

Numerical modeling and simulation of gas separation
processes by distillation under subsea condition
Universidade de São Paulo

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Posted Apr. 15, 2025, set to expire Aug. 11, 2025

Job Title	Numerical modeling and simulation of gas separation processes by distillation under subsea condition
Department	Departamento de Engenharia Naval https://ppgen.poli.usp.br/
Institution	Universidade de São Paulo São Paulo, , Brazil
Date Posted	Apr. 15, 2025
Application Deadline	Jun. 1, 2025
Position Start Date	Available immediately
Job Categories	Post-Doc
Academic Field(s)	Naval Architecture & Marine Engineering
Job Website	https://www.linkedin.com/company/otic-offshore-technology-innovation-center/
Apply By Email	otic.jobs@usp.br
Job Description	

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The CO₂ content is very high in the pre-salt natural gas (NG) reserves in Brazil, reaching values close to 60% in molar fraction. Offshore CO₂ separation is highly attractive for oil companies, as it facilitates CO₂ injection into the sea, reducing the amount of greenhouse gases released into the atmosphere. The most common devices for CO₂ separation, such as amine units and membrane modules, are more suitable for lower CO₂ percentages than those typically found in NG extracted from pre-salt reserves. Furthermore, the size of these devices increases with the amount of CO₂ removed, thus occupying a large area of the platform deck. Having a robust system that can be installed subsea, with low complexity and little need for maintenance, is of great interest to the oil and gas industry in Brazil, as it promotes CO₂ capture and facilitates CH₄ utilization.

The researcher will be dedicated to the modeling and numerical simulation of the gas separation process by distillation (flash separator type). Given the diversity of approaches in this project, many methods will be employed. Traditional design methods and norms will be used for the conceptual design of the equipment, considering that it will be installed subsea. Regarding the numerical models and simulations, high-fidelity CFD models will be employed, which consider the physics of multiphase flows, condensation, and phase slip (for separation).

PhD in engineering or a field related to the project.

Knowledge and proficiency in numerical methods for simulation of distillation processes and computational fluid dynamics.

English communication skills.

Availability to work in São Paulo at USP.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact Offshore Technology Innovation Centre - OTIC
Departamento De Engenharia Naval
Universidade De São Paulo
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Brazil

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