Abstract

Pedagogical Approach for Developing a Course on the Use of Hydrogen as a Maritime Fuel

This thesis explores the design of a pedagogical approach to train seafarers in the use of hydrogen as a maritime fuel. Faced with the climate emergency, the author highlights a critical gap between technological innovation and the international regulatory framework (IGF Code), currently centered on LNG and partially unsuited to the unique properties of hydrogen.

Based on the "Model Course Outline" method, the work proposes a structured curriculum composed of eight modules which are: 1) introduction and fundamental properties of hydrogen, 2) production and classification, 3) regulatory framework and IGF Code, 4) hazards and health risks, 5) technical design and storage (LH_2 vs CH_2), 6) operational safety and inerting, 7) detection and firefighting, 8) personal protective equipment.

In conclusion, while theoretical training is already feasible, this pedagogical framework is conditioned by the progress of technical solutions and applicable regulations, which slows the development of a comprehensive training program. Consequently, the course content is expected to evolve regularly to reflect ongoing innovations and regulatory adjustments in application.