LNG HYBRID Barge & Ferries

You’re just a few steps away from a greener future!

Becker Marine Systems

Innovative engineering for environmentally-friendly products!

- 230 Employees
- 125 in Hamburg
- 6 Locations worldwide
- 20 Products

Reduction of CO²
1,057,619 t (434 Ships)

Energy-Saving Devices
Manoeuvring Equipment
LNG stands for a clean energy!

**CO₂ Emissions per call**
(6MW average load; 10 h.)

- MGO 0.1% S
- LNG: Ca. 20%
- Power plant *

Savings Percentage

**SOₓ Emissions per call**
(6MW average load; 10 h.)

- MGO 0.1% S
- LNG: 100%
- Power plant *

**NOₓ Emissions per call**
(6MW average load; 10 h.)

- MGO 0.1% S
- LNG: Ca. 88%
- Power plant *

**PM Emissions per Call**
(6MW average load 10 h.)

- MGO 0.1% S
- LNG: 100%
- Power plant *

*Federal Environment Agency – Energymix Germany

Data based on the electrical power!
Our Solution

**LNG HYBRID BARGE**

- **Barge Dimensions:** 76 x 11,4 x 2,5 m
- **Capacity:** 2 x 15 t LNG Container
- **Powerplant:** 5x 1,5MW LNG GenSets

Silent operation (60 dBA / 10m)
Classified as seagoing barge
## LNG HYBRID Barge

### Standard

<table>
<thead>
<tr>
<th>5 x</th>
<th>1.500 kW</th>
<th>7.500 kW</th>
</tr>
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<tbody>
<tr>
<td>11 kV</td>
<td>Barge/Ship</td>
<td></td>
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<td>60 Hz</td>
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<th>5x</th>
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**Thermal Capacity:** ~8.800 kW

### Option

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**Thermal Capacity:** ~10.500 kW
project partners:

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Plugs

IEC 80005-1 global standard

Specifies the plug layout for commercial vessels and cruise ships

Currently two manufacturer

Cavotec commercial vessels
Patton & Cooke cruise ships

Length: approx. 650 mm
Weight: approx. 30 kg
Cable Handling Units
Moving the Barge...

Magdeburger Hafen Summer mode

O´Swaldkai Containerhandling

Hansahafen Stand By (Summer)

Rugenberger Hafen Winter mode
Handling LNG

2 x 40 ft. LNG Container Typ C, Capacity < 30 t
Handling LNG

Gas Processing Unit

Drip tray

Flexible hose / dry coupling
Concept Summer & Winter

operating 365 days/year

Summer season:
Cruise ships
Power supply 60Hz / 11kV
20 – 90 arrivals, 10 hrs.

Winter season:
Industrial Customer
Power supply 50Hz / 10kV
24 hrs. / 7 days

...creating earnings

Natural gas grid
Transfer point - Electricity
Long distance heat grid
Approvals from Authorities

Flag State
BG Verkehr

BImSchG
Federal Immission Control Act

BSU
Department of Civil Engineering and the Environment

CHP Law
Combined Heat & Power Act

EEG 2014 Law
Renewable Energy Sources Act

Class Society
Bureau Veritas

Hazard Workshop

Port Authority

Departments
Port Captain
Fire Brigade
Water Police

Approvals for safe operation
Risk Analysis
Collision Analysis
LNG HYBRID Barge christened in Hamburg

Project start 02/2012 + + + Keel laying 01/2014 + + + Launching 09/2014 + + + Arrival Hamburg 10/2014
Further Projects

**Wadden Sea Ferry**
- Length: 74.40 m
- Capacity: 58 Cars
- Breadth: 16.80 m
- Passengers: 480
- Draught: 1.50 m
- Lean Gas Engines & Battery

**Pax-Cargo Ferry**
- Length: 71.64 m
- Passenger: 515
- Breadth: 11.80 m
- Speed: 16 kn
- Draught: 3.25 m
- Lean Gas Engines

**Inland Water Way Ferry**
- Length: 65.00 m
- Capacity: 60 Cars
- Breadth: 13.40 m
- Passengers: 200
- Draught: 1.50 m
- Lean Gas Engines & Battery

**Small Scale Power Supply for Container Vessel**
- ~1.5 MWel.
Drive concept

- 2x electric engine ca. 630 kW
- 3x LNG GenSets 285 kW
- Batterie Packs ca. 2000 kW
Environment-friendly drive
LNG HYBRID Waddensea Ferry

Length 74,40 m
Breadth 16,80 m
Draught 1,50 m
Lanemeter 315,00 m
Cars: ca. 58 Car oder 10 trucks
Passenger: 480
Speed: 11,0 kn
LNG-Generator: 3x285 kW
E-Motors: 2x650 kW
1,8 MW Li-Ion
Hybrid Battery-Pack
LNG Hybrid Elbeferry

- **LNG GenSet**
- **electric-engine**
  - clean
  - quiet
  - efficient

**Concept Design**

**Technical Specifications**
- **Length**: 65.0m
- **Breadth**: 14.8m
- **Draught**: 1.5m
- **Speed**: 11 kn
- **Track length**: 270m
- **Car capacity**: 60
- **Passenger**: 200
Thanks for your attention!

Speaker
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Your greener future starts now
For more information please visit www.becker-marine-systems.com