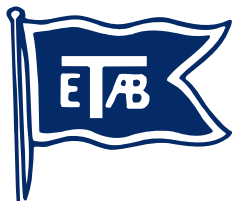


LNG - A solution for sustainable transports



THUNBOLAGEN

— ERIK THUN AB (publ) —

The Erik Thun Group

Offering sustainability and tailor made transport efficiency

The Erik Thun Group is a private company founded in 1938. Our core business is shipping and we own and operate more than 40 vessels in sizes from 4,000 to 10,500 tons deadweight in several different subsidiary companies. We primarily focus on regional trade and our main trading area is Europe.

Embracing the future - building on experience from the past

We in Erik Thun have always had a high focus on cost awareness and resource efficiency that translates into modern environmental care. We consider sustainability in everything we do.

Our vision has always been to be best in class and recognized by our customers as the industry leader by providing safe, sustainable and cost efficient cargo transport solutions that are second to none through innovative design based on our long term experience.

The in-house knowledge has been determinant when developing future efficient and sustainable transport solutions. For decades we have designed increasingly economic and fuel efficient quality ships. The scope has always been a continuous development of the business and to make trading in coastal shipping more effective. Long term customer relationships have enabled us to build and develop tailor made ships that meets our customers' demands and lower their costs.

Striving to be one step ahead, always with the focus on finding the most sustainable offering, lies in our DNA, therefore it has been a natural step for us to explore a more environmental friendly transport solution.



Developing the next generation of vessels

A few years ago we began the development process of running our ships on LNG. Going beyond mere compliance, we wanted to lead the industry in environmental development by identifying and implementing new ways of using resources efficiently and lowering emissions. That has materialized in the building of two cement carriers that uses LNG as a fuel. The first of the two sisters, M/V Greenland, was delivered in December 2015. The second sister vessel, M/V Ireland, was launched in March 2016.

In addition we have also ordered an intermediate size, 16,300 tons deadweight, product tanker that will be fuelled with LNG. This new product tanker will be delivered during 2018. Furthermore we are also in the process of developing the next generation of smaller coastal tankers and dry cargo ships; we expect to take delivery of these vessels 2018-2019.

A project for economical and environmental benefit

Together with our project partners, KGJ Cement, MF Shipping Group, Ferus Smit ship yard, the class society Lloyd's Register and EU-coordinator SSPA we have developed a vessel with significantly improved environmental performance, better than ever seen before. Through this project we have stayed loyal to our vision of creating economical and environmental profit to our customers by using innovative and world leading maritime solutions. The project has been made possible by funding from Trans-Europe Transport Network (TEN-T).

Meeting the demands

With the project being established, we soon found out that the biggest challenge was to obtain a competitive offering compared to conventional ships in the same segment of transports. All of our customers wish to have good environmental performance but the difficulty lies in continuing to remain business competitive. We also needed to take bunker possibilities into consideration, as there still is a long way to go before LNG will be available in the majority of ports. With these factors in mind we came to the conclusion that the best suited vessels for the initial project was LNG-fuelled cement carriers.



Scan the QR code to see the movie from the launch of the LNG-powered vessel M/V Greenland.





The first in the world

The cement carrier M/V Greenland is the first dry cargo vessel in the world that is fuelled with LNG. The vessel is equipped with a dual-fuel engine that can use gasoil in case of shortage of LNG. The tank is fitted in the forecabin in a vertical position not to interfere with cargo space. This solution is new and a good example that we always find a creative way to meet our customers' needs.



Facts about our cement carriers M/V Greenland and M/V Ireland

- LoA 110 m
- Deadweight 7,350 tons
- Speed 13 knots
- Self-unloader (pneumatic)
- FIN/SWE Ice Class 1A
- Wärtsilä Dual Fuel Engine 34DF
- Cylindric LNG tank, forecabin, 130 m³
- Ballast Water Treatment System
- Water Lubricated Stern Tube





Thun intermediate size product tanker

- LoA 149.9 m
- Deadweight 16,300 tons
- Cargo capacity 20,000 m³
- Beam 22.8 m
- Draft 8.8 m
- Main engine output 4,500 kW

Emission reduction*

- CO₂ 49%**
- NOx 84%
- SOx 99%
- Particles 99%

**Compared to traditional tonnage.*

*** CO₂ can be eliminated if biogas is used.*

The next generation Thun tanker has been ordered at a Chinese ship yard and will be built to a design, developed especially to impact minimal on the environment, with close to 50 % reduction of CO₂ emissions. The vessel fulfills the Tier III rules; have dual fuel/LNG propulsion including LNG in port consumption, LNG for inert gas production, power production with floating frequency, battery backup (UPS) for all vital functions to minimize use of auxiliary engines, installed Ballast Water Treatment System, Ice Class 1A and Alternative Propulsion System.

Next generation Thun product tanker & dry cargo vessels

These vessels are already on
Thun's drawing board:



Small size product tanker with LNG propulsion

- LoA 115 m
- Deadweight 8,700 tons
- Cargo capacity 9,550 m³
- Speed 12 knots
- 130 m³ LNG tank (2 weeks operations)

LNG powered Ice Class 1A dry cargo vessel

- LoA 89 m
- Deadweight 5,875 tons
- Speed at 90% MCR 12 knots
- Beam 14.5 m
- Draught, design 6.5 m
- LNG fuel tank capacity 120 m³



Read more on our webpages:

www.thun.se
www.zerovisiontool.com/lsr



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COLLABORATION METHOD
ZERO VISION TOOL