

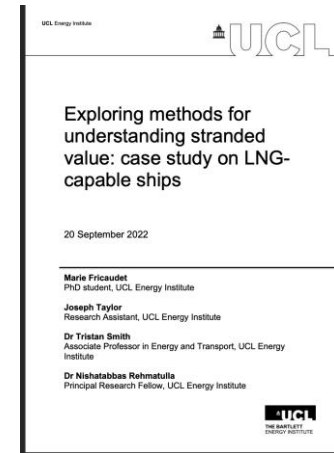
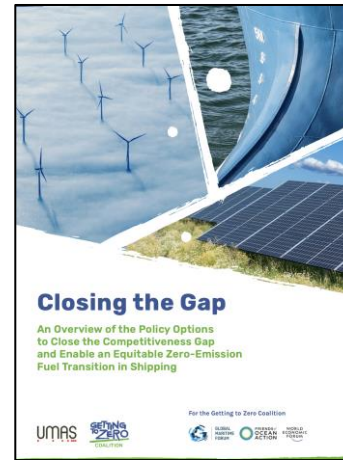
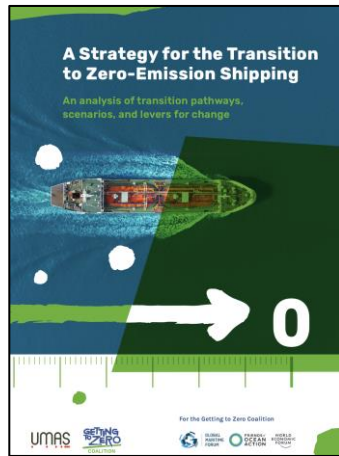
LNG and IGF Code – Lessons for Ammonia

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BACKGROUND

- Multiple codes responsible for the regulation of ship processes
- Key codes for LNG: IGC Code, IGF Code
- Other codes have to be considered as well: ASME Boiler and Pressure Vessel Code (BPVC), STCW Regulation V/3, ISO LNG Bunkering standard

SIGTTO - Society of International Gas Tanker and Terminal Operators

SGMF – Society for Gas as a Marine Fuel

NGOs, IGOs, and national administrations feeding into IMO proceedings



MEPC

MSC

CCC

International Maritime Organization (IMO)

- Regulates maritime shipping
- Has specialised committees, sub-committees, and working groups
- For LNG of relevance: MEPC, MSC, CCC
- Information fed by maritime experts from organisations at IMO (E.g. industry associations, NGOs, etc.) and member states

IGC Code

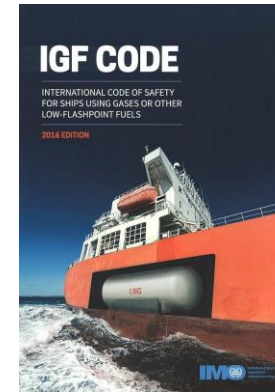
- Main code regulating LNG fuelled ships prior to adoption of IGF Code
- Stringent requirements: fuel piping, fuel tank location, ESD engine room, etc.
- Has been in place for decades and well established
- Rigid standards not meant for smaller vessels and vessels with passengers became problem in 2000s
- 2000 – ‘Glutra’, first LNG-fuelled passenger ferry, followed by uptake of LNG as ship fuel in Norway/Scandinavia



The outline

- **The International Code of the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk**
- Mandatory since 1986 - adopted by MSC.5(48), SOLAS chapter VII
- Applies to ships regardless size, engaged in carriage of liquefied gases, with vapour pressure exceeding 2.8 bar at 37.8°C

IGF Code



- Main code regulating LNG fuelled ships other than those covered with IGC Code
- Lead to new training requirements with amendments to SOLAS and the STCW Code
- Includes multiple design considerations such as: ESD protected machinery spaces, bilge systems and drip trays, loading limits for fuel tanks, airlocks, ventilation and leak detection, etc.

The outline

- The **International Code of Safety for Ship Using Gases or Other Low-flashpoint Fuels**
- Entered into force in 2017- adopted at MSC 95, amendments to SOLAS chapter II-1
- Applies to all ships, other than those covered by IGC Code, operating with gas or low-flashpoint liquids
- Provides industry standards for ships that use fuels with a flashpoint of less than 60°C
- Goal-based approach (MSC.1/Circ.1394), specifies: design, construction and operation of ships

IGF vs IGC Code - differences

- **IGF Code generally is based on and follows developments from the IGC Code,** but aims to make process for non-gas carrier ships better suited for their unique specifications
- **Routing of fuel piping:** *IGC Code limits cargo gas used as fuel to piping in the machinery space. IGF Code allows through runs of gas fuel piping in other areas of the ship provided they are protected by a double walled pipe or ventilated duct.*
- **ESD protected engine room:** *IGC Code - all gas fuel piping in machinery spaces be protected by double walled, ventilated piping system. IGF Code permits the elimination of this double walled protection if the ignition sources are limited and electrical power secured in event gas is detected in the machinery space*
- **Crew training requirements -** *based upon those contained in Regulation V/5 for gas carriers*

IGF Code – History

- 2000 – first LNG-fuelled passenger ferry ‘Glutra’ enters service in Norway
- IGC Code used as guideline – but design considerations for engine rooms and operational requirements not suitable for such vessels
- Bunkering standards developed nationally and involvement by class, with calls for development of international safety standards for LNG-fuelled ships
- 2003 – first call at IMO to develop IGF Code
- 2003 - 2010 – on-going discussions between multiple member states and industry associations
- 2010- Sub-Committee on Bulk Liquids and Gases (BLG) intensifies work on IGF Code with multiple submissions – in particular discussions on bunkering, operations and technical considerations
- 2011-2013 – work continues at Correspondence Group on the IGF Code - challenging discussions on what design considerations should be developed – what safety standards are appropriate
- How to deal with hazards and challenges
- 2015 – code adopted

IGF Code – Current developments

- 2023 - Carriage of Cargoes and Containers (CCC9) at IMO: draft amendments to paragraphs 4.2.2 and 8.4.1 to 8.4.3 of the IGF Code
- Draft Interim guidelines for the safety of ships using hydrogen as fuel
- Safety provisions for ships using low-flashpoint oil fuels
- Draft Interim guidelines for ships using ammonia as fuel: comply with SOLAS Chapter II-1 Part G and read in conjunction with IGF Code – to be complete by 2025, focus of ‘Correspondence Group’ on: risk assessment, semi-refrigerated and pressurised systems in the guidelines, safe haven/refuges on board of ships, mitigation measures for release of ammonia, etc.

IGF Code – Lessons for Ammonia

- LNG rules took decades to finalize and create – ammonia has to move faster
- IGF and IGC Code differences show need to ensure different rules apply to different ships based on their operational profile and nature of ship cargo being carried
- Passenger ships should be looked at in conjunction with specific bunkering guidelines considerations – one type of vessel should not stop development of the code for other types, if discussions at CCC persist
- Goal-based approach offers many lessons for ammonia in ways in which rules and regulations should be created
- LNG continued to grow in usage irrespective of the developments pertaining to IGF Code, but the code helped to standardize global expectations, here class can also play an important role

Thank you