This document is an excerpt from the Wärtsilä Annual report. To view the report in full, please visit www.wartsilareports.com/en-US/2012/ar/
Table of contents

Business

03  Message to the shareholders
05  This is Wärtsilä
06  Operating environment
07  Corporate strategy
07  Sustainability
07  Financial targets
10  Power Plants
12  Operating environment
15  Strategy
16  Power Plants and sustainability
18  Development 2012

18  Ship Power
22  Operating environment
26  Strategy
27  Ship Power and sustainability
31  Development 2012
31  Services
34  Operating environment
36  Strategy
36  Services and sustainability
38  Development 2012
38  PowerTech
39  Strategy
Message to the shareholders

Dear shareholders,

2012 was a year of big events. During 2012, we closed our largest ever acquisition with the purchase of Hamworthy. This acquisition supports our growth strategy in the marine gas, offshore and environmental solutions markets, and Hamworthy has performed well while being integrated to our Ship Power business. In 2012, the Power Plants business received two of its largest orders ever; a 384 MW power plant to be built in Azerbaijan followed by a 573 MW order from Jordan. I am also very pleased that Services’ net sales returned to growth and reached an all time high level. Supported by the positive development in all three businesses, as well as by the acquisition of Hamworthy, our net sales grew by 12%. At the same time we kept our profitability solid at 10.9%.

The Power Plants order intake remained resilient, decreasing by only 5% despite the total market having declined by an estimated 30-40%. Supported by their economic growth, the emerging markets continued to invest in new power generation capacity. However, the macroeconomic uncertainty continues to delay investment decisions in the overall power generation markets. Demand continued to be strong for our fuel flexible solutions in markets transitioning to natural gas. Today, 74% of orders are for gas or dual-fuel engines. With the growing number of larger orders, Wärtsilä is increasingly recognised as a serious contender in power plants of up to 500 MW capacity.

In Ship Power markets, the traditional merchant segment continued to struggle with overcapacity and, as a result the number of global vessel orders was 35% down from the previous year. Despite the weak overall markets, Wärtsilä Ship Power performed strongly and its order intake grew by 45%. Our position is good in the growing offshore markets, not least in Brazil where we secured several important orders. There was continued strong interest in marine gas solutions, and the orders received demonstrate our leading position in the dual-fuel markets. In line with the Ship Power strategy, Wärtsilä received several significant orders for the delivery of total solutions, including ship design, propulsion machinery, automation and other equipment. Strategically notable orders were also received for environmental solutions, such as the first orders for ballast water management systems and several orders for exhaust gas cleaning systems for SOX removal.

Overcapacity and low freight rates in the marine industry have impacted our Services customer base, and utilisation of the global fleet has been at historically low levels. After three stable years, growing by 5% in this tough environment was a great achievement. This growth was fuelled by our wide services offering that is aimed at reducing our customers’ operating expenses and increasing the availability of their equipment, as well as by the growth in the installed power plant engine base. During 2012, Wärtsilä signed major service agreements for power plants in Jordan, Kenya, Timor-Leste, South Africa, Brazil and the USA. Wärtsilä was also awarded service agreements by Princess Cruise Lines Ltd and Prestige Cruise Holdings, Inc.

During 2012, Wärtsilä invested more than ever in technological development, spending EUR 188 million on R&D activities. These activities were focused on developing technologies and products that meet the tightened environmental legislation and on products and solutions which can secure profitable operations for our customers. We are well positioned to reduce emissions and the use of natural resources, thanks to our various technologies, specialised services, and our continuous R&D efforts. Power production on land and at sea is a big responsibility, and thus efficiency, reliability and sustainable business practices are vital to us. We remain committed to supporting the UN Global Compact and its principles with respect to human rights, labour, the environment and anti-corruption.
Today, 35% of ships are built in China. In order to secure a strong presence in the important Chinese shipbuilding market, Wärtsilä signed an agreement with Yuchai Marine Power Co. Ltd. to establish a joint venture for manufacturing medium-speed marine engines. Furthermore, the existing Chinese joint venture factory manufacturing auxiliary engines is planning to expand its production capacity.

Our strategic goal is to be the leader in complete lifecycle power solutions for the global marine markets and selected energy markets worldwide. We continue to see growth opportunities in gas and dual fuel based power generation in the power plant and marine markets. Supported by recent developments in the regional and global environmental regulations, we also seek growth in environmental solutions, including exhaust gas cleaning systems for SOX removal and ballast water management systems. The acquisition of Hamworthy supports our growth strategy and our target is to double the net sales for Flow and Gas solutions and Environmental solutions over the next five years. The integration of Hamworthy has proceeded well and the strength of their performance has been a positive surprise.

Our strengths are our technological leadership, especially in gas and dual-fuel engine technology and environmental solutions, as well as our integrated product and service offering. We maintain close and long-standing customer relationships, while our unparalleled global presence helps us in serving our customers, many of whom face a very challenging operating environment today. To further strengthen our competitiveness and to serve our customers more effectively, we have changed our organisational set up within Ship Power and Wärtsilä Industrial Operations. The aim is to highlight entrepreneurial drive by including activities, from R&D and manufacturing to sales, within one organisation. This change will further increase the flexibility of our operations and ensure faster decision making; factors that are needed for meeting both customer demands and intensified competition.

Despite the continued uncertainty in the economy, our outlook for 2013 remains stable. We expect the overall gas and liquid fuel based power generation markets to be similar to that of 2012, and that activity will remain focused on the emerging markets. We remain cautious about the outlook for the overall shipbuilding markets, but we expect continued activity in the offshore and specialised vessel markets. The service market outlook remains stable with good development in the installed power plants base offsetting less favorable overall outlook for marine services. We are determined to capture growth opportunities within our end markets, while maintaining a solid profitability.

A big thank you goes to our customers who have entrusted their business to us during these challenging times. I would also like thank our personnel for their continuous efforts in serving our customers globally and for the support in the internal integration and reorganisation work. I am very thankful to our shareholders for all the interest expressed, and for the trust placed in our future potential.

Björn Rosengren
President & CEO
Key figures

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net sales</td>
<td>4 725</td>
<td>1 533</td>
<td>1 087</td>
<td>1 099</td>
<td>1 005</td>
<td>4 209</td>
<td>4 553</td>
</tr>
<tr>
<td>Power Plants</td>
<td>1 498</td>
<td>568</td>
<td>304</td>
<td>353</td>
<td>272</td>
<td>1 365</td>
<td>1 525</td>
</tr>
<tr>
<td>Ship Power</td>
<td>1 301</td>
<td>426</td>
<td>339</td>
<td>296</td>
<td>238</td>
<td>1 022</td>
<td>1 201</td>
</tr>
<tr>
<td>Services</td>
<td>1 908</td>
<td>531</td>
<td>435</td>
<td>449</td>
<td>492</td>
<td>1 816</td>
<td>1 823</td>
</tr>
<tr>
<td>Depreciation and amortisations</td>
<td>-139</td>
<td>-38</td>
<td>-33</td>
<td>-35</td>
<td>-33</td>
<td>-113</td>
<td>-116</td>
</tr>
<tr>
<td>Operating result¹</td>
<td>515</td>
<td>186</td>
<td>113</td>
<td>113</td>
<td>102</td>
<td>469</td>
<td>487</td>
</tr>
<tr>
<td>Operating result¹, %</td>
<td>10.9</td>
<td>12.2</td>
<td>10.4</td>
<td>10.3</td>
<td>10.1</td>
<td>11.1</td>
<td>10.7</td>
</tr>
<tr>
<td>Profit before taxes</td>
<td>452</td>
<td>161</td>
<td>99</td>
<td>98</td>
<td>93</td>
<td>429</td>
<td>548</td>
</tr>
<tr>
<td>Earnings per share, EUR</td>
<td>1.72</td>
<td>0.62</td>
<td>0.38</td>
<td>0.38</td>
<td>0.33</td>
<td>1.44</td>
<td>1.96</td>
</tr>
<tr>
<td>Balance sheet total</td>
<td>5 038</td>
<td>5 038</td>
<td>4 920</td>
<td>4 860</td>
<td>4 807</td>
<td>4 600</td>
<td>4 696</td>
</tr>
<tr>
<td>Interest-bearing liabilities, gross</td>
<td>794</td>
<td>794</td>
<td>899</td>
<td>942</td>
<td>858</td>
<td>652</td>
<td>628</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>225</td>
<td>225</td>
<td>199</td>
<td>148</td>
<td>242</td>
<td>592</td>
<td>776</td>
</tr>
<tr>
<td>ROI, %</td>
<td>20.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20.4</td>
<td>26.0</td>
</tr>
<tr>
<td>Gearing</td>
<td>0.31</td>
<td>0.31</td>
<td>0.41</td>
<td>0.49</td>
<td>0.40</td>
<td>0.04</td>
<td>-0.09</td>
</tr>
<tr>
<td>Order book, end of period</td>
<td>4 492</td>
<td>4 492</td>
<td>4 724</td>
<td>4 515</td>
<td>4 409</td>
<td>4 007</td>
<td>3 795</td>
</tr>
<tr>
<td>Order intake</td>
<td>4 940</td>
<td>1 357</td>
<td>1 275</td>
<td>1 198</td>
<td>1 109</td>
<td>4 516</td>
<td>4 005</td>
</tr>
<tr>
<td>Year-end market capitalisation</td>
<td>6 454</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4 402</td>
<td>5 631</td>
</tr>
<tr>
<td>Personnel, number at end of period</td>
<td>18 887</td>
<td>18 887</td>
<td>18 961</td>
<td>19 161</td>
<td>19 073</td>
<td>17 913</td>
<td>17 528</td>
</tr>
</tbody>
</table>

¹ Figures exclude non-recurring items.

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 2012, Wärtsilä’s net sales totalled EUR 4.7 billion with approximately 18,900 employees. The company has operations in nearly 170 locations in 70 countries around the world. Wärtsilä is listed on the NASDAQ OMX Helsinki, Finland.

Ship Power

Wärtsilä enhances the business of its customers by providing solutions for the marine and oil and gas industry that are safe, environmentally sustainable, efficient, flexible, and economically sound. Our solutions are based on our customers’ needs and include products, systems and services. Being a technology leader in this field and through the experience, know-how and dedication of our personnel, we are able to customise optimised solutions for the benefit of our clients around the world.
Power Plants

Wärtsilä is a leading supplier of modern, environmentally advanced, highly efficient, and dynamic power plants that allow the maximum integration of intermittent renewable power generation. We offer multi-fuel power plants, from base load generation to peaking and load following operation, as well as dynamic system balancing and ultra-fast grid reserve, for current and future capacity markets. In addition to the technical advantages, our fast track deliveries of complete power plants, together with long-term operation and maintenance agreements, provide our customers with complete solutions - in urban areas as well as in the most demanding remote environments.

Services

Wärtsilä supports its customers throughout the lifecycle of their installations by optimising efficiency and performance. We provide the most comprehensive portfolio of services 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.

Wärtsilä's operating environment

During 2012, uncertainty over the global economic development continued. Compared to 2011, global GDP growth decreased from 3.8% to 3.3%. GDP growth was highest in Asia, the Middle East and Africa. Wärtsilä’s net sales in 2012 grew by 12%, with Asia representing 43% of net sales and approximately 80% of the net sales growth. The majority of Wärtsilä Power Plants’ orders came from the higher growth emerging markets and the largest single region was the Middle East and Africa. Shipbuilding continues to be concentrated in Asia, and Wärtsilä’s two largest countries in terms of net sales were South Korea and China. South Korea’s position was strong due to the high share of offshore vessel contracting. The lower GDP growth had a negative impact on certain Ship Power and Services marine customer groups, especially in the merchant markets and in Europe. Stronger global GDP growth would be required for the merchant market to absorb the current overcapacity and for activity in vessel contracting to increase. Due to the overcapacity and low freight rates in the marine markets, there is less spending on discretionary maintenance and investments.

Strategy

Wärtsilä aims to be the leader in complete lifecycle power solutions for the global marine markets and selected energy markets worldwide. We see growth opportunities in gas power plants as part of our Smart Power Generation concept, as well as in gas-fuelled engines and related systems for the marine market. We also seek growth in environmental solutions, including exhaust gas cleaning systems for SOx 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 unparalleled 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.

Values

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.
## Financial targets

<table>
<thead>
<tr>
<th>Target</th>
<th>Development</th>
<th>Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net sales</strong></td>
<td><strong>Our target is to grow faster than global GDP.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In 2012, Wärtsilä’s net sales increased 12% to EUR 4,725 million.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wärtsilä’s CAGR 2002-2012 was 7.4%.</td>
<td></td>
</tr>
<tr>
<td><strong>Growth over the cycle</strong></td>
<td>Net sales, MEUR</td>
<td>Net sales growth, %</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Growth over the cycle graph" /></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: World nominal GDP growth 2002-2012 averages 7.9% USD denominated (source: IMF).</td>
<td></td>
</tr>
<tr>
<td><strong>Profitability</strong></td>
<td><strong>Our operating profit margin (EBIT%) target is 14% at the peak of the cycle.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In 2012, our operating profit was EUR 515 million, 10.9% of net sales.</td>
<td></td>
</tr>
<tr>
<td><strong>Profitability</strong></td>
<td><img src="image" alt="Profitability graph" /></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Figures are shown before non recurring items.</td>
<td></td>
</tr>
</tbody>
</table>
Capital structure

Our target is to maintain gearing below 0.50. In 2012, our gearing was 0.31.

Gearing

The increase in gearing during 2012 relates to the acquisition of Hamworthy.

Dividend

Our target is to pay a dividend equivalent to 50% of earnings.

Earnings/share, dividend/share

The Board of Directors proposes that a dividend of 1.00 euro per share be paid for the financial year 2012.

1 Proposal by the Board 2012.
Power Plants review

Wärtsilä Power Plants provides superior value to its customers by offering decentralised, flexible, efficient, and environmentally advanced energy solutions.

We provide dependable power plants that can be constructed in multiple parallel generation units, and on a fast track basis. 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.

Smart Power Generation

Smart Power Generation enables the transition to a modern, sustainable power system. Its main cornerstones are very high energy efficiency, outstanding operational flexibility, and multi-fuel operation. For today’s and future low-carbon power systems, it balances large input fluctuations of wind and solar power. It also provides high efficiency base load, peaking, and load-following power, as well as super-fast grid reserves on a national power system level.

Further information on Smart Power Generation can be found at the address www.smartpowergeneration.com/.
# Product segments

Wärtsilä has four main product segments: Flexible baseload, Grid stability and peaking, Industrial self-generation and the Oil & gas industry. We operate mainly in emerging markets; however, there is demand for our power plant projects also in the developed markets. We offer our customers solutions ranging from engine only deliveries to full turnkey power plants. Our power plants can run on both liquid fuels and natural gas.

<table>
<thead>
<tr>
<th>Flexible baseload</th>
<th>Grid stability and peaking</th>
<th>Industrial self-generation</th>
<th>Oil &amp; gas industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Markets</td>
<td>Mainly developing markets, islands, and remote locations</td>
<td>Developed and emerging markets</td>
<td>All markets producing, transporting, processing and storing oil &amp; gas</td>
</tr>
<tr>
<td>Demand drivers</td>
<td>Population growth, increasing industrialisation, rising standards of living and capacity replacements increase the demand for electricity</td>
<td>Demand for renewable fuels, grid stability, capacity replacements</td>
<td>Industry specific drivers, such as local GDP growth, construction, and mineral price development</td>
</tr>
<tr>
<td>Offering</td>
<td>Power plants optimised for baseload operation and suitable for CHP</td>
<td>Power plants optimised for peaking and load following solutions</td>
<td>Power plants optimised for baseload operation and suitable for CHP</td>
</tr>
<tr>
<td>Fuel</td>
<td>Liquid fuels and natural gas</td>
<td>Mainly natural gas, some liquid fuels</td>
<td>Liquid fuels and natural gas</td>
</tr>
<tr>
<td>Customers</td>
<td>Privatised or state owned utilities and IPPs</td>
<td>Utilities, IPPs, transmission system operators</td>
<td>Cement, textile and mining industries etc.</td>
</tr>
<tr>
<td>Customer requirements</td>
<td>Competitive lifecycle costs, reliability, world-class product quality, fuel and operational flexibility, operations &amp; management services</td>
<td>Rapid start and ramp up, ability to operate at varying loads, competitive electricity generation and capacity costs, 24/7 support service</td>
<td>Reliability, reduced energy costs, and independence from the grid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reliability, fuel flexibility and efficiency</td>
</tr>
</tbody>
</table>

This pdf is composed of selected elements from the Wärtsilä Corporation Annual report and may deviate from other generated documents.
### Competition

<table>
<thead>
<tr>
<th>Competition</th>
<th>Power Plants operating environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal and gas fired steam plants, CCGTs, other combustion engines</td>
<td>The main market segments covered by Power Plants are Flexible baseload, Grid stability and peaking, Industrial self-generation and the Oil &amp; Gas industry. The main customer groups within these markets are utilities, Independent Power Producers (IPP’s), industrial manufacturers in industries such as the cement, mining and textile industries as well as oil &amp; gas industry customers. Power plant projects are often significant investments. Wärtsilä’s power plant projects are financed by the project’s or customer’s own cash flow or through debt financing, typically from local financial markets. As a result, Wärtsilä’s power plants are funded in many geographical markets. Wärtsilä does not provide funding to its customers, but provides support in finding funding solutions for them.</td>
</tr>
<tr>
<td>SCGTs, flexible CCGTs, other combustion (gas) engines, high speed combustion engines</td>
<td>General market drivers in Power Plants</td>
</tr>
<tr>
<td>Small SCGTs, other combustion engines, power from grid</td>
<td>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. The majority of Wärtsilä Power Plants’ orders comes from the emerging markets. In emerging markets and remote areas, the demand for flexible baseload power plants as well as for industrial self-generation is driven by growth in electricity consumption and by developments in the mineral prices. The demand for gas and dual fuel driven plants increases along with the introduction of gas networks to the emerging markets.</td>
</tr>
<tr>
<td>GTs, small GTs, other combustion engines, high speed combustion engines, power from grid</td>
<td></td>
</tr>
</tbody>
</table>

**General market drivers in Power Plants**

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. The majority of Wärtsilä Power Plants’ orders comes from the emerging markets. In emerging markets and remote areas, the demand for flexible baseload power plants as well as for industrial self-generation is driven by growth in electricity consumption and by developments in the mineral prices. The demand for gas and dual fuel driven plants increases along with the introduction of gas networks to the emerging markets.
While the economic development is a less important driver in the OECD countries the ageing installed capacity will drive demand for new investments. Important drivers include stricter environmental regulations and the aim for low carbon power systems, which are spurring investments in renewable energy. Solutions, such as wind power, lead to unforeseen grid stability challenges, which require additional backup and balancing power. The large scale use of renewable power increases the need for flexible, reliable, and efficient power that Wärtsilä’s solutions provide.

Age profile of installed thermal and nuclear capacity by region

As gas is a flexible fuel enabling system balancing with lowest emissions compared to other fossil fuels, the demand is expected to grow. This is further supported by increasing availability of gas due to growing LNG investments as well as unconventional sources such as shale gas becoming economical. The gas power plant capacity is expected to grow by 2.4% per year, and 65% of this growth is expected to occur in non-OECD countries. Wärtsilä is well positioned in these markets. In regions where gas infrastructure is being built, a key feature of power plants is the capability to utilise available liquid fuels until gas is available and fully reliable.

World electricity generation by type
Power Plants competition

In larger gas-fired projects, Wärtsilä often competes against gas turbine technology. In smaller gas based projects and in the heavy fuel oil based power plant market, Wärtsilä’s competitors are mainly other engine suppliers. We hold a leading position in engine technology with the largest and most efficient gas and dual-fuel engines. Our competitive strength is the ability to provide complete turnkey power plants combined with operation & maintenance agreements as well as fuel flexibility. Our main strengths compared to gas turbine technology is higher efficiency in varying loads and the capability to achieve faster starts without increased costs as well as the ability to offer dual-fuel solutions for markets transitioning to natural gas.

Gas turbine and engine manufacturers

Wärtsilä is increasingly competing against gas turbines in larger gas-fired power plant projects. Wärtsilä’s market share of the engine based power plant market is over 60%.

Main drivers for Wärtsilä’s Power Plants business

- Economic development and growth in electricity consumption
- Growth in use of gas as fuel in power plants
- Need for fuel flexibility due to uncertainty in gas availability
- 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 to the increasingly dynamic and environmentally conscious energy market to enable more sustainable, affordable and reliable power systems globally.

- We will grow strongly in large gas power plant markets
- We will maintain our leading position in HFO power plant
- We will continuously develop our capabilities in power plants using renewables
- We aim to become a recognised player in oil & gas and emergency power applications
Our target segments for power generation are: flexible baseload power, grid stability & peaking and industrial self-generation. We also offer solutions for the oil & gas and nuclear industries. Our products are based on tried and tested concepts and deliver competitive costs, high efficiency, operational flexibility, low environmental impact and fuel flexibility.

Our strategic goal is to grow in the large gas power plant market for utilities by influencing and actively developing selected target markets. We will demonstrate the superiority of our value proposition, which is based on the highest single-cycle efficiency and on unbeatable operational flexibility. Our goal is to maintain our leading position in heavy fuel oil fired power plants. This will be done by further enhancing our value proposition through guaranteed performance, high efficiency and unique operational and fuel flexibility. We will also seek growth in field power, pumping and compression applications in the oil & gas markets, as well as in emergency power applications for nuclear power plants. 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 strengths**

- Unique operational and fuel flexibility
- Energy efficiency and emissions compliance
- Competitive capital cost and EPC capability
- Global service organisation

**Power Plants and sustainability**

*Wärtsilä Power Plants contributes to the development of a sustainable power system with proven optimised solutions for various market needs.*

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.

As a part of 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 is helping to 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 various regions of the world.

Wärtsilä’s energy solutions 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.
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 balancing and back-up power to be flexible and dynamic. Current and earlier power systems were not designed for this purpose. 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 plant 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.

Smart Power Generation meets all of these requirements, thus allowing the maximal utilisation of valuable renewable power, and the smooth operation of inelastic baseload thermal power plants. According to the results of future power system modelling, Smart Power Generation, together with increased wind and solar capacity, enables dramatic reductions in system level CO₂ emissions.

Wärtsilä’s Smart Power Generation concept allows true operational optimisation of the entire energy system in a cost-efficient, reliable and sustainable way:

• Enables extremely low carbon levels from the total system
  • Enables the highest penetration of wind and solar power capacity without balancing problems
  • Enables baseload plants to operate on high output and efficiency, thereby enabling the lowest CO₂ 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
  • 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.

Towards low-carbon energy systems

Wärtsilä is able to provide optimised solutions for various market needs.

<table>
<thead>
<tr>
<th>Market</th>
<th>Wärtsilä’s role</th>
<th>Milestone in 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed countries</td>
<td>Enable the development of low carbon power systems.</td>
<td>First gas-fired power plant in South Africa 180 MW.</td>
</tr>
<tr>
<td>Emerging economies</td>
<td>Enable fast development of the power system, thus providing reliable power to boost economic development.</td>
<td>A gas-fired power plant (over 160 MW) sold to Mauritania. A gas-fired power plant (386 MW) sold to Azerbaijan.</td>
</tr>
</tbody>
</table>

Development in 2012

Power plant market activity was at a good level during 2012 with a strong focus on natural gas based generation. Supported by their economic growth, the emerging markets continued to invest in new power generation capacity. However, the uncertainty of economic development continued to delay investment decisions in the power generation markets overall. Wärtsilä’s share of global orders for natural gas and liquid fuel based power generation (including all prime mover units of over five MW) increased from 3.3% during 2011 to 4.9% during the first half of 2012. The total market was 28.8 GW during the same time period.

In 2012, Power Plants order intake decreased by 5% EUR 1,515 million, while the overall market is estimated to have decreased by 30-40%. Around 74% of the orders received, in terms of MW, were from gas based markets. During the year, Wärtsilä received its largest ever power plant order for a 573 MW tri-fuel project in Jordan. Another major order was received from Azerbaijan, for a 384 MW plant operating on gas. Other important orders were received from the African continent as well as from Indonesia, Australia and the USA. Net sales for Power Plants increased by 10% to EUR 1,498 million (1,365) during 2012, which represents 32% of Wärtsilä’s total net sales.
Wärtsilä Ship Power

Wärtsilä Ship Power's position is strong in all the main marine segments, as well as in the offshore industry.

We provide optimised, environmentally sustainable and economically sound solutions, which are developed based on our customers' needs. Our in-depth understanding of our customers' businesses, combined with our extensive network, broad product portfolio, and ability to be involved as early in the vessel lifecycle as in the design process, enables us to support our customers throughout the lifecycle of their installations.

Shifting towards entrepreneurial drive

During the year, changes were made to the Ship Power organisation as part of creating a new entrepreneurially driven organisation within Wärtsilä. Ship Power is today organised by product lines, namely 4-stroke, 2-stroke, Propulsion, Flow & Gas, Environmental, and Solutions, which includes both the Electrical & Automation and Ship Design product lines. One shared Sales organisation is responsible for customer relationships, uncovering customer needs, and for the sales network globally. With this new organisation, Ship Power will have better end-to-end control of its activities. This includes R&D, engineering and manufacturing, which, with the exception of 4-stroke, have been transferred to their respective product lines. Because of the transportation limitations related to the large size of low-speed engines, 2-stroke remains a licensing business and has no own manufacturing.

Our customer structure is two-fold

Ship Power 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 installations, and the supplier’s ability to manage large delivery scopes. Ship owners, on the other hand, require reliability, operational efficiency and support, as well as the availability of services. Decision-making is further impacted by freight rates, interest rates, and the cost of the ship. Furthermore, both ship owners and operators are increasingly considering factors such as optimised and operational efficiency, including environmental compliance, in their decision making.

We are committed to meeting the needs of both customer groups, which we achieve through our in-depth understanding of their businesses and requirements. As a result, we are able to offer products and solutions that best further their business interests.

Our extensive offering covers all main customer segments

Ship Power is active in all main vessel segments, and understands the particular needs and requirements related to each of them – from the initial vessel design choices to the every-day operation throughout the lifecycle.

Wärtsilä’s integrated ship power solutions are efficient, economically sound, and environmentally sustainable. Our design capabilities, long heritage, and technological leadership form the basis of our reputation. The acquisition of Hamworthy has strengthened our position in both environmental solutions and gas markets by bringing a broader set of complementing products to our offering, which today consists of:
Together with our in-house experience and expertise, this extensive product offering enables us to interface throughout all lifecycle stages. Our ability to combine the products we offer into larger systems and solutions supports our strategy of being the sole Ship Power supplier to our customers. Our in-depth expertise in optimising vessels makes it possible for our customers to achieve both cost efficiencies and improved environmental performance. This strategy provides added value to both our yard and ship owner customers despite their differing priorities. Shipyard customers can focus on their areas of expertise and benefit from a lesser risk 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><strong>Merchant</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tankers</td>
<td>2-st engines, auxiliary engines,</td>
<td>fixed pitch propellers (FPP), tunnel thrusters, 4-st engines for smaller vessels</td>
</tr>
<tr>
<td>Containers</td>
<td>2-st engines, auxiliary engines, FPP, tunnel thrusters, ship design, 4-st engines for smaller vessels</td>
<td></td>
</tr>
<tr>
<td>LNG carriers</td>
<td>4-stroke main dual-fuel engines,</td>
<td>controllable pitch propellers (CPP), gearboxes, tunnel thrusters</td>
</tr>
<tr>
<td>Bulkers</td>
<td>2-st engines, auxiliary engines, FPP, tunnel thrusters, 4-st engines for smaller vessels</td>
<td></td>
</tr>
<tr>
<td>Other: cargo, RoRo, car carriers, LPG carriers</td>
<td>All of the above</td>
<td></td>
</tr>
<tr>
<td><strong>Offshore</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floating exploration: drillships, semisubmersibles, etc</td>
<td>4-st engines, steerable thrusters, tunnel thrusters, vessel automation, electric power distribution, gearboxes</td>
<td></td>
</tr>
<tr>
<td>Floating production units: FPSO's, FSO, floating LNG, etc</td>
<td>4-st engines, steerable thrusters, tunnel thrusters, CPP, vessel automation, electric power distribution, gearboxes</td>
<td></td>
</tr>
<tr>
<td>Service/Supply vessels: OSV's, PSV's, AHTS, AHS</td>
<td>4-st engines, steerable thrusters, tunnel thrusters, CPP, electrical propulsion, ship design, automation, gearboxes</td>
<td></td>
</tr>
<tr>
<td>Other: crane vessels, pipelayers, accommodation vessels</td>
<td>All of the above</td>
<td></td>
</tr>
<tr>
<td><strong>Cruise and Ferry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cruise vessels</td>
<td>4-st engines, FPP, tunnel thrusters</td>
<td></td>
</tr>
<tr>
<td>Ferries</td>
<td>4-st engines, CPP, FPP, steerable thrusters, tunnel thrusters</td>
<td></td>
</tr>
<tr>
<td>Other: ro-pax, yachts</td>
<td>All of the above</td>
<td></td>
</tr>
<tr>
<td><strong>Special vessels</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tugs</td>
<td>4-st engines, FPP, steerable thrusters, tunnel thrusters, vessel automation, ship design</td>
<td></td>
</tr>
<tr>
<td>Dredgers</td>
<td>4-st engines, CPP, FPP, steerable thrusters, tunnel thrusters, vessel automation</td>
<td></td>
</tr>
<tr>
<td>Other: fishing vessels, ice breakers, research vessels, work boats, inland waterway vessels</td>
<td>All of the above</td>
<td></td>
</tr>
<tr>
<td><strong>Navy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frigates, corvettes, patrol vessels, aircraft carriers, destroyers, support vessels</td>
<td>Waterjets, seals and bearings, tunnel thrusters, 4-stroke engines</td>
<td></td>
</tr>
</tbody>
</table>

* Excluding Hamworthy’s offering which can be installed in nearly all ship types.
Growth through gas and environmental solutions

Tightening environmental regulations are driving interest in gas as a marine fuel and in other vessel related technologies to mitigate emissions, such as exhaust gas scrubbers and ballast water treatment systems. Ship Power offers our customers alternative solutions for meeting these requirements in a way that best meet the needs of their business and operating model, both as part of new build projects, but also as retrofits to vessels in operation.

In order to comply with the upcoming IMO sulphur regulations, ship owners have the choice of either operating on lower sulphur fuels, such as light fuel oil or gas, or using exhaust gas scrubbing technology. Our offering for the gas markets consists of gas fuelled engines, gas conversions, and gas handling systems. We have strong references in these markets with dual-fuel engines supplied over one hundred LNG carriers. The interest in dual-fuel engines is increasing in all segments of the shipping industry. We have received order from all segments in which we are active, most notably from Offshore where we have received altogether 15 dual-fuel orders for platform supply vessels and an order for one FPSO operating on over 100 MW of installed gas engine power. Today, our portfolio of scrubbing systems is the broadest in the industry, consisting of closed loop scrubbers for fresh water use, open loop scrubbers for sea water use, and a combination of the two, i.e. the hybrid system. Wärtsilä has to date a total of 47 exhaust gas cleaning scrubbers delivered or on order, for a total of 24 vessels. The ballast water regulations proposed by the IMO will necessitate the installation of a ballast water management system to stop the spread of non-indigenous invasive species. We offer our customers systems based on the two most common technologies for ballast water treatment; ultraviolet treatment and electro-chlorination. The first orders for the ultraviolet based systems have been received and were delivered in 2012.

Further information on environmental solutions can be found in the IR library.

Ship Power operating environment

The marine industry

The main vessel segments covered by Ship Power are Merchant, Offshore, Cruise & Ferry, Navy and Special vessels. Ship Power’s customers include both shipyards and ship owners.

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 shipping and offshore oil & gas industries. High fuel prices drive the development in the offshore oil & gas industry while in the general shipping industry they increase the demand for efficient vessels. Other factors, such as shipyard capacity, new build prices, decommissioning and scrapping, interest and freight rates, and environmental considerations and regulations, 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 production and support, cruise and ferry services, and for naval use. Another important factor is the demand for environmental solutions and gas as a marine fuel resulting from environmental regulations. Moreover, the increasing demand for oil and gas, together with declining production from traditional fields, supports new offshore investments in deepwater and remote locations.
Main drivers for Wärtsilä’s Ship Power business

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

Competitors and market position

Wärtsilä Ship Power has continuously broadened its portfolio, which today ranges from engines and propulsion equipment to electrical equipment, automation and ship design. Furthermore, the acquisition of Hamworthy positions us well to grow in environmental solutions and gas systems for vessels. This is backed by the capability to build environmentally sound solutions, and by the best service support throughout the lifecycle of the product. Our competitive advantage lies in having the industry’s broadest marine focused offering of leading products, as well as insightful integrated systems and engineering, supported by a unique global sales and service network. We have a strong position in the medium-speed engines markets in which our largest competitors are MAN Diesel & Turbo and Caterpillar (MAK). In the dual-fuel engines market we are the leading player with the widest references in the industry. In the market for low-speed engines, MAN Diesel & Turbo is the leading player followed by Wärtsilä and Mitsubishi Heavy Industries.

<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 medium-speed 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 MW) is controlled by Wärtsilä.</td>
</tr>
<tr>
<td>4-stroke auxiliary generating sets</td>
<td>All vessel types</td>
<td>Market is highly fragmented, price sensitive and with heavy competition. 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 (license-built)</td>
<td>Large and medium size merchant vessels</td>
<td>MAN D&amp;T, Mitsubishi Heavy Industries</td>
<td>Market challenger, approximately 18% of the market (in MW) is controlled by Wärtsilä.</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</td>
<td>CP &amp; FP propellers: Market is fragmented with several players competing, Wärtsilä amongst top players. Steerable thrusters: Wärtsilä amongst top players. Tunnel thrusters: Market is highly fragmented, Wärtsilä is a market challenger.</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Electricity &amp; Automation</td>
<td>Offshore, special vessels</td>
<td>ABB, Siemens, Kongsberg, Rolls-Royce, General Electric</td>
<td>Established position in offshore, otherwise market challenger.</td>
</tr>
<tr>
<td>Ship design</td>
<td>OSVs, merchant vessels, specialised vessels, fishing vessels</td>
<td>Skipsteknik, Marinteknik, MMC, Rolls-Royce, Ulstein, STX OSV</td>
<td>Amongst the leading independent ship design houses.</td>
</tr>
<tr>
<td>Oil &amp; Gas systems</td>
<td>Offshore gas processing &amp; storage vessels, LNG/LEG/LPG carriers, floating production systems, industrial applications, fuel gas to all vessel types</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>Wärtsilä Hamworthy amongst top players.</td>
</tr>
<tr>
<td>Flow systems</td>
<td>All vessel types</td>
<td>Niigata, Marflex, Framo, Hyundai Heavy Industries, Shinko, Colfax, Ellehammer</td>
<td>Wärtsilä Hamworthy amongst top players.</td>
</tr>
</tbody>
</table>
Environmental solutions
• Exhaust gas cleaning
• Ballast water management systems
• Inert gas systems
• Water production systems
• Water cleaning systems

All vessel types
Alfa Laval, Hyundai Heavy Industries, Couple Systems, DuPont (Belco), GEA Westfalia, Siemens, Ecospec

Wärtsilä amongst top players.

* Only main applications mentioned.
** Only main competitors mentioned.

Market position of medium-speed main engines
Medium-speed engines are Wärtsilä’s core product and are used mainly in Offshore and specialised vessel segments, such as cruise ships and LNG carriers.

Wärtsilä’s market shares are calculated on a 12 months rolling basis, numbers in brackets are from the end of the previous quarter. Wärtsilä’s own calculation is based on Marine Market Database.

Market position of low-speed main engines
Low-speed main engines are built under license close to the shipyards and are mainly used in the merchant vessel segment.

Wärtsilä’s market shares are calculated on a 12 months rolling basis, numbers in brackets are from the end of the previous quarter. Wärtsilä’s own calculation is based on Marine Market Database.
Market position of auxiliary engines

The auxiliary engine market is highly fragmented with many competitors.

![Market share chart]

Wärtsilä’s market shares are calculated on a 12 months rolling basis, numbers in brackets are from the end of the previous quarter. Wärtsilä’s own calculation is based on Marine Market Database.

Ship Power strategy

Wärtsilä Ship Power’s strategic goal is to be the leading solutions provider to the marine and offshore industries through building on our deep customer understanding and broad, competitive product offering.

This will be achieved by:

- establishing a clear leading position in solutions for gas fuelled vessels, environmental compliance and efficiency optimisation
- further developing our position as the shipbuilding industry’s leading systems integrator
- providing a competitive offering of products
- seeking further growth through the ability to offer lifecycle solutions for ship owners and operators

As a solutions provider, we are ready to deliver everything from a single product to complete lifecycle support of complex systems powering ships; from the initial building to operational use. Wärtsilä Ship Power is uniquely positioned in being the industry’s only true provider of a total marine offering. This offering includes ship design, engines, generating sets, reduction gears, propulsion equipment, automation and power distribution systems, sealing solutions, emission control and abatement systems, gas containment and handling systems, control and communications, and the world’s strongest service network serving the shipping and offshore industries. Our wide range of products is supported by world class ship design, engineering, and project delivery capabilities, allowing us to find solutions that optimise lifecycle value for our customers.

We identify 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 (including scrubbers, ballast water treatment systems, selective catalytic reduction etc.), 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 acquisitions and partnerships. This growth will be achieved by expanding sales to ship owners and operators based on integrated lifecycle solutions where performance and availability are guaranteed. This expansion will be crafted hand in hand with Wärtsilä’s Services business. Maintaining our position as the shipbuilding industry’s leading systems integrator, and establishing a similarly strong foothold in the offshore business, will also be key components for growth. Finally, further investments in strengthening our presence and maximising the competitiveness of our products and sales processes are of the utmost importance, especially in the key shipbuilding areas, such as China, South Korea, Brazil and Russia.

**Ship Power strengths**

- An unmatched track record in providing gas fuelled vessels with our dual-fuel technology and gas systems
- The broadest portfolio of reliable and high performing products and solutions in the marine industry, supported by the industry’s strongest global services network
- 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 major segments in the industry, allowing us to navigate ship building cycles

**Ship Power and sustainability**

The shipping industry is more than ever seeking ways to increase energy efficiency and to lower operational costs. At the same time, it needs to comply with upcoming environmental legislation. The primary drivers for this are escalating fuel prices, a very competitive shipping market, the International Maritime Organisation’s (IMO) Energy Efficiency Design Index (EEDI) for limiting carbon dioxide emissions from new vessels, and emissions legislation specified by the IMO and the US Environmental Protection Agency (EPA) relating to nitrogen oxides (NO\textsubscript{X}), sulphur oxides (SO\textsubscript{X}) and particulate matter (PM).

Wärtsilä is highly committed to helping its customers in the shipping industry resolve these challenges. We have invested significant effort in the development of new technologies, and in understanding our customers’ needs and options. These actions form the basis of our success in offering our customers the best solution for their needs.

Wärtsilä’s toolbox spans a unique range of technologies and solutions. Our environmental solutions reduce the impact of harmful emissions, our gas solutions enable the use of gas as a fuel for vessels, and we have the capabilities required to significantly increase the efficiency of the entire vessel.

**Environmental solutions**

To ensure environmental compliance, Wärtsilä has developed both primary and secondary emission reduction technologies. Wärtsilä’s exhaust gas cleaning systems enable an optimal integration with the ship’s power train. To lower NO\textsubscript{X} emissions, a range of selective catalytic reduction (SCR) systems are available under the Wärtsilä NO\textsubscript{X} Reducer (NOR) product name, while Wärtsilä SO\textsubscript{X} exhaust gas cleaning systems are available for the reduction of sulphur oxides and particulate matter. Following its acquisition of Hamworthy Ltd., Wärtsilä now has the broadest portfolio of SO\textsubscript{X} exhaust gas cleaning systems on the market with a range that includes closed-loop, open-loop, and hybrid exhaust gas cleaning systems.
<table>
<thead>
<tr>
<th>Emission type</th>
<th>Effect</th>
<th>Legislation</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide</td>
<td>CO₂ Global warming</td>
<td>IMO’s EEDI</td>
<td>Improved efficiency, dual-fuel engines</td>
</tr>
<tr>
<td>Sulphur oxides</td>
<td>SOx Acidification of soil and water</td>
<td>IMO’s global sulphur limit, Sulphur emission control areas (SECA)</td>
<td>Dual-fuel engines, SOx exhaust gas cleaning systems</td>
</tr>
<tr>
<td>Nitrogen oxides</td>
<td>NOx Smog, eutrophication</td>
<td>IMO’s global NOx emission limits (Tier I, II), NOx control areas (Tier III, NECA)</td>
<td>Dual-fuel engines, SCR</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>PM Human health impacts</td>
<td>U.S. EPA, regional legislation</td>
<td>Dual-fuel engines, SOx exhaust gas cleaning systems, diesel particulate filter</td>
</tr>
</tbody>
</table>

To enable further lowering of exhaust gas noise levels, Wärtsilä has successfully introduced its Compact Silencer Solution (CSS). This modular solution allows a higher noise reduction rate without increasing the exhaust gas back pressure, which also has a positive effect on energy consumption.

To reduce emissions to water, our propulsion shaft line sealing systems offer environmentally sound alternatives that prevent the leakage of oil from ships. For bilge water treatment, Wärtsilä offers efficient oily water separation (OWS) systems. As a result of the Hamworthy acquisition, Wärtsilä can now also offer an extensive portfolio of conventional sewage treatment plants, as well as advanced wastewater treatment systems for black and grey water. These systems require no addition or generation of chemicals hazardous to the maritime or shipboard environment, and the quality of the subsequent discharge is excellent.

The Hamworthy acquisition has also enabled Wärtsilä to expand its portfolio of ballast water management (BWM) systems. Today, Wärtsilä offers BWM systems based on both ultraviolet (UV) and electro-chlorination (EC) technologies that allow ship owners to efficiently meet the requirements of the IMO’s Global Ballast Water Convention, regardless of the type or size of ship.

Wärtsilä’s solutions also enable other industries to reduce their environmental impacts. The wind power industry is one example. In this field, Wärtsilä has co-operated with partners in the development of a High Performance Turbine Installation Vessel, and a new and environmentally sound concept for offshore wind farm installation and maintenance vessels. Another example related to the offshore industry is Wärtsilä’s Direct Electric Heating solution for subsea flowlines. This system lessens the probability of pollution, and reduces the handling of toxic disposals resulting from traditional chemical flow assurance methods.

**Gas as an enabler**

The use of liquefied natural gas (LNG) in shipping has numerous benefits, both for the shipping industry and for society at large. Wärtsilä has actively developed technologies that allow the use of gas to fuel vessels. Wärtsilä’s dual-fuel technology brings together two combustion technologies into one single product. This has a unique advantage in that the same engine can be run on natural gas and heavy fuel oil, light fuel oil and various other liquid fuels, thus providing maximum flexibility in fuel choice. Switching between fuels can be made whilst the engine is running.
The benefits of using Wärtsilä’s dual-fuel technology to enable ships to be powered by LNG are clear:

- Emission reductions (when operating in gas mode):
  - NOx emissions by 85%
  - SOx emissions by 99%
  - Particulates up to 99%
  - CO2 emissions by 20-30%
  - No smoke
  - Reduced waste streams (liquid waste)
  - No need to use secondary emission reduction systems (and hence no consumption of reagents) to meet current and known future emissions legislation

- Fuel flexibility to enhance operational security and competitiveness:
  - HFO or MDO operation possible
  - Biofuel use possible
  - Crude oil use possible
  - Redundancy and safety

Wärtsilä is the world’s leading ship design company in the field of gas-fuelled special vessels. For LNG applications, Wärtsilä has the broadest engine range in the industry. To date, more than 520 Wärtsilä dual-fuel engines capable of running on gas have been sold for use in some 150 vessels, consisting primarily of LNG carriers. Wärtsilä’s gas technology provides high efficiency, even at part-load, and with very low emission levels. By using gas to power vessels, the industry is taking a major step towards more sustainable shipping.

In addition to engine development, Wärtsilä has developed and delivered a complete LNG storage and fuel supply system that includes on-board bunkering facilities, known as the Wärtsilä LNGpac. This solution enables the use of gas in all vessel types.

Wärtsilä’s dual-fuel medium-speed engines have now accumulated more than 7 million running hours in both land-based and marine applications. This milestone represents a dual-fuel technology track record that cannot be matched by any other engine manufacturer. The solid and unique track record that Wärtsilä’s dual-fuel technology has established, especially with LNG carriers, has created confidence in the reliability of this technology for other vessel segments as well. The opportunities for using gas to fuel ships are growing rapidly, and several types of vessel are now gas fuelled.

**Efficiency improvement**

By improving overall ship efficiency, both lifecycle costs and exhaust emissions can be reduced. CO2, SOx, and particulate emissions are directly linked to fuel consumption. Wärtsilä’s portfolio of solutions addresses all the necessary application areas, including automation, machinery, propulsion, and ship design. By basing these solutions on a solid knowledge of customer operations, and by combining them into an integrated system, truly efficient ship operations can be achieved. We constantly strive to develop products and solutions that make the entire ship more operationally efficient and cost-effective.

The propulsion options for vessels designed by Wärtsilä Ship Design are based on the results and experience from over 150 model tested hull shapes. The hull lines, bow and bulb, and aft ship are computational fluid dynamics (CFD) calculation optimised for maximum propulsion efficiency according to the vessels’ operational profile. This results in lower fuel consumption.
Electric propulsion offers great operational flexibility. However, electric transmission is less efficient than mechanical transmission. Wärtsilä’s patented Low Loss concept (LLC) lowers the energy losses in electrical transmissions to 6-7%, compared to 10-12% for traditional electrical transmission systems. The Wärtsilä LLC not only improves efficiency, but is also more compact and offers better redundancy than traditional systems.

In order to meet greater efficiency requirements, Wärtsilä has strengthened its low-speed engine offering with the development of the new Generation-X series of engines. During 2012, the first X35 and X40 engines were shop tested and delivered into service. The experience gained from the introduction of the X35 and X40 engines has been applied to all Generation-X family engines to provide the highest fuel efficiency on the market today. The new, fuel-efficient X62 and X72 engines were contracted for delivery in late 2013. The latest addition to the portfolio of Generation-X engines is the new super long stroke 92 cm bore X92 engine. The traditional RT-flex portfolio engines continue to be developed, and improvements to achieve lower fuel consumption and increased power have been introduced on the already successful RT-flex58T-D and RT-flex82T-D engines. New fuel injector design changes are now available for all portfolio engines. These modifications enable ships to achieve further reductions in fuel consumption and an improved EEDI.

Environmental advances for low-speed engines include the first Wärtsilä Integrated Fresh Water Scrubber, installed on a series of vessels equipped with five RT-flex50D engines sailing the Great Lakes of North America. The vessels will go into operation in early 2013. Testing on gas mode dual fuel operation in low speed engines has continued throughout 2012 with good results. Optimisation will continue into 2013, and the first onboard installation is planned for 2014. Selective Catalytic Reduction testing during 2012 and early 2013 will provide a product launching platform for additional Tier III solutions needed in the market for low-speed engines.

**Milestones reached during 2012**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Milestone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>During 2012, the gas technology expanded to both new markets and to new vessel types. Wärtsilä signed a contract to supply dual-fuel engines for China’s first LNG powered tugs.</td>
</tr>
<tr>
<td>Gas</td>
<td>Wärtsilä was contracted to supply the complete dual-fuel propulsion package for two new Liquefied Ethylene Gas (LEG)/Liquefied Petroleum Gas (LPG) tankers for Anthony Veder.</td>
</tr>
<tr>
<td>Gas</td>
<td>In 2012, 2 X 20 DF engines for PSV Eidesvik entered into service.</td>
</tr>
<tr>
<td>Gas</td>
<td>During 2012 Wärtsilä was contracted to supply 50DF dual-fuel propulsion engines to 100 Liquefied Natural Gas (LNG) Carrier vessels in a South Korean shipyard.</td>
</tr>
<tr>
<td>SOx Exhaust gas cleaning systems</td>
<td>Expansion of portfolio as a result of Hamworthy acquisition. Today Wärtsilä provides a portfolio consisting of Closed-loop, Open-loop and Hybrid systems. During 2012, contracts were signed for 14 shipsets.</td>
</tr>
</tbody>
</table>
During 2012, contracts were signed for 27 NOR units and 9 shipsets including first contracts that contains both Wärtsilä NOR and SOx Scrubber Systems.

Expansion of portfolio as a result of Hamworthy acquisition. Today Wärtsilä provides both ultraviolet (UV) and electro-chemical (EC) based BWMS systems. During 2012, AQUARIUS UV received IMO type approval during and first two BWMS contracts were signed for five shipsets.

Wärtsilä’s Environmental technology portfolio was expanded as a result of Hamworthy acquisition and includes today both conventional sewage treatment plants as well as advanced wastewater treatment systems based on Membrane Bioreactor (MBR) technology.

During 2012, contracts were signed for 8 CSS units.

15 LLC units were sold by the end of 2012.

**Development in 2012**

The total number of new registered vessel contracts decreased by 35% to 1,090 during 2012. While the traditional merchant segment continued to struggle with overcapacity, ordering was active in offshore, special vessels and in the LNG and LPG carrier markets. China and South Korea continued to be the dominant countries in shipbuilding. Wärtsilä’s share of the medium-speed main engine market remained high at 47% (48% at the end of the previous quarter). The market share in low-speed engines remained stable at 18% (18). In the auxiliary engine market, Wärtsilä’s share was 4% (5).

Ship Power orders increased by 45% to EUR 1,453 million during 2012. Wärtsilä received several significant offshore orders as well as many orders for dual-fuel engines, underlining the company’s frontrunner position in gas applications. Supported by recent developments in environmental regulation, Wärtsilä also received strategically noteworthy orders for exhaust gas cleaning systems for SOx removal and the first ballast water management system orders. Net sales for Ship Power increased by 27% to EUR 1,301 million (1,022) during 2012, which represents 28% of Wärtsilä’s total net sales.

**Wärtsilä Services**

*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 broadest in the industry, consisting of over 11,000 service professionals in more than 160 locations in over 70 countries globally. We offer expertise, local availability, responsiveness, and the most environmentally sound solutions for all customers, regardless of the make of their equipment.
We focus on three key elements for optimal lifecycle efficiency:

- **Performance optimisation**
  Longer term strategies are aimed at improving the efficiency of our customers’ businesses. Our wide service offering facilitates the performance optimisation of our customers’ systems, thereby enabling a reduction in both fuel costs and emissions, while also extending maintenance intervals.

- **Preventing the unexpected**
  Reliable, continuous performance is essential for our customers. We strive, therefore, to secure the operational reliability of our customers’ installations and offer them access to the highest quality of services. Our flexible solutions minimise downtime and optimise availability in a cost-efficient way.

- **Environmental efficiency**
  Environmental legislation and energy efficiency are currently major concerns for our customers. We offer several sustainable solution options that enable a reduced environmental impact and improved operational efficiency.

### Lifecycle efficiency

![Lifecycle efficiency diagram](image)

Our services 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 competences in strategic growth areas, such as electrics & automation, the oil & gas and offshore industries, and in environmental solutions. Expanding our offering by developing our portfolio through innovations 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 both customers and Wärtsilä with lower costs and improved operational efficiencies.

**Our areas of expertise include:**

**Engine services**

We provide a full range of services for medium- and low-speed gas and diesel engines and other related systems. We offer these services for both Wärtsilä and other engine brands, and they comprise 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 the lifecycle of an installation. Propulsion improvements enable the fuel efficiency of vessels to be optimised and offshore rig reliability.

**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 and gas installations, as well as for power plant and vessel safety systems. We provide a range of services from instrumentation to turnkey engineering packages, and modernisation or conversion projects.

**Boiler services**

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

**Environmental services**

We offer an extensive set of environmental services to both land based power plants and ship installations. Our portfolio includes products and solutions ranging from those aimed at reducing various air emissions and the adaption to different fuels, to ballast water treatment and other water solutions.

**Service agreements**

We tailor our service agreements to the customers’ needs, letting them choose from different levels of partnership. Supply agreements ensure the global logistical delivery of spares parts and guarantee the availability of service professionals. 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, while operations and maintenance agreements can cover full 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, while allowing customers to concentrate on their core business.

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 both the company’s marine and power plant customers. Of the existing engine fleet, approximately one quarter is power plant related and the remainder marine industry installations. In terms of Services’ revenues, approximately 40% comes from power plant customers and 60% from marine customers. The services 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 the Services revenue comes from spare parts, one quarter from field service, and one quarter from service solutions, such as maintenance agreements and service projects.

Installed base by business

Wärtsilä’s installed engine base consists of thousands of installations distributed throughout the world.

Total 181,200 MW
- Power Plants
- Ship Power
Services net sales by business

Services is Wärtsilä’s largest business areas, representing 40% of group net sales.

General market drivers for Services

The main market driver in the service business is the size and development of the active fleet, which is determined by new equipment deliveries and by the pace at which older installations are taken out of use. The market conditions faced by end customers have a direct impact on the utilisation rate, and the estimated lifetime of installations in operation. In the marine service business, the activity level of the vessel fleet is impacted by the number of anchored and idled vessels, and by the speed at which vessels operate.

Lifecycle efficiency drives the Services business in both end markets. The need for lifecycle efficiency solutions comes as a result of 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. Lifecycle solutions are offered through long-term service agreements and retrofit projects.

The outsourcing of operations and management is today an important trend in the power plants service market. In the future, we believe this will also become a more important driver for the marine markets.

Competition and market position

Wärtsilä has a strong position in the service market. There is no single competitor with the ability to provide such a broad service offering globally. Only a few smaller global players provide a similar scope of service, and thus competition is mainly local. Wärtsilä Services competes with 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 and each product has its own set of competitors.

The competition for long-term service agreements for operating power plants comes from a few regional players capable of offering operational services to power plants, including those with different technologies. In the marine market, although some customers handle service and maintenance themselves, a similar scope of service agreements is also offered by ship management companies. Wärtsilä Services cooperates with several companies in this area, offering a variety of options to ensure the best solution for the end user.
Services strategy

Our customers recognise Wärtsilä as their service partner; competitive, trusted, and easy to deal with.

- We will maximise our market share with our present customer base
- We will constantly develop our offering proposition with value-enhancing products
- We will grow by providing more service agreements with new Ship Power and Power Plants deliveries
- We will become our industry’s market leader in environmental solutions

In Services, our objective is to maximise our market share in the marine and power plant service markets. We will develop our service offering and delivery process to cost-efficiently provide better value to our customers. Together with our customers, we create lifecycle-optimising solutions that improve the customers’ operational efficiency and profitability. We use our advanced expertise to offer them global 24/7 support in the fields of logistics, maintenance, plant-operating services and technical support. This offering includes an advanced portfolio of long-term agreements. Moreover, we are able to deliver service projects that match the changing needs of our customers’ businesses. We combine our service solutions with new equipment sales to create value-adding lifecycle solutions. Being the only player on the market able to provide such a wide range of solutions for a broad product portfolio, our competitive position is notably strengthened.

Our broad portfolio of environmental services is aimed at optimising lifecycle environmental efficiency by reducing emissions to air and water, and by minimising waste volumes for both land-based power plants and vessel installations. Our goal is to become the industry leader in environmental upgrade and retrofit solutions. This will be achieved by building world-class delivery capabilities and through developing our value-enhancing offering.

The size and scope of the Services business creates stability in a changing market environment and provides a platform for further growth.

Services’ strengths

- Long-term relationships with customers and an in-depth understanding of their needs
- A lifecycle offering
- The broadest services offering 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.
Wärtsilä Services conducts its business in a responsible way, and creates added value by providing services from locations in close proximity to its customers, and through offering employment opportunities in local communities.

**Solutions for the marine and power industry**

Wärtsilä Services’ key role in sustainability is to provide a range of services that ensure reliable and optimised operational, environmental, and safety performance. Climate change, the availability of liquid fuels and gas, and stricter environmental requirements, all create opportunities for the Services business.

Our solutions enable the application of the latest technologies in operational 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 the product’s lifecycle.

**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.

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

**Solutions for reducing emissions**

We provide products and solutions for new and existing installations that range from reducing air emissions (NO\(_x\), SO\(_x\), CO, VOC) and adapting to different fuels, to ballast water treatment and other water solutions.

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 to the generation of economic benefits.
- Low NO\(_x\) 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 NO\(_x\) 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 an heavy fuel oil (HFO) or marine diesel oil (MDO) -installation to operate on natural gas offers many benefits, and is becoming increasingly attractive throughout the industry.
For new and existing installations, secondary methods that integrate additional equipment and which contribute to emissions abatement are available. Our portfolio includes a range of products, solutions and services aimed at both land-based power plants and ship installations, such as:

- Exhaust gas scrubbers for removing sulphur oxides (SO\textsubscript{x}). These systems are suitable for both new buildings and the retrofitting of existing vessels having either 2-stroke or 4-stroke engines, as well as oil-fired boilers. To comply with all types of installation and operating profiles, and thanks to the integration of Hamworthy, the Wärtsilä exhaust gas scrubber portfolio now includes open loop, closed loop, and hybrid technologies.
- The Wärtsilä NO\textsubscript{x} Reducer (NOR) to reduce NO\textsubscript{x} emissions by 85-95% based on Selective Catalytic Reduction (SCR) technology. The new SCR product range caters to the needs of all four-stroke engines in Wärtsilä’s portfolio and can be used for both newbuild and retrofits.
- We can also offer complete oily water treatment systems for power plants and marine applications that meet the most stringent standards, as well as ballast water treatment systems which are vital to prevent organisms from one ecosystem upsetting the ecological balance in another.

Our offerings cover total service packages, including start-ups, installations, engineering work, and maintenance and repairs.

**Development in 2012**

The stable services market development continued in 2012. Development in the power plants and offshore markets continued to be strong. From a regional perspective, the market was still the most active in the Middle East and Asia. At the end of the year, Wärtsilä’s installed base was 181,200 MW, representing an increase of 1% compared to the previous year. The installed power plants base continued to increase during 2012, while the marine installed base showed a slight decline due to the scrapping of older merchant vessels with large 2-stroke engines.

In 2012, Services’ net sales grew by 5% and reached an all time high level of EUR 1,908 million, which represents 40% of Wärtsilä’s total net sales. This increase relates to the growth in the installed engine base, as well as the wide services offering aimed at reducing our customers’ operating expenses and increasing the availability of their equipment. The Services order intake totalled EUR 1,961 million (1,909). Interest in service agreements was high during the year. Wärtsilä Services signed major service agreements for power plants in Kenya, Timor-Leste, South Africa, Brazil, the USA and Jordan. Within the marine industry, Wärtsilä was also awarded service agreements by Princess Cruise Lines Ltd and Prestige Cruise Holdings, Inc.

**PowerTech**

Wärtsilä’s manufacturing focuses mainly on assembly, test running, and finishing of products.

PowerTech serves both the Ship Power and Power Plants market areas, and comprises R&D for medium-speed engines, the Product Center 4-stroke, Central Operations, including Supply Management and Quality, as well as Centres of Excellence. 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. Our product portfolio consists of medium-speed engines, catalytic systems, and emission monitoring products. Other products sold to the marine markets are a part of Ship Power’s product portfolio. We provide products that are reliable, cost-efficient, functional, environmentally compatible, technologically leading, and able to be integrated into solutions or delivered as stand-alone equipment.

**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, and our network is continuously being further developed. 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.

**PowerTech footprint**

Wärtsilä’s manufacturing model follows market demand to ensure flexible global capacity. The manufacturing of our medium-speed main engines is concentrated at the delivery centres in Vaasa, Finland and Trieste, Italy. As structural changes continue in our end markets, we continue to strengthen our presence in key markets. This enables us to be better positioned in these emerging markets and allows savings to be achieved in both production and transportation costs.

We currently have six joint ventures globally. In China, our joint ventures produce propulsion machinery, medium-speed engines and low-speed engines. In December 2012 Wärtsilä and Yuchai Marine Power Co. Ltd. signed an agreement to establish joint venture for manufacturing medium-speed marine engines for the Chinese markets. In Korea, we manufacture dual-fuel engines for the LNG carrier markets. Our joint venture with Transmashholding has begun construction of a modern factory located in Penza, Russia, where the manufacture of new and multi-purpose diesel engines is expected to begin in summer 2013.

**PowerTech strategy**

Wärtsilä PowerTech’s strategic goal is to provide a broad portfolio of market leading products. In order to serve a wide range of customer needs, our products are suitable for integration into larger solutions or for use as ‘stand-alone’ items.

In our operations, we put a strong emphasis on the product development and product delivery processes with optimised end-to-end value streams. Operationally, our top priority is to secure deliveries as promised, according to the expected product quality, delivery accuracy and cost.

Our product development activities focus on gas as a fuel, efficiency improvements, and environmental technologies. Special attention is paid to achieving competitive product cost, to reducing the total cost of ownership and to providing high quality and reliable performance throughout operations.

Our delivery process focuses on assembly and testing, while aiming for maximum flexibility in our activities. Wärtsilä PowerTech will establish a strong supply management, manufacturing, and product engineering footprint close to our growth markets, while securing control over our core operations.
We will adapt our operating models to meet the specific requirements of these markets, often in cooperation with leading local industrial partners.

Through our people we have built a strong performance culture, which is the basis of our success.

**PowerTech strengths**

- Innovation in products and processes
- A competitive medium-speed 4-stroke engine portfolio with best practice design
- Manufacturing and selected engineering activities close to the main markets
- Continuous improvement of the product development and product delivery processes

In the new entrepreneurial drive focused organisation within Wärtsilä, the PowerTech product portfolio consists of medium-speed engines, catalytic systems, and emission monitoring products. They are reliable, cost-efficient, functional, environmentally compatible, technologically leading, and able to be integrated into solutions or delivered as stand-alone equipment.