TECHNOLOGY WITH EXCELLENCE

LARS HELLBERG
Group Vice President, Industrial Operations
Our product portfolio 2012

4-stroke engines 2-stroke engines Gensets & Auxpacs Propellers FPP/CPP Steerable thrusters Transverse thrusters Flue gas desulphurisation & scrubbers Energy efficiency systems*

Frequency converters Propulsion controls Automation, monitoring & control I/O cabinets Switchboards Gears Fuel cells Catalysts (SCR, Oxicat, etc.)

* e.g. Waste Heat Recovery Systems
We provide market leading products

Four themes in the WIO strategy

- Leading technology & products
- FlexAgility*
- Operational excellence (QDC)
- Valued people in a performance culture

*) FlexAgility = Flexibility + Agility
  Flexibility = Ability to deal with known and predictable variations (singular systems)
  Agility = Cultural capability to cope with the unknown (affecting bigger systems)
Leading technology & products

Technology & product development

Innovation with a focus on future market needs, know-how leadership

- Fundamental research
- Technology development
- Product development
- Product management (Modification and improvement)

Supplier integration
Competitive portfolio

Market

A streamlined, broad and competitive product portfolio

Product delivery

Focus on customer value, whilst reducing waste across the value stream

- Raw material supply
- Component supply and machining
- Sub-assembly
- Assembly
- Testing and finishing

Operational Excellence QDC

Customer
Continued focus on R&D

**Differentiators**

**Reliability**
- High quality and reliability

**Performance**
- Environmental compliance
- Superior efficiency
- Gas focus
- Multi-fuel capability and fuel flexibility
- Superior loading capability

**Design**
- High power density
- Solutions integration
- Service-ability

**Cost**
- Total cost of ownership

**Wärtsilä R&D Expenses**

% of net sales

- **2005**
- **2006**
- **2007**
- **2008**
- **2009**
- **2010**
- **2011**
- **E2012**
Keeping the lead in engine products

4-stroke portfolio program

- **Small bore**
  - W20
  - 0.6-5.4 MW

- **Medium bore**
  - W32/W34/W38
  - 2.6-11.6 MW

- **Large bore**
  - W46/W50
  - 7.2-23.0 MW

2-stroke portfolio program

- **Small bore**
  - W-X35, W-X40
  - 5.0-14 MW

- **Medium bore**
  - RT-flex 48-50
  - 8-25 MW

- **Large bore**
  - RT-flex 82-84-96
  - 21-80 MW

Time horizon for product planning extended to 20 years.

Current portfolio products
New portfolio products
Future upgrades/new products

Carbon limits?
Tighter Tiers?

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New technology – improving efficiency

Medium Voltage Power Drive

- Power electronics for marine electric propulsion (fast growing market with increasing power)
- Supports new and increased power concepts in the 10–25 MW range
- Enables energy savings
- Specific market segments: LNG, cruise and offshore vessels

<table>
<thead>
<tr>
<th>Motor power</th>
<th>1 000 - 25 000kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>3300-6600VAC</td>
</tr>
<tr>
<td>Control</td>
<td>Vector control/PWM output</td>
</tr>
<tr>
<td>Efficiency full load</td>
<td>&gt;98,8%</td>
</tr>
<tr>
<td>Power factor</td>
<td>&gt;0,96</td>
</tr>
<tr>
<td>Switchboard connection</td>
<td>Direct or with propulsion transformer</td>
</tr>
<tr>
<td>Cooling method</td>
<td>Deionized fresh water</td>
</tr>
<tr>
<td>External cooling water</td>
<td>10-38°C fresh or salt water</td>
</tr>
<tr>
<td>Protection</td>
<td>IP44</td>
</tr>
</tbody>
</table>
Increasing attention on IPR

- Increased attention on Intellectual Property Rights (IPR) and Intellectual Asset Management (IAM)
- Owning > 2,000 patents and patent applications*)
- Filing annually over 500 new national applications

*) All in force in countries where Wärtsilä products or components are manufactured and sold.
FlexAgility: Adjusting operations over time

- Market downturn
- Clear market downturn
- Market upturn
- Expansion into Asia
- WQDC
- Wärtsilä expands with Automation
- Start of Wärtsilä Engineering Centre China (WECC)
- Establish JVs WCEC & WTEC
- Oil & water treatment in Gothenburg
- CPP factory inaugurated in Zhenjiang

2004
- Closed Turku factory
- Sold Mulhouse factory
- First engine from WQDC
- Downsizing capacity
- Moved CPP operations from NL to China; naval CPP to Norway; thruster manufacturing to Trieste; foundry to China and Spain; closure Delivery Centre Drunen
- Wärtsilä 20 production Vaasa moved to China
- Transferred component manufacturing to supply chain – closure DTS Zwolle
- Closure PC4 assembly Bermeo
- S&B merged to the established Wärtsilä S&B (DCUK Havant; DCUK Slough; DCTO; Wuxi)

2006
2007
2008
2009
2010
2011
2012
2013

2005

New ways of working

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Flexibility in capacity is essential

4-stroke MW delivered by Wärtsilä (incl. JVs)

Capacity flexibility 3000 MW

Flexibility is obtained from people, outsourcing, supply chain optimisation and streamlining of manufacturing footprint
Manufacturing footprint: Ability to deliver in all markets

- **Fully owned sites**
  - DCV (Vaasa, Finland) - 4-stroke engines
  - DCK (Khopoli, India) - Gensets, Auxiliary modules, Ecotech modules
  - DCS (Santander, Spain) - Propulsion
  - DCT (Trieste, Italy) - 4-stroke engines
  - DCW (Wuxi, China) - Propulsion
  - QMD (Qingdao, China) - 2-stroke engines
  - WTEC (Penza, Russia) - 4-stroke engines
  - WTEC (Penza, Russia) - 4-stroke engines
  - WSE (Gothenburg, Sweden) - Oily water treatment
  - WCEC (Nantong, China) - 4-stroke engines
  - WQDC (Lingang, China) - 4-stroke engines

- **Joint Venture sites**
  - DCN (Rubbestadneset, Norway) - Propulsion
  - WTEC (Penza, Russia) - 4-stroke engines
  - WSE (Gothenburg, Sweden) - Oily water treatment
  - Rio de Janeiro, Brazil

- **Ongoing footprint initiatives**
  - DCN (Rubbestadneset, Norway) - Propulsion
  - WSE (Gothenburg, Sweden) - Oily water treatment
  - Rio de Janeiro, Brazil
Joint ventures create value and profitability

DRIVERS OF JOINT VENTURES

- Local market access
- Access technology and local supply chain
- Capture sales, scale and volume
- Risk sharing

Brazil
WCME
WQDC
WHEC
QMD
WTEC
WCEC

WIO manufacturing locations (development over time; existing scope only)

Ongoing JV initiatives
Existing JVs
JV BRICK
Own BRICK
Own Europe

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Less costs – more efficiency

Manufacturing capacity cost
[indexed 2009 = 100]

Manufacturing employees
[FTEs]

Manufacturing inventory
[indexed 2009 = 100]
Operational excellence: lean examples

- Toshulin machine change over time reduction 2hr → 30mins
- KPIs & 12 cockpits deployed
- Voice of the Customer
  - Sealol case value stream >50 improvements identified
  - Lead time reduction ~20%
  - Cost reduction ~3.5%
- Lead Acuity (SS, SD, SP & WIO)
- SP/WIO joint Value Stream Management project
- SC21 fast track & bronze award (WIO & Services)
- Leader Acuity (SS, SD, SP & WIO)
Continuous control on quality and cost

- Global sourcing
- Consistently controlling Quality, Delivery accuracy, Cost competitiveness, lead time and required capacity
- Moving towards ‘Extended Enterprise approach’ (Lean)
- Risk & continuity planning
- Category concepts (economy of scale)
- Early supplier involvement in our product development processes

Supplier selection, assessment and qualification

<table>
<thead>
<tr>
<th>Wartsila Requirement Assessment</th>
<th>Category Assessment (Questionnaire)</th>
<th>Quality Management System Audit</th>
<th>Part Quality Assurance Plan</th>
<th>Process Control Plan Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready to deliver to us?</td>
<td>Parts approved?</td>
<td>Process secured?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Control and enhance core competences and outsource non-core activities →
- Increase manufacturing in partnerships
Valued people in a performance culture

We grow when our people grow

Competent people, leaders and experts, in a strong global performance culture are the foundation for being a trusted business partner

<table>
<thead>
<tr>
<th>Competence management</th>
<th>Active leadership</th>
<th>Performance culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managed core competences</td>
<td>Visionary &amp; entrepreneurial</td>
<td>Empowerment</td>
</tr>
<tr>
<td>Hire and retain best people</td>
<td>Role modelling</td>
<td>Entrepreneurial mindset</td>
</tr>
<tr>
<td>Right people in right places</td>
<td>Recognise performance</td>
<td>Managing complexity</td>
</tr>
</tbody>
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