

When Safety and Size Matter Most

Offshore Experts Partner for Safe, Compact Drilling Rigs

Industrial and environmental safety has always been a critical component of all processing plant operations.

But whereas in the past, regulators have kept an intense and vigorous eye on plant safety, recent national and international accidents, crises and disasters have replaced their magnifying glass with an electron microscope. Safety is not just imperative for plant employees — its consequences can have global effects.

Nowhere has safety become more critical than in the drilling and mining industries.

Two international powerhouses in harnessing and distributing energy — Samsung Heavy Industries based in South Korea, and Gazprom in Russia, have partnered with U.S.-based Clayton Industries, to assure the utmost in safety for workers and the environment at two natural

gas drill rigs being built for use in the Barantz and Kara seas.

Energy Leaders Working Together

Since its corporate birth in 1938, Samsung Heavy Industries has evolved into a world leader in technology, natural resources, energy and industry. Still based in its home of South Korea, Samsung has some 90 offices in 43 countries worldwide. The company is an active player in the exploration, development and production of oil and gas fields around the world.

Gazprom, one of the world's largest energy companies, specializes in geological exploration, production, transportation, storage, processing and marketing of hydrocarbons as well as generation and marketing of heat and electric power. Gazprom's mission is to ensure a highly efficient and balanced gas supply to

its Russian customers.

In 2008, Gazflot, a subsidiary of Gazprom, contracted with Samsung to build the upper platforms of two natural gas drill rigs. These rigs would be part of Gazprom's Shtokman field campaign to develop a new natural gas and oil production center in the Kara and Barantz seas, along the Russian Arctic Shelf.

The rigs needed to be compact, ultra-sturdy and dependable so that they could withstand the severe Arctic conditions, extreme low temperatures and wave heights as high as 32 meters. Samsung experts knew the equipment on the platforms needed to be the best in safety and reliability.

Small in Size; Huge in Safety

Every drill rig needs boiler equipment. But Samsung wanted ones with the highest safety

standards and the smallest size.

They turned away from the traditional and looked to Clayton Industries to supply three steam generators for each rig.

Clayton Industries high-efficiency Steam Generators will be used on the rigs for space heating, de-icing and oil processing.

According to Samsung executive Kyung-Su Bae, space on an oil rig is at a premium, and there needs to be enough room to accommodate crew members. The vertical design of the generators are accepted and used by offshore companies

worldwide, and require only 1/3 of the space that a traditional boiler would.

"The Clayton Steam



Generators are compact, offering more usable deck space. These units heat-up faster, provide rapid response to load changes and can be turned on and off when needed, without the risk of damage to the system," he said.

In 2008, Clayton unveiled its repackaged SigmaFire 200 BHP steam generator system to allow for more steam per square-foot of deck space. The system is ideal for heating drilling mud, work floors and rooms, and unexcelled as a steam source for desalinization, de-icing, cooking and general cleanup.

Most importantly, Clayton Industries steam generators are explosion-proof, providing the highest levels of safety in the boiler industry.

There has never been, nor can there be, a steam explosion of a Clayton Steam Generator. Steam

explosions that cause death, injury and serious property damage result from the near instantaneous, uncontrolled, release of energy that is present in water at saturated conditions that exist in steam boilers. However, there is relatively little water in a steam generator and that water is contained in the helical coil heat exchanger. Even if there is a leak in this coil, the energy cannot be released instantaneously because the water must travel through the coil to reach the point of the leak.

Steam Generation's Added Benefits

In addition, steam generators heat-up faster, provide rapid response to load changes and can be turned on and off when needed without the risk of damage to the system. The generator's design creates less heat loss and chemical loss. They have

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higher thermal efficiency over typical older designs, with most Clayton Steam Generators incorporating PID Controls, fully modulating burners and Variable-Speed Drives.

Clayton Steam Generators use controlled circulation, which results in reduced blowdown requirements compared to traditional boiler designs. That means reduced heat losses from blowdown compared to other designs.

Finally, Clayton Industries offers low NOx options to meet strict air quality requirements, and can offer low NOx options that typically produced as low as 9 ppm.

Samsung and Gazprom expect completion of the rigs sometime between the last quarter of 2010 or early 2011. Meanwhile, the steam generators have been installed and placed in service by Clayton Industries.

All involved in this project are sure that these rigs will operate smoothly, safely and efficiently due in large part to the Clayton Steam Generators.

"With a perfect safety record, compact equipment and easy and efficient operations, the Clayton Steam Generators are the right fit for these rigs," said Kyung-Su Bae.

"Our past partnerships in the offshore drilling industries have always proven successful. We hope to be an important component in Gazprom's efforts to expand its clean energy exploration and drilling campaign," said Clayton Industries Vice President Nand Bogman.

For more information, contact Nand Bogman at nbogman@aol.com or go to www.claytonindustries.com.

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