A single, strong, company-wide purpose defines Wärtsilä’s actions in 2014.
CEO REVIEW

2014 was a year of refocusing on Wärtsilä’s core areas of expertise, and on developing our business through new partnerships and acquisitions. It was also a year of good performance despite challenges in the market environment. Net sales grew by 4% with profitability at 11.9%, and I am pleased with the resilience that we have shown in reaching our targets for the year.

The power generation markets were impacted by continued macroeconomic uncertainty and slower global growth projections. However, activity improved significantly after the summer, supported by the demand for new power plants in the emerging markets and the US dollar strengthening against the euro. Power Plants’ order intake developed accordingly; the 32% growth seen in the second half resulted in the full year’s order intake reaching 2013 levels. Significant orders included those for a 120 MW dual-fuel power plant from Oman, and a 139 MW gas fuelled power plant from Mexico. During the year, we also received our first order for a turnkey LNG receiving terminal to be built in Tornio, Finland. This is a good illustration of the value that we can provide by combining our strong project execution skills with our LNG handling expertise.

Ship Power’s order intake increased by 6% during 2014, despite the general slowdown in vessel contracting and the lower demand for offshore vessels. The growth is largely due to our strong position in gas carriers, where contracting remained robust. It demonstrates the benefits of our broad offering and wide market exposure, which compensates for shifts in demand within the different vessel categories. Gas carriers represented 34% of the order intake, while interesting orders for dual-fuel engines and related systems were also received in other vessel segments. We are committed to maintaining our leading position in the marine gas markets. During the year we launched a new dual-fuel engine, the Wärtsilä 46DF, and a new LNGPac gas handling system.

Within the service markets, demand from our marine customers improved in the second half, and the demand for power plant related services was healthy throughout the year. Consequently, after several years of stable development, net sales from the Services business increased by 5%. I strongly believe that the Services organisation, with its unique offering and global reach, is one of our key strengths. Representing over 40% of Wärtsilä’s sales, it offsets the cyclicality of our end-markets, while supporting our growth ambitions and our target to improve long-term profitability.

At the very start of 2014, the signs of continued market difficulties were evident. We therefore initiated measures to realign our operations globally, with the aim of securing future profitability and competitiveness. Such decisions are not made lightly; nevertheless, developing the efficiency and flexibility of our organisation is essential in order to adapt to changes in market demand.

The reorganisation of our operations was not limited to internal activities. In July, we announced a joint venture with China State Shipbuilding Corporation (CSSC), which will take over Wärtsilä’s two-stroke engine business. Wärtsilä’s share of the joint venture is 30%. The partnership with CSSC, the largest shipbuilding conglomerate in China, will accelerate growth in important Asian markets and enhance the position of Wärtsilä’s two-stroke technology globally. The transaction will have a positive impact on our continuing operations, and represents a step forward in the work towards reaching our long-term profitability goals. During the summer we also announced the sale of our shares in the Wärtsilä TMH Diesel Engine Company LLC joint venture in Russia. The divestment will enable us to concentrate on our core areas of expertise, namely complete lifecycle power solutions for the marine and energy markets.

In order to further strengthen the position of our four-stroke technology in key emerging markets, we also agreed to establish a joint venture with CSSC for the manufacturing of our medium-speed diesel and dual-fuel engines in China. The joint venture will target the growing offshore and LNG markets, as well as the auxiliary engine market for very large container carriers.
Towards the end of the year we announced the acquisition of L-3 Marine Systems International, a company that supplies automation, navigation and electrical systems to the marine, naval and offshore markets. Through this acquisition we will create an electrical and automation business that is unique in terms of sector competence. The deal is fully in line with our strategy of acquiring companies that strengthen our position in markets where we are not yet a leading player.

Wärtsilä’s edge lies in its technological expertise. We continuously invest into technology development in order to maintain the competitiveness of our product portfolio, and to secure a leading position at the forefront of sustainable innovation. In 2014, our R&D investments represented approximately 3% of net sales, the key focus areas being efficiency improvement, fuel flexibility, and environmental performance. High ethical standards are our priority. We are committed to supporting the UN Global Compact and its principles with respect to human rights, labour, the environment and anti-corruption.

The demand for gas and energy efficiency, coupled with environmental considerations, drives our business. The need for efficient, flexible, and clean power generation in both the emerging markets and developed economies, offers growth opportunities for our Smart Power Generation power plants. Our gas expertise positions us well as there is a gradual transition in the marine markets to a wider scale use of gas as fuel. We also see opportunities in the development of medium-scale LNG infrastructures. More stringent environmental legislation is entering into force, which we expect will increase interest in our environmental solutions. By emphasising these strategic focus areas, we anticipate some growth in net sales and improved profitability for 2015, despite our cautious market outlook.

I would like to take this opportunity to thank our customers for the interest you have shown in our solutions and services, our shareholders for the confidence placed in Wärtsilä’s future development, and the entire Wärtsilä organisation for your dedication to reaching our common goals.

Björn Rosengren
President & CEO

Key figures
Personnel, number at end of period

<table>
<thead>
<tr>
<th></th>
<th>17 717</th>
<th>17 717</th>
<th>17 817</th>
<th>17 876</th>
<th>18 159</th>
<th>18 315</th>
<th>18 887</th>
</tr>
</thead>
</table>

1 Figures exclude non-recurring items.
2 The figures in the comparison period 2012 have been restated during 2013 according to the revised IAS 19.
3 Figures related to the statement of income have been restated due to the reclassification of the two-stroke business as discontinued operations.

WÄRTSILÄ IN BRIEF

Wärtsilä is a global leader in complete lifecycle power solutions for the marine and energy markets. By emphasising technological innovation and total efficiency, Wärtsilä maximises the environmental and economic performance of the vessels and power plants of its customers.

In 2014, Wärtsilä’s net sales totalled EUR 4.8 billion with approximately 17,700 employees. The company has operations in over 200 locations in nearly 70 countries around the world. Wärtsilä is listed on NASDAQ Helsinki.

Power Plants

Wärtsilä Power Plants is a leading global supplier of flexible baseload power plants of up to 600 MW operating on various gaseous and liquid fuels. Our portfolio includes unique solutions for peaking, reserve and load-following power generation, as well as for balancing intermittent power production. Wärtsilä Power Plants also provides LNG terminals and distribution systems. As of 2014, Wärtsilä has installed nearly 5,000 power plants in 170 countries around the world.

Ship Power

Wärtsilä enhances the business of its marine and oil & gas industry customers by providing innovative products and integrated solutions that are safe, environmentally sustainable, efficient, flexible, and economically sound. Being a technology leader, and through the experience, know-how and dedication of our personnel, we are able to customise solutions that provide optimal benefits to our clients around the world.

Services

Wärtsilä supports its customers throughout the lifecycle of their installations by optimising efficiency and performance. We provide the most comprehensive portfolio of services - from spare parts to complete operational and maintenance service - and the broadest service network in the industry, for both the energy and marine markets. We are committed to providing high quality, expert support and the availability of services in the most environmentally sound way possible, wherever our customers are located.

WÄRTSILÄ'S OPERATING ENVIRONMENT

According to the IMF, GDP grew by 3.3% in 2014. The uncertainty over global economic development continues. GDP growth is expected to remain broadly stable in the emerging markets and developing economies in 2015. Although forecasts have been revised downwards, these economies will continue to account for the bulk of global growth. Over
50% of the Wärtsilä’s net sales came from non-OECD countries in 2014. In advanced economies the stronger than expected recovery in economic growth in the US is expected to continue.

Demand in Wärtsilä’s end-markets is largely driven by GDP development. In the power generation markets, macroeconomic uncertainty and slower global growth projections continued to impact investments during 2014. However, the demand for new power plants was supported by economic growth in the emerging markets, which account for the majority of Power Plants’ order intake. Several orders were also received from the US, as the strengthening of the US dollar against the euro had a positive impact on demand. The shipbuilding markets continue to be focused on Asia. China and South Korea accounted for 41% and 27% respectively of the confirmed vessel contracts in 2014 in terms of compensated gross tonnage. Overcapacity is still one of the main obstacles to a full recovery in the shipping industry. Stronger global GDP growth would be required for this overcapacity to be absorbed. An improved global economic outlook would also boost spending on discretionary maintenance and investments, thereby benefitting the Services business.

Oil prices declined significantly in 2014, mainly due to supply related factors. In the marine markets, lower oil prices will impact the demand for new offshore vessels. In other vessel segments, lower bunkering costs may have a positive impact on the operating expenses for ship owners. Offshore related orders accounted for 28% of Ship Power’s order intake in 2014 and approximately 10% of Group order intake. In the Power Plants business, the low oil prices may impact demand oil and gas production based economies. Offsetting this trend is the strengthening purchasing power of oil importing economies and the potential for increased interest in dual-fuel installations.

CORPORATE STRATEGY

Wärtsilä aims to be the leader in complete lifecycle power solutions for the marine and selected energy markets worldwide. We see growth opportunities in gas fuelled power plants as part of our Smart Power Generation concept, in gas fuelled engines and related systems for the marine market, as well as in the development of medium-scale LNG infrastructures. We also seek growth in environmental solutions, including exhaust gas cleaning systems for SO\textsubscript{2} removal and ballast water management systems. Our strengths are our technological leadership, an integrated product and service offering, our close and long-standing customer relationships, and our unparallelled global presence. With our production and supply chain management we constantly seek ways to maintain cost efficiency and high quality - often in co-operation with leading industrial partners in our key growth markets. Our strong focus on R&D allows us to stay at the forefront of technology and innovation in our industry. We are determined to capture growth opportunities within our end markets, while maintaining a solid profitability.

Sustainability

Wärtsilä’s aim is to meet shareholder expectations and contribute toward the well-being of the society. This requires efficient, profitable and competitive company operations. Good economic performance establishes a platform for the other aspects of sustainability – environmental and social responsibility.

Wärtsilä’s overriding promise is to supply power solutions that offer high efficiency with low environmental load. Our objective is to continuously improve the environmental performance of our products and services, as well as to maintain technological leadership by utilising new technologies and collaborating with our customers and other stakeholder groups. In doing this, we help our customers and society at large to meet the goals of the tightening global environmental regulations and guidelines.

Wärtsilä acts as a good corporate citizen wherever we are active. Our business operations and relations with our stakeholders are governed by our Code of Conduct. Wärtsilä is a responsible employer, and we seek to offer our
employees an interesting and exciting workplace where openness, respect, trust, equal opportunities and scope for personal development prevail. A further aim is to offer a hazard-free working environment to our employees and contractors and to minimise the health and safety risks associated with the use of our products and services. Supply chain management and development are integral elements of our operations.

### Values

<table>
<thead>
<tr>
<th>VALUES</th>
<th>MISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENERGY</td>
<td>We provide lifecycle power solutions to enhance our customers’ business, whilst creating better technologies that benefit both the customer and the environment.</td>
</tr>
<tr>
<td>EXCELLENCE</td>
<td>We will be our customers’ most valued business partner.</td>
</tr>
<tr>
<td>EXCITEMENT</td>
<td>Capture opportunities and make things happen.</td>
</tr>
<tr>
<td></td>
<td>Do things better than anyone else in our industry.</td>
</tr>
<tr>
<td></td>
<td>Foster openness, respect and trust to create excitement.</td>
</tr>
</tbody>
</table>
FINANCIAL TARGETS

Net sales

**TARGET**
Our target is to grow faster than global GDP.

**DEVELOPMENT**
In 2014, Wärtsilä’s net sales increased by 4% to EUR 4,779 million. Wärtsilä’s CAGR 2004–2014 was 7.9%.

Profitability

**TARGET**
Our operating profit margin (EBIT%) target is 14% at the peak of the cycle. At the trough of the cycle, our target is to keep the operating profit margin above 10%.

**DEVELOPMENT**
In 2014, our operating profit was EUR 569 million, 11.9% of net sales.

* Restated, figures include continuing operations.
**Capital structure**

**TARGET**
Our target is to maintain gearing below 0.50.

**DEVELOPMENT**
In 2014, our gearing was 0.05.

**Gearing**

![Gearing chart]

**Dividend**

**TARGET**
Our target is to pay a dividend equivalent to 50% of earnings over the cycle.

**DEVELOPMENT**
The Board of Directors proposes that a dividend of 1.15 euro per share be paid for the financial year 2014, which represents 65% of operational earnings.

**Earnings/share, dividend/share**

![Earnings/share chart]

1 Proposal by the Board 2014
### SUSTAINABILITY TARGETS

**Wärtsilä’s targets for reducing GHG and other emissions**

<table>
<thead>
<tr>
<th>Target</th>
<th>Schedule</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>To reduce energy consumption by at least 10% in terms of absolute consumption (GWh) by 2016 compared to mean energy consumption in 2005.</td>
<td>2016</td>
<td>By the end of 2014, energy savings of 37,5 GWh have been reached. This represents 80% of the final energy savings target.</td>
</tr>
<tr>
<td>To create solutions for enabling medium-sized LNG to replace liquid fuel infrastructure.</td>
<td>2015</td>
<td>First turnkey project was signed with Manga LNG Oy. Feasibility study ongoing in Indonesia for the project to develop bio-gas plant with local partners.</td>
</tr>
<tr>
<td>To enable emission reductions through gas conversion projects.</td>
<td>2015</td>
<td>Since 2004, Wärtsilä has performed gas conversions for more than 28 installations totalling 925 MW. During 2014, Wärtsilä has received gas conversion orders for three power plant installations totalling 161 MW.</td>
</tr>
<tr>
<td>To increase total net electrical efficiency in simple and combined cycle power plants in cyclic operations.</td>
<td>2015</td>
<td>In 2014 Wärtsilä sold its highest efficiency power plant of all times, i.e. the 140 MW Flexicycle power plant to Mexico. In total four Flexicycle power plants were sold during the year. With the market release of the turbo generator, Wärtsilä is able to provide 50% plant net efficiency at site conditions. Wärtsilä Dry Flexicycle, with high electrical efficiency and minimal water consumption, have been offered to several projects.</td>
</tr>
<tr>
<td>To influence developing dynamic power markets in order to enable wide scale renewable integration.</td>
<td>2015</td>
<td>Wärtsilä has participated in many studies which have assessed the value of flexibility for the power systems. Wärtsilä has also assessed various power market models and their ability to secure adequate flexibility in the power systems. Wärtsilä has conducted an active dialogue with various stakeholders concerning dynamic power markets.</td>
</tr>
<tr>
<td>To enable the reduction of power losses by 3-5% in electrical propulsion using medium voltage system.</td>
<td>2015</td>
<td>Full scale validation and verification of MV (medium voltage) frequency converter started in the first quarter of 2014, validation of MV LLC (medium voltage low loss concept) will continue in 2015. The reduction target is anticipated to be achieved by the end of year 2015.</td>
</tr>
<tr>
<td>To develop performance management solutions for different vessel types enabling better efficiency of the plant.</td>
<td>2012</td>
<td>Wärtsilä Control and Communication Centre (3C) has been developed and is ready for pilot project.</td>
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<tr>
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</tr>
<tr>
<td>To develop 10 new Wärtsilä Optimiser solutions enabling customer to optimise lifecycle performance.</td>
<td>2015</td>
<td>As part of the Wärtsilä Services “Go Digital” strategy, a condition based monitoring and maintenance concept for all Wärtsilä delivered equipment, performance optimisation concepts for vessels and power plants powered by Wärtsilä engines or propulsion systems and remote services for all customer support activities will continue to be developed heavily during 2015. Focus will be on providing improved end customer business, efficiency, reliability and availability optimisation of the customer’s assets.</td>
</tr>
<tr>
<td>To reduce GHG emissions by 3% through improving the engine efficiency.</td>
<td>2015</td>
<td>Target achieved.</td>
</tr>
<tr>
<td>To expand the gas portfolio.</td>
<td>2015</td>
<td>LNGPac sold to 12 installations in 2014.</td>
</tr>
</tbody>
</table>
| To stimulate growth for LNG-fuelled OSV’s (offshore support vessel). | 2015 | Wärtsilä received:  
  • Two orders for LNG powered OSV’s in the North Sea market  
  • One order for LNG powered RoPax in the Baltic Sea market  
  • Three orders for LNG powered ferries in Canada  
  • One order for an LNG powered tug in the Middle Eastern market |
| To expand the field of LNG applications beyond present vessel types and to facilitate LNG re-engining. | 2015 | Wärtsilä has received LNG powered vessel orders beyond present types:  
  • Icebreaker  
  • Cement carrier (bulk carrier)  
  • Harbour tug  
  • Icebreaking LNG carrier |
| To deliver environmental and energy efficiency consultancy projects: 10 projects. | 2015 | In 2014, the major focus of the consultancy projects has been in environmental compliance, sustainability and in some aspects of energy savings. During 2014, altogether 11 full projects including consultancy, design and hardware delivery have been sold. The target has been achieved. |
Decrease Water Consumption

<table>
<thead>
<tr>
<th>Target</th>
<th>Schedule</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>To develop further the dry concepts for high-efficiency combined cycle solutions.</td>
<td>2015</td>
<td>The first business case is in the pipeline. The 355 MW power plant in El Salvador will feature Wärtsilä’s dry combined cycle system plant concept in place. The international patent application that was filed in 2013 is expected to be in force during 2015.</td>
</tr>
</tbody>
</table>

Wärtsilä’s targets for improving overall performance

<table>
<thead>
<tr>
<th>Target</th>
<th>Schedule</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>To conduct 3 lifecycle assessments.</td>
<td>2015</td>
<td>The potential product categories for the lifecycle assessment have been reviewed. First lifecycle assessment is ongoing.</td>
</tr>
</tbody>
</table>

Wärtsilä’s social targets

<table>
<thead>
<tr>
<th>Target</th>
<th>Schedule</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>To make Wärtsilä a workplace where all employees have the opportunity to show their best and develop their career – to build a company of equal opportunities.</td>
<td>Continuous</td>
<td>Open vacancies filled: 63% internal selections in job level 3 and up and 37% in external selections. In 2014, training days/employee rate was 4.2 (4.1).</td>
</tr>
<tr>
<td>To develop a new way of working in supplier relations, safeguarding Wärtsilä’s sustainability commitment.</td>
<td>2015</td>
<td>In 2014, periodical assessments for key suppliers were conducted based on the new model and by the end of 2014 Wärtsilä had rated 95% of its suppliers in terms of total spent on Wärtsilä Supply Management supplies.</td>
</tr>
<tr>
<td>Development discussion coverage 100%.</td>
<td>Continuous</td>
<td>Altogether 92% employees had completed development discussions by the end of 2014.</td>
</tr>
<tr>
<td>To implement certified EHS management systems in all subsidiaries (excluding purely sales offices).</td>
<td>Continuous</td>
<td>Launch of two new OHSAS 18001 certified and two new ISO 14001 certified companies during 2014. In 2014, a new management system framework was introduced including new approved global EHS instructions.</td>
</tr>
<tr>
<td>To reach the long-term goal for zero lost time injuries.</td>
<td>Continuous</td>
<td>Wärtsilä continued improving, consolidating and spreading the safety culture. By the end of 2014 over 8,900 employees had completed the 4-hour e-learning focusing on Wärtsilä’s Zero Injury approach. The positive trend continued, the lost-time injury frequency rate for 2014 was 3.5 (4.4).</td>
</tr>
<tr>
<td>To ensure Code of Conduct commitment throughout the organisation.</td>
<td>2014</td>
<td>At the end of 2014, 17,220 employees covering 95% of total employees had successfully participated in the training.</td>
</tr>
</tbody>
</table>
To reinforce the Anticorruption/Broker training of key employee groups and obtaining anti-corruption commitments from all key employees trained. Target 2014: Training of all employees to achieve 80% completion rate.

<table>
<thead>
<tr>
<th>Year</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>At the end of 2014, 14,683 employees (81%) had successfully participated in the training.</td>
</tr>
</tbody>
</table>

To conduct three community support projects by 2015.

<table>
<thead>
<tr>
<th>Year</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Three community projects have been conducted. Wärtsilä has supported two school building projects in South Sudan. In addition Wärtsilä has carried out ParticipAid programme in Finland. The target has been achieved.</td>
</tr>
</tbody>
</table>

To improve well-being at work and increase productivity by reducing sickness day cost.

<table>
<thead>
<tr>
<th>Year</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Analysis done in selected countries, action plans done and monitored in respective local companies.</td>
</tr>
</tbody>
</table>

THE VALUE OF SUSTAINABLE INNOVATIONS

As a global leader in complete lifecycle solutions for the marine and energy markets, Wärtsilä plays a key role in providing environmental sound solutions and services that enable its customers to develop their businesses in a sustainable way. This approach is the basis of our sustainability work and it is supported by our strong commitment to responsible business conduct.

The growth in the world’s energy needs, combined with increasingly stringent environmental requirements and the scarcity of natural resources, create a challenging operating climate for companies in Wärtsilä’s line of business.

To secure our leading position at the forefront of sustainable innovation we continuously invest in technology development. We focus on improving the energy efficiency of our products, while we simultaneously strive to reduce emissions from them. As part of our sustainable innovation approach, we also assess the benefits that our solutions bring to, for example, power systems.

Innovation in product development and the willingness to explore new technologies is essential in order to meet the current needs of our customers, to be prepared for future requirements, and to remain an industrial frontrunner. We strive to develop environmentally sound products and solutions across a wide front, including technologies related to efficiency improvement, the reduction of gaseous and liquid emissions, waste reduction, noise abatement, as well as effluent and ballast water treatment. Our proactive approach to meeting future demand has resulted in the development of both primary and secondary abatement technologies, and has broadened the range of usable fuels. The commitment to investing in research and product development benefits Wärtsilä’s customers as well as the environment, both in the short-term and over a longer time span.

The key features of Wärtsilä’s environmentally sound solutions include:

- Reliability, safety and long lifetime
- Solutions to reduce emissions
- Alternatives to heavy fuel oil
- Flexibility in fuel use
- Solutions to maximise efficiency with the lowest lifecycle cost
- Solutions to minimise water consumption
- Optimisation of vessel design and operations
By combining the key features and through understanding the system level benefits of our offering, we are able to provide solutions that enable the development of sustainable shipping and power systems.

<table>
<thead>
<tr>
<th>SUSTAINABLE POWER SYSTEMS</th>
</tr>
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<tbody>
<tr>
<td>- Wärtsilä to supply a 112 MW peaking power plant to North Dakota</td>
</tr>
<tr>
<td>- Wärtsilä supplies a 50 MW power plant to help integration of solar energy in Hawaii</td>
</tr>
<tr>
<td>- Wärtsilä supplies flexible capacity to integrate wind and solar energy in Oklahoma</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SOLUTIONS TO REDUCE EMISSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Wärtsilä to supply Exhaust Gas Cleansing Systems for six vessels in the Baltic and North Seas</td>
</tr>
<tr>
<td>- Wärtsilä supplies its new Skop Water Treatment System for an ultra-deep water drill ship operating in the Gulf of Mexico</td>
</tr>
<tr>
<td>- Wärtsilä Ballast Water Management Systems will be installed in a total of 22 bulk carriers owned by Pioneer Marine</td>
</tr>
<tr>
<td>- Wärtsilä's new NOx reducers will be fitted to two new HB Grandi fishing vessels</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>FLEXIBILITY IN FUEL USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Wärtsilä to develop Indonesia's first bio-LNG plant in cooperation with local partners</td>
</tr>
<tr>
<td>- Biogas liquefaction plant supplied by Wärtsilä to produce biodiesel for buses in Norway</td>
</tr>
<tr>
<td>- Wärtsilä signs a contract to supply an LNG terminal to Tomio in Finland</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOLUTIONS TO MAXIMISE EFFICIENCY WITH LOWEST LIFECYCLE COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Wärtsilä launches a low loss hybrid (LLH) system offering fuel savings and reduced emissions</td>
</tr>
<tr>
<td>- Wärtsilä’s Propulsion Condition Monitoring Service (PCM) recognised by three major classification societies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GAS AND SHIPPING</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Wärtsilä to deliver gas handling systems for the world’s largest ethane carriers</td>
</tr>
<tr>
<td>- World’s first LNG fuelled icebreaker to be powered by Wärtsilä dual-fuel engines</td>
</tr>
<tr>
<td>- Wärtsilä integrated solutions chosen for new series of six deep water Anchor Handling Tug Supply vessels</td>
</tr>
<tr>
<td>- Wärtsilä designs and supplies propulsion and other equipment for a new harbour tug that will operate on liquefied natural gas (LNG)</td>
</tr>
</tbody>
</table>
SUSTAINABILITY HIGHLIGHTS 2014

Q1

10.1. Wärtsilä signs a contract to supply an LNG terminal to Tornio in Finland.


31.1. Wärtsilä West Africa S.A received ISO 14001 and OHSAS 18001 certifications.

11.2. Wärtsilä’s Sustainability Report 2013 published as part of the Annual Report.

12.2. Biogas liquefaction plant supplied by Wärtsilä begins biofuel production for buses in Oslo, Norway.

NOTHING GROWS UNLESS YOU PLANT A FEW SEEDS.
14.2. US Environmental Protection Agency (EPA) approved the regulatory compliance of Wärtsilä’s environmental seal systems.

18.2. Wärtsilä contracted to supply the largest ever LNG ship conversion in North America.

21.2. Wärtsilä receives the first order for its new slop water treatment system.

14.3. Wärtsilä contracted to supply fast-response gas power plant for city of Alexandria, Louisiana, USA.

19–21.3. Wärtsilä’s expertise in sustainable and efficient shipping on show at Asia Pacific Maritime 2014.

24.3. The Wärtsilä 46DF dual-fuel engine is introduced.
25.3. Wärtsilä receives its first order to supply a low-pressure, 2-stroke, dual-fuel engine for an LNG carrier.

26.3. Wärtsilä contracted to supply the world’s first LNG fuelled icebreaker with dual-fuel engines.

9.4. Wärtsilä arranged a sustainability conference for customers to mark the inauguration of a new test centre in Norway.

2.5. Wärtsilä signs the Diversity Charter of the Corporate Responsibility Network FIBS.


15.5. Wärtsilä Exhaust Gas Cleaning Systems ordered for six vessels operating in the Baltic and North Sea.
2.6. Connecting rod workshop in Vaasa, Finland reached two years without injuries.

4.6. Wärtsilä introduces a new fixed pitch propeller design offering significant fuel savings.

5.6. Wärtsilä wins its third consecutive Best Paper Award at Power-Gen Europe.

24.6. Wärtsilä’s environmental seal systems gain recognition by Lloyd’s Register for meeting EPA requirements, as the first company in its industry.

7.7. Wärtsilä wins biggest ever single owner order for Ballast Water Management Systems.

9.7. Wärtsilä contracted to supply control system for Harvey Gulf’s shore-based LNG fuelling facility - the first source of LNG fuel in the Gulf of Mexico.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.8</td>
<td>Wärtsilä wins ship design contract for environmentally sound Gulf of Bothnia ferry.</td>
</tr>
<tr>
<td>14.8</td>
<td>Wärtsilä awarded a contract to supply dual-fuel engine technology to a bulk carrier for the first time.</td>
</tr>
<tr>
<td>18.8</td>
<td>Wärtsilä elected one of the 130 best companies to work for in Brazil, according to the ranking Great Place to Work® 2014.</td>
</tr>
<tr>
<td>25.8</td>
<td>Wärtsilä launched the Low Loss Hybrid energy system offering fuel savings and reduced emissions for ships.</td>
</tr>
<tr>
<td>26.8</td>
<td>Wärtsilä launched the upgraded Wärtsilä LNGPac system.</td>
</tr>
<tr>
<td>28.8</td>
<td>Wärtsilä’s Annual Report 2013 ranked 6th globally in Report Watch’s yearly ranking of best annual reports, and was the highest placed Finnish report.</td>
</tr>
</tbody>
</table>
3.9. Wärtsilä WeCare tool for reporting and managing occupational health and safety, security and environmental incidents implemented in all Wärtsilä companies.

8.9. Wärtsilä introduced high efficiency Controllable Pitch Propeller system.


22.9. Wärtsilä and MAN Diesel & Turbo initiate HERCULES-2 research project aimed at minimising marine engine emissions.

25.9. Wärtsilä contracted to supply a Smart Power Generation power plant to integrate wind and solar energy in Oklahoma, USA.

30.9. Wärtsilä India Ltd. exceeded 4 million working hours without lost time injuries.

7.10. Wärtsilä hosted a dinner debate on Flexibility Challenge attended by the European Energy Forum.

8.10. Wärtsilä signed a joint development agreement to develop Indonesia’s first bio-LNG plant in cooperation with local partners.

27.10. Wärtsilä contracted to supply a Smart Power Generation power plant to help integration of solar energy in Hawaii.

5.11. Wärtsilä Solutions Oy received ISO 14001 and OHSAS 18001 certifications.

10.11. Wärtsilä dual fuel engines chosen to power new icebreaking LNG carriers.
11.11. Wärtsilä supporting CMI (Crisis Management Initiative) as lead partner: The Ahtisaari Day Seminar tackled the new dynamics in politics and business.


18.11. Middle East’s first LNG fuelled harbour tug ordered to feature full scope of Wärtsilä solutions.

30.11. Wärtsilä Columbia completed a local Wärtsilä ParticipAid programme, where employees donated money, amount doubled by the company, to Fundación Chanita helping children with cancer.

8.12. Wärtsilä contracted to supply a 120 MW Smart Power Generation power plant for island mode operations to Oman.

16./17.12. Wärtsilä donated funds, given by employees in Finland and doubled by the company in a Wärtsilä ParticipAid program, to Plan International’s ‘Because I am a girl’ charity campaign.
22.12. Wärtsilä contracted to power world’s first high speed LNG fuelled RoPax ferry.

29.12. Wärtsilä donated a marine engine to Nelson Mandela Metropolitan University in South Africa.

31.12. The annual Lost Time Injury frequency index reached record low again.

Wärtsilä in sustainable development indices

FTSE4Good Index

ECPI Global Carbon Index & ECPI Global ESG Best in Class Equity index
OMX GES Sustainability Nordic Index & OMX GES Sustainability Finland Index

Wärtsilä has also been rated a Prime company by oekom research

Ethibel EXCELLENCE Investment Register
POWER PLANTS REVIEW

Wärtsilä Power Plants provides superior value to its customers by offering decentralised, flexible, efficient, and environmentally advanced energy solutions. We offer dependable power plants that can be constructed in multiple parallel generation units, and on a fast track basis.

An offering based on flexibility

We offer our customers Smart Power Generation power plants for baseload generation, peaking and load following operation, as well as dynamic system balancing and ultra-fast grid reserve, with solutions ranging from equipment only deliveries to full turnkey power plants. Our tried and tested power plants are modularised so as to enable them to be located close to the end-user customers. This also allows construction to be carried out in phases according to the customer’s needs. The fuel flexibility of our solutions supports the transition from oil to gas as the markets increasingly embrace natural gas. Through operation and maintenance agreements we support our customers throughout the lifecycle of their installations. While we operate mainly in the emerging markets, there is, however, demand for our power plant projects also in the developed markets.

In the LNG business, we offer complete end-to-end LNG distribution infrastructures, including small and medium sized LNG terminals and liquefaction and regasification technology. An LNG terminal can be integrated with a Smart Power Generation power plant to form a joint and efficient turnkey solution.

Our power business is divided into three segments

Our three main customer segments are: Utilities, Independent Power Producers (IPP’s) and Industrial customers. Utilities supply electricity to residential, commercial and industrial end users, whereas IPP’s are financial investors investing in power plants and selling the generated power to utilities. Customer needs in these segments vary according to the application for which the plant is used. In traditional baseload power generation, customers require competitive lifecycle costs, reliability, world-class product quality, and fuel and operational flexibility. In balancing and peaking applications, customer needs typically include rapid start and ramp up, the ability to operate at varying loads, as well as competitive electricity generation and capacity costs. Industrial customers are mainly private companies in, for instance, the mining, cement and oil & gas industries, investing in captive power plants. Reliability, reduced energy costs, and independence from the grid are among the key factors in their decision-making.
OPERATING ENVIRONMENT

Wärtsilä’s power plants are used in a wide variety of applications. These include traditional baseload energy generation for national grids, providing dynamic grid power balancing services in order to integrate larger shares of renewable energy, and island mode applications that operate independently.

As a global supplier of power plant solutions, we recognise that there are significant differences in the energy infrastructure models between regions and countries. We serve primarily four types of energy infrastructure:

- Natural gas based energy infrastructure with pure gas flexible baseload power plants
- Energy infrastructure with high levels of intermittent renewable energy requiring dynamic balancing power plants with a fast response capability
- Liquid fuel based energy infrastructure with heavy fuel oil power plants
- Energy infrastructure transitioning to gas through LNG with dual-fuel power plants

The commercial drivers for power plant investments vary between the different customer segments. Generating and selling power is the core business for utilities and power generation facilities, therefore, strategic assets. IPP projects are typically financial investments in order to gain returns. Industrial customers need a power supply for their process facilities or factories. The common factor for all customer segments is that the power plant projects are often significant investments. Wärtsilä’s power plants are funded in many geographical markets. Funding sources are typically a mix of international, commercial, governmental, export credit agency and multilateral financing. Wärtsilä provides support in finding funding solutions for customers, while it does not itself participate in the funding.

General market drivers in the Power Plants business

The demand for power generation is driven primarily by population growth and economic development. As electricity consumption grows, the demand for both new power generation equipment and replacement equipment for older
capacity increases correspondingly. Looking ahead, growth is expected to be higher in non-OECD countries due to increasing industrialisation and improving living standards.

In emerging markets and remote areas, the demand for flexible baseload power plants, as well as for industrial self-generation, is driven by increasing electricity consumption and by developments in the commodity prices. The demand for gas and dual-fuel driven plants increases along with the introduction of gas networks to the emerging markets.

While economic development is a less important driver in the OECD countries, the ageing installed capacity will drive demand for new investments. Other important drivers include stricter environmental regulations and targets to achieve low carbon power systems, which are spurring investments in renewable energy. The significant growth in wind and power installations has led to unforeseen grid stability challenges, which require flexible balancing power. Wärtsilä’s Smart Power Generation power plants not only back up renewable generation, but enable much more of it, thereby increasing the sustainability, reliability and affordability of the entire power system.

![Final electricity generation by region](chart.png)

The demand for gas is expected to grow, as it enables system balancing with minimal emissions compared to other fossil fuels. This is further supported by the increasing availability of gas resulting from growing investments in the LNG infrastructure, as well as from the economic viability of unconventional sources, such as shale gas. The share of gas in the global energy mix is expected to grow by 2.4% per year, and most of this growth will occur in non-OECD countries. Wärtsilä is well positioned in these markets. In regions where the gas infrastructure is being built, a key feature of our power plants is their capability to utilise available liquid fuels until the availability of gas is fully reliable.
Power Plants’ competition

In larger gas-fired projects, Wärtsilä’s internal combustion engine technology often competes against gas turbine manufacturers, such as GE and Siemens. In smaller gas based projects and in the heavy fuel oil based power plant market, Wärtsilä’s competitors are mainly other engine suppliers such as MAN Diesel, Caterpillar (MAK), and Rolls-Royce. Our advanced gas and dual-fuel engine technology has given us a leading position in gas-fired engine power plants where we hold a 70% market share, while in the entire market for engine power plants where all fuels are used, we have a 50% market share. Our competitive strengths include the ability to provide anywhere in the world, complete turnkey power plants with fuel flexibility and lifetime support through operation & maintenance agreements. Our main advantages over gas turbine technology are higher efficiency in varying loads, the capability to go from start-up to full load in less than 5 minutes, the ability for unlimited starts and stops without impact on maintenance needs, and the ability to offer dual-fuel solutions for markets transitioning to natural gas.
Main drivers for Wärtsilä’s Power Plants business

- Increased need for flexibility in power systems around the world
- Economic development and growth in electricity consumption
- Growth in the use of gas as fuel in power plants
- Need for fuel flexibility due to uncertainty in fuel availability and price
- Environmental concerns and renewable energy investments
- Ageing generation capacity

POWER PLANTS’ STRATEGY

Our aim is to be a globally recognised leader in liquid fuel and gas power plants. We will promote Smart Power Generation technology to the increasingly dynamic and environmentally conscious global energy market to enable more sustainable, affordable and reliable power systems.

Our strategy is to:

- Maintain our leading position in heavy fuel oil & dual-fuel power plants by enhancing our value proposition, and by influencing and actively developing selected target markets
- Grow strongly in the large utility gas power plants market by capturing market share from combustion turbines
- Grow in the biofuel power plants market by enabling a wide range of fuels
- Grow in special applications - LNG infrastructure, oil & gas, nuclear emergency power and combined heat and power - by introducing our value proposition to selected customer segments.

Our value proposition is based on providing solutions with guaranteed performance, high energy efficiency, and unique fuel and operational flexibility, which make them ideal for many types of energy infrastructures in varying applications. Modularity is a key enabler for ensuring cost competitive solutions in both equipment and turnkey deliveries.
The capability of our engines to run on a wide range of fuels makes it possible for us to further grow in the market for power plants using renewable fuels. Our focus is on products and projects that provide unquestionable environmental benefits and that make economic sense.

**POWER PLANTS AND SUSTAINABILITY**

The development of a more sustainable energy infrastructure is driven by climate policies, energy security, and economics. Carbon-intensive energy sources are being replaced by low carbon fuels, such as natural gas and renewable solutions. Energy savings and efficiency improvements are encouraged, and even legally enforced, at every level. This development is evident on a global scale, even though short-term actions can vary in different regions.

In line with its commitment to sustainability and responsible business conduct, Wärtsilä has taken an active role in market and solution development, advising national decision makers on changes in the power markets, and on relevant technical and commercial norms. In this way, Wärtsilä helps speed the transition to more sustainable power systems. Wärtsilä strives to maintain a deep understanding of the market requirements, and to develop its solutions in a way that enables them to contribute effectively to improved energy system performance in the various regions of the world.

Wärtsilä’s solutions for the energy industry offer a unique combination of flexibility, high efficiency, and low emissions. Many different fuels, including bio-fuels, can be used efficiently, which helps reduce greenhouse gas emissions. Wärtsilä’s Smart Power Generation technology enables the development of a reliable energy infrastructure, wherein most of the sustainable characteristics are already known. Moreover, integrating more wind and solar energy with flexible back-up capacity has great potential for reducing carbon emissions.

**Towards sustainable power systems**

The effects of climate change require a dramatic decrease in coal based power generation and a major increase in low carbon power generation, including wind, solar and natural gas fired plants. In modern power systems, the majority of electricity will be generated by wind and solar power, while thermal power generation will be increasingly used for system balancing and back-up. The variability of renewable energy generation requires the balancing and back-up power to be flexible and dynamic. Current and earlier power systems were not designed for this purpose, and in order to meet the required capacity, new flexible power generation assets need to be added to the system. Such flexible capacity is based on three elements: operational flexibility, energy efficiency, and fuel flexibility.

**Operational flexibility** is needed for reacting to the rapid changes in wind and solar output. Power plant requirements include the following capabilities:

- Frequent and fast starts and stops without negative wear and tear consequences
- Cyclic operation with high up and down ramp rates
- High full and part load efficiency
- A broad load range
- Minimal CO₂ emissions.

**Energy efficiency** means that less fuel is needed to generate electricity. Lower fuel consumption results in lower CO₂ levels in power generation.

**Fuel flexibility** enables the transition to more sustainable fuels when they become available. This feature becomes increasingly important when investing in new power capacity, because the plant is not fixed to a certain fuel where more sustainable fuels may be available in the future.
These three elements form the cornerstones of the Smart Power Generation technology. It enables the maximal utilisation of valuable renewable power, the smooth operation of inelastic baseload thermal power plant and, according to the results on future power system modeling, enables dramatic reductions in system level CO\textsubscript{2} emissions.

- Wärtsilä’s Smart Power Generation technology allows true operational optimisation of the entire energy system in a cost-efficient, reliable and sustainable way:
  - Enables extremely low carbon emissions from the total system
  - Enables the highest penetration of wind and solar power capacity without balancing problems
  - Enables baseload plants to operate with high output and efficiency, thereby lowering CO\textsubscript{2} levels
  - Minimises wind curtailment and helps to avoid negative prices
  - Reduces the amount of spinning reserve
  - Enables the efficient use of bio gas- and liquid bio-fuel resources

- Allows the entire system to operate in the most cost effective way:
  - Removes the abusive cyclic load from plants that are not designed for it, enabling them to operate in their most cost-effective way
  - High efficiency over a wide load range enables flexible power plants to operate in the most cost effective way

- Ensures system reliability, even during extreme conditions, such as wind variations and contingency situations
- Enables decentralisation of the intermediate and peak load capacity:
  - Flexible plant sizing facilitates later expansion to match local needs
  - Installing generation capacity in load pockets reduces grid losses and helps to avoid investments in new high voltage grid expansions
  - Fast track delivery enables local capacity deficits to be rapidly overcome

**POWER PLANTS DEVELOPMENT IN 2014**

Power generation markets were challenging throughout 2014, with macroeconomic uncertainty and slower global growth projections impacting customer decision-making. Activity improved after the summer, supported by the demand for new power plants in the emerging markets and the dollar strengthening against euro. In Wärtsilä’s main addressable market, i.e. the market for installations up to 500 MW, orders totalled 16.5 GW (25.0) during the first nine months of 2014, and Wärtsilä’s market share increased to 10.5% (7.1%).

In 2014, Power Plants’ order intake was stable at EUR 1,293 million. 61% of the orders received, measured in MW, were for gas based power plants. Highlights included the order to supply a 112 MW peaking power plant to North Dakota. Other major orders were the 140 MW power plant order from Mexico, and the 120 MW order from Oman. Wärtsilä also received its first order for a turnkey LNG receiving terminal to be built in Tornio, northern Finland. Power Plants’ net sales declined by 22% due to slow order intake during the first half of the year, and totalled EUR 1,138 million. This represents 24% of Wärtsilä’s net sales.
SHIP POWER REVIEW

Wärtsilä Ship Power has a strong position in the marine and oil & gas industries. We provide optimised, environmentally sustainable, and economically sound solutions, which enhance the business of our customers. Our reputation is based on a good understanding of our customers’ businesses, our design capabilities, a broad product portfolio and technological leadership. Our organisation is structured into end to end business lines with full control over sales, R&D, engineering, procurement and manufacturing. This enables increased flexibility, fast decision-making, and the optimal utilisation of resources to provide superior customer service.

We serve both shipyards and ship owners

Ship Power’s marine customers comprise both shipyards and ship owners, and their needs and demands differ significantly. The decision-making process of shipyard customers is typically affected by product prices, delivery times and reliability, project management, ease of installation, and the supplier’s ability to manage large delivery scopes. Ship owners, on the other hand, require safe and efficient operations, reliability and support, as well as the availability of services. Their decision-making is also impacted by freight rates, interest rates, and the capital and operating costs of the ship. Furthermore, both ship owners and operators are having to increasingly consider factors such as environmental compliance and fuel flexibility in their decision-making.

We are committed to meeting the needs of all our customer groups. We succeed through our in-depth understanding of their businesses, operating models and requirements, which is backed by our extensive network, broad product portfolio, and ability to be involved in the life of the vessel as early as the design process. This enables us to support our customers throughout the lifecycle of their installations with products and solutions that best serve their business interests.

Our offering is the broadest in the industry

Ship Power is active in all the main vessel segments with a wide range of products and solutions, and understands the particular needs and requirements related to each of them – from the initial vessel design choices to everyday operations throughout the vessel’s lifecycle. Our portfolio also covers gas systems for land-based installations, such as gas terminals. Innovative and competitive products, delivered efficiently and with high quality, form the basis of our offering, which consists of:

- Medium-speed diesel and dual-fuel engines, low-speed engines sold through the Winterthur Gas & Diesel Ltd. (WinGD) joint venture
- Propulsion systems and gears
- Seals and bearings
- Automation systems
- Communication and control systems
- Power distribution and management systems
- Environmental solutions, including exhaust gas cleaning, ballast water management and fresh water systems
- Pumps and valves
- Gas systems, including LNG and LPG handling, inert gas systems, compressors, liquefaction, regasification and equipment for small-to-medium scale onshore gas installations
- Ship design

The ability to combine the products we offer into larger systems and solutions supports our strategy of being the main ship power supplier to our customers. This strategy provides added value to both our yard and ship owner customers.
Shipyard customers can focus on their areas of expertise and benefit from reduced risks of product interface problems, while ship owners can rely on benefits related to operations and maintenance.

<table>
<thead>
<tr>
<th>Segment</th>
<th>Vessel type</th>
<th>Main offering*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merchant</td>
<td>LNG carriers</td>
<td>4-st main dual-fuel engines, controllable pitch propellers (CPP), tunnel thrusters</td>
</tr>
<tr>
<td></td>
<td>Tankers, Containers, Bulkers</td>
<td>2-st engines sold through the WinGD joint venture, auxiliary engines, fixed pitch propellers (FPP), tunnel thrusters, 4-st engines for smaller vessels</td>
</tr>
<tr>
<td></td>
<td>Other: cargo, RoRo, car carriers, LPG carriers</td>
<td>All of the above</td>
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</tbody>
</table>

| Offshore    | Floating exploration: drillships, semi-submersibles, etc. | 4-st engines, steerable thrusters, tunnel thrusters, vessel automation, electric power distribution, gearboxes |
|-------------| Floating production units: FPSO's, FSO, floating LNG, etc. | 4-st engines, steerable thrusters, tunnel thrusters, CPP, vessel automation, electric power distribution, gearboxes |
| Service/Supply vessels: OSV's, PSV's, AHTS, AHS | 4-st engines, steerable thrusters, tunnel thrusters, CPP, electrical propulsion, ship design, automation, gearboxes |
|             | Other: crane vessels, pipelayers, accommodation vessels | All of the above                                                               |

| Cruise and Ferry | Cruise vessels | 4-st engines, FPP, tunnel thrusters |
| Other: ro-pax, yachts | All of the above |

| Special vessels | Tugs | 4-st engines, FPP, steerable thrusters, tunnel thrusters, vessel automation, ship design |
| Dredgers        | 4-st engines, CPP, FPP, steerable thrusters, tunnel thrusters, vessel automation |
| Other: fishing vessels, ice breakers, research vessels, work boats, inland waterway vessels | All of the above |

| Navy | Frigates, corvettes, patrol vessels, aircraft carriers, destroyers, support vessels | Waterjets, seals and bearings, tunnel thrusters, 4-st engines |

* Excluding Wärtsilä Hamworthy’s offering, which can be installed in nearly all ship types.

**Growth through gas, environmental solutions and efficient vessels**

Within the industry, Ship Power is uniquely positioned for growth driven by the increasing availability and use of gas as a marine fuel, the introduction of new environmental regulations, and the increased demand for more efficient vessels as a result of high fuel costs.

Stricter environmental regulations are driving the interest in gas as a marine fuel, as well as in emissions abatement technology, such as exhaust gas cleaning systems and ballast water treatment systems. Ship Power offers its customers
alternative solutions for meeting these requirements in a way that best meets the needs of their business and operating model, both as part of new build projects and as retrofits to vessels already in operation.

Our market leading offering for the gas segment consists of gas fuelled engines, gas conversions, and gas handling systems. We have a strong position in exhaust gas cleaning systems, with the most extensive reference list on the market. Today, our portfolio of exhaust gas cleaning systems is the broadest in the industry and consists of closed loop systems for fresh water use, open loop systems for seawater use, and a combination of the two, i.e. the hybrid system. In ballast water treatment we offer our customers systems based on the two most common technologies; ultraviolet treatment and electro-chlorination.

High fuel prices have made efficiency one of the top concerns for ship owners and operators. Our in-depth expertise and system skills help to optimise the efficiency of vessels and make it possible for our customers to achieve the performance, cost, and environmental compliance parameters that specifically match their operating profile.

SHIP POWER’S OPERATING ENVIRONMENT

Ship Power serves the marine and oil & gas industries. The main vessel segments covered in the marine industry are traditional merchant vessels, gas carriers, cruise & ferry, navy and special vessels. In the oil & gas industry we are active in offshore installations and vessels, and in land-based gas installations.

General shipbuilding and shipping market drivers

Demand in the shipbuilding and shipping industries is mainly driven by developments within the global economy and the resulting impact on trade and transportation capacity requirements. The global economy also influences fuel prices, which in turn has both a direct and an indirect impact on the marine and oil & gas industries. The price, availability and demand for fuel drives development in the oil & gas industry, while in the general shipping industry, it increases the demand for efficient vessels. Other factors, such as shipyard capacity, newbuild prices, decommissioning and scrapping, and interest and freight rates, also affect these industries. Global demand for new vessels drives Wärtsilä Ship Power’s business, in particular ships built for seaborne cargo transportation, offshore oil drilling, production and support, cruise and ferry services, and for naval use. Another important driver is the development of environmental regulations and their impact on the demand for optimised vessel efficiency, environmental solutions and gas as a marine fuel.

Main drivers for Wärtsilä’s Ship Power business

- Developments in the global economy
- Development of world trade and needed transportation capacity
- Development of gas as an energy source
- Development of oil and gas prices
- Development of new offshore oil & gas fields and infrastructures
- Environmental regulations

Competitors and market position

Wärtsilä Ship Power has continuously broadened its portfolio, which today ranges from engines and propulsion equipment to electrical equipment, automation, ship design, environmental solutions, gas systems, and pumps and valves. This is backed by the capability to build environmentally sound solutions, and by superior service support throughout the lifecycle of the product. Our competitive advantage lies in having the industry’s broadest marine focused
offering comprised of leading, innovative products, integrated systems and engineering, which is supported by a unique sales and service network in touch with our customers globally.

Our field of competitors is broad. It includes engine companies, such as MAN D&T, Caterpillar, and Chinese licensee manufacturers, propeller makers such as Schottel and Thrustmaster, and environmental and auxiliary equipment providers like Alfa Laval. It also includes electrical and automation houses, notably Siemens, ABB and Kongsberg, pump and gas system providers, such as Colfax and Cryostar, and companies with broad offerings like Rolls-Royce or Hyundai Heavy Industries. Wärtsilä is recognised as a proven supplier of innovative and sustainable technologies across our portfolio serving the marine and oil & gas markets.

<table>
<thead>
<tr>
<th>Wärtsilä’s offering</th>
<th>Main application*</th>
<th>Main competition**</th>
<th>Wärtsilä’s market position</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-stroke main engines</td>
<td>Small merchant vessels, offshore, special vessels</td>
<td>MAN D&amp;T, MAK (CAT), Rolls-Royce, HiMSEN.</td>
<td>Approximately half of the market (in kW) is controlled by Wärtsilä.</td>
</tr>
<tr>
<td>4-stroke auxiliary generating sets</td>
<td>All vessel types</td>
<td>The market is highly fragmented, price sensitive and with heavy competition. The main competitors are MAN D&amp;T and its local license manufacturers, Yanmar and HiMSEN. High-speed engines also compete in the auxiliary engine market.</td>
<td>Wärtsilä is a market challenger, having around 3% of the total market.</td>
</tr>
<tr>
<td>2-stroke engines sold through the WinGD joint venture</td>
<td>Large and medium size merchant vessels</td>
<td>MAN D&amp;T, Mitsubishi Heavy Industries</td>
<td>Market challenger, approximately 10% of the market (in kW) is controlled by Wärtsilä branded engines</td>
</tr>
<tr>
<td>Propulsion</td>
<td>All vessel types</td>
<td>Rolls-Royce, Schottel, Hyundai Heavy Industries, Mitsubishi Heavy Industries, Mecklenburger Metallguss, Thrustmaster, Brunvoll, Kawasaki, Caterpillar (Berg Propulsion)</td>
<td>CPP &amp; FPP: fragmented market, Wärtsilä among the top players. Steerable thrusters: Wärtsilä among the top players. Tunnel thrusters: highly fragmented market, Wärtsilä is a market challenger.</td>
</tr>
<tr>
<td>Electrical &amp; Automation</td>
<td>Offshore, special vessels</td>
<td>ABB, Siemens, Kongsberg, Rolls-Royce, General Electrics</td>
<td>Established position in offshore, otherwise market challenger.</td>
</tr>
<tr>
<td>Systems</td>
<td>Ship design</td>
<td>Oil &amp; Gas systems</td>
<td>Pumps and valves</td>
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</tr>
<tr>
<td>Systems</td>
<td>OSVs, merchant vessels, specialised vessels, fishing vessels</td>
<td>Offshore gas processing &amp; storage vessels, LNG/LEG/ LPG carriers, floating production systems, industry applications, fuel gas systems for all vessel types</td>
<td>All vessel types, on-and offshore oil &amp; gas facilities</td>
</tr>
<tr>
<td>Systems</td>
<td>Skipsteknik, Marinteknik, MMC, Rolls-Royce, Ulstein</td>
<td>TGE Marine, Cryostar, Linde GAS - AGA, Kobelco, Moss Maritime, Daewoo Shipbuilding &amp; Marine Engineering, Weir LGE, Cryonorm, John Zink, Black &amp; Veatch, Air Liquid, Aker Solutions, FMC/ CDS, Cameron/Concept</td>
<td></td>
</tr>
<tr>
<td>Systems</td>
<td>Amongst the leading independent ship design houses.</td>
<td>Wärtsilä Hamworthy among the top players.</td>
<td>Wärtsilä Hamworthy among the top players.</td>
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<tr>
<td>Systems</td>
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<tr>
<td>Systems</td>
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<tr>
<td>Environmental solutions</td>
<td>All vessel types</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systems</td>
<td>Alfa Laval, Green Tech Marine, Techcross, Panasia, Evac, Scanship GEA Westfalia, Marinfloc</td>
<td>Wärtsilä among the top players.</td>
<td></td>
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<tr>
<td>Systems</td>
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<td>Systems</td>
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<tr>
<td>* Only main applications mentioned.</td>
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</tr>
<tr>
<td>** Only main competitors mentioned.</td>
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</table>
SHIP POWER’S STRATEGY

Wärtsilä Ship Power’s strategic goal is to be the leading provider of innovative products and integrated solutions to the marine and oil & gas industries.

To achieve this we will build on our deep customer understanding and:

- Solidify our leading position in solutions for gas fuelled vessels, environmental compliance and efficiency optimisation
- Further develop our position as the shipbuilding industry’s leading systems integrator
- Provide a competitive offering of products for the growing needs of the marine and oil & gas markets
- Seek further growth through the ability to offer the most efficient lifecycle solutions for our customers.

As a solutions provider, we are ready to deliver everything from a single product to complete lifecycle support of complex systems for powering ships; from concept development to operational use. We are uniquely positioned in being the industry’s only true provider of a total marine offering. Our wide range of products is supported by world class ship design, engineering, and project delivery capabilities, all of which allow us to provide solutions that optimise the lifecycle value of our customers’ installations.

We see important mid-term growth opportunities in solutions for gas fuelled vessels, environmental compliance and efficiency optimisation. Wärtsilä is already well positioned in these areas, having the most extensive experience and track record in running gas engines, a unique portfolio of products for emissions control and abatement, and a holistic approach to ship-level efficiency optimisation through our engineering and ship design capabilities.

Wärtsilä Ship Power seeks organic growth that will be supported by targeted acquisitions and partnerships. We develop and deliver our offering of innovative and competitive products based on the requirements of our customer segments and the operating profiles of their vessels. Together with the Services business, we offer ship owners and operators integrated lifecycle solutions, whereby performance and availability are guaranteed. We will maintain our position as the shipbuilding industry’s leading systems integrator, and will further strengthen our already strong foothold in the oil & gas
business. Finally, we will invest further in strengthening our presence and maximising the efficiency of our supply chain, engineering and sales, especially in the key shipbuilding areas, notably China, South Korea and Brazil.

Ship Power’s strengths

- The broadest portfolio of reliable and high performing products and solutions in the marine and offshore oil & gas industries, supported by the industry’s strongest global services network
- An unmatched track record in providing gas fuelled vessels with dual-fuel technology and gas systems
- The most comprehensive selection of options for meeting our customers’ needs concerning fuel flexibility, efficiency and environmental requirements
- A unique synergy between ship design and engineering capabilities that allows us to maximise a vessel’s efficiency throughout its lifecycle
- A strong presence in all the major marine and offshore oil & gas segments, thereby allowing us to navigate ship building cycles

SHIP POWER AND SUSTAINABILITY

The marine and oil & gas industries are at the center of converging megatrends, namely a move towards a more diverse and cleaner energy mix, increased transparency and accountability with regards to environmental performance, and a need to improve economic performance despite possible uncertainties in the global economy. For Wärtsilä it is clear that improved sustainability is central to addressing all these trends.

Wärtsilä is committed to becoming the most valued business partner of its customers. Thus it is essential for Ship Power to have sustainability at the very core of its product and solutions development. Our R&D and business development activities are based on a deep understanding of how these megatrends affect our customers. The expansion and development of Wärtsilä’s offering to the marine and oil & gas industries over the years demonstrates our response to our customers’ needs. Gas, environmental compliance, and efficiency are the three pillars on which Ship Power builds its offering.

The shift towards natural gas

The global energy landscape is shifting towards a more diverse and sustainable energy mix, and natural gas - the cleanest fossil fuel - has a key role to play in this transition. The oil & gas industry has, during recent years, seen a dramatic rise in the demand for natural gas along with the increase in supply. The marine industry is also affected by this transition, with interest in the use of gas as a marine fuel rising sharply.

Wärtsilä develops products and services that enable the safe use, handling and distribution of natural gas for the marine and oil & gas industries. We are the marine industry’s undisputed leader when it comes to gas-fuelled propulsion, with dual-fuel medium-speed engines ordered for more than 200 vessels and over 7 million running hours accumulated in both land-based and marine applications. These milestones represent achievements that cannot be matched today by any other engine manufacturer. Thanks to a strong and safe track record in the use of gas as a marine fuel for LNG carriers, the industry is increasingly keen on expanding the use of LNG to other vessel types.

The benefits of using Wärtsilä’s well proven low-pressure dual-fuel technology are many:

- Emission reductions (when operating in gas mode): -85% NOx, -99% SOx, up to 99% reduction of particulates, 20-30% less CO₂ emissions, no smoke
- Fuel flexibility to enhance operational security and competitiveness, operation on HFO, MDO, bio fuels and crude oil is possible
• Capital expenditure reductions of 15-20%, since the use of low pressure technology means simpler (lower cost) gas handling systems, and no need for further exhaust gas cleaning systems
• Reduced waste streams (liquid waste)
• No need to use secondary emission reduction systems (and hence no consumption of reagents)
• Redundancy and safety
• Stable operation on gas across the entire load range with no need to switch to diesel fuel at low loads
• Lower consumption of pilot fuel (just 1% of the total fuel used)

Enabling the use of gas as a marine fuel means much more than supplying a proven technology on gas engines. For Wärtsilä, it means also maintaining its leading position in the design of gas fuelled vessels, and offering reliable and competitive gas storage and handling systems. Wärtsilä also supports the development of the broader gas value chain in the oil and gas industry with, for instance, its liquefaction and regasification solutions.

**Environmental compliance**

The marine industry is implementing changes to comply with existing environmental regulations, while evaluating the possibilities for complying with upcoming regulations. Emissions to air (CO\(_2\), NO\(_x\), SO\(_x\), PM, VOC, and others) and water are under scrutiny. Similarly, regulations relating to safe and clean operations are becoming stricter, especially for the oil & gas industry.

Wärtsilä offers a wide set of options for compliance with environmental regulations. All include working technologies, fast installation, and support throughout our global network. We are committed to providing our customers and society at large with reliable and safe technologies for environmental compliance, which will be available for use as new regulations come into force. We can also assist our customers in the process of evaluating the best options for compliance so as to adopt a solution that meets their specific operational needs.

In the marine industry our offering for environmental compliance covers the following:

• For SO\(_x\) and NO\(_x\) compliance: gas propulsion, conversions to gas propulsion, exhaust gas cleaning systems (NOR, hybrid scrubber system, open loop scrubber system)
• For ballast water compliance: ultraviolet treatment and electro-chlorination
• For EEDI compliance: improved efficiency of individual products, ship design
• For emissions to water compliance: sealing systems

In addition to these, Wärtsilä’s offering to the oil & gas industry includes the following solutions to facilitate safe and clean operations:

• VOC recovery
• Waste and fresh water management systems
• Oil separation
• Flare gas recovery

**Focus on efficiency**

The global economic downturn has put enormous pressure on the cost structure of the marine industry in particular, while the oil & gas industry is also affected. In the marine industry especially, the high cost of fuel is a key driver for upgrading equipment, re-thinking operational profiles, and for new vessel designs. Investments in improved energy efficiency have both economic and improved environmental performance benefits.

At Wärtsilä, we strive to optimise the lifecycle cost of installations. We do this because it makes economic sense to our customers, since we understand the pressure for reducing costs and investing in developing products and solutions that will help achieve significant savings. Furthermore, improved efficiency results in better environmental performance.
For us, one way of improving efficiency is to continuously invest in renewing our product portfolio. During 2014, we launched the Wärtsilä 46DF engine, which drastically lowers specific fuel consumption in both gas and diesel fuel mode, as well as a new Aframax tanker design and an upgraded SK 5054 MkII tanker design which emphasise improvements in energy efficiency. Furthermore, our propulsion portfolio has been expanded with the introduction of a new fixed pitch propeller design, and a new controllable pitch propeller system. In both cases the emphasis has been on efficiency, resulting in improved fuel efficiency. Finally, our new Low Loss Hybrid Energy System utilises different power sources in combination with energy storage devices to operate the prime movers closest to their optimum performance, thus achieving annual fuel savings of up to 15%.

SHIP POWER DEVELOPMENT IN 2014

During the year 2014 a total of 1,769 contracts for new vessels were registered, compared to 2,201 in 2013. In the traditional merchant markets contracting activity was slow, and the demand for offshore vessels was clearly lower than in the previous year. The ordering of gas carriers (LNG and LPG carriers) was, however, robust and the cruise vessel markets developed well with contracting volumes doubling compared to 2013. Wärtsilä’s share of the medium-speed main engine market was 52% (51% at the end of the previous quarter).

Despite the slowdown in vessel contracting, Ship Power’s order intake increased by 6% to EUR 1,746 million during 2014. The ordering of gas handling systems and dual fuel engines for LNG and LPG carriers was strong, and gas as a marine fuel is being increasingly applied also in other vessel markets. Among the noteworthy orders was the contract to supply an integrated solution, comprising the main propulsion equipment, the gas fuel supply system, and the cargo handling system, for three multigas carriers being built for the Danish operator Evergas. Ship Power’s net sales increased by 30% and totalled EUR 1,702 million, which represents 36% of Wärtsilä’s net sales.

SERVICES REVIEW

Wärtsilä Services supports its customers by offering the most comprehensive portfolio of services in the industry, thereby optimising their operations and the lifecycle performance of their installations. Our service network is the most extensive in the industry, consisting of approximately 11,000 service professionals in more than 160 locations in over 70 countries. We offer expertise, local availability, responsiveness, and the most environmentally sound solutions for all customers, regardless of the manufacturer of their equipment.
Our service offering

We aim to develop close relationships with our customers, thus enabling us to gain an in-depth understanding of their business, and to extend our offering accordingly. Our Services business provides full and complete support for both Ship Power and Power Plants installations, and is based primarily on the equipment sold and designed by Wärtsilä, including engines, propulsion systems, and electrical and automation systems. However, Wärtsilä Services has the capability to retrofit and service other brands as well.

We are continuously developing our existing competences while also building new skills in strategic growth areas, such as oil & gas, asset optimisation, and environmental solutions. Expanding our offering by developing our portfolio through innovations connected to the overall digitalisation of the industry will continue to be our focus in the future. Further growth is sought by strengthening our service offering in response to our customers’ increased interest in partnerships, thereby providing them with both lower costs and improved operational efficiency.

Our areas of expertise include:

Engine services

We provide a full range of services for medium- and low-speed diesel, gas, dual and multiple fuel engines and other related systems. Our offering comprises everything from standard engine overhauls to optimisation retrofits that improve the performance of older engine designs.

Propulsion services

We offer a complete range of services for propulsion systems throughout their lifecycle. Propulsion improvements enable optimal fuel efficiency for vessel and offshore installations.
Seals & bearings services

We provide a wide range of sealing, bearing and sterntube solutions in the form of integrated systems, packages and products. These services provide marine and industrial customers with increased efficiency, reduced running costs, and operational longevity.

Electrical & automation services

Electrical and automation services include the maintenance and upgrade of all types of control and automation systems for power plants, marine applications and oil & gas installations, as well as for power plant and vessel safety systems.

Boiler services

We provide a comprehensive range of boiler services, including inspection services, condition based services, retrofits and spare parts for all types of boiler plants, economisers, and their control systems.

Environmental services

We offer land based power plants and ship installations an extensive set of services aimed at improving efficiency and minimising emissions. These solutions include fuel conversions, low NO\textsubscript{X} solutions, and propulsion efficiency services. Furthermore, our field service organisation supports Ship Power’s environmental retrofit market in the installation and commissioning of environmental solutions.

Service agreements

We tailor our service agreements to enable customers to choose from different levels of partnership. Technical management agreements include regular inspections, monthly reporting, and exchange programmes for spare parts. In our maintenance agreements, we provide fixed prices for inspections, technical support, spare parts, training, and maintenance work. Our operations and maintenance agreements can cover complete operational, management and maintenance services, as well as installation performance guarantees.

Service projects

Our project management capabilities enable us to optimise the performance of our customers’ installations through upgrades, modernisations, fuel conversions and safety solutions.

Training services

Our training services cover all aspects of management, operational, maintenance, and safety issues, and range from traditional hands-on training to advanced remote training systems and e-learning opportunities.

SERVICES OPERATING ENVIRONMENT

Wärtsilä Services supports the company’s marine and power plant customers. Of the company’s existing installed engine base, measured in MW, approximately one quarter is power plant related with the remainder being marine industry installations. In terms of Services’ revenues, the breakdown is approximately 40% power plant related and 60% marine sector related. The service portfolio includes everything from spare parts and field service work, to more advanced lifecycle solutions aimed at reducing operational costs and improving efficiency. Roughly half of Services’ revenues come
from spare parts, one quarter from field service, and one quarter from service solutions, such as maintenance agreements and service projects.

### General market drivers for Services

The main market driver in the service business is the size and development of the installed equipment base. The market conditions faced by end customers have a direct impact on the utilisation rate and the estimated lifetime of installations in operation. The lifecycle phase of an installation also affects maintenance requirements, and thereby the service needs in both the marine and power plant markets. Lifecycle solutions are offered through long-term service agreements and
retrofit projects. The need for such solutions is driven by changes in, for instance, the cost or availability of different fuels, the cost or availability of crew, and/or the level of technical expertise needed to operate the vessels or power plants. Changes in environmental regulations, as well as improved safety aspects, also influence the need for lifecycle solutions. The outsourcing of operations and management to a reliable partner is today an important trend in the power plants service market. It is also becoming a more important driver for marine customers, whereby partnerships can improve clarity concerning future costs and improve operational efficiency.

**Competition and market position**

Wärtsilä has a strong position in servicing equipment sold and designed by Wärtsilä. Only a few players are able to provide such a broad services offering globally. Thus competition is mainly local, consisting of parts traders, repair yards, local workshops, and component suppliers for spare parts and the field service business. The number of local players is quite large; therefore competition is rather fragmented and focused on a limited scope of offering.

The competition for long-term service agreements for operating power plants comes from a few regional players capable of offering plant operational services. In the marine market the competition for long-term service agreements is even more fragmented with some ship management companies being competitors in this area. Wärtsilä Services offers a variety of options to ensure the best solution for the end user.

**SERVICES STRATEGY**

Our customers recognise Wärtsilä as being a reliable service partner; namely competitive, trusted, and easy to deal with:

- We focus on customer needs in order to constantly develop our offering proposition with value-enhancing products
- We support our customers locally through our qualified global field service network
- We grow by expanding our agreements scope in both marine and power plant applications
- We support our customers in minimising their environmental footprint and foster a quality attitude and a safe way of working
- We actively scan the market for acquisitions that allow us to further strengthen our offering.

The size and scope of the Services business provides a platform for further growth. We are continuously developing our service offering and delivery process in order to cost-efficiently provide better value for our customers. We offer global 24/7 support in the fields of logistics, maintenance, plant-operating services, asset monitoring systems and technical support, as well as real-time information and analyses through effective online services. Our offering includes a variety of long-term agreements, allowing customers to focus on their core business. Moreover, we are able to deliver service projects that match the changing needs of our customers’ businesses.

**Services’ strengths**

- Long-term relationships with customers and an in-depth understanding of their needs
- A complete lifecycle offering
- The broadest service portfolio in the industry
- A global service network
SERVICES AND SUSTAINABILITY

Environmental legislation and the need for energy efficiency are currently the main drivers for our customers’ actions towards developing their businesses in a more sustainable way. Wärtsilä Services strives to be a leader in supporting its customers’ efforts to meet and exceed current and future business and sustainability demands. Through continuous innovation, we will continue to provide shipping companies and energy providers with environmentally sound solutions well into the future. We conduct our business in a responsible way, and create added value by providing services from locations in close proximity to our customers and by offering employment opportunities in local communities.

Solutions for the marine and power industries

The essential role for Wärtsilä Services as regards sustainability is to provide a range of services that ensure reliable and optimised operational, environmental, and safety performance. The increasing availability of alternative liquid fuels and gas, together with stricter environmental requirements, creates opportunities for the Services business to improve the operational efficiency of customer installations, while at the same time reducing their environmental impact.

Our solutions enable the application of the latest technologies in power plants and ships that are already in operation, thereby allowing them to comply with new legislative requirements. A lifecycle optimised approach guides the creation of our solutions, which are developed in co-operation with the customer. The aim is to improve the economic and environmental performance of existing installations, and to ensure their safety and reliability throughout their operational life.

Energy efficiency and maintenance

We develop and provide services, such as upgrades, reconditioning, fuel conversions and retrofit solutions, that improve environmental performance, comply with stringent environmental legislation, and extend the operational lifetime of the application.

Good maintenance of equipment is a key factor in material effectiveness and energy efficiency. Wärtsilä’s proactive Dynamic Maintenance Planning programme includes the planning and scheduling of engine and propulsion maintenance based on online monitoring of the installed equipment’s mechanical condition and performance, and by using system efficiency data and other indicators. The data is collected and monitored daily, which enables fault sources to be identified before failure occurs.

For existing installations, a set of primary upgrading solutions are available, such as:

- Engine, propulsion, or electrical & automation system efficiency upgrade packages that reduce fuel and/or lube-oil consumption, thereby contributing to lower emissions and the generation of economic benefits
- Low NOx solutions that combine various engine modifications designed to find the ideal combination of compression ratio, injection timing and injection rate. The concept has been developed so as to achieve the best possible trade-off between NOx reduction and fuel consumption
- The conversion of propeller shaft sealing systems to an anti-pollution version that eliminates the risk of water pollution
- Diesel to gas conversions that considerably reduce emissions from the installation. The conversion of heavy fuel oil or marine diesel oil installations to operate on natural gas offers extended benefits.

For new and existing installations, secondary methods are available to integrate additional equipment contributing to emissions abatement. Wärtsilä Services provide unparallelled environmental solutions, as well as the field experts needed for their installation and commissioning.
SERVICES DEVELOPMENT IN 2014

Service market activity developed well during 2014. Marine customers’ service demand picked up in the second half, and the demand for power plant related services was healthy throughout the year. At the end of 2014, Wärtsilä’s installed base totalled 181,000 MW. Four-stroke engines accounted for approximately 60% of the installed base and two-stroke engines for approximately 40%.

Services’ order intake increased by 9%, totalling EUR 2,045 million. Several important long-term service agreements were signed during the year, with particular interest from customers with gas fuelled vessels, as well as cruise customers. Noteworthy contracts included the 10-year maintenance and technical support agreement with Royal Caribbean Cruises Ltd covering 36 vessels. Net sales from the Services business increased by 5% to EUR 1,939 million, which represents 41% of Wärtsilä’s net sales. The Services sales mix saw an increase in revenues from spare parts and projects.

MANUFACTURING REVIEW

Wärtsilä’s manufacturing is focused mainly on the assembly, test running, and finishing of products and key strategic components. Our business model, which is strongly connected to a broad network of suppliers, guarantees flexibility in capacity. Being close to the customer is important, as is our focus on quality and the continuous emphasis we place on technology leadership in our R&D activities.

The focus on gas, environmental solutions, and Smart Power Generation drives the development of our operations. We provide products and systems that are reliable, cost efficient, functional, environmentally compatible, technologically leading, and able to be integrated into solutions or delivered as stand-alone equipment.

Manufacturing footprint

Wärtsilä operates a global manufacturing footprint which is continuously optimized considering competence availability, customer presence and efficiency. As structural changes continue in our end markets, we remain focused on strengthening our presence in key markets, such as China. This enables us to better serve our customers locally and allows savings to be achieved in both production and transportation costs.

Wärtsilä currently has four joint ventures globally. In Korea, we manufacture dual-fuel engines for the LNG carrier markets in partnership with Hyundai Heavy Industries Co. In China, we produce engines for the local markets in two joint ventures. The Wärtsilä Qiyao Diesel Company Ltd joint venture manufactures medium-speed auxiliary engines, while the Wärtsilä Yuchai Engine Co., Ltd joint venture manufactures medium-speed auxiliary and main engines. The Wärtsilä CME Zhenjiang Propeller Co. Ltd joint venture, also located in China, produces fixed pitch and controllable pitch propellers. We are currently in the process of setting up two joint ventures with China State Shipbuilding Corporation. One will focus on manufacturing medium-speed diesel and dual fuel engines and the other will assume responsibility for Wärtsilä’s low-speed engine business. In addition to these joint ventures we are constructing a fully owned manufacturing facility in Açú, Brazil to meet increasing market demand, particularly in the offshore segment.

Wärtsilä's global supplier network supports flexibility in manufacturing

Through close co-operation, excellent relations, and the sharing of information with our suppliers, the supply of components and market-conform lead times are secured. Wärtsilä has around 1,200 suppliers globally. Our sourcing
strategy is to focus on carefully selected suppliers, with a strong emphasis on performance, innovation, and a presence close to our manufacturing units and joint ventures. Our aim is to continuously develop and strengthen our global supply chain with a strong emphasis on quality and cost competitiveness.

Production and R&D globally

Wärtsilä is strongly committed to research & development. The aim of its R&D activities is to continuously strengthen the company’s technology leadership position, and to further improve its competitive edge in the global marine and energy markets. This is achieved by developing products that are based on reliable, efficient, and cost-competitive technologies and which address customer needs.

The focus of Wärtsilä’s R&D activities is on products and solutions that are flexible, efficient, reliable, safe, cost-efficient to operate, and that have a minimal environmental footprint throughout their lifecycles. A substantial proportion of the company’s investments in product development are targeted at securing environmental compliancy and providing short- and long-term benefits for our customers.

By focusing on the initial stages of the development process and by utilizing simulation, virtual testing and validation, Wärtsilä is able to reduce the lead time for new solutions without compromising reliability and safety aspects.

Validation testing on site with existing installations, in cooperation with our customers, is an important element in furthering the improved performance of existing solutions. It also assists in finding new and better solutions while, at the same time, gaining long term experience under real field conditions. A field installation also provides an opportunity to gain valuable learning and insight regarding new technologies and solutions.
When the product has successfully passed all the validation process steps, both in the laboratory and the field, and its performance meets Wärtsilä’s high standards, it can be delivered to the market.

We protect innovation and competitiveness through close attention to our Intellectual Asset Management and the continuous development of our internal key competences. We build networks and clusters to further extend our know-how, skills and capabilities by committing to long-term relationships with suppliers, engineering companies, university partners, and with licensees and other Original Equipment Manufacturers.

Research and development expenditure

* Restated, figures include continuing operations.

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<tr>
<th>IMPROVEMENTS IN EFFICIENCY</th>
<th>REDUCING EMISSIONS TO AIR</th>
<th>REDUCING EMISSIONS TO WATER</th>
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<tr>
<td>• TOTAL SHIP EFFICIENCY: An efficient and low emission system for the entire vessel is achieved by combining optimised ship design with Wärtsilä’s knowledge of automation, machinery, propulsion and control systems. Wärtsilä has developed numerous efficiency concepts, such as Low Loss Concept (LLC) and Low Loss Hybrid (LLH).</td>
<td>• GREENHOUSE GASES (GHG): Wärtsilä focuses on the development of technologies that reduce GHG emissions and improve engine efficiency.</td>
<td>• BALLAST WATER MANAGEMENT SYSTEMS: Wärtsilä provides Ballast Water Management systems. Its Aquarius™ range of Ballast Water Management Systems (BWMS) has been developed to comply with the Ballast Water performance requirements from both the IMO and the USCG.</td>
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<td>• ENGINE EFFICIENCY IMPROVEMENTS: A long-term focus on improving engine efficiency has resulted in Wärtsilä engines having the highest efficiency ratings among existing prime movers. A key success factor has been the development of integrated engine functionalities that enable low emissions and high engine efficiency.</td>
<td>• SO₂ EMISSIONS: Wärtsilä’s technology development supports solutions that enable the use of fuels with different sulphur contents, as well as systems that clean sulphur from the exhaust gas, and enable alternative fuels, e.g. to natural gas.</td>
<td>• NOₓ EMISSIONS: All Wärtsilä engine portfolio products are IMO NOₓ Tier II compliant. Wärtsilä solutions for IMO NOₓ Tier III are:</td>
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<tr>
<td>• PROPELLER EFFICIENCY UPGRADES: Propulsion products incorporate environmental features and are critical for the overall environmental impact of the vessel. The new generation propulsion units from Wärtsilä result in significant fuel efficiency improvements (5-12%) that also result in fewer emissions.</td>
<td>• Selective Catalytic Reduction (SCR)</td>
<td>• Gas engine (Dual fuel (DF) in gas mode)</td>
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