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## TWO DAY TRAINING ON HYDROGEN FUEL CELL VESSEL

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**COURSE OBJECTIVES** To develop awareness of key concepts in the design, development, and operation of hydrogen fuel cell-powered ships.

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**ABOUT THE COURSE** The participants will have an overview of various alternate fuels. Advantages and challenges of each fuel type. Comparative analysis of emissions and environmental impacts. Basics of hydrogen production, storage, and fuel cell operation. Efficiency, performance metrics, and case study of the hydrogen-powered vessel. Specific regulations for hydrogen fuel cells in maritime settings. Safety standards and certifications required for construction and operation. Risk analysis methodologies, including HAZOP (Hazard and Operability Study), power and control system considerations, Dispersion analysis, Hydrogen fuel Bunkering Key design principles for integrating hydrogen fuel cells into ship systems. Operational safety measures and best practices. Understanding the interplay between fuel cells and traditional propulsion systems.

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**PARTICIPANTS** The training will be useful for the decision makers from the government bodies, shipbuilders, shipping companies, ship designers, ports, marine equipment manufacturers and all those involved in the supply chain of logistics.

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**DURATION** Two day

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## LEARNING OBJECTIVES

- Participants will:
- Gain in-depth knowledge of alternative fuels for ship propulsion, with a focus on hydrogen fuel cells.
  - Understand the regulatory landscape and safety considerations for hydrogen-powered ships.
  - Acquire skills in risk analysis, system design, and integration relevant to hydrogen technologies.
  - Benefit from practical experience from various stake holders Class, Shipyard, system integrators.
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## KEY TOPICS

Alternate Fuel Candidates  
Introduction to Hydrogen Fuel Cell  
Regulations related to Hydrogen Fuel Cell  
Design Consideration - Risk Analysis  
Design consideration - Power, control, machinery aspects  
Design Consideration – HAZOP Analysis, Dispersion analysis  
Design Consideration – System Integration  
Vessel Construction Challenges  
Operational Safety  
Crew Training

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## TRAINER



### R Srinivas

Mr R.Srinivas is working as Vice President & Senior Principal Surveyor at Indian Register of Shipping (IRS). He heads the Electrical and control systems department in IRS plan approval division. He is an IRS member in IACS Cyber Systems Panel and in Joint Industry Working Group on Cyber systems. He is actively involved as Project manager in IACS cyber systems panel, for development of recommendations, unified requirements for cyber systems, He is also an ISMS internal auditor.



### Devrup Kabi

Presently working as Senior Principal Surveyor at Indian Register of Shipping. A marine engineer with 12 years of sailing experience till the rank of Chief engineer. Presently working as head of shipbuilding project management and head of machinery plan approval at Indian Register of Shipping. He is the IRS Member of EU RO Steering committee, IACS Machinery panel and EU MED.IACS representative in IMO as an Indian delegate at MEPC and PPR.