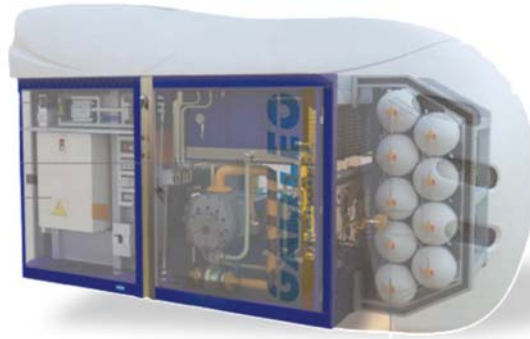
The gas produced by the treatment plant is pipeline grade and it can be injected into a pipeline at the digester site or at a remote location. Our Galileo equipment is capable of regulating the injection pressure required by the pipeline. If there is no pipeline on site there are various options that we can offer to handle the gas depending on the final utilization.

## **NATURAL GAS COMPRESSION (CNG) OR LIQUEFACTION (LNG)**

We determine the most appropriate way to treat the gas based on its total volume and the distance from its final utilization. For distances under 200-250 miles, generally it is more convenient to produce CNG. For distances over 250 miles it is better to consider producing LNG.

## **CNG PRODUCTION**

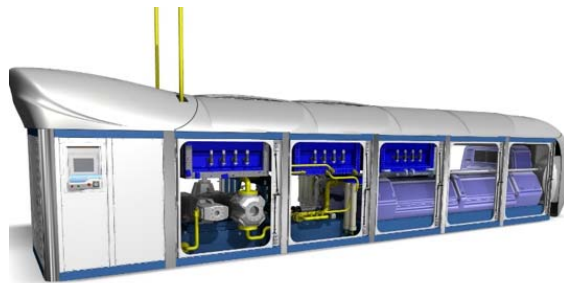
Depending on the volume to be treated we offer a full range of compressors with flow rates from 0.5 to 20+ GGE/min. The Nanobox, the Microbox and the Gigabox compressors are totally integrated and can be installed on a small footprint. They are placed on a concrete pad and they can be quickly set up after connecting them to the power supply and the gas lines. The modularity of these units allows an organic growth and a continuous and rapid alignment of gas production and processing capacity. The unique design of all our equipment allows a quick relocation if the project requires it.



*Galileo Microbox*

### **LNG PRODUCTION**

If the specific project requires the liquefaction of the natural gas produced by the digester, the Cryobox is the most versatile solution. One unit can produce 10,000 Gallons of LNG/day. Like for the Microbox and Gigabox the Cryobox can offer modularity and flexibility. It can be easily moved to a different location when required.



*Galileo Cryobox*

### **VIRTUAL PIPELINE CNG**

Once the CNG or LNG is produced we can transport it with our Virtual Pipeline, the most effective solution to move the gas to final location. The MATs are designed to hold various quantities: 430 GGE, 700 GGE, 1,800 GGE of gas at 3,600 psi. If the gas will be used at the final site for fueling vehicles we can add the MAT B and our HPU to deliver fuel at 3,600 psi.



*Galileo MAT and MAT B (with booster)*



*Galileo MAT B and HPU for Direct Fueling*

### **VIRTUAL PIPELINE LNG**

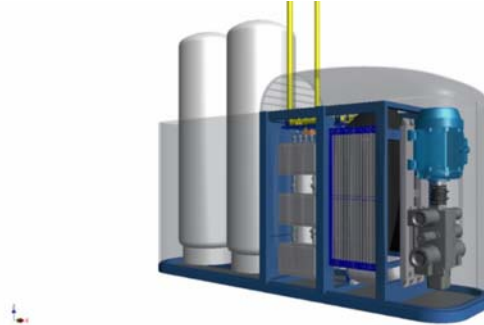
We move LNG to the final location on ISO tanks and it will be ready for various usage: as LNG for fueling trucks or it will be gasified for transportation using L-CNG or for energy generation.



*ISO Tanks*

## PATAGONIA - LNG and L-CNG FUELING

If the purpose of the LNG is fueling, the LNG can be stored in our Patagonia which offers, storage and dispenser features for LNG and L-CNG on demand. This solution allows the rapid installation of a natural gas fueling station even if no gas lines are available at the site. It requires a small footprint and minimum energy to store the LNG with no boil-off.



*Galileo Patagonia*

## POWER GENERATION

We can provide with our pressure regulators (PRP) the required gas pressure for GenSets or to access the city gate of the gas line of a remote town.



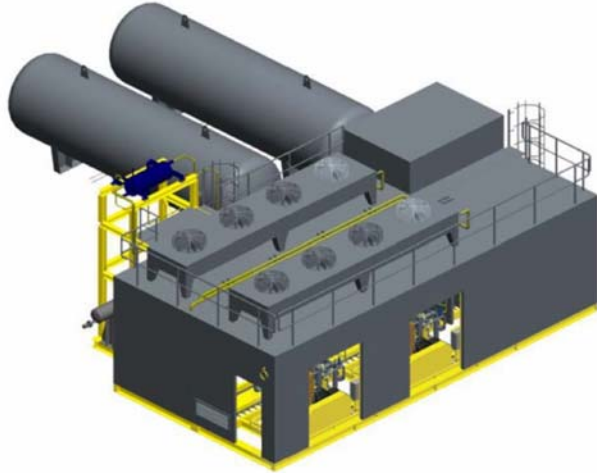
*Galileo PRP - Pressure Regulator*

Natural gas is a clean fuel. With the increased availability of large CNG engines, natural gas has become the clean solution for power generation. For the past 20 year Galileo has been offering Virtual Pipeline solutions in major mining operations in isolated locations away from electrical power sources.



## WASTE GAS TREATMENT

The waste gas, coming from the ZTPS raw gas treatment can be further treated for the extraction of the CO<sub>2</sub>. The Pentair process is capable of producing beverage grade CO<sub>2</sub> with a purity of 99.9%. It is a modular solution that adds value to the biogas treatment and it increase its return on investment.



*Pentair CO<sub>2</sub> Extraction Module*

*Verdek is capable of providing a vast range of equipment for the natural gas treatment.  
We are a global and integrated source for the Biogas Industry.*

For more information please contact us at [info@verdek.com](mailto:info@verdek.com)  
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STAY CONNECTED:

