

## Repsol Sinopec Invests In Robotics For Oil Wells Operations, Inspection

The company is working in Brazil with Ouro Negro and the Pontifical Catholic University of Rio de Janeiro to develop an autonomous robotic system.

Brunno Braga, Contributor Fri, 07/26/2019 - 07:54 AM



Ouro Negro is leading the team that is developing the robot. (Source: Shutterstock.com)

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RIO DE JANEIRO—Aiming to enhance its operations worldwide, Repsol Sinopec is developing an autonomous modular robotic system to inspect oil wells.

The goal of the project, called WellRobot, is to create a new tool for well inspections aimed at plugging and abandonment operations. The project, which will be developed in Brazil, is a partnership between Repsol Sinopec Brasil, Brazilian E&P technology company Ouro Negro and the Pontifical Catholic University of Rio de Janeiro (PUC-Rio).

“At Repsol Sinopec Brasil we invest in innovative technologies, seeking a greater degree of automatization in our operations in order to help us increase their safety and generate energy in a more sustainable and efficient way,” said Tamara Garcia, research and innovation manager at Repsol Sinopec Brasil.

Repsol Sinopec operates in the Brazilian presalt. Its portfolio of assets includes three producing fields—Albacora Leste, Sapinhoá and Lapa—and high potential exploration blocks. The company has invested US\$20 million over the past three years in research, development and innovation projects in Brazil.

Plans are for the robotic prototype to be used at the company’s assets where it leads operation activities, according to the Repsol Sinopec press office.

Ouro Negro is leading the team that is developing the robot. The company provides monitoring solutions for equipment and structures, integrated systems for intelligent well completions, subsea engineering, solutions based on the use of high-power laser, autonomous robots for inspection and operation in well and subsea systems and computational intelligence for production and asset integrity management.

According to Ouro Negro CEO Eduardo Costa, the robotic system will reduce costs, especially those related to well profiling, drilling rig operation time and operational risks. “This system will optimize the critical plugging and abandonment process undertaken during decommissioning in mature basins,” Costa said.

The robotic project is expected to enter operation in August 2021 when a functional prototype of the WellRobot robotic platform will be presented.

In terms of disruptive technology, Costa explained that WellRobot follows a technology trend of greater operational efficiency.

“WellRobot is an autonomous robotic platform that moves without the need of cables and connections,” said Costa. “With the introduction of the WellRobot system, the required wire system structure is removed from the process. In addition to this replacement, the robot can be installed at the wellhead, prepared to perform tasks when is needed.”

Currently, systems require a wire system to lower tools and sensors in the well are used, according to Costa.

He also mentioned that the technological solution is being developed to initially serve dry completion wells. In the future, it may be adapted for use in post-salt and presalt wells. “It is a tool that will be able to work in a range of temperature, pressure, flow and diameters and it can meet several scenarios, including post-salt and presalt wells,” Costa said. “Usage ranges are being defined together with our partners to serve a large number of wells with the same equipment.”

The Brazilian tech company intends to give WellRobot an intelligent and autonomous navigation, locomotion and actuation systems that will enable the operator to position itself and perform tasks automatically.

“Modularity is a basic concept in the development of the project,” enabling its commerciality, according to Ouro Negro Robotic Systems Manager Julio Guedes. “It will be designed with the use of additive manufacturing for concept and functionality testing. Concept tests and functional tests will be carried out internally in the company for later validation in the field.”

This technological tool represents a paradigm shift since it makes wire systems unnecessary, while improving complex logistics, lowering both direct and indirect costs, he said.

For Marco Antonio Meggiolaro, coordinator of the Robotics Laboratory of PUC-Rio and professor in the mechanical engineering department of PUC-Rio’s Center of Science and Technology, the partnership will accelerate development of the robotic system.

“We are integrating teams with development knowledge of high-reliability hardware and intelligent control software required to perform the challenging tasks proposed,” he said.