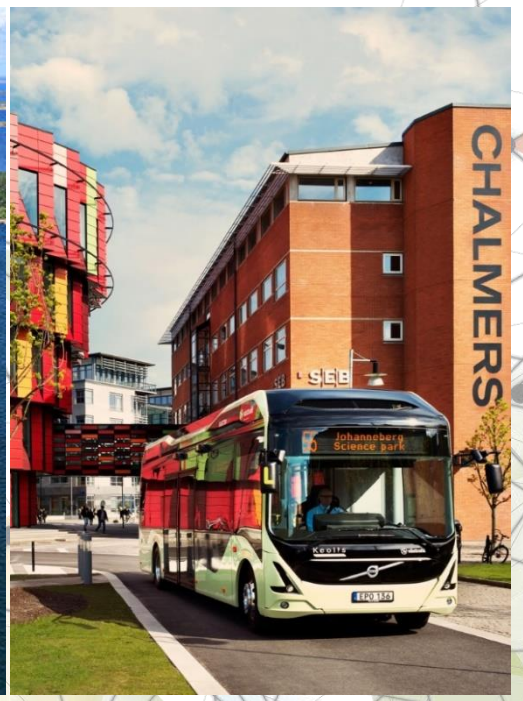
CHALMERS
UNIVERSITY OF TECHNOLOGY

Gasdagarna Båstad

2019-05-15



CHALMERS
UNIVERSITY OF TECHNOLOGY

Johan Eliasson Ljungklint

Department of Mechanics and Maritime Sciences

Lecturer in Engine room simulation

Head of Marine Engineering program

Second process leader for ”To educate”

Marine Engineer

At Chalmers since 2008

Ex Naval Officer

Lectures

Tommy Hjälmås
Guest lecturer

ALTAMARINE

Johan Eliasson Ljungklint
Lecturer
Chalmers University

“FOR A SUSTAINABLE FUTURE”

- Our vision is allowed to permeate all activity within the fields of research, education and innovation
- The goal is to develop technical solutions that are needed to create a sustainable future
- Avancez
  Founded by William Chalmers 1748-1811 Supercargo of the Swedish East India Company

Image: Volvo

CAMPUSES | SITES

Our Campuses

– Johanneberg
– Lindholmen

– Onsala Space Observatory
– The House of William Chalmers

Three Science Parks

– Johanneberg
– Lindholmen
– Sahlgrenska

Organized under 13 departments

WORLD-CLASS EDUCATION

- Full-scale engineering university
- All education is based on research
- Challenge driven education and digital learning

Maritime Educations at Chalmers

Undergraduate (Bachelor's level)

International Logistics (Internationell logistik), 3 years.

Master Mariner (Sjökapten), 3 years + 1 year onboard training.

Marine Engineer (Sjöingenjör), 3 years + 1 year onboard training.

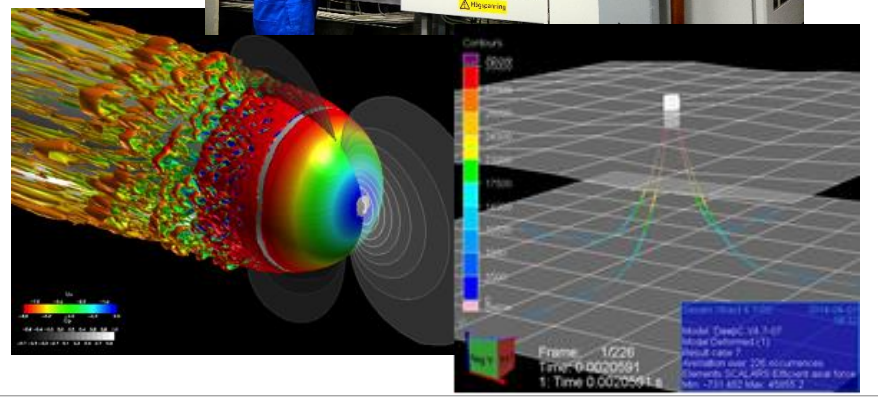
Officer Class VII Deck and Engine for Coastal Waters, 1 years

Graduate (Master's programs)

Naval Architecture and Ocean Engineering, 2 years.

Maritime Engineering, 2 years.

Maritime Management, 2 years.



Infrastructure

Chalmers' Simulator Center:

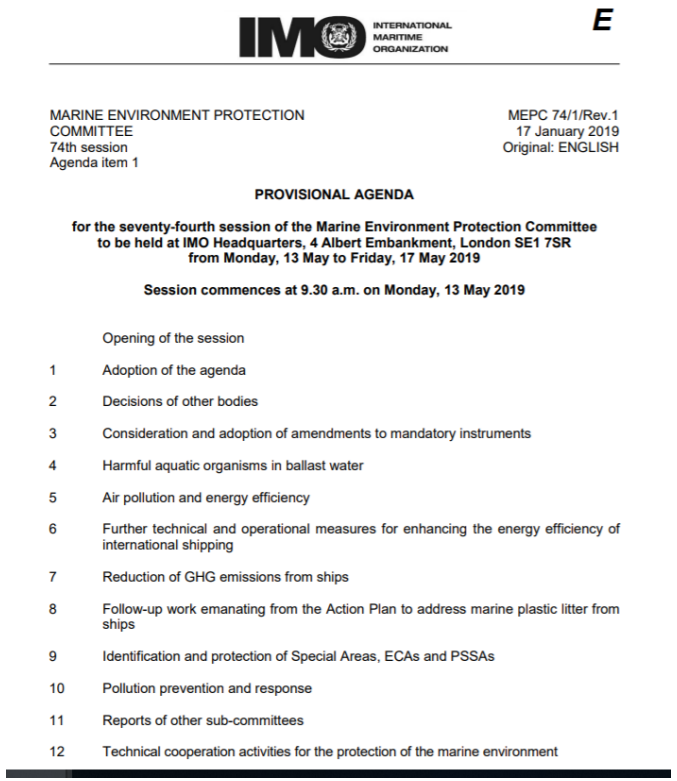
- Innovative ship simulator center
- Approved as a Chalmers Research Infrastructure
- Cooperation with Swedish Maritime Administration
- Chalmers part of the European Maritime Simulator Network (EMSN)

The regulations that effect the Shipping industry

- United Nations
  - International Maritime Organization
  - Committees that handles the transnational legislation and agreements.
  - Marine Environment Protection Committee (MEPC)
  - Human Training and Watchkeeping (HTW)

Today what is happening right now in London? Marine Environment Protection Committee (MEPC) 74 Session

- Highlight of the Agenda
- Air pollution and energy efficiency
- Reduction of GHG emissions from ships
- Identification and protection of Special Areas, ECAs and PSSAs
- Pollution prevention and response



IMO INTERNATIONAL MARITIME ORGANIZATION

E

MARINE ENVIRONMENT PROTECTION COMMITTEE
74th session
Agenda item 1

MEPC 74/1/Rev.1
17 January 2019
Original: ENGLISH

PROVISIONAL AGENDA

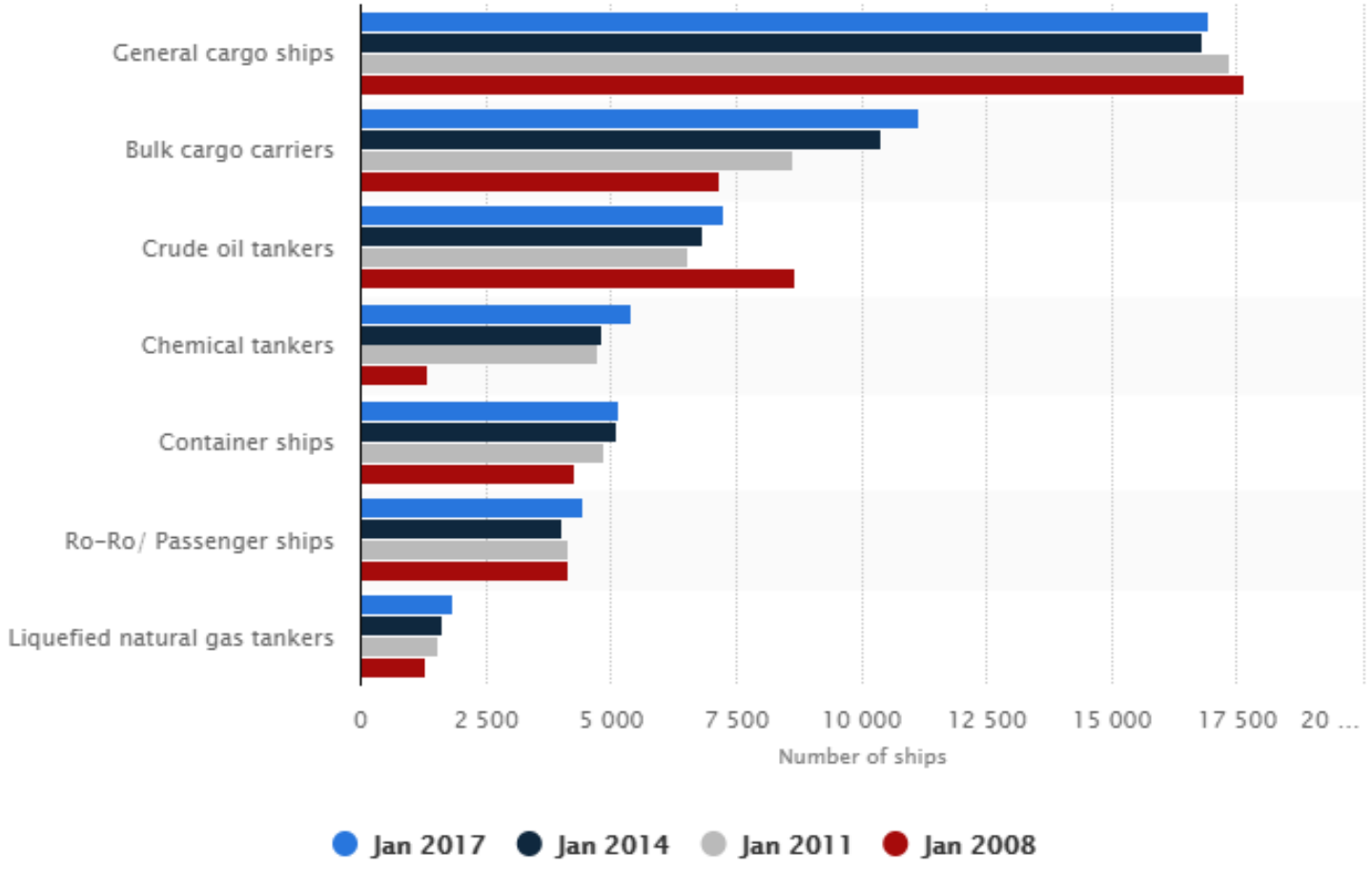
for the seventy-fourth session of the Marine Environment Protection Committee to be held at IMO Headquarters, 4 Albert Embankment, London SE1 7SR from Monday, 13 May to Friday, 17 May 2019

Session commences at 9.30 a.m. on Monday, 13 May 2019

	Opening of the session
1	Adoption of the agenda
2	Decisions of other bodies
3	Consideration and adoption of amendments to mandatory instruments
4	Harmful aquatic organisms in ballast water
5	Air pollution and energy efficiency
6	Further technical and operational measures for enhancing the energy efficiency of international shipping
7	Reduction of GHG emissions from ships
8	Follow-up work emanating from the Action Plan to address marine plastic litter from ships
9	Identification and protection of Special Areas, ECAs and PSSAs
10	Pollution prevention and response
11	Reports of other sub-committees
12	Technical cooperation activities for the protection of the marine environment

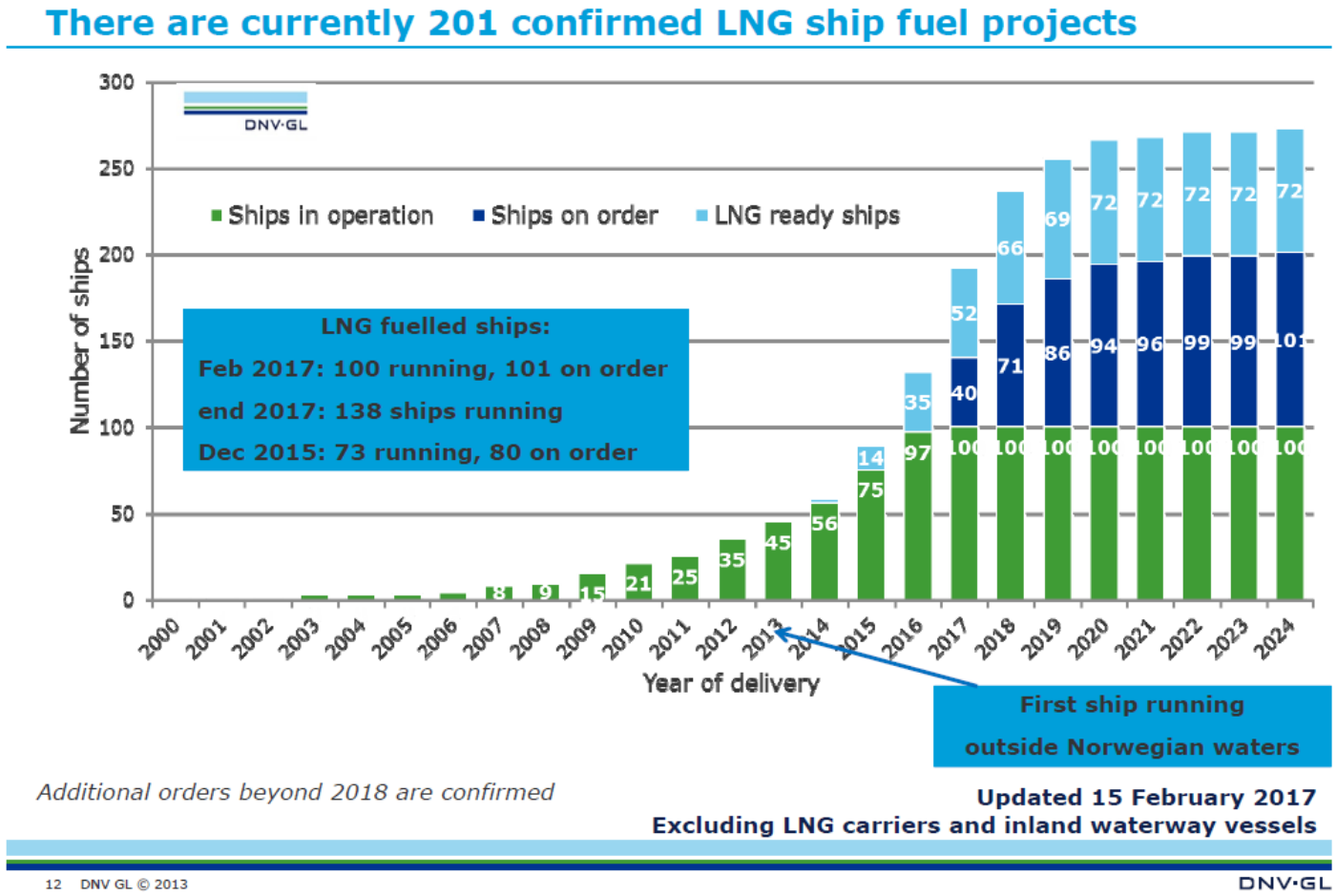
The challenge for shipping industry

- How many ships in service of today?
- 65000 all over world



Ships under construction and coming

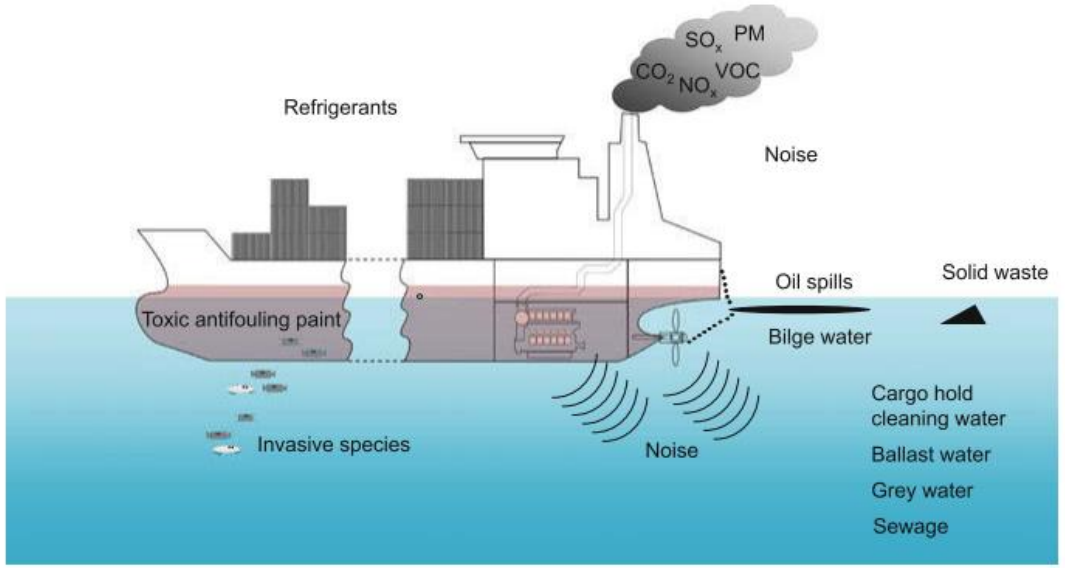
350 LNG fuelled ships (In Service + NB)
9 Methanol fuelled ships (In Service + NB)



Why IGF and low point flash fuels?

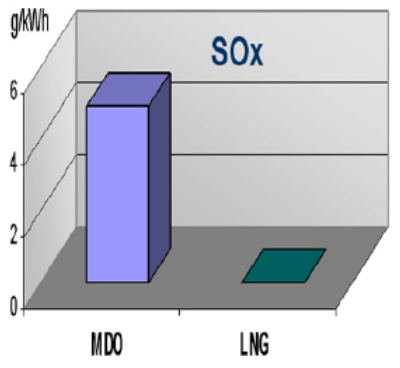
The GHG from shipping

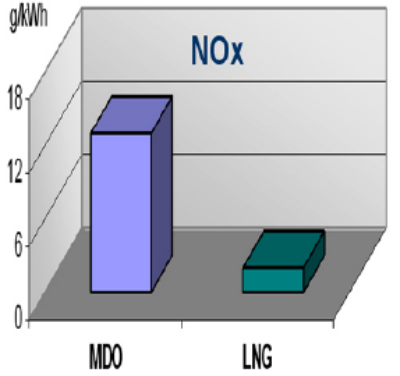
The Sulphur

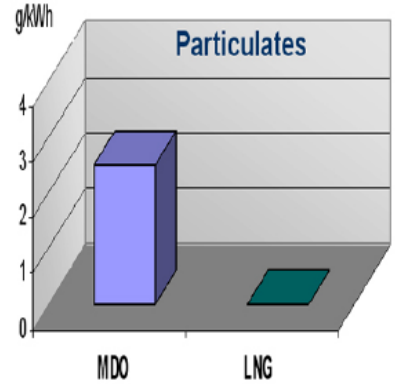


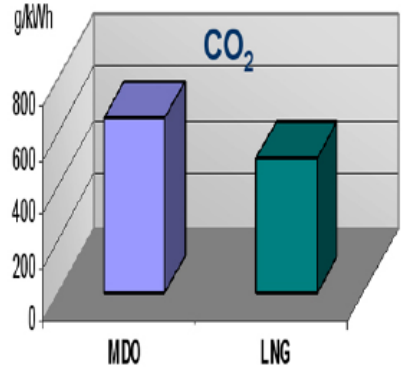
Emissions from LNG fuelled ships - compared to MGO

- **SOx**: practically zero
- **NOx**: 80-90 % reduction
- **PM**: negligible
- **CO_2**: 25-30% reduction (excl **SLIP**)
- Net reduction of **GHG** (Green House Gases): 15-20%

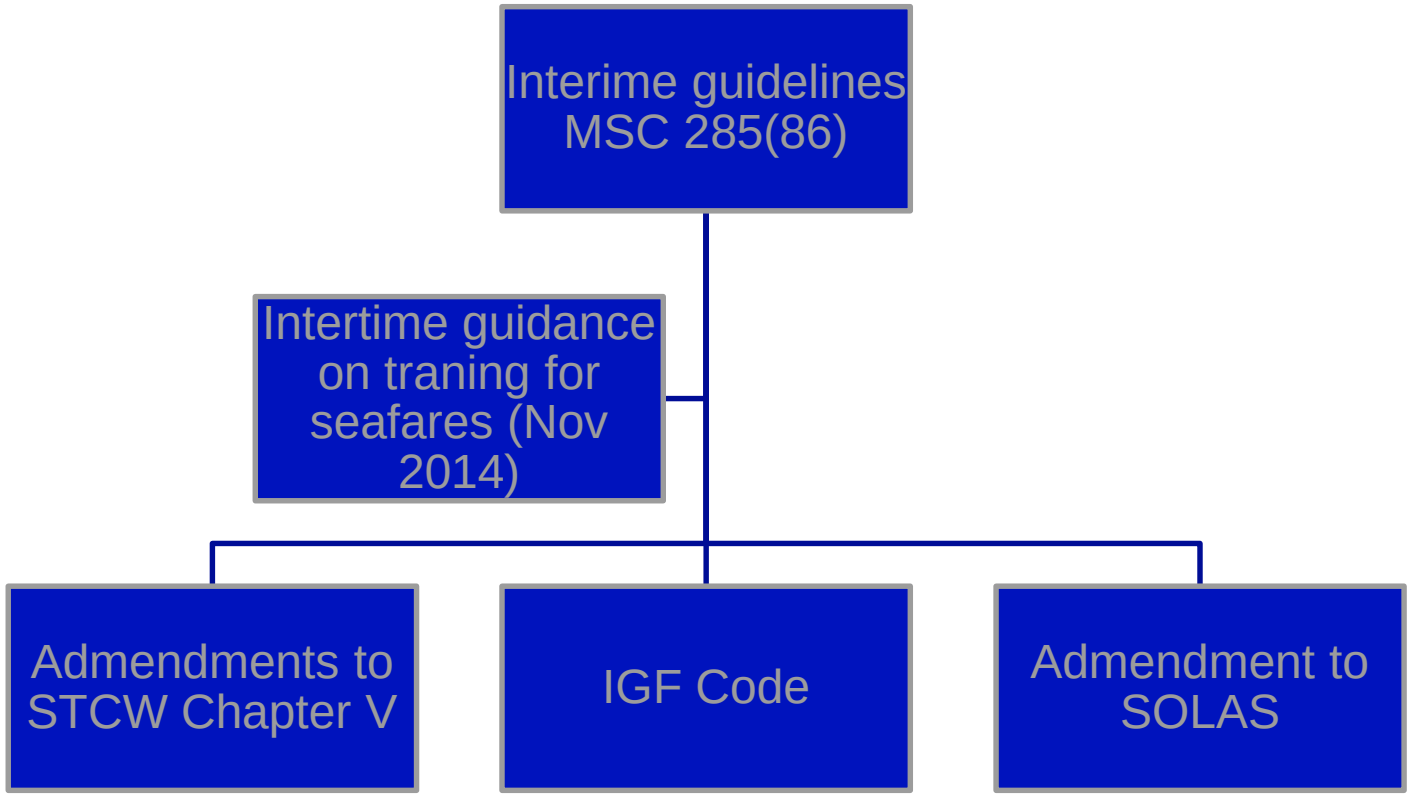








The guidelines and implementation



Is LNG something new onboard?

- No its not.
- It has been onboard since the 1950
- What is the difference now?

It is use as fuel in “any type pf ship”

The IGC Code

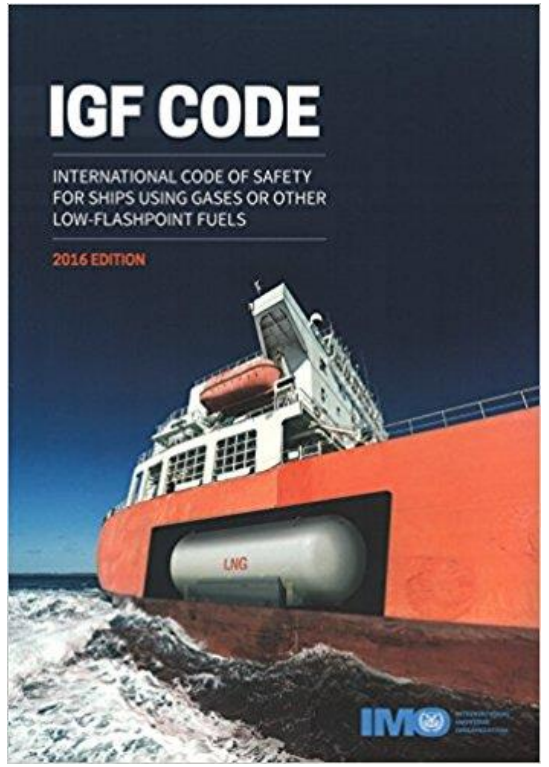
- The International Code of the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code
- Due to the safe carriage of LNG by sea in bulk
- Mainly with construction and design
- To be developed

The IGF Code

- The purpose of this Code is to provide an international standard for ships using low-flashpoint fuel, other than ships covered by the IGC Code.
- The current version of this Code includes regulations to meet the functional requirements for natural gas fuel.
- Regulations for other low-flashpoint fuels will be added to this Code as, and when, they are developed by the Organization.

The IGF Code

- New type of fuel
- Other regulations and demands for a safe shipping
- Infrastructure
- Less of pollution
- Cryogenic



The IGF Code education and courses

- What was the challenge?
- How will affect the shipping industry?
- Swedish shipowners started to invest in vessels
  - Furetank
  - Tarbit
  - Viking Grace

A real life example of IGF Code

What to full fill due to IGF code ?

- What was the challenge?
- New type fuel to bunker and handle as fuel to the main engine.
- Need for simulator training to fulfill the qualifications of the IGF course
- Purpose: to provide an international standard for ships using low-flashpoint fuel, other than vessels covered by the IGC Code.
- Aim: to minimize the risk to the ship, its crew and the environment, having regard to the nature of the fuels involved
- Contains: mandatory provisions for the arrangement, installation, control and monitoring of machinery, equipment and systems using low-flashpoint fuels, focusing initially on LNG.

IGF code simulator why!!

- New demands
- Referral university to Swedish Transport Agency
- Its a supplement to chapter V in STCW Code.
- Train our students for the future
- Courses for the shipping industry

- Half of all new built in Sweden is LNG vessels or prepared for LNG. (total in stock 43 vessel)

IGF code simulator why!!

Any onboard personnel that handles the fuel and the bunkering of it.

- Basic training
  - Certificate in basic training (Table A-V/3-1)
- Advanced training

  Certificate in advanced traning (Table A-V/3-2), AND
  - Completed at least one month of approved seagoing service including a minimum of *three bunkering operations* onboard ships subject to the IGF Code (of which two can be replaced by approved simulator training)

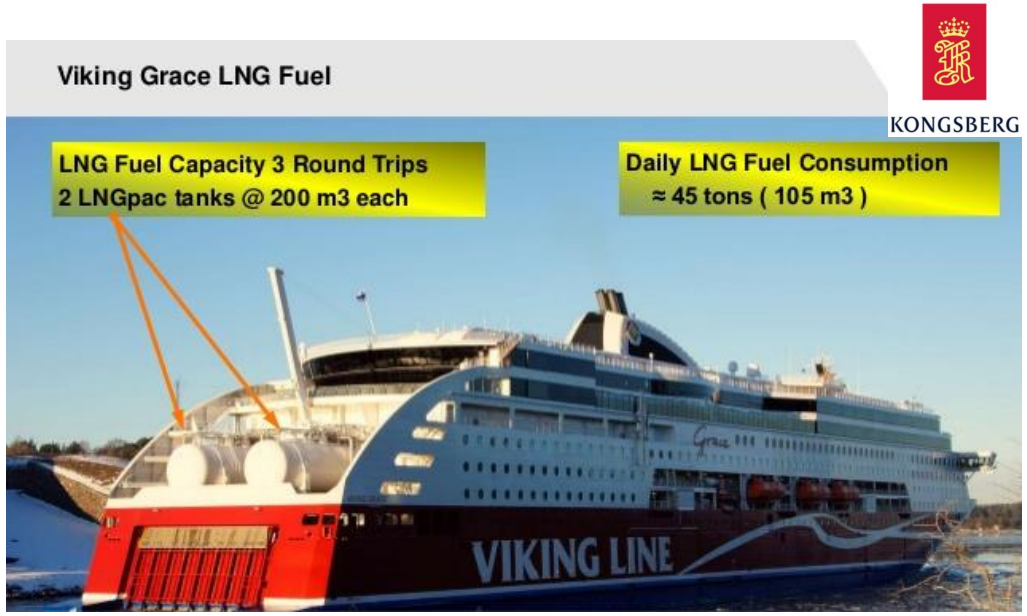
IGF code simulator?

KONGSBERG

- Why? TO be able to give course !
- Is there any on the market?
  - NO!
- What can we do?
  - Order a simulator
- Installed in 2017 “as the first in the World” by Kongsberg Digital

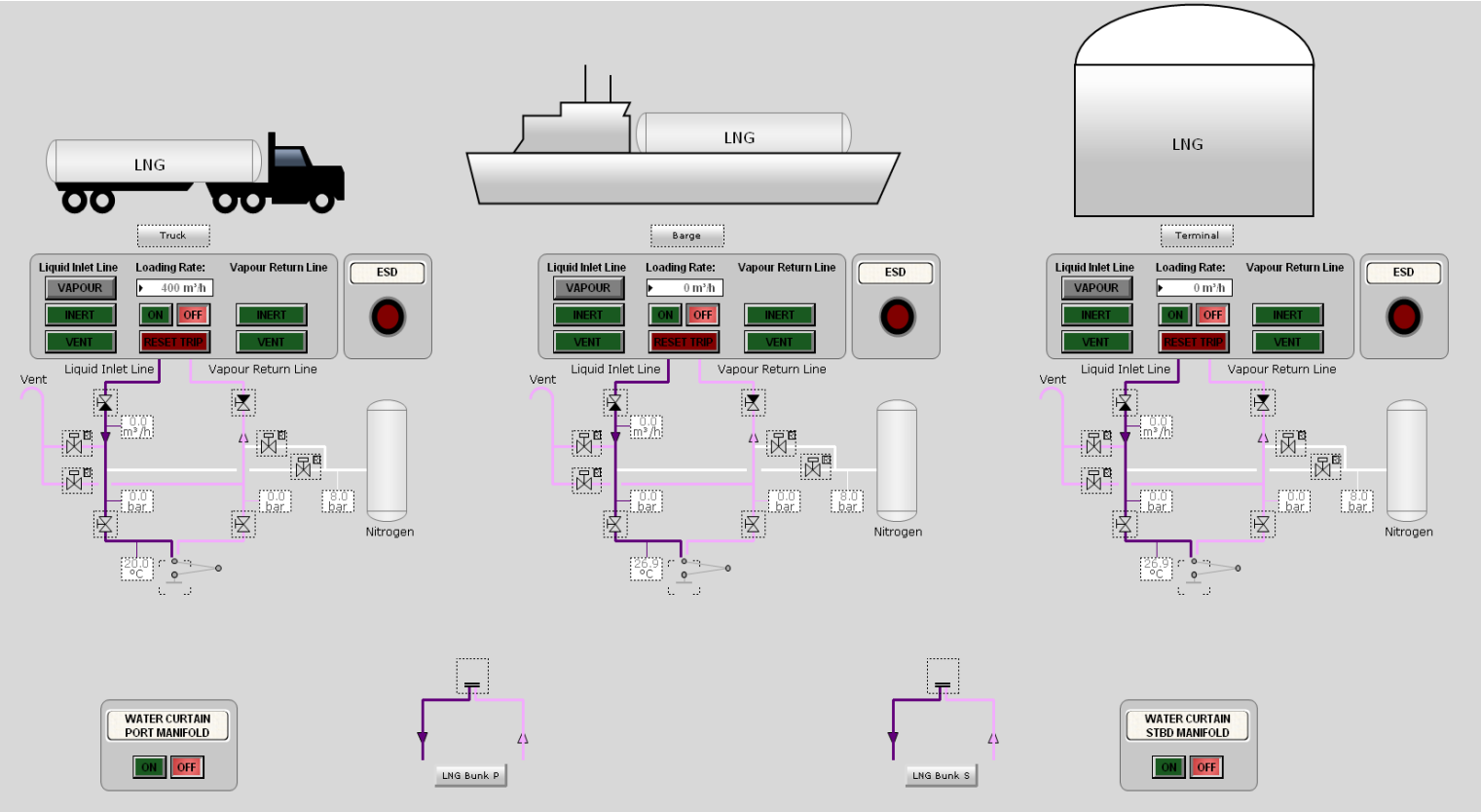
IGF code simulator?

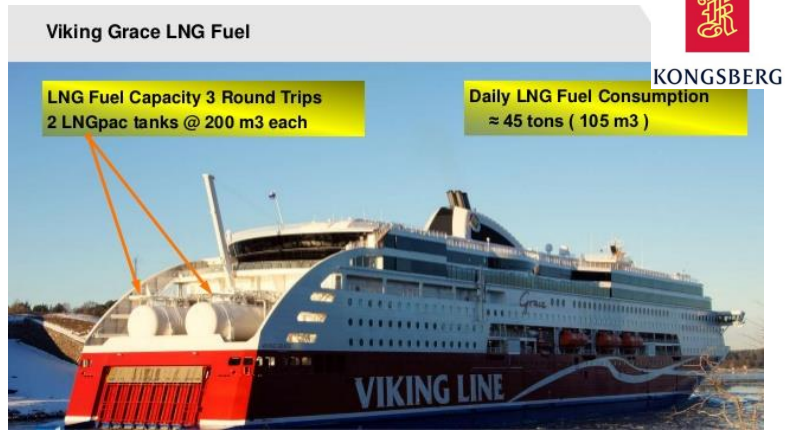
A joint project with Linnaeus University, Chalmers University of Technology and Kongsberg digital.
First discussion in may 2016 delivery in June 2017
The base for the bunkering simulator is Viking Grace passenger ferry



KONGSBERG

IGF code simulator?





KONGSBERG

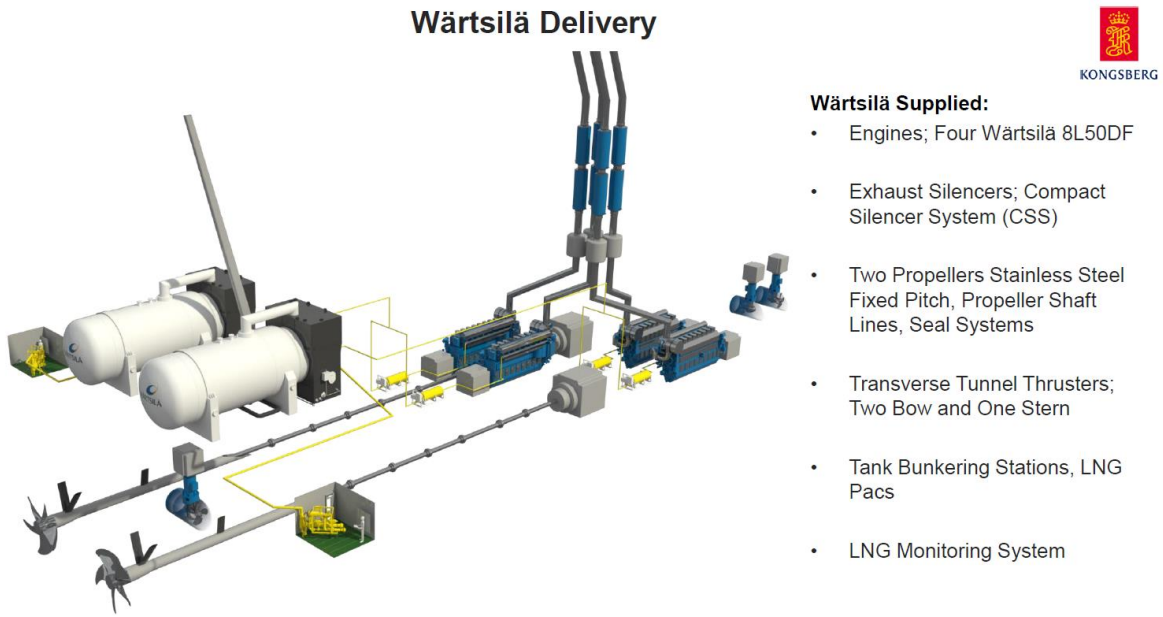
Based up on a real vessel!

KONGSBERG

IGF code simulator?

- Understand the complex thermodynamics of LNG
- Handle different qualities of LNG
- Elaborate with the complex properties
- Understand how to handle risks
- Be more confident with your onboard duties

Support the industry
Prepare our student's for the future



IGF “The model course”

To be finished
Just reviewed at IMO HTW 2019
Sweden
Norway
Netherland
Germany

Every candidate for a certificate in advanced training for service on ships subject to the IGF Code shall,

.1 completed approved advanced training for service on ships subject to the IGF Code and meet the standard of competence as specified in section A-V/3, paragraph 2 of the STCW Code; and

.2 completed at least one month of approved seagoing service that includes a minimum of three bunkering operations on board ships subject to the IGF Code. Two of the three bunkering operations may be replaced by approved simulator training on bunkering operations as part of the training in paragraph 8.1 above.

IGF code courses

To support the shipping industry and prepare our students for the future!

3 Days courses fore active sea fares
Developed a electable course (Given in English)
Ships operation under the IGF code
Both course will fulfill the requirement's for the IGF Code.
Electable course for the students in the Marine Engineering program

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Where to find more information

www.chalmersprofessional.se

Thanks!

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