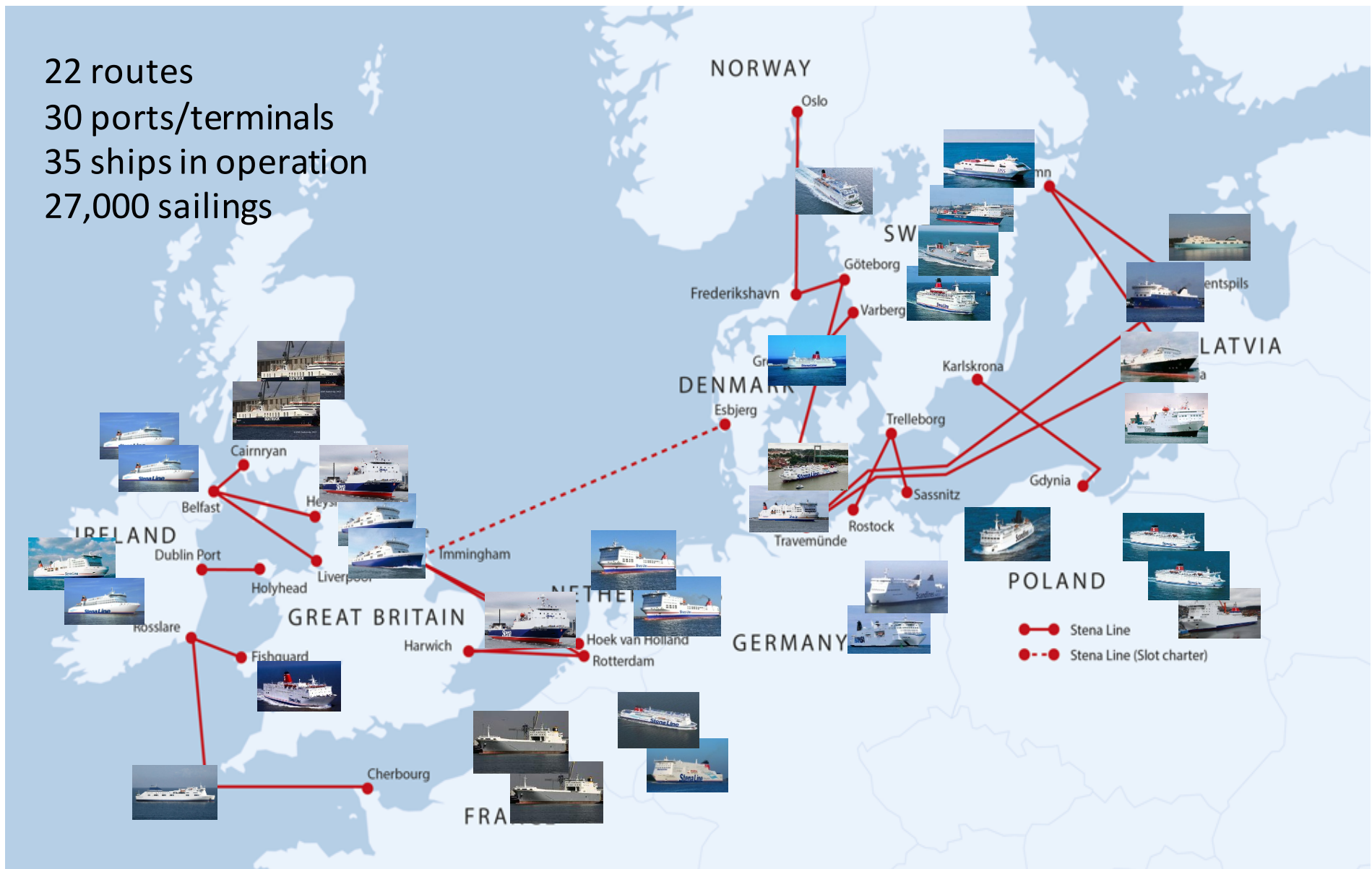


The Methanol Experience

Per Wimby
16th of June 2016

STENA LINE is one of the worlds leading ferry companies

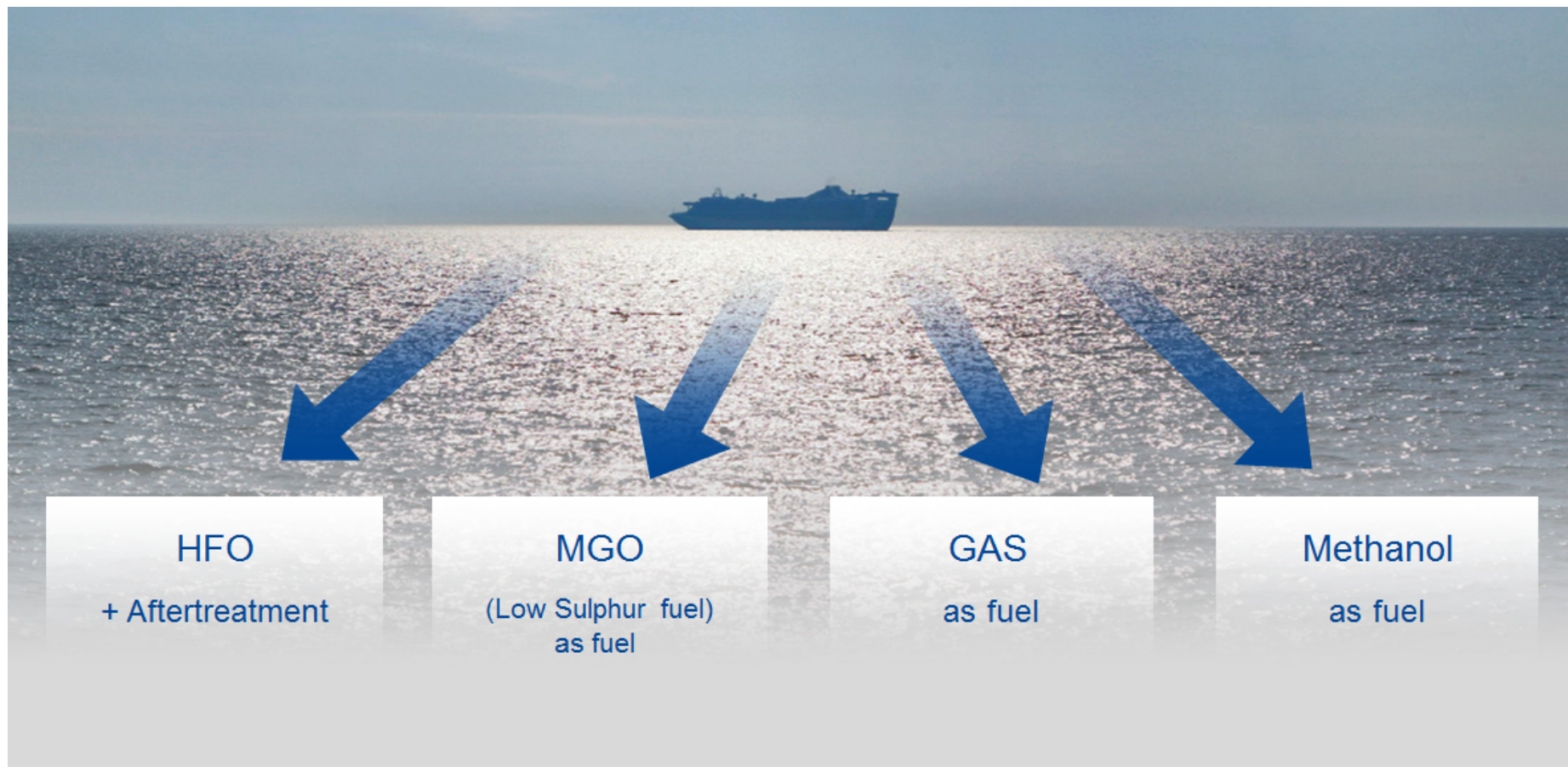
22 routes
30 ports/terminals
35 ships in operation
27,000 sailings



The Challenge - SECA Sulphur Emission Control Area



General alternatives for ship-owners



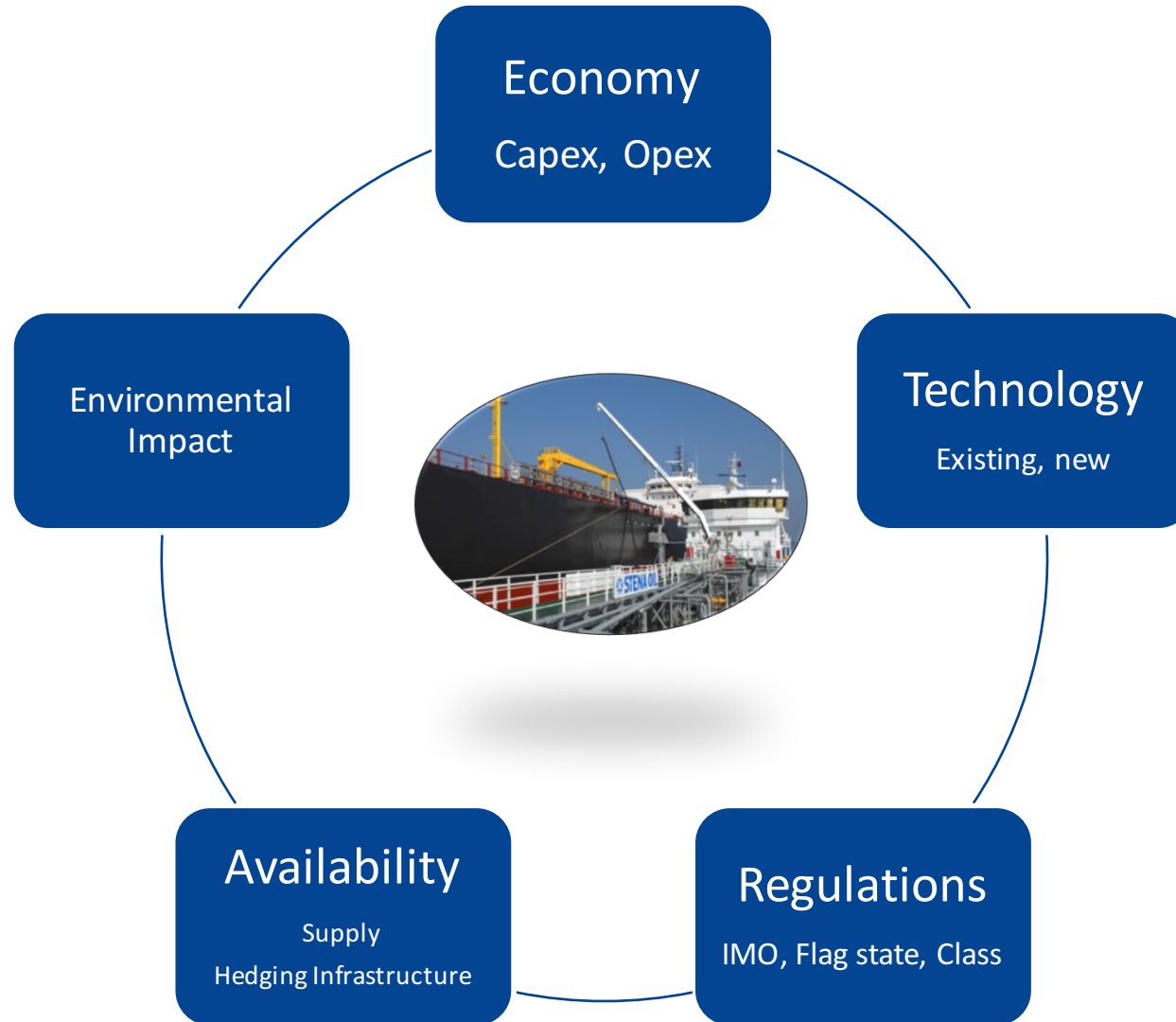
Same fuel but
“scrubbers” clean exhaust
fumes

Difference to previous
fuel about +\$250/MT
- most common

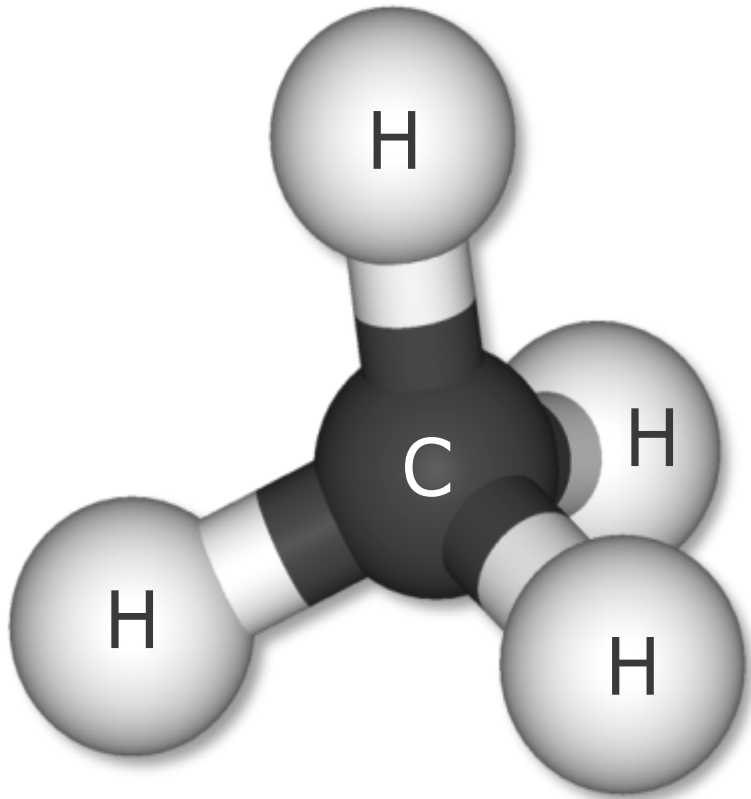
LNG – Cleaner than MGO
but expensive infrastructure

Clean as LNG
but untested

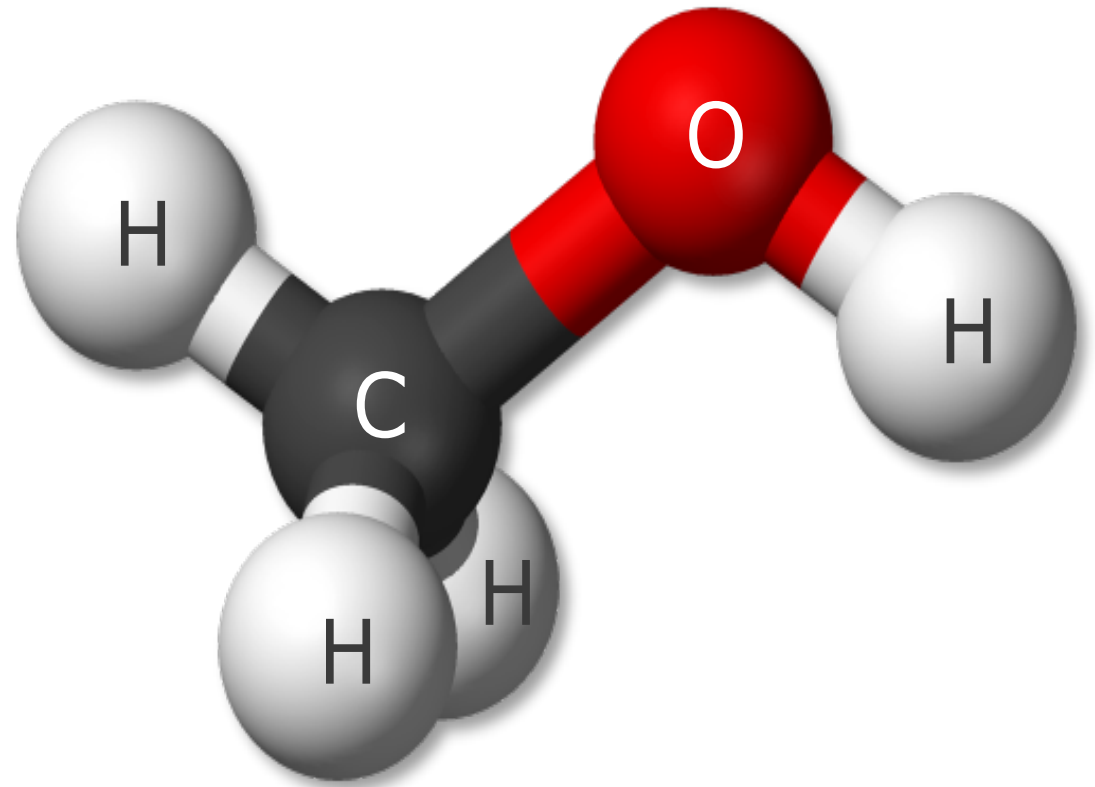
REGULATIONS, TECHNOLOGY, AVAILABILITY , ENVIRONMENTAL IMPACT AND ECONOMY AFFECTS THE CHOICE OF FUEL



Availability: Methanol is liquefied natural gas

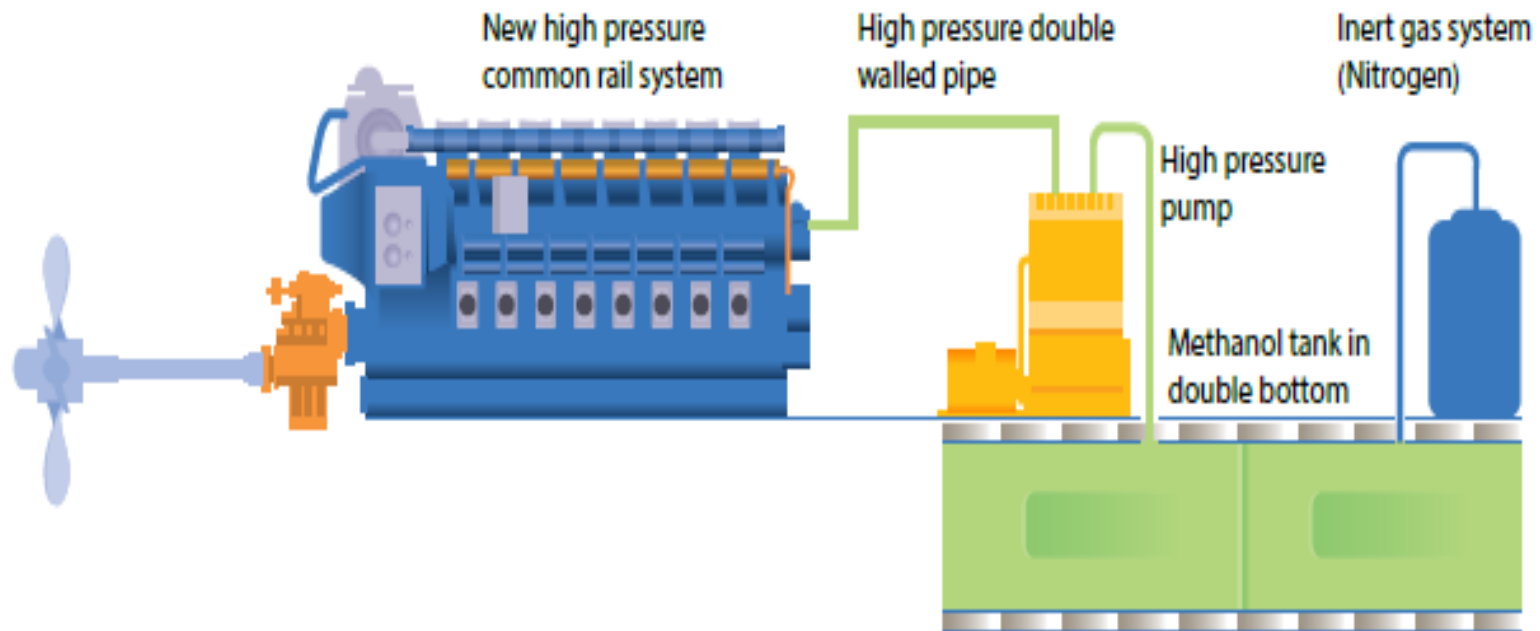


Methane CH_4



Methanol CH_3OH

Technology



Regulation: Shipping fuel is highly regulated and Methanol is not on the approved list (yet). Development of the IGF code ready in Sept.-16.

- Major effort to establish new standard
- Fueling procedures, storage, fire and other safety measures have been challenges to overcome
- Engine is working fine but there has been issues with pipes and pumps.

Approval from Lloyds register to run on Methanol!



INTERIM CERTIFICATE PROVISIONAL ISSUE

Page 1 of 1

Ship's Name: STENA GERMANICA
LR/IMO Number: 9145176
Date of Build: 05/02/2001
Port of Registry: Gothenburg
Gross Tons: 51837
Port of Survey: Gothenburg-Kiel
Certificate Number: GDK 1500594
First Visit: 06/07/15
Last Visit: 07/07/15

I have carried out the surveys detailed below. All recommendations made by me have been dealt with to my satisfaction. I am recommending that class be maintained with new records as follows.

	SURVEYS HELD	STATUS	NEW RECORD
	MACHINERY		
MALT	Test for MF class notation completed	COMPLETE	07/07/15
	CONDITIONS OF CLASS DELETED		
43	ME No.4 METHANOL FUELING MODE TESTS CARRIED OUT IN RUNNING CONDITION. ALARM MONITORING AND SAFETY SYSTEM EXAMINED AND FOUND SATISFACTORY, ENABLING		
	SUBSEQUENT TRIALS BY OWNERS. FINAL TESTS ON METHANOL FUEL HAVE TO BE PRESENTED AFTER TUNING.		
	MEMORANDA IMPOSED		DUE
M01	ME No. 1,2 and 3 high pressure methanol supply pumps tests pending completion of methanol package fitting on the subject Main Engines.		

*** END ***

The above recommendation is made subject to any outstanding conditions of class being dealt with as previously recommended.

Signed:  
Krzysztof Janusz, Waldemar Kaniszewski

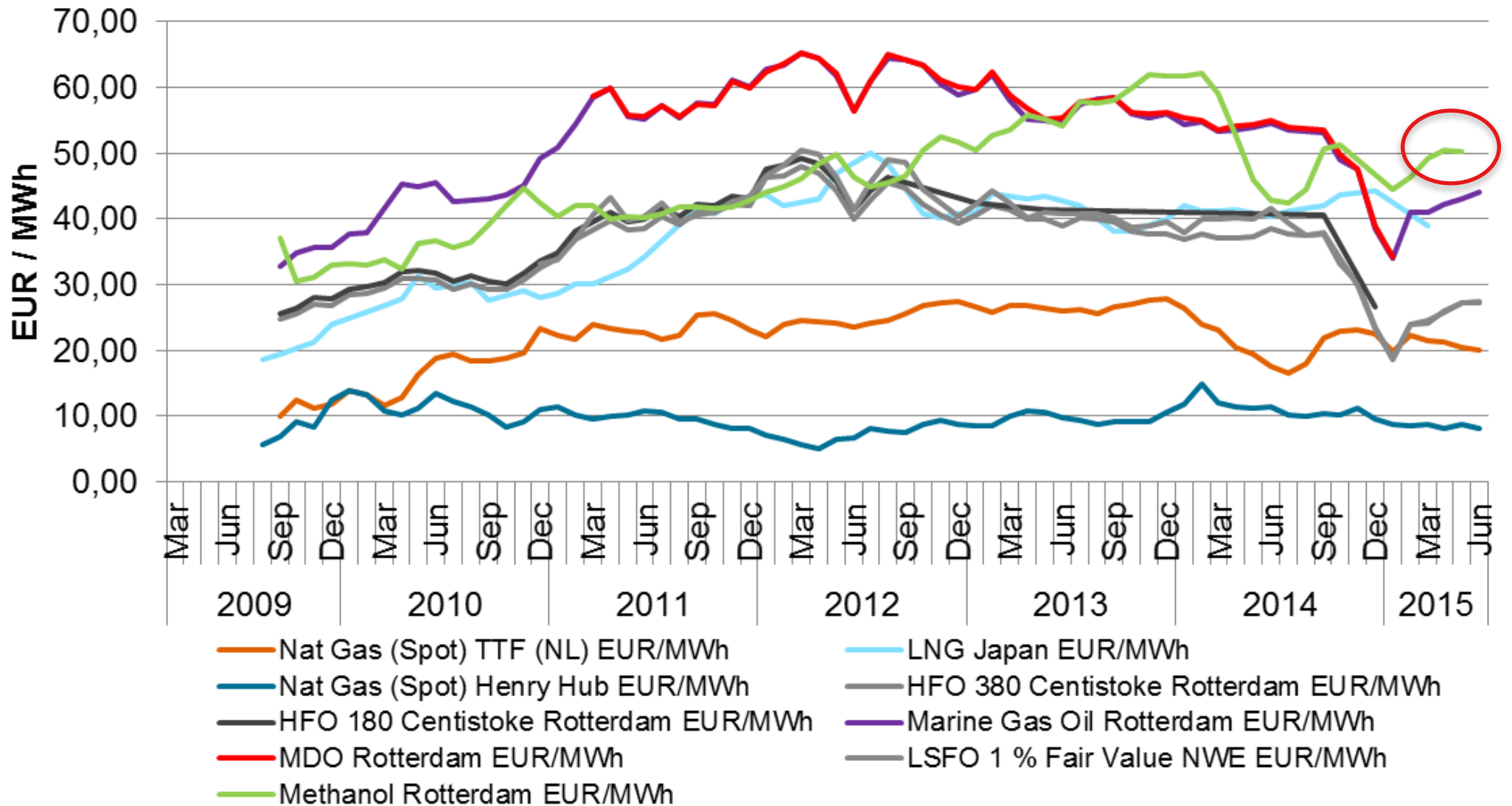
Surveyor(s) to Lloyd's Register EMEA
A member of the Lloyd's Register Group.

Date: 07/07/2015

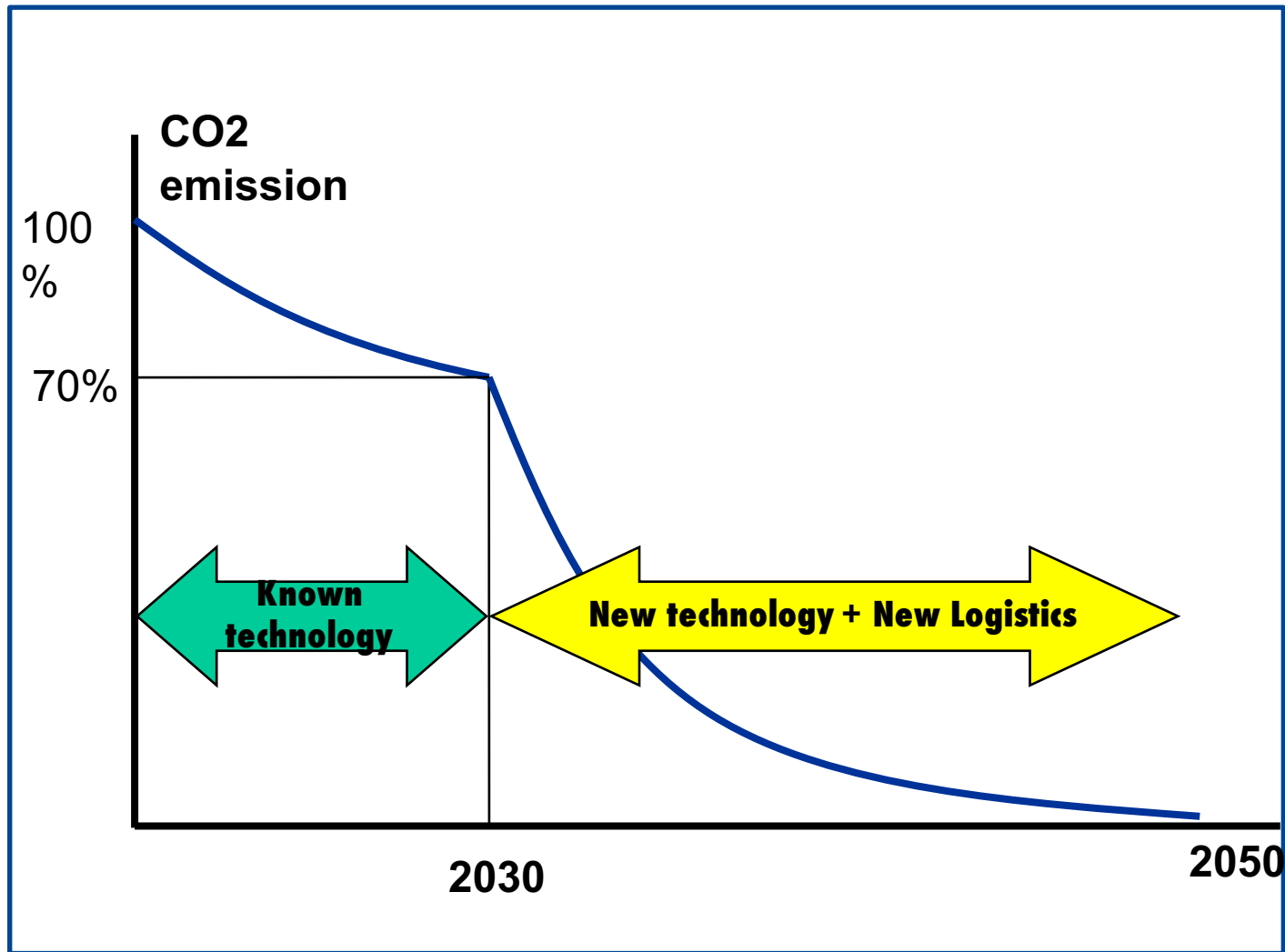
Lloyd's Register, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register Group'. The Lloyd's Register Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



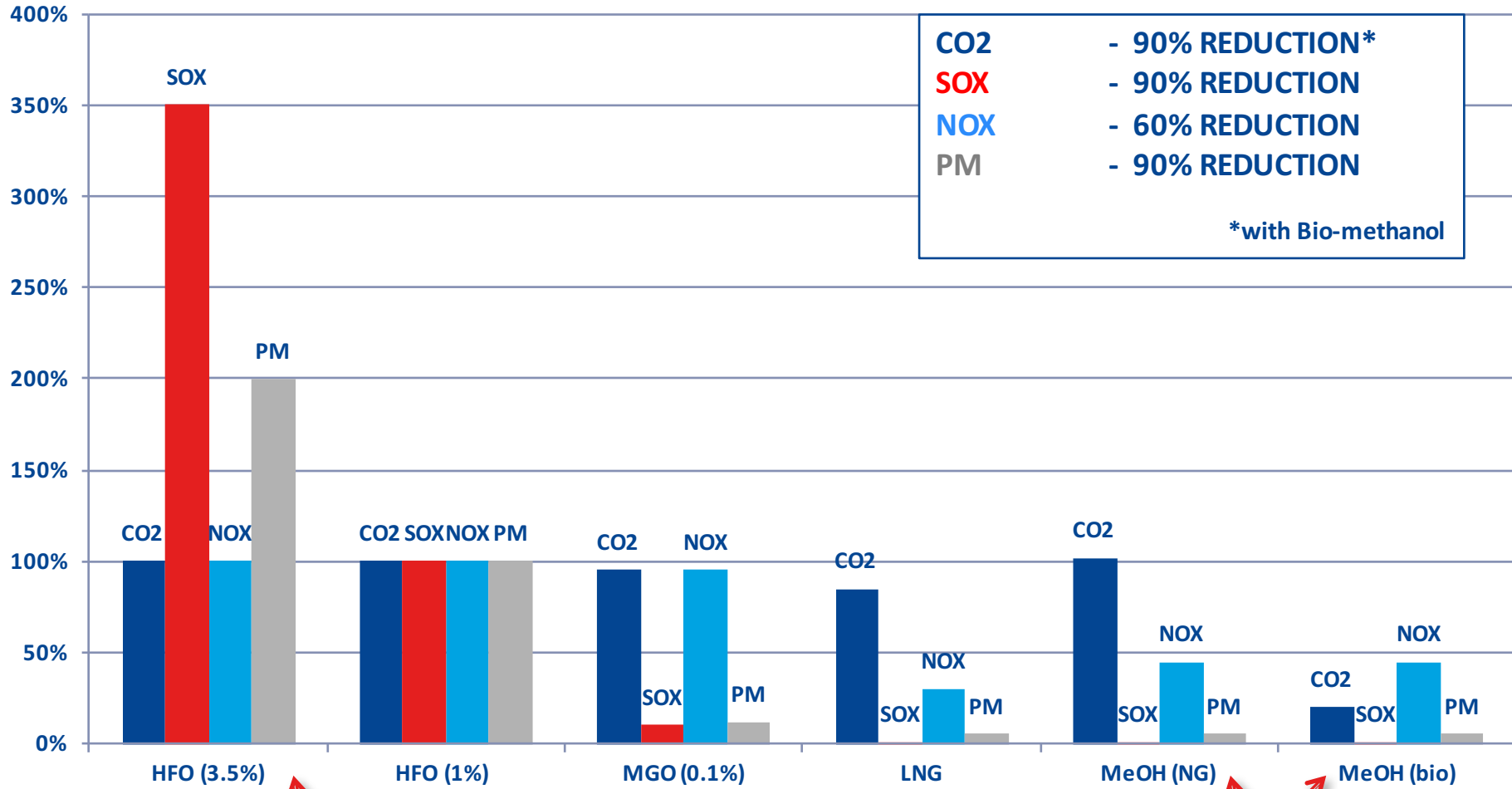
ECONOMY: But it's currently an expensive alternative



Environmental Impact: Methanol leads towards the zero vision



METHANOL – A SUSTAINABLE FUEL FOR GLOBAL SHIPPING



International
bunker fuel

Methanol





Papermill, Piteå, SWE



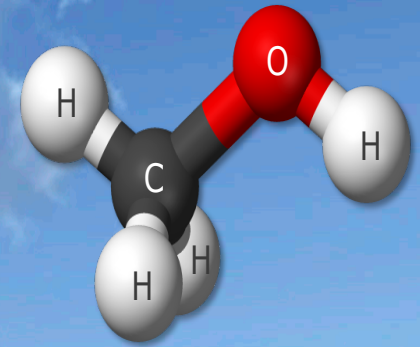
Svartsengi, ISL



Enerchem, Edmonton, CAN



BioMCN, Delfzijl, NLD



Methanol

The marine fuel of the future

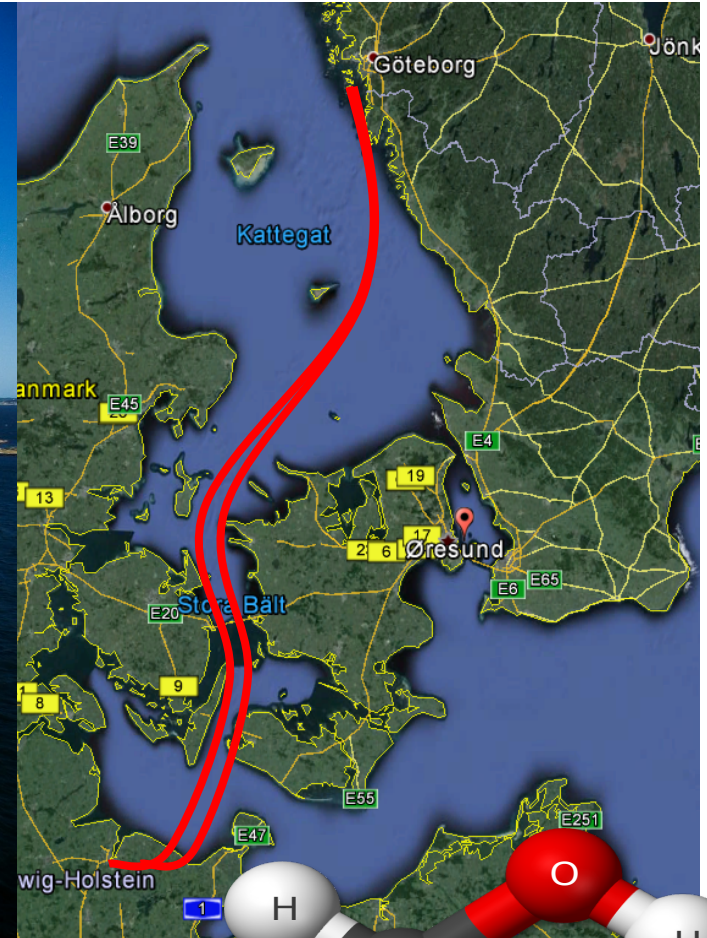


Stena Germanica

Gothenburg – Kiel

Co-financed by the European Union
Trans-European Transport Network (TEN-T)

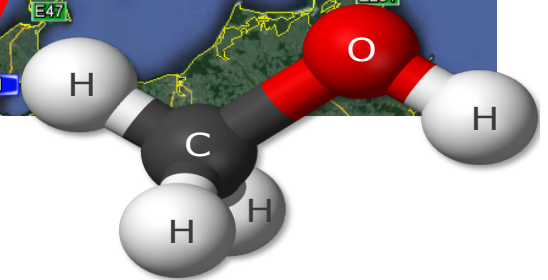
SOX	- 90% REDUCTION
NOX	- 60% REDUCTION
PM	- 90% REDUCTION



50 000 Cars
43 000 Trucks/trailers
220 000 passengers



Lifted from the road
onboard the worlds first
methanol conversion



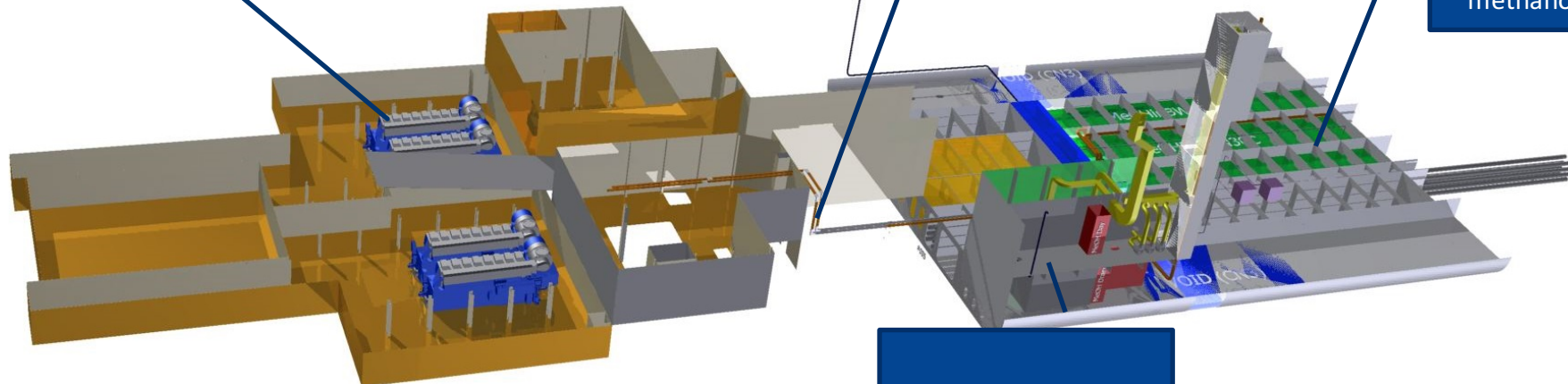
STENA GERMANICA – WORLDS FIRST METHANOL SHIP



Engines converted Q1 2015 for methanol

Double walled fuel pipes

Ballast tank converted to methanol fuel tank



Pump room



Methanol bunkering in Gothenburg



The Methanol Experience

Pros

- Cleaner
- Bunkering
- Fuel change
- Fuel storage (ballast tanks)
- No lubrication problem
- No formaldehyde emissions
- Efficiency

The Methanol Experience

Cons

- Hard to find leaks
- Conversion during operation
- Valves
- Pipe connections
- Price of oil

OUR SUPERGREEN PROJECT IS MAKING WAVES

Winner:

1. Swedish Maritime Day “Innovation Award 2015”
2. Green Ship Technology: “GST Ship-owner of the year”
3. The Swedish Confederation of Transport Enterprises “2015 Pegasus award”
4. 2015 Global Business Excellence Awards UK "Outstanding Green Initiative Award"
5. Shippax “Eco-Award” at the yearly Ferry Shipping Conference
6. “Ship of the year award”, European Marine Engineering Conference and Awards

Finalist:

- The Economist’s “Ocean Innovation Challenge “
- Seatrade Awards “Clean Shipping Award”
- Fathom Ship Efficiency Awards 2015 as “Sustainable Ship Operator of the Year”
- Lloyds Global Awards “Environmental Award” announced October 1st





**WE
CARE**



**WE
INNOVATE**



**WE
PERFORM**

