



Peru's first eco-well adopts Dopeless® technology

Tenaris's technology proves instrumental in the environmentally sensitive development of the Kinteroni gas field in the Peruvian Amazon.

Summary

A pioneering project in the Amazon

In 2008 Repsol announced the discovery of a large natural gas field in the Peruvian central Amazon. Located only 50 km away from the origin of the Camisea gas pipeline, the massive reservoir structure of the new Kinteroni field is estimated to hold 56 bcm of gas and condensate reserves.

Given the delicate ecosystems surrounding the field, the operator set out a pioneering, early development program in which care for the environment drove every detail of the well design. As a result, the Kinteroni 2X became Peru's first ever "eco-well".

Playing a pivotal role was Tenaris's Dopeless® technology, used for the well's casing and tubing strings. Instead of using typical connections with wet lubricants and solvents that would have ended up contaminating both the formation and the environment in general, the operator opted to use Dopeless® technology.

Challenges

Protecting the environment

The Ucayali-Madre de Dios basin where the Kinteroni field lies is one of Peru's most environmentally sensitive areas. Repsol's Block 57 is home to numerous indigenous communities, while its lands and rivers support a rich biodiversity of plant and animal life. Minimizing the impact of E&P operations on these unique and delicate habitats is a must.

Particularly relevant for tubular products, it was necessary to avoid the discharge of potentially hazardous materials while cleaning, making up or breaking out pipe.

Sealing performance

Another major consideration in the design of the well was the sealability performance of the connection used by the tubular products installed. The fact that this wasn't only a gas well but also one located deep in the Amazon jungle meant there was a critical need for reliable sealing behavior.

PROJECT PROFILE

Operator

Repsol

Location

Kinteroni field (Peruvian jungle)

Well purpose

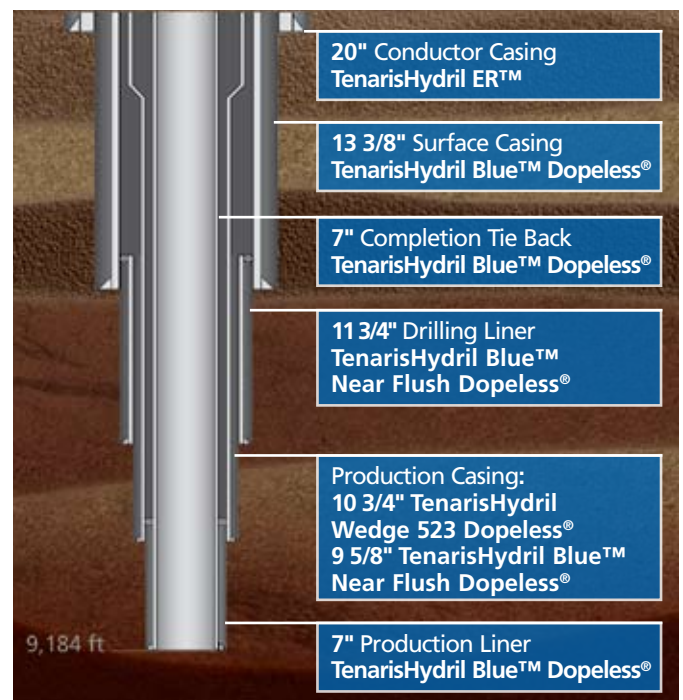
Development (gas)

Services provided

- Onsite training
- Field inspection
- Running assistance

Products highlighted

- 13 3/8" and 7" casing with TenarisHydril Blue™ Dopeless® connections
- 11 3/4" and 9 5/8" casing with TenarisHydril Blue™ Near Flush Dopeless® connections
- 10 3/4" casing with TenarisHydril Wedge 523™ Dopeless® connections
- 7" tubing with TenarisHydril Blue™ Dopeless® connections
- Accessories



▲ Total Vertical Depth (TVD): 8,388 ft. Measured Depth (MD): 9,184 ft.

Solution

Dry connections on all strings

The directional Kinteroni 2X well was drilled to a True Vertical Depth (TVD) of 8,388 ft and a Measured Depth (MD) of 9,184 ft, with a 33.61° angle. The configuration did not vary from those commonly used in the area (three casing strings and two liners to satisfy the mechanical requirements of the well). However, for the first time in Peru, all casing strings and the tubing were provided with Dopeless® technology.

Dopeless® technology is a dry, multifunctional coating applied to premium connections at the mill in an industrially controlled process. With Dopeless® technology, the need to use thread or storage compounds, grease, cleaning solvents (during pre-running preparations) or any other type of chemical on the pipe is entirely removed from the rig site.

Besides helping reduce the environmental footprint of drilling operations, Dopeless® technology introduces several operational advantages. By arriving at the rig site “ready-to-run”, tubular products with Dopeless® connections eliminate a series of time-consuming steps. This translates into faster running times, reduced rejection/remake-up rates, less pipe handling and improved cost savings.

Stable sealing behavior

With the exception of one string, all other casings and the tubing were made up with pipes fitted with TenarisHydril Blue™ Series connections. They were selected due to the stable behavior that these premium connections consistently show for all combined load conditions. Behind such reliability – a critically important factor during well production in a gas field – is the tested connections’ metal-to-metal seal.

By design, the 10 3/4" casing had a tighter-than-usual clearance that demanded the use of flush or semi-flush connections. Without compromising the objective of a complete ecological well, this situation was overcome by using the TenarisHydril Wedge 523™ Dopeless® integral connection, which has also a gas tight metal seal.

Service support

Tenaris’s involvement in the project started well before the actual installation work. Repsol’s Drilling Engineering Department, led by Rafael Cachutt, Drilling Manager, and Alberto Gil, Project Leader Engineer, worked together with Tenaris as a team to evaluate the mechanical requirements of the well to get an optimized design. After several technical discussions and the introduction to the Dopeless® concept, the team agreed and the Kinteroni 2X well design was finally materialized and approved.



▲ All three casing strings, two liners and the tubing were provided with Dopeless® technology.

Results

A green technology for a green well

The project marked the first time that Dopeless® connections were used in every casing section of a well in a jungle environment, making it the first environmentally sensitive well in the Americas. Use of the technology reduced the chances of discharging potentially contaminating substances in the well. The technology also eliminated the use of fresh water and chemicals to clean up connections or remove storage compounds prior to installation.

Replacing the manual-intensive application of thread compound with connections that already came equipped with the exact amount of uniformly applied lubricant helped achieve more consistent make-ups. There were no rejects and no re-made-up joints. Running speeds increased, which in turn generated cost savings in rig time use.

From design to completion

Repsol found in Tenaris much more than just a supplier of advanced tubular products. A wide range of value-added technical services – including the design of the well and running assistance offered by a group of experts familiarized with the technology and the local environment – ensured such products performed to their optimum levels.



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