

**TECHNICAL
ADVISORY,
ASSET
MANAGEMENT
AND ASSURANCE
SOLUTIONS**
FOR THE SHIPPING AND
OFFSHORE ENERGY MARKETS.

UNIVERSITY OF LIVERPOOL
SOLUTIONS
Maritime & Offshore



MAN Energy Solutions




MAN Energy Solutions








**ABB Ability™
Tekomar XPERT**
Engine performance
analytics software.

abb.com/turbocharging

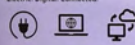


 Save
2 - 3 hours
per engine

 Save up to
3 tons
per vessel / per day

 Save up to
\$1000
per vessel / per day

 Payback in less than
3 days

Marine & Ports at a glance

Vision Electric. Digital. Connected. 	Team  > 1800 employees	Marine Solutions <ul style="list-style-type: none"> Propulsion Solutions Electric Solutions Digital Solutions Services
Values 	Global footprint <ul style="list-style-type: none"> 25 countries 6 HBLs China, Singapore, Poland, Norway, Sweden and US 20 LBLs 8 in AMBA, 9 in Europe and 5 in America 	Ports Solutions <ul style="list-style-type: none"> Crane Automation OCR and Process Automation Port Electrification Services

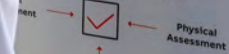


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Digital SIKO**
For two-stroke
turbocharging.

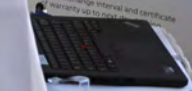
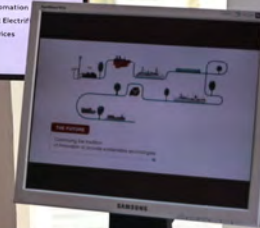
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How Digital SIKO works



Estimated exchange Internal and External certificate warranty up to 100,000 hours



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
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ome with

What if your small vessel could be
big in comfort and efficiency?
Travel is cleaner, quieter, more efficient, and more comfortable –
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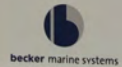
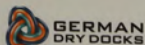
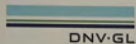
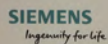
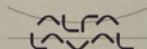
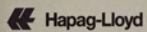
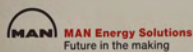




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becker marine systems
PRODUCTS
Energy-Saving
Concepts
LNG Hybrid
Concepts





becker marine systems

PROFITS



Manoeuvring
Systems

Rudders
Nozzles
Rudder Control & Monitoring



Saving

Be
Be



LNG

LNG
LNG P
LNG Hy



www. becker-marine.com

Cruise Liner driven by LNG: Operational Experience



Dr.-Ing. Christoph Schladdr, Director Technical Projects
Hamburg, September 24, 2019



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Die maritime Wissensgesellschaft

- Netzwerk aus 2.000 Mitgliedern
- gebündelte Kompetenz in 18 Fachausschüssen
- Veranstalter von hochwertigen Fachtagungen



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COSTS AND EMISSIONS -

HOW TO MAKE SHIPS MORE EFFICIENT

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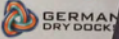
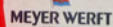
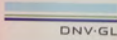
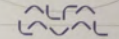
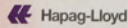


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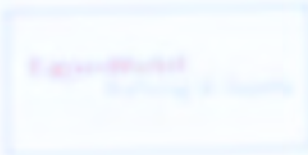
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the bunker suppliers with bunker
to perform bunker operations
ons in container hubs!





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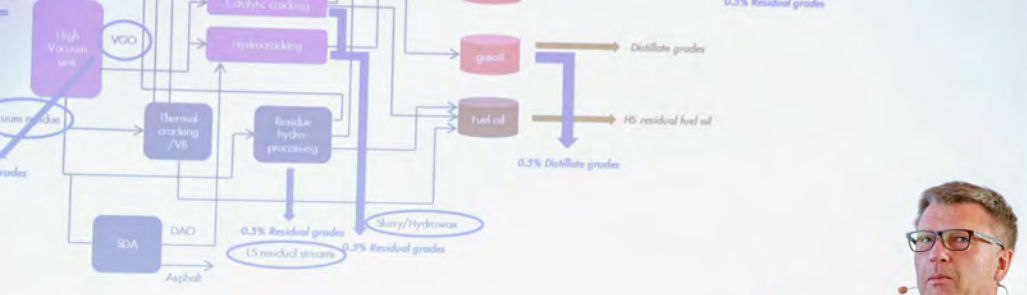
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ed on carriers

$H_2 + X \rightarrow X + H_2 \rightarrow H_2 + X$

al steam reforming of Ethanol and PHX, noble metal catalysts (Pt, Pd, Ni) and Cu

$H_2 + O_2 \rightarrow H_2O + O_2$



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AND SHIPS
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