LNG fuelled ships - regulations

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Summary

1. Do we need dedicated regulations for LNG-fuelled ships?
2. Current regulations in force (IMO)
3. New developments
4. Future regulations - prospects
Reasons for dedicated regulations
(safe and environmentally-friendly design, construction and operation of ships)

• Fuel flashpoint limit $\geq 60^\circ C/43^\circ C$
  [SOLAS II-2/R.4]

• LNG (low-flashpoint fuels) properties/associated risks
Current regulations in force

1. IMO regulations
2. Class regulations
3. ISO standards
4. EU/National regulations
5. Industry standards
6. Local/regional regulations (ports)
IMO regulations in force

- Res. MSC.285(86) [year 2009] Interim guidelines on safety for natural gas-fuelled engine installations in ships.
- IGC Code (Chapter 16: use of cargo as fuel)
- SOLAS Convention
New development

CODE OF SAFETY FOR SHIPS USING GASES OR OTHER LOW-FLASHPOINT FUELS

IGF Code
IGF CODE – entry into force

CCC 1 (Sep 2014) -> MSC 94 (Nov 2014) -> MSC 95 (June 2015)

Entry into force
01.01.2017 ?
IGF Code - application

- Passenger ships
- Cargo ships ≥ 500 GT
- Ships converted to use low-flashpoint fuels
- Recommended for cargo ships ≤ 500 GT (up to Administrations)
- Not applicable to ships covered by IGC Code /Ch.16
IGF Code

- Holistic approach
- Goal based approach
- Mandatory criteria
- Vast applicability

IGF Code regulates arrangement, installation and operation of machinery, equipment and systems for vessels to minimize the risk to the ship, its crew and the environment.
LNG fuel quality - specification

Typical LNG gas composition in volume (Res. MSC. 285(86))

- Methane (C1) 94.0%
- Ethane (C2) 4.7%
- Propane (C3) 0.8%
- Butane (C4+) 0.2%
- Nitrogen 0.3%
- Density gas 0.73 kg/sm³
- Density liquid 0.45 kg/dm³
- Calorific value (low) 49.5 MJ/kg
- Methane number 83

It should be recognized that the composition of natural gas may vary ..... (IGF Code – draft)
Port regulations (bunkering)

- Safety assessment
- General regulations
- Safety checklists
- Suppliers’ authorisation
Bunkering options

• Shore to ship
• Ship to ship
• Truck to ship
• Portable container tank
Future regulations

IGF Code

• ethyl/methyl alcohol
• low-flashpoint diesel
• fuel cells (LNG, other)
• Other fuels
THANKS!

(QUESTIONS?)