ELECTRICAL & AUTOMATION IN FOCUS

Stephan Kuhn,
Vice President, Electrical & Automation
Main benefits are improved safety and operational control and efficiency

“E is the blood and A the brain of a vessel”
# E&A portfolio today

<table>
<thead>
<tr>
<th>Customer needs</th>
<th>Wärtsilä’s offering</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable speed drives:</strong></td>
<td>Low voltage variable speed drives</td>
</tr>
<tr>
<td>➤ Propulsion, winches and drilling applications</td>
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<tr>
<td><strong>Power distribution:</strong></td>
<td>Medium and low voltage modular switchboards</td>
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<tr>
<td>➤ For oil &amp; gas and marine applications</td>
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<td><strong>Propulsion controls:</strong></td>
<td>Propulsion control automation products for all solutions related to Wärtsilä and other brands propulsion products</td>
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<tr>
<td>➤ Basic and advanced control systems</td>
<td></td>
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<td><strong>Vessel automation:</strong></td>
<td>• Alarm &amp; monitoring systems</td>
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<tr>
<td>➤ From alarm &amp; monitoring to integrated automation systems</td>
<td>• Integrated automation and power management systems for diesel electric solutions</td>
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<td></td>
<td>• Wärtsilä 3C bridge</td>
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Today’s markets served

Advanced Marine
- Cruise & Ferry
- Offshore support vessels, platform supply vessels, offshore construction vessel, anchor handling tugs
- Dredgers
- Ice-class/arctic
- Merchant
- Navy

Oil & Gas Drilling
- Drillships
- Accommodation units
- Semi-sub drilling rigs
- Jack-up drilling rigs

Oil & Gas Production
- FPSO & other floating units
- Fixed installations
- DEH Flow line heating
System highlight: Wärtsilä Low Loss Concept

Benefits:

- More efficient
- More compact
- More freedom in transformer location
- More redundancy

Patented by Wärtsilä
System highlight: Low Loss Hybrid

Ship assist
Total time

Engine specific fuel consumption
SFC [%]

Engine load, %
Viking lady – the world’s first hybrid PSV

- LNG fuelled PSV with 690V LLC hybrid concept owned and operated by Eidesvik
- First DNV approved battery assisted PSV
Product highlight: Direct Electric Heating

- Risk for hydrate and wax formation clogging subsea pipes in deep sea oil and gas extraction
- Traditional solution is to inject chemicals
- Wärtsilä’s solution avoids clogging by heating the pipes
Acquisition: Marine Systems International

16th Dec 2014
SPA signed

EU & Korean merger control approvals

Q2 2015
Change of ownership
Global presence in all major shipbuilding countries

- 38 facilities
- 80+ sales representatives and service partners

MSI locations
Sales representatives and service partners
## E&A markets

<table>
<thead>
<tr>
<th></th>
<th>Relevant fleet (# of vessels)</th>
<th>Ship yard order book</th>
<th>Market position Wärtsilä and MSI</th>
<th>Market trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cruise &amp; Ferry</td>
<td>6 519</td>
<td>96</td>
<td>•</td>
<td>↑</td>
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<tr>
<td>Merchant</td>
<td>53 710</td>
<td>3 987</td>
<td>•</td>
<td>→</td>
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<tr>
<td>Offshore Oil &amp; Gas</td>
<td>9 226</td>
<td>965</td>
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<td>↑</td>
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<tr>
<td>Navy</td>
<td>N.A.</td>
<td>N.A.</td>
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- **Good**
- **Medium**
- **Weak**

Source: Clarksons World Shipyard Monitor March 2015
# Competitive landscape

<table>
<thead>
<tr>
<th>Electrical power systems</th>
<th>Automation systems</th>
<th>Power generation and management</th>
<th>Navigation systems</th>
<th>Communication systems</th>
<th>DP systems</th>
<th>Electrical and mechanical services</th>
<th>Audio Visual</th>
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</thead>
<tbody>
<tr>
<td>Vertically integrated OE established</td>
<td>MSI</td>
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<td>Vertically integrated OE newcomers</td>
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<td>Electrical power giant OE</td>
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<td>Technical service providers</td>
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MSI
MSI product highlight: NACOS Platinum System

Common hardware platform system for Navigation Automation Control scalable to any vessel type

→ All functionalities accessible from each workstation
The dynamic position system is the «brain» for automatic positioning by using the propulsors and position sensors

- MSI Nacos Platinum DP systems runs on same hardware as integrated navigation system
- Scalable DP system compliant with any marine classification requirement
MSI product highlight:
Audio Visual Entertainment Systems

The range of entertainment systems varies from standalone applications up to complete integrated multipurpose systems.
MSI product highlight: Specialties

- Custom made solutions for naval vessels up to turnkey responsibility
- Degaussing systems and magnetic ranging systems
- Automation and navigation systems dedicated for naval vessels
The MSI acquisition gives critical mass to our E&A business and scope for leveraging product sales.

MSI will increase Wärtsilä‘s business opportunities in the cruise, ferry and merchant segments.

The combined offering of Wärtsilä and MSI will be unmatched.

MSI‘s main focus in the first year is to maintain the current trading.
What system do you need to have to ride the perfect storm?
Thank you!

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