



FSRU Project Development and  
Operation Training



# FSRU Project Development and Operation Training

## Introduction:

This FSRU project development and operation course is designed to provide in-depth knowledge and understanding of Floating Storage and Regasification Units FSRU and their critical role in the gas industry. FSRUs have revolutionized the LNG sector by offering flexible and cost-effective solutions for gas importation and storage, making them an integral part of modern gas projects.

In this FSRU project development and operation course, you will explore the meaning and definition of FSRU, delving into what FSRU stands for and the numerous benefits it brings to the table. You will gain insights into the FSRU market, understanding the dynamics and growth prospects of this innovative sector. We will cover the design aspects of FSRU, examining how these units are engineered to efficiently store and regasify LNG, ensuring seamless integration into existing energy infrastructures.

Throughout the FSRU project development and operation course, you will learn about the various phases involved in oil and gas project development, with a specific focus on how FSRU projects are conceptualized, planned, and executed. From initial feasibility studies to detailed engineering, construction, and operational phases, we will guide you through the entire lifecycle of FSRU projects.

By the end of this FSRU project development and operation training, you will have a solid grasp of FSRU gas handling, the strategic advantages of deploying FSRUs in various regions, and the operational intricacies that ensure their success in the gas industry. Whether you are a professional looking to expand your expertise in FSRU projects or a newcomer eager to understand this dynamic field, our course offers valuable knowledge and practical insights to help you excel.

## Targeted Groups:

- Technical, commercial, and management employees who need in-depth technical knowledge of the LNG business and FSRU development.
- New technical support personnel entering the sector.
- Technical personnel who want to learn more about the sector.

## Course Objectives:

At the end of this FSRU project development and operation course, the participants will be able to:

- Understand the FSRU meaning and definition.
- Learn what FSRU is and its role in the oil and gas industry.
- Explore the benefits of FSRU in gas project development.
- Analyze the FSRU market trends and opportunities.
- Study the key aspects of FSRU design and engineering.
- Examine FSRU gas handling and regasification processes.
- Identify the various phases of FSRU projects.
- Gain insights into FSRU LNG storage and distribution.
- Discuss FSRU applications in oil and gas projects.
- Review the critical gas project phases involving FSRUs.
- Learn about the complete gas project development phases.

## Targeted Competencies:

At the end of this FSRU project development and operation training, the targeted competencies will be able to:

- Understand FSRU's meaning and definition.
- Recognize what FSRU is and its significance.
- Identify the benefits of FSRU in gas projects.
- Analyze the FSRU market dynamics.
- Master FSRU design principles.
- Handle FSRU gas processes.
- Manage FSRU projects efficiently.
- Comprehend FSRU LNG operations.
- Integrate FSRUs in oil and gas projects.
- Navigate gas project phases with FSRUs.
- Oversee gas project development phases.

## Course Content:

### Unit 1: Introduction to LNG - What is LNG:

- Define LNG and its physical properties.
- Discuss rich and lean LNG compositions.
- Explain safety and flammability concerns.

### Unit 2: LNG Global Trade and Alternative Commercial Models:

- Explore the global gas and LNG trade.
- Analyze the development of LNG trade.
- Identify major LNG-importing countries.
- Review the global FSRU fleet and its market characteristics.
- Examine the LNG contract chain, including sales and purchase agreements and FSRU chartering.

### Unit 3: Technical Fundamentals:

- Discuss LNG properties and conversions.
- Explain heating values, Wobbe index, and interchangeability.
- Analyze market specifications for LNG.

### Unit 4: FSRU vs Land-Based Import:

- Compare CAPEX schedules for FSRU and land-based import solutions.
- Outline permitting processes.
- Identify major port restrictions.

## **Unit 5: Major FSRU Technology Choices:**

- Explore regas technology selection.
- Discuss boil-off gas handling and reliquefaction.
- Review LNG pump selection and topside layout considerations.

## **Unit 6: FSRU Cargo Containment Systems:**

- Provide an overview of liquefaction systems: membrane, Moss, SPB, and Type C.

## **Unit 7: LNG Transfer:**

- Compare ship-to-ship transfer methods: side-by-side vs tandem.
- Discuss the use of hard arms vs cryogenic hoses.
- Explain HP gas transfer methods and custody transfer, metering, and measurement.
- Address small-scale and bunkering LNG transfer.

## **Unit 8: FSRU Mooring System Designs:**

- Review different mooring system designs: tower yoke systems, spread mooring, jetty mooring, and gravity-based regas structures.

## **Unit 9: Marine Infrastructure Issues:**

- Discuss breakwater design and port dredging.
- Analyze tugs and pilots for FSRU designs.
- Compare new build vs conversion projects.
- Select suitable shipyards and ship designs AtlanticMax, Q-max, Q-flex.
- Examine floating storage units FSUs, floating regas units FRUs, and niche FSRU applications like floating gas-to-power.

## **Unit 10: FSRU Construction & Constructability:**

- Outline the delivery of long lead items.
- Review typical conversion and new build schedules.

## **Unit 11: FSRU CAPEX and OPEX:**

- Identify factors influencing CAPEX and OPEX.
- Discuss typical OPEX elements.

## **Unit 12: FSRU Site Selection Considerations:**

- Consider met ocean data and water depth requirements.
- Analyze water temperature impacts and environmental regulations.



## **Unit 13: Introduction to LNG Safety:**

- Review historical incidents and lessons learned.
- Discuss material selection, layout, stratification, and rapid phase transition.
- Explore safety in design and safety code requirements.
- Introduce permitting and environmental considerations.

## **Conclusion:**

The FSRU project development and operation course offers a thorough analysis of the FSRU sector, covering many technical, project-specific, and business concerns related to the usage of FSRU regasification units.