



THUNBOLAGET

— ERIK THUN AB (publ) —

LNG

- one solution

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Erik Thun AB

Erik Thun AB

- **A family business since 1938.**
- **Business areas:**
 - Shipping
 - Aviation – Aircraft leasing.
 - Meat processing
 - Real Estates
- **Dry cargo, Tankers & Self Unloaders.**
- **32 ships in fleet.**
- **All ships develop and designed in-house and built in Holland.**



Shipping



12 Dry Cargo ships in Vänermax-size. North Europe and Med trading. Chartering from Lidköping.



12 Coastal Tankers, chartering by Thun Tankers in Göteborg.



7 Self Unloaders designed by Erik Thun AB & chartering by fully owned co Citadel Shipping AB.



8 Cement vessels in a Joint Venture with KGJ.

Future Challenges

<u>Challenge</u>	<u>When</u>	<u>Solution</u>
SECA	1 Jan 2015,	MGO or Scrubber.
NOX	TIER III, Legal / Fees,	SCA (catalyst).
Particles	Environmental or Health,	Non sulphur fuel.
Co2	EEDI, other regulations? World Wide? EU?	

Other challenges?

Ballast Water Treatment Systems etc.

Is There One Solution?

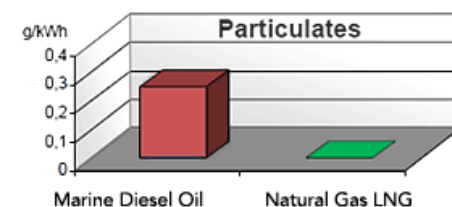
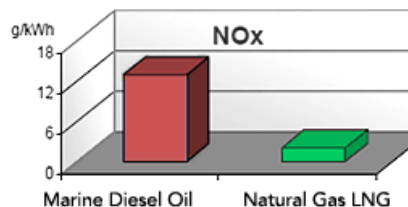
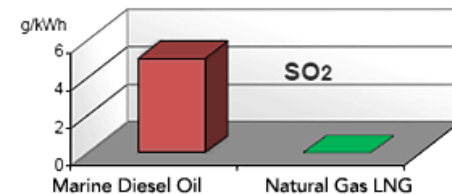
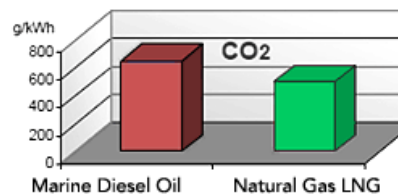
	SOx	NOx	CO2	Particles
MGO	OK	X	X	X
Scrubber	OK	X	X	X
SCA (catalyst)	X	OK	X	X
Methanol	OK	OK	-	OK
LNG	OK	OK	-	OK

- **Scrubber and SCA hard to combine.**
- **Methanol not a solution for us:**
 - Low Energy Contents
 - Dangerous in a ER; wide flashpoint & heavier than air.
 - Toxic, not very good working environment.

Environmental & Economy

– How to combine?

- Best environmental performance! But how to get paid for it?
- Customers: Good! But lowest freight is most important.
- What will LNG cost in the future?
- Spread between MGO & LNG?
- Political will. EU Ten-T Fund.



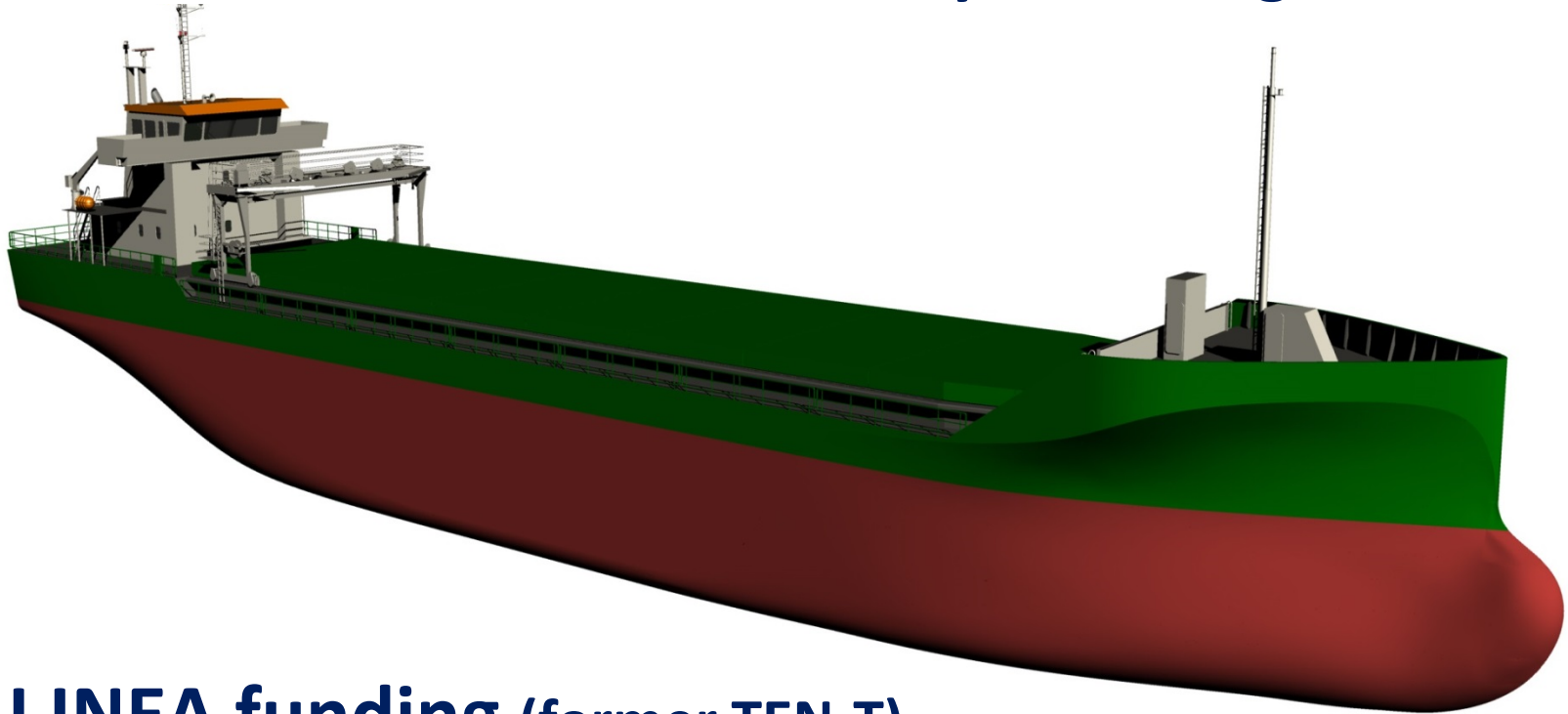
Bunkering LNG?

Start with a small dry cargo vessel:

- Probably no LNG-bunker vessels available by delivery.
- With a low ME consumption and a small LNG tank bunkering is possible direct from LNG-trucks.
- Easier to enter dry ports for LNG-trucks than oil terminals.

What will the cost of infrastructure be (USD/m³)?

New Building: Duel Fuel LNG Dry Cargo vessel LNG SEA RIVER – Delivery date: Aug 2015



EU INEA funding (former TEN-T)

ZVT Tool

<http://www.zerovisiontool.com/lsr>

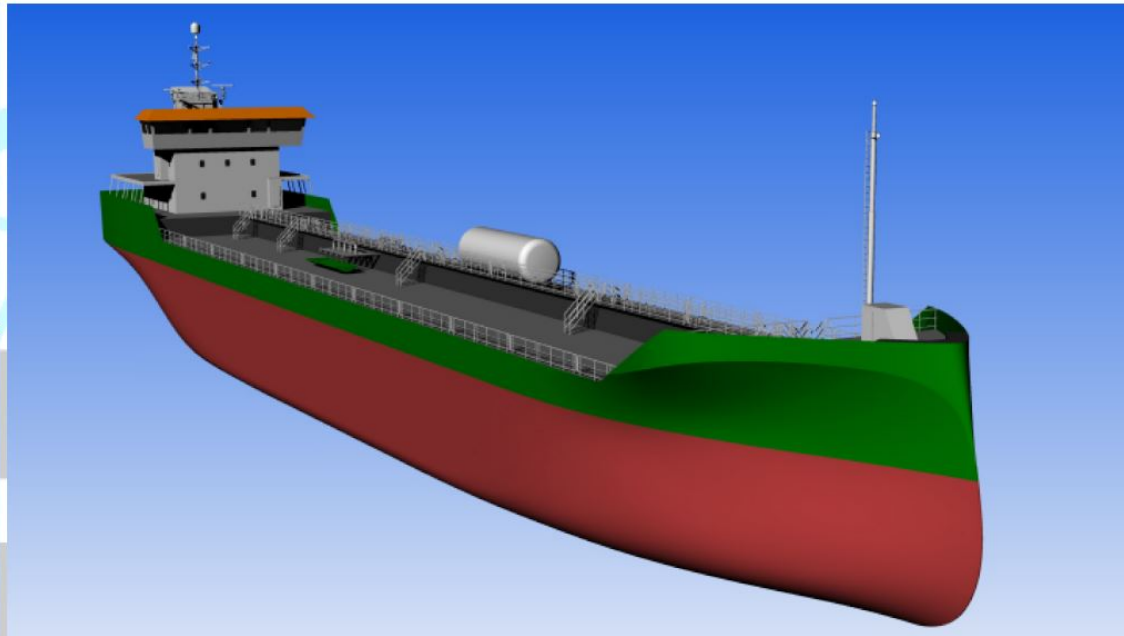


**COLLABORATION METHOD
ZERO VISION TOOL**



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

New Building Project: LNG dual fueled Tanker



Deadweight: 8200dwt
Tank volume: 8750m³
Length o.a. 115m



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Thank you!