

## Vahterus - Gas Cooling in GoM

As the inventors and pioneers of Plate & Shell Heat Exchangers (PSHE) technology, Vahterus successes in the Offshore and Oil & Gas markets, continue to form a critical part of the company's continual development and fast paced growth. With almost all oil majors now having some experience with PSHE, applications and installations continue to grow exponentially.

Vahterus PSHE technology offers the user small footprint and reduced weight, aligned with wide ranging pressure and temperature capabilities. Traditionally this industry would utilise tubular technology to perform many operations, notably high pressure applications, but it is clear they now have a viable alternative with Vahterus PSHE. Offshore where space and weight are at a premium, PSHE can provide significant advantages, as well as installation and operational benefits.

During 2007, Vahterus North America team, led by Jonathan Pascoe, executed a project in the Gulf of Mexico, procured by Bluewater Industries. The end client was ATP, and the heat exchangers would form part of the Topsides of their platform 'Mirage'. This project was a new development, and was in fact the first hull of its kind, Mindoc3; Serial No. 001. It was designed and engineered by Mustang Engineering, from their Houston offices; who were Vahterus main point of contact for the duration of the project.

"Vahterus was a pleasure to work with. Even with the challenges of a transatlantic order, Vahterus was my best vendor on the project in terms of customer service and in meeting their commitments. I look forward to working with Vahterus on future projects".

ATP Mirage is designed to process 25,000 BOPD and 50 MSCFD of gas, with the capacity to be upgraded to handle 100 MSCFD in the future. Located in Mississippi Canyon 941/942, the facility was proposed in order for the client to harvest the reserves located in this offshore block.

Vahterus remit of supply was two of the Main Gas Compressor Coolers.

2nd Stage Suction Cooler  
PSHE 4HH-264/1/1 (Openable Model)  
Design Pressure: 680 psi  
Design Temperature: -20 to 350 °F  
Cooling Hydrocarbon Vapours using  
Seawater @ 75 °F

3rd Stage Suction Cooler  
PSHE 4HH-252/1/1 (Openable Model)  
Design Pressure: 1360 psi  
Design Temperature: -20 to 350 °F  
Hydrocarbon Vapours using  
Seawater @ 75 °F

Based on the use of seawater as the cooling medium, titanium plates were utilised for the 2nd Stage Cooler, and Hastelloy plates used for the 3rd Stage Cooler (based on the higher design pressure requirement). The gas was processed on the shell side of the exchangers which were manufactured from carbon steel and designed according to ASME code.

These units were shipped from Vahterus facility in Finland in September 2007 by air to Houma, LA, where the package was being constructed. Upon completion of the work, Vahterus team of Marko Rantala, Anna-Leena Huhta-Aho, Jani Utrila and Jonathan Pascoe were commended by Mustang personnel for their part in the project. Michael Weatherwax of Mustang provided feedback on Vahterus performance:

“Vahterus was a great vendor to work with. They were very responsive, professional and were an asset to the project. Although the coolers were manufactured overseas, they did a splendid job managing the project and keeping the lines of communication open at all times. They made themselves available to the project team as required. I wish more of our GoM suppliers operator like Vahterus did on this job”.



Vahterus PSHE provided numerous benefits to all concerned in the project. Their physical size and weight benefits; the ease of installation and operation; and not least the cost of the exchangers, left all parties with satisfactory feeling upon completion.

### **Vahterus Latest News**

To further extend Vahterus applications and capabilities within the Oil & Gas market, Vahterus PSHE are now available with increased pressure capability. During Q2 2009, our new development will be released, making it possible to utilise PSHE with Design Pressures up to 200 bar(g) / 2900 psi(g), whilst still benefitting from the space and weight savings PSHE can offer.

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Vahterus Oy is the pioneer and inventor of -Plate&Shell-® Heat Exchangers (PSHE) technology. PSHE combines the high heat transfer capabilities and compact nature of plate exchangers, with the temperature and pressure capabilities of Shell & Tube. Since 1990, Vahterus have been working to design, manufacture and deliver the most compact and cost effective solutions to our clients in many sectors, in many applications.

More information and contact details for all countries can be found at [www.vahterus.com](http://www.vahterus.com)

**CASE STORY**