“GO LNG – FINAL CONFERENCE TO THE SBSR PROJECT “MARTECH LNG”

„Viking Grace- 20 months' experience of Ship to Ship LNG bunkering“

Kari Granberg
Project Manager
New Building & Technical Development.
Agenda

• Viking Line
• Viking Grace Route & Timetable
• 24/7 on LNG/NG.
• Main engine running hours.
• Experience from LNG bunkering
• Stockholm, area and port, safe zon.
• Frequently asked questions
• Viking Line and LNG
• Awards
1959–2014

194 million passengers,
nearly 18.6 million cars
and 3.6 million cargo units.

Every year 6.5 million passengers
travel on Viking Line’s vessels.

Any day now, we have our 200 million passengers!
The Viking Line fleet

The Viking Line fleet consists of seven vessels that are well adapted for passenger and cargo service.

**Viking Grace**
- Built in 2012
- 2800 passengers
- 550 cars

**Amorella**
- Built in 1988
- 2,450 passengers
- 450 cars

**Gabriella**
- Built 1992, purchased 1997
- 2,400 passengers
- 420 cars

**Viking Cinderella**
- Built in 1989
- 2,500 passengers
- 306 cars

**Mariella**
- Built in 1985
- 2,500 passengers
- 400 cars

**Rosella**
- Built in 1980
- 1,500 passengers
- 340 cars

**Viking XPRS**
- Built in 2008
- 2,500 passengers
- 230 cars
The most environmentally friendly cruise ship in the world

~2.4 million passenger
### Viking Grace Specification

#### Main particulars
- **Length, overall**: 218 m
- **Breadth**: 31.8 m
- **Draught**: 6.8 m
- **Gross Tonnage**: 57,565
- **Net tonnage**: 38,039
- **Speed service**: 22.1 kn (85% MSP)
- **Deadweight**: 5,030 ton
- **Life Saving Appliances**: 3,000 persons

#### Cabins
- **Passenger**: 880
- **Crew outside**: 200
- **Total**: 1,080

#### Lane Meters
- **Trailers on Deck 3**: 1,275 lm
- **Cars on Deck 5**: 550 lm (abt 100 cars)
- **+D4 hoist. platform**: 550 lm
- **820 lm + 300 cars**
<table>
<thead>
<tr>
<th>TURKU</th>
<th>MARIEHAMN / LÅNGNÄS</th>
<th>STOCKHOLM</th>
</tr>
</thead>
<tbody>
<tr>
<td>20:55</td>
<td>01:05 / 01:10</td>
<td>06:30</td>
</tr>
<tr>
<td>19:50</td>
<td>14:25 / 14:10</td>
<td>07:45</td>
</tr>
</tbody>
</table>
• Viking Grace has now 20 moths experience of full time run on LNG/NG.
• Also when the vessel is in berth load and unload cargo and passengers simultaneously bunkering LNG.
• Cancellation of departure = 0
• Delayed departure = 0
Main Engine running hours

- 2014-12-01
- ME 1: 13 359 h
- ME 2:  8 927 h
- ME 3: 12 891 h
- ME 4:  6 772 h
- Tot. all Engines 41 949 h
Experience from LNG bunkering

- Truck to Ship bunkering’s prior Seagas delivery, 10 times.
- Ship to Ship bunkering's until 2014-12-01, 525 times.
- Total 29 000 ton LNG.
Viking Terminal Stockholm
Normal day in Stockholm!
Frequently asked questions.

If Viking Line order a new ship which fuel will you choose?

- LNG is our first choice.
- LNG, natural gas is the cleanest fossil fuel.
- Future-proof, emission levels lower than all known new regulations such as NOx and PM.
- If the availability and price of biogas (LBG) is competitive, biogas can be used without modifications of the engines.
Frequently asked questions.

What would you change if you order a new LNG fueled ship?

- Viking Grace is built for three different fuels: HFO, MGO and LNG.
- HFO has not been bunkered, the equipment has not been tested or used!
- If we order a new ship, we'll remove HFO equipment, this is the only major change.
Frequently asked questions.

What type of engine will you choose, single or dual fuel?

- Dual Fuel Engines and Boilers.
- Dual Fuel, higher redundancy if there are disruptions in supply of LNG or operational disruptions.
- The newest developed dual-fuel engines have equivalent consumption on both fuels, then you can choose the fuel depending best price.
1959 Viking Line was founded.
1985 Viking Line's marketing agency Rönnberg shortened our logo NG LI.
2013 Viking Line's first LNG ship.
Awards for M/S Viking Grace

Ports of Stockholm’s Environmental Buoy 2012

Viking Line was awarded Ports of Stockholm’s Environmental Buoy 2012 for building the world’s first passenger ferry in its size class that can run on LNG and for at the same time developing unique and innovative environmental solutions for M/S Viking Grace.
Awards in five different categories:

1) Environmental qualities; Being the first long-distance ferry with a dual fuel engine.

2) Environmental qualities; For the many energy saving measures.

3) Exterior Design; Where the LNG Tanks and the small funnel are the testimonies of her environmental qualities.

4) Innovative layout for the handling of stores in combination with the practically designed food preparation areas.

5) Innovative interior design
First prize for M/S Viking Grace in the newly established Baltic Sea Clean Maritime Awards

The Awards were given for the first time on Monday, 11 November 2013 at the 4th Annual Forum of the EUSBSR (EU Strategy for the Baltic Sea Region) in Vilnius, Lithuania. Viking Grace was awarded the first prize in the category Technology, Propulsion and Engines.

The award was handed out by Kurt Bodewig, the maritime ambassador of the European Union and former Minister of Transports of Germany.
Viking Grace receives the 2014 Skål Sustainable Tourism Award

Viking Line’s flagship M/S Viking Grace has been awarded an international environmental prize for its sustainable solutions. Viking Grace received the 2014 Skål Sustainable Tourism Award in Mexico on October 26, 2014.

The jury describes the Viking Grace as the most environmentally friendly cruise ship in the world, setting the standard for the whole industry.
• No visible exhaust, significantly reduced emissions.
• No exhaust odors or soot.
• Low waves from the bow and stern.
• The ship is very quiet, below 50 dB(A) at 100 meters distance from the ship,
  • motor boat aft of Grace generates more noise!
Thank you for your attention