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# OPEN OPPORTUNITIES

## DATE: February/24


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## Solution Aquisition

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## 7004176458 - Automation of drilling rig activities

The challenge is to automate repetitive tasks performed by the driller and assistant driller by virtualization of commands sent to the equipment (drilling winch, iron roughneck, pipe handling systems, rotary table, top drive, mud pumps, among others) of the offshore rigs, during drilling and tripping/handling of tubulars. The goal is to achieve consistency, increased performance and safety in operations.

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## Digital Twin of UEP Tanks

Implement a digital tool in operating units to incorporate inspection results and allow possible structural failures of tanks to be predicted. Due to the difficulty of intervention on board, the installation of additional sensors was ruled out. Therefore, the idea is to use the systems already installed on the platforms to refine the fatigue calculation and, consequently, extend the useful life of the unit.

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## Robotic inspection of pipes with an insulating layer

Increase the reliability of inspections on pipes that are difficult to access, such as chimney pipes, flares/flares and pipes with an insulating layer (without the insulation layer having to be removed) by performing thickness measurement sweeps, corrosion detection or erosion and cracks or fractures in the pipe by Ultrasonic Testing (UT) and Magnetic Particle Testing (MT) using robots, reducing HHER exposure and scaffolding use.

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# Module Pre-commercial Procurement

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## RFI: DIVERLESS CONNECTION OF RIGID RISERS IN BELLMOUTHS

PETROBRAS is carrying out a study on DIVERLESS CONNECTION OF RIGID RISERS IN BELLMOUTHS and its objective is to obtain information from companies mapped in the Supplier Register or in Market Research, to promote improvements in its supply and specification process.

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## - RFI: Subsea Chemical Storage & Injection System

This RFI aims to obtain information on the viability of the qualification, up to TRL 6 (API17Q), of a Subsea Chemical Storage and Injection System until June 2026.

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## RFI: Swiveled Symmetrical Bending Stiffener

Petrobras is performing is on the Swiveled Symmetrical Bending Stiffener, which aims to locally increase the rigidity of the flexible pipe to progressively reduce the curvature and, consequently, the stresses imposed on the pipeline, in order to meet specific demands for the installation of risers in deep waters. This bending stiffener absorbs the bending moments acting on the pipeline by bending a double polyurethane cone pivoted to a stationary structure. Therefore, there is a smooth transition between the tubular body of the pipeline and its termination.

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## RFI: Stimulating Completion Fluid

Petrobras intends to contract the development of a stimulating completion fluid capable of acting to remove damage from drilling, leaving a well without any damage or, preferably, slightly stimulated, so that a subsequent conventional stimulation operation is not necessary, reducing the need for a dedicated stimulation ship and its associated costs and risks.

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# Module Technology Transfer

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## 1 click Licensing - Petrobras offers 214 patents for licensing

Petrobras is offering 214 technologies for licensing in a simple and fast way. The objective is to accelerate the implementation of innovations and contribute to the development of suppliers that can implement the technologies in Petrobras' business. There are opportunities available in the areas of Exploration and Production, Production Development, Refining and Sustainability.

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## Public Offering - Annular Flow Generator Cyclonic Device

The device preferably applied in oil transport lines is capable of generating an annular flow pattern in predominantly two-phase fluids, based on the energy present in the flow of the fluid itself. It does not require accessory pumping equipment and can optionally act as a drainage hydro cyclone. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

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## Public Offering - Antifouling Equipment for Smart Completion Valve

The antifouling equipment for smart completion valve is a chemical injection capsule. It is a cylindrical tubular device, which is positioned over the smart completion valve by creating an annular space in front of the valve, to serve as a chamber where the turbulence of the oil flow that is being extracted promotes efficient mixing between the scale inhibitor or other chemical agent and the oil being extracted/produced. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

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## Public Offering - Electrical Impedance Sensor For Gas-Oil Drainage

The electrical impedance sensor for gas-oil flow consists of a mechanical spool with flanges at its ends, so that it can be connected to the oil and gas transport piping. The rod and the electronic circuit housed in the spool allow the rod to read the electrical impedance and finally calculates the process variable. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

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## Public Offering - First Stage Multiphase Separator and Method of Separation of a Multiphase Fluid

The first stage Multiphase Separator produced in one or more oil wells provides a method of separating a multiphase fluid, comprising the steps of: inserting the multiphase fluid into a separation vessel; collecting a volume of gas separated from the multiphase fluid in an upper part of the separation vessel; collecting a volume of oil separated from the multiphase fluid in an intermediate part of the separation vessel; collecting a volume of water separated from the multiphase fluid in a lower part of the separation vessel; and injecting a mixture of pressurized collected gas and collected water into a lower portion of the separator vessel. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

If your company is interested in obtaining a license under the terms and conditions of the Agreement offered, email to licenciatec@petrobras.com.br. Documents sent through this channel will be treated as confidential information by Petrobras. The opportunity can be found by clicking below.

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## Public Offering - Method to Adapt an Oil Maritime Production Facility

The present method aims specifically to adapt the liquid processing plant of an offshore oil production facility (offshore), already in operation, to new production conditions that arise throughout the productive life of an oil field. Depending on the variation in the amounts of oil and water produced, over the course of production time, equipment intended for oil treatment can be converted into equipment for water treatment. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

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## Public Offering - Process for Obtaining Fuels from Biomass in Fluid Catalytic Cracking

It is a process for obtaining fuels from biomass that includes introducing the catalyst at the base of a cracking section, in which the said catalyst at high temperature comes into contact with a gaseous stream of light hydrocarbons rich in hydrogen, in that the catalyst and hydrocarbon streams then come into contact with a lignocellulosic liquid stream in the same cracking section, originating the reaction mixture which, shortly afterwards, comes into contact with the main stream containing the traditional FCC fossil load in a second cracking section. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

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## Public Offering - Process to Inhibit the Formation of Gel in Paraffin Oils

It is a process to inhibit the formation of gel in paraffinic oils during their flow through the pipelines, especially when the ambient temperature is reduced. It is a mechanical process in which rapid cycles of pressure and relief are applied simultaneously to the period in which the fluid is cooling down, during the production stoppage, obtaining a fluid with lower gel strength. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

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## Public Offering - Subsea Recirculation Depressurization System

The proposed system is applied in subsea oil flow lines provided with a pumping unit external to the well and can be implemented in a resident way in arrangements of individual wells, known as satellite, or wells grouped by a centralized collector (manifold) for prevention and eventual correction (dissolution) of hydrates. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

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## Public Offering - Vortex-Induced Motion Suppressor Flips

The accessory applied to large submerged structures, with a cylindrical or predominantly cylindrical configuration, specifically floating oil prospecting platforms of the mono-column or SPAR type, mitigating the movements induced by vortices in these structures, mainly when they are subject to strong currents. This public offer is intended for business companies or consortiums of companies that are interested in producing and selling the products or services related to this Intellectual Asset.

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## Public Offering of Submarine Inspection Technology (AURI)

This opportunity it is offering Technology License known as AURI Diverless (AUTONOMOUS UNDERWATER RISERS INSPECTOR). The technology implatation will allow to inspections of flexible pipelines with a significant productivity gains.

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## Module Open Lab

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## CCP

CCP is a python library for calculation of centrifugal compressor performance. It uses CoolProp/REFPROP for the gas properties calculations.

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## WPRAutoencoders

It contains a well pressure response generator, a dataset of 20,000 synthetic pressure responses, and an autocoder neural network capable of clustering this data based on transmissibility and reservoir geometry.

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## ROSS

ROSS is a Python library for rotordynamic analysis, enabling the construction of rotor models and their numerical simulation. The shaft elements are modeled using Timoshenko beam theory, which considers shear and rotational inertia effects, and discretized using the Finite Element Method. The tool allows for rotor geometry visualization and the execution of simulations such as static analysis, modal analysis, undamped critical speed, frequency response, unbalance response, time response, and more.

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## 3w

It promotes the experimentation of Machine Learning based approaches and algorithms for specific problems related to undesirable events that occur in offshore oil wells.

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## Petrobras on Github

Access Petrobras on GitHub and learn about the Open Lab Module opportunities.

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**If you have any questions, please contact contact us:**
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