



Eaton Synflex hose lends a hand in helping Brazil triple oil production by 2020

Location:

Brazil

Segment:

Oil exploration and production

Challenge:

Assuring subsea tree manufacturers that Eaton hose will endure 20-year subsea duty under severe pressure conditions.

Solution:

Eaton's Synflex® High Crush Resistant (HCR) high-pressure thermoplastic hose.

Results:

Eaton Synflex hose has been performing to expectations and helping subsea tree manufacturers meet their Brazilian local content goals.

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Because of the many challenges and large-scale investment involved in deep-sea oil exploration and production, hydraulic hose must last a minimum of 20 years. Eaton® Synflex hose is made to endure long-term subsea duty and tested way beyond its performance limits just to make sure.

Background

The world is not running out of oil; rather, it's running out of easily found and easily extracted oil. What's left is in places that are hard to get to and even harder to work in, such as off the coast of Brazil where one of the largest oil reserves in the world is buried in a "pre-salt" geological layer beneath miles of water and rock.

Eaton is working with one of the largest oil and gas companies in the world and its supply partners to safely bring the oil to the surface and to help Brazil meet an aggressive goal of tripling its oil production—from approximately 2 million barrels a day to 6 million barrels a day—before the end of the decade.

Among Eaton's contributions is Synflex High Crush Resistant (HCR) high-pressure hose that was developed in response to increasing demand for oil drilling rig equipment that is virtually fail-proof at extreme subsea depths.

Eaton's Hydraulics facility in Guaratinguetá, Brazil, is supporting local exploration and development of pre-salt wells by providing HCR thermoplastic collapse-proof hose for subsea trees produced by leading oil and gas equipment manufacturers. The subsea trees, often called Christmas trees because of their rudimentary resemblance to decorated holiday trees, control the flow of oil out of a well.

Synflex HCR hose, which is part of Hydraulic Flying Leads (HFLs) that connect manifold blocks to subsea trees, takes hose construction and functionality to a whole new level. Each HFL is actually a bundle of individual HCR hoses that vary in quantity according to project requirements.

The hose's flexible 316 stainless steel inner-locking carcass withstands over 5,000 psi differential pressure and up to 7,500 psi working pressure, extreme forces that are commonplace in ultra-deep water exploration. HCR hose



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is supplied in extremely long continuous lengths to the customers' requirements, which can be over 10,000 feet!

Challenge

Prior to 2010, subsea tree manufacturers typically relied on hose sources outside Brazil to bundle hose and build HFLs. In 2011, when the manufacturers were required to adhere to the Brazilian government's new local content regulations, Eaton began its pursuit of local hose business on subsea trees.

"Eaton approached the tree manufacturers at just the right time," said Eaton's Pedro Cortonesi, South American industrial sales manager, "since they were looking for a local hose partner to help them meet Brazilian content requirements. We explained that although Synflex hose is made at Eaton's hose manufacturing facility in Aurora, Ohio, it is shipped to Eaton's Guaratinguetá facility, where we add local content by cutting individual hoses to precise lengths, attaching corrosion-resistant stainless steel end connectors, wrapping the hoses into bundles and flushing and testing the completed bundles."

Eaton's first mission was to emphasize the solid performance and reliability of Eaton Synflex hose that has been a critical component in subsea exploration for over 45 years.

"Reliability is absolutely monumental for hose that is installed under as much as 8,200 feet of water," Cortonesi said, "making it very difficult and expensive to repair, in addition to the fact that a hose failure can literally shut down a drilling operation. Because of the many challenges and large-scale investment involved in deep sea drilling, hydraulic hose must last a minimum of 20 years. We explained how Eaton Synflex hose is made to endure long-term subsea duty in ultra-deep water, thereby helping to ensure uptime and keep project timelines on track.

"Still, we had a lot of work to do in order to obtain the hose business. The customers wanted to be assured that Eaton knows the demands—that each hose must be engineered to order, undergo rigorous testing and be delivered within a four- to six-week timeframe with no excuses."

Solution

To reinforce Eaton's strength in providing customized hose solutions, Eaton engineers met with the wet tree manufacturers to present their approach to each project that includes close interaction with the customer and in-depth analysis of tree configurations and hose requirements.

Knowing that proof-testing is mission critical in the supply of subsea hose—so critical

Eaton's Synflex HCR hose is ready for shipment to subsea tree manufacturers.



that it must be witnessed by a customer-appointed inspector—Eaton engineers invited customer personnel to tour Eaton's in-house testing operations in Guaratinguetá, where the application worthiness of each completed Synflex HCR hose assembly is verified.

"In this business in which hose assemblies can be thousands of feet long, there is no such thing as prototypes," Cortonesi said, "so each hose must undergo rigorous testing to API-17 standards and tested way beyond its performance limits to ensure it will function on the job. We demonstrated how each Eaton subsea hose is subjected to pounding vibration, rough abrasion, high operating pressures, and more through vigorous around-the-clock testing."

Results

Impressed with Eaton's know-how, strict adherence to industry protocol and capability to meet an

absolute delivery date, the subsea tree manufacturers awarded their hose business to Eaton's Brazil operations.

"Our customers are pleased with the performance of Synflex hose and that Eaton is helping them achieve their Brazilian content goals," Cortonesi said.

"In turn, their business is helping Eaton become a major player in the oil and gas market, particularly here in Brazil which has the potential to become one of the largest oil producers in the world."

Other Eaton products used in Brazil's oil and gas offshore work include XL Series motion-compensation cylinders on an ultra-deepwater drill ship, which are reducing downtime and enhancing platform safety; and Eaton ReactoGard® filtration systems that are helping local oil refineries improve quality and performance and meet ultra-low sulfur emission regulations.

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