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

Innovative engineering for environmentally-friendly products!

- 210 Employees
- 120 in Hamburg
- 6 Locations worldwide
- 20 Products

Reduction of CO²
947,768 t (371 Ships)

Energy-Saving Devices
Manoeuvring Equipment
Today’s Problems

- Air and noise pollution in port from ships
- Stronger public awareness
- Ship operators are in danger to **loose image**
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 stands for a clean energy!

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

- MGO 0.1% S
- LNG
- Power plant

- Ca. 20%

*Federal Environment Agency - Energymix Germany*

**SO₂ Emissions per call**
(6MW average load; 10 h.)

- MGO 0.1% S
- LNG
- Power plant

- 100%

*Federal Environment Agency - Energymix Germany*

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

- MGO 0.1% S
- LNG
- Power plant

- Ca. 88%

*Federal Environment Agency – Energymix Germany*

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

- MGO 0.1% S
- LNG
- Power plant

- 100%

*Federal Environment Agency – Energymix Germany*

Data based on the electrical power!
LNG HYBRID Barge

**Standard**

- 5 × 1.500 kW, 7.500 kW, 11 kV, 60 Hz
- 5 × ~1.400 kW, ~7.000 kW, 10 kV, 50 Hz
- Thermal Capacity: ~8.800 kW

**Option**

- 7 × 1.500 kW, 10.500 kW, 11 kV, 60 Hz
- 7 × ~1.400 kW, ~9.800 kW, 10 kV, 50 Hz
- Thermal Capacity: ~10.500 kW
Infrastructure Hamburg

Shore Junction Box & Cable Channel

project partners:

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Moving the Barge...

Magdeburger Hafen Summer mode

O’Swaldkai Containerhandling

Rugenberger Hafen Winter mode

Hansahafen Stand By (Summer)
Concept Summer & Winter

operating 365 days/year

Summer season:

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

...creating earnings

Winter season:

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

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 Law

Class Society
Bureau Veritas

Hazard Workshop

Port Authority

Departments

Port Captain
Fire Brigade
Water Police

Approvals for safe operation

Risk Analysis
Collision Analysis
Barge in progress

Engineroom outfitting

Gas Gen-Set arriving at the shipyard /Komárno
Barge in progress

Ventilation / Launching

Power Management
LNG HYBRID Barge arrived 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 MW el.
**LNG HYBRID PowerPac**

**PowerPac Dimensions:**
- 40 ft high cube Container (2x)

**Powerplant:**
- 1,5 MW - LNG GenSets

**Weight:** ~60 t

**Engine:** Gas Engine
**Max. Power:** ~1500 kWel.
**Frequency:** 60 Hz
**Voltage:** 440V / 6,6 KV
Drive concept

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

LNG Trailer

LNG - Gensets

2x E-Motor

Battery

Wind Energy

overnight
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
Project Elbferry

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LNG Hybrid Elbferry

Length: 65,0m
Breadth: 14,8m
Draught: 1,5m
Speed: 11 kn
Track length: 270m
Car capacity: 60
Passenger: 200

LNG GenSet - clean
Electric-engine - quiet

Concept design
Thanks for your attention!

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Greener future starts now

For more information please visit  www.becker-marine-systems.com