



WÄRTSILÄ  
CORPORATION  
**ANNUAL REPORT 2012**  
SUSTAINABILITY



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/](http://www.wartsilareports.com/en-US/2012/ar/)

# Table of contents

## Sustainability

03	Wärtsilä and sustainability	47	Reducing greenhouse gas emissions
04	Wärtsilä's focus on sustainability	48	Water solutions
06	Summary of key figures	49	Creating new solutions
07	Sustainability performance management	51	Long-term research activities
08	Code of conduct	52	Collaboration with stakeholders
11	Management systems	52	Summary of environmental aspects
13	Product liability	56	Environmental performance indicators
14	Supply chain management	57	Materials, energy and water
14	Stakeholder relations	60	Emissions and wastes
16	Channels of dialogue	65	Compliance with legislation
16	Activities in organisations	66	Environmental costs and liabilities
18	Wärtsilä in sustainable development indices	67	Personnel and social performance
19	Recognitions	67	Social targets
19	Economic performance	69	Personnel
20	Suppliers	75	Employee practices
21	Employees	78	Occupational health and safety
22	Public sector	80	Human rights
23	Creditors and shareholders	80	Weak governance zone
24	Community support	81	Security practices
24	Wärtsilä and emission trading	81	Impact on communities
25	Customers	81	Suppliers
26	Environmental performance	82	Preventing corruption and bribery
28	Environmental targets	83	Political lobbying
32	Wärtsilä QEHS Policy	83	Competition regulation
32	Solutions for GHG reduction	83	Product liability
35	Towards more sustainable solutions	83	Customer satisfaction
36	Legislation and initiatives	85	Our figures
37	Wärtsilä's R&D focus	86	Economic data
38	The importance of understanding the lifecycle	87	Environmental data
39	Ensuring reliability and safety	88	Social data
40	Improving efficiency	90	Our reporting
42	Reducing sulphur dioxide emissions	92	Reporting rules and principles
45	Reducing nitrogen oxide emissions	93	Independent Assurance Report
		96	GRI and UNGC index

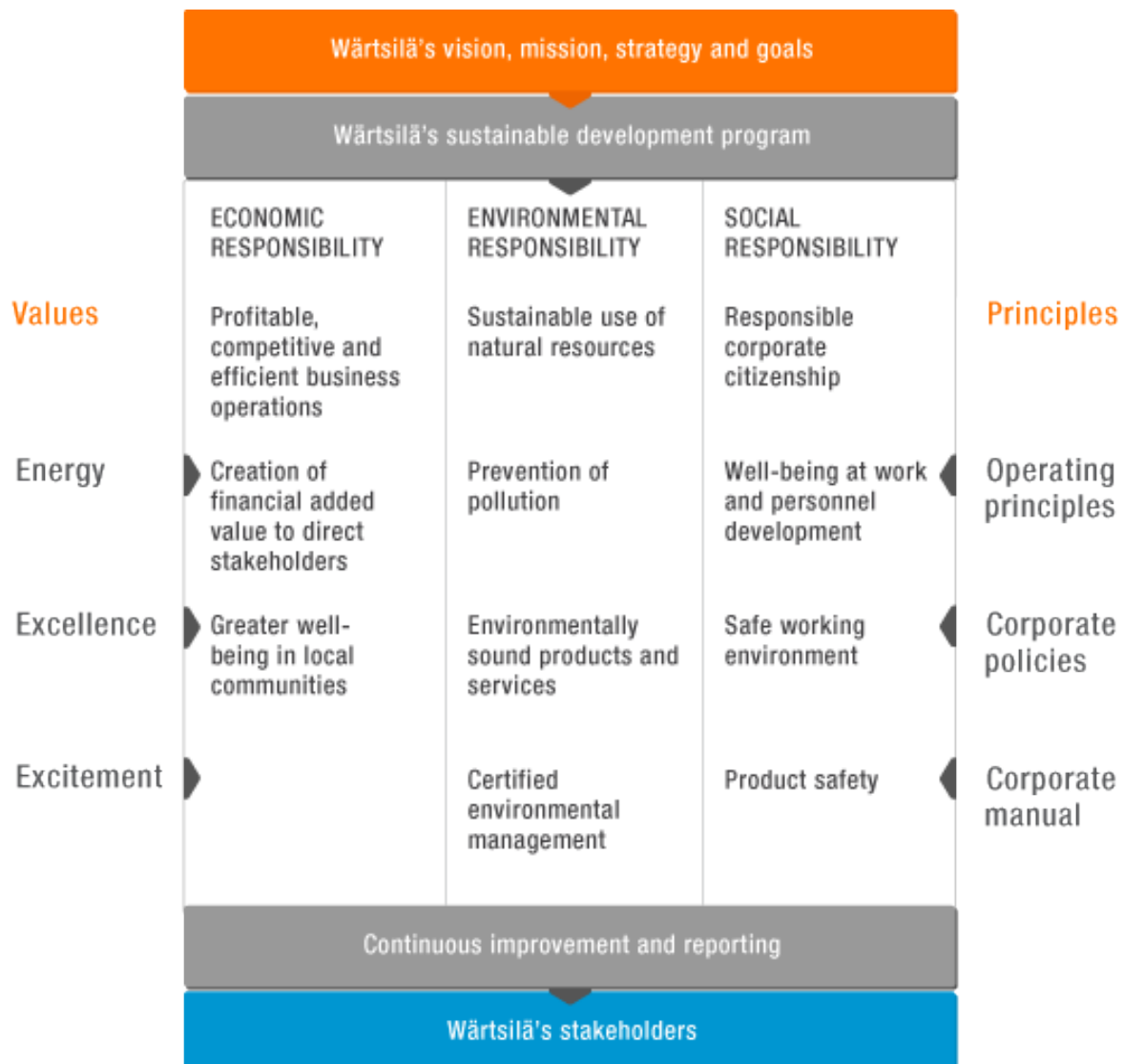
## Wärtsilä and sustainability

As a global leader in complete lifecycle solutions for the marine and energy markets, Wärtsilä has a key role in providing sustainable solutions for the shipping and energy sectors. We support our solutions globally during their entire lifecycle. This creates the basis for our sustainability work, which is supported by our commitment to responsible business conduct.

Our commitment to sustainability and responsible business is based on our mission, vision and strategy, which along with our sustainable development objectives create the framework for developing the company's activities and products. Wärtsilä's management system and other sustainability tools provide us the means to assess our performance and to improve our operations and products continuously.

Wärtsilä applies global guiding principles such as the Quality, Environmental, Health & Safety policy (QEHS policy) and the Code of Conduct, which together with the company's values ensure a harmonised way of working towards sustainable development. The Corporate Manual includes, in addition to the ones mentioned above, other policies and directives, a description of the company's operating procedures, responsibilities and the management system structure. Wärtsilä's governance and risk management principles, as well as the main sustainability risks, are described in the Governance-section.

## Wärtsilä and sustainability



## Wärtsilä's focus on sustainability

Wärtsilä's sustainable development is based on three closely interrelated pillars: economic, environmental and social performance. In the field of sustainable development, Wärtsilä's overriding focus is on the following:

- Economic: profitability
- Environment: environmentally sound products and services
- Social: responsible business conduct

The other core areas of sustainability are presented in the picture [Wärtsilä and sustainability](#). Wärtsilä's strategy for environmental and social responsibility is presented in the [Strategy section](#). Wärtsilä sets corporate level sustainability targets for the core areas. Wärtsilä's key product performance targets are currently related to providing solutions for [sustainable shipping](#) and [smart power generation](#). Wärtsilä's

key operational sustainability targets are currently related to the improvement of energy efficiency and zero injuries.

From a sustainability impact point of view, product-related environmental issues are the most significant for Wärtsilä. The use of Wärtsilä's products has environmental impacts both locally and globally. Other dimensions of sustainability have mainly local impacts.

Sustainability impact	Local	Global
Economic	x	
Environmental		
- Product related	x	x
- Operational	x	
Social	x	

## Economic responsibility

Economic performance involves meeting the expectations of shareholders and contributing towards the well-being of local societies. This requires the company's operations to be profitable and competitive. Economic performance, besides creating economic added value for the company's stakeholders, also calls for promoting well-being in the local communities where the company operates. Good economic performance establishes a foundation for other aspects of sustainability and safeguards the company's future operating capabilities.

## Environmental responsibility

Environmental protection means sound management of natural resources and operating on the terms of the environment. Protecting the air, soil and water, as well as combatting climate change and using natural resources in a sustainable way, are all important objectives, whether these apply to Wärtsilä's own operations or to how the company's products are used. Environmental performance also requires the company to identify the lifecycle environmental impacts of its products and to reduce these impacts through proactive research and development.

Continuous improvement of environmental performance is both a challenge and an opportunity. Wärtsilä continuously develops and improves its operations with the help of certified environmental management systems. Strong focus on environmental performance in R&D and product development reduces the environmental impact of products. Climate change and other environmental concerns increase the demand for environmentally sound products.

## Social responsibility

Social performance involves following good practices and procedures in stakeholder relations. This requires continuous co-operation with suppliers, partners and local organisations.

The Code of Conduct and its related policies set the boundaries for Wärtsilä's business operations and their development in line with the Group's strategy. The other central aspects of good social performance are creating a safe working environment and operating procedures, ensuring the well-being of the company's employees and developing personal skills and competencies.

These aspects uphold the ability of the employees to do their work as well as raise efficiency and improve Wäartsilä's position as a desirable employer. Product safety means responsibility towards the company's customers and its own personnel.

Alongside compliance with the safety requirements, essential aspects of product safety also include product support and training. Promoting good social performance requires seamless collaboration throughout the Group network.

## Summary of key figures

### Performance indicators

Economic (EUR million)	2012 <sup>5</sup>	2011 <sup>4</sup>	2010 <sup>3</sup>	2009 <sup>2</sup>	2008 <sup>1</sup>
Net sales	4 725	4 209	4 553	5 260	4 612
Cost of goods, materials and services purchased	-3 007	-2 694	-2 927	-3 593	-3 134
Value added distributed to stakeholders	1 717	1 514	1 626	1 667	1 479
Wages and salaries	887	770	773	735	693
Taxes and social dues	317	322	326	337	288
Net financial items	-30	-16	-13	-34	-9
Dividends	197	178	271	173	148
Retained earnings for business development	285	228	242	388	340
R&D expenses	188	162	141	141	121
<b>Environmental</b>					
Total energy consumption (TJ)	1 691	1 735	1 916	2 194	2 383
Electricity consumption (MWh)	143 810	145 078	149 047	164 022	151 169
Heat consumption (MWh)	27 910	31 805	41 401	37 060	50 193
Light fuel oil (t)	5 096	3 409	3 623	5 662	5 432
Heavy fuel oils (t)	5 920	7 652	9 020	15 652	22 145
Natural gas (t)	9 767	10 486	12 347	11 792	11 160
Other fuels (t)	4 025	4 173	3 729	3 326	1 711
Total water consumption (1 000 m <sup>3</sup> )	9 546	9 775	10 292	8 128	11 712
Consumption of domestic water (1 000 m <sup>3</sup> )	799	830	840	808	622
Consumption of cooling water (1 000 m <sup>3</sup> )	8 747	8 945	9 452	7 320	11 090
Emissions of nitrogen oxides (t)	697	765	826	1 290	1 633
Emissions of carbon dioxide (t)	63 762	68 897	80 234	96 749	122 669
Emissions of sulphur oxides (t)	145	265	277	595	840
Particulates (t)	13	20	19	28	65
VOC (t)	51	58	61	170	152
Non-hazardous waste (t)	39 512	42 865	38 392	49 946	35 055
Hazardous waste (t)	23 005	42 288	5 175	5 857	5 154

**Social**

Training days (days/employee)	3.4	3.0	3.1	3.7	3.3
Number of lost-time injuries, total	238	267	333	470	548
Lost-time injuries (number/million working hours)	5.5	6.3	7.8	12.9	16.3
Absence rate (% of total working hours)	2.2	2.2	2.4	2.6	2.4

<sup>1</sup> The data includes all Wärtsilä companies except those mentioned in the Sustainability Report 2008 Report Scope section.

<sup>2</sup> The data includes all Wärtsilä companies except those mentioned in the Sustainability Report 2009 Report Scope section.

<sup>3</sup> The data includes all Wärtsilä companies except those mentioned in the Sustainability Report 2010 Report Scope section.

<sup>4</sup> The data includes all Wärtsilä companies except those mentioned in the Sustainability Report 2011 Report Scope section.

<sup>5</sup> The data includes all Wärtsilä companies except those mentioned in the Report Scope section of this report.

The operational performance data in this report has been compiled from the economic, environmental and social records of the Wärtsilä companies. Whilst every effort has been made to ensure that the information is neither incomplete nor misleading, it cannot be considered as reliable as the financial information published in the Financial review.

## Sustainability Performance Management

Wärtsilä's Board of Management has the overall responsibility for sustainability performance. The Board of Management approves the guiding principles and reviews the content on a regular basis. The Board of Management defines sustainability targets and monitors performance against these set targets. Performance is reviewed in connection to the management reviews on both Wärtsilä's Board of Management and Business Management Team levels.

Wärtsilä's sustainability function is responsible for providing the necessary information to management, identifying development needs as well as for coordinating sustainability programmes and preparing instructions. The function co-operates closely with the Businesses and the supporting functions such as Human Resources, Legal, Compliance, Quality, Wärtsilä Supply Management and Real Estate. It also collects and consolidates sustainability data from the subsidiaries.

Wärtsilä has clearly defined responsibilities supported by necessary instructions and training. This training covers for example the Code of Conduct, anti-corruption as well as environmental and occupational health and safety issues. Wärtsilä monitors sustainability performance by utilising the information provided by various sustainability tools and activities such as internal audits and compliance processes.

### Voluntary commitments



Wärtsilä participates in the Sustainable Shipping Initiative and the UN Global Compact initiative. Wärtsilä has also signed an agreement in 2008, whereby the Finnish industry voluntarily endeavours to use energy more efficiently. Wärtsilä North America Inc. has joined the Customs Trade Partnership Against Terrorism (C-TPAT) agreement signed in 2003.



## Wärtsilä tools for Sustainability

Basic principles	Systems and processes	Others
Vision, Mission and Strategy	Quality Management System	Sustainability target setting
Corporate Governance	Environmental Management System	Sustainability management reviews
Corporate policies and principles: Code of Conduct, QEHS policy, Policy on Equal Opportunities and Fair Employment Practices, Anti-Corruption Policy, Compliance Reporting Policy etc.	Occupational Health and Safety Management System	Business development tools: Due diligence, Environmental surveys
Corporate Manual	Supplier Management System	Stakeholder dialogue
Corporate requirements for suppliers	Risk management process	Sustainability reporting

# Wärtsilä Code of Conduct

## Introduction

Wärtsilä is committed to carrying out its business in a sustainable way. In order to promote the long-term interests of Wärtsilä and its stakeholders, the company strives to maintain the highest legal and ethical standards in all its business practices. Each employee is expected to act responsibly and with integrity and honesty and to comply with this code and its underlying policies and instructions.

## Compliance with laws

All business and other activities of Wärtsilä shall be carried out strictly in compliance with all applicable laws and under the principles of good corporate citizenship in each country where such activities take place.

Each employee is expected to comply with the requirements of those laws and regulations that apply to Wärtsilä's operations and to his/her job and with the Wärtsilä principles of good corporate citizenship.

## Openness

Wärtsilä promotes openness and transparency as well as continuous dialogue with its stakeholders, including customers and other business partners, shareholders, personnel, authorities, local communities and the media. Stock exchange rules and competitive considerations may, however, in some cases restrict such openness and transparency.



Wärtsilä strives to be honest and accurate when communicating with its stakeholders, and also Wärtsilä employees shall make their statements in accordance with this principle.

## **Respect for human and labour rights**

Wärtsilä supports and respects the protection of human rights as defined in the United Nation's Universal Declaration on Human Rights. No employee is allowed to take any action that violates these human rights principles, either directly or indirectly.

Wärtsilä supports basic labour rights as defined by the International Labour Organization. In this respect, Wärtsilä upholds the freedom of association and the effective recognition of the right to collective bargaining. In the case that these rights are restricted by local law, Wärtsilä endeavours to offer its employees alternative means to present their views. Wärtsilä does not accept any form of forced or compulsory labour or the use of child labour.

## **Fair employment practices**

Wärtsilä promotes freedom from discrimination based on race, ethnic or national origin, colour, gender, family status, sexual orientation, creed, disability, age, political beliefs or other characteristics protected by law. Wärtsilä fosters equal opportunity and our employees are selected and treated on the basis of their abilities and merits.

Wärtsilä does not accept any form of discrimination, harassment or bullying from its employees.

## **Occupational health and safety**

Wärtsilä endeavours to create hazard-free workplaces for its employees, contractors and others working in various locations by applying high standards of occupational health and safety. Wärtsilä strives to assure the safety of its products and solutions through its world-class product and solution development processes.

Each employee is responsible for complying with the safety instructions, for using personal protection equipment when required and for reporting on any shortcomings regarding safety instructions or protection measures.

## **Conflicts of interest**

Wärtsilä expects full loyalty from its employees. Employees must avoid situations where their personal interests may conflict with those of Wärtsilä. This means, for instance, that employees are not allowed to accept gifts or entertainment from a stakeholder, except a gift or entertainment of a minor value given on an occasional basis, providing it does not create a conflict of interest situation.

## **Anti-corruption**

No Wärtsilä company or any of its employees may, directly or indirectly, promise, offer, pay, solicit or accept bribes or kickbacks of any kind, including money, benefits, services or anything of value. Such payments and favours may be considered bribery, which violates local legislation and internationally recognised principles for combatting corruption and bribery.

## Environment

Wärtsilä's target is to develop and produce for its customers environmentally advanced solutions and services that fulfil essential requirements, such as low emissions and high efficiency. Efforts are made to achieve sustainable development by means of raw material selection, processes, products, wastes and emissions through the use of the latest technical advances. Each employee shall comply with the policies and instructions regarding environmental protection.

## Relationship with authorities and local communities

Wärtsilä maintains constructive co-operation with authorities and regulatory bodies, at both local and international levels. Wärtsilä seeks to play a role in serving the needs of the local communities whenever possible.

## Innovation and protection of proprietary information

Wärtsilä supports and encourages innovation by its employees in all areas of its activities.

Wärtsilä's intellectual property is one of its most valuable assets, and the patents, trademarks, copyrights, trade secrets and other proprietary information of Wärtsilä must be protected. At the same time, each Wärtsilä employee must respect the intellectual property rights of others.

## Accuracy of accounting records

Wärtsilä accounting records must be accurate and reliable in all material respects. Unrecorded funds are prohibited. The records must not contain any false, misleading, or artificial entries.

## Competition and fair dealing

Competition laws aim to protect consumers and businesses against unfair business practices. Each employee shall comply with those laws. Actions such as participation in cartels, abuse of a dominant position in the market place or the exchange of price or other commercial information between competitors are prohibited. Wärtsilä employees should be sensitive to competition concerns when attending occasions where competitors, or potential competitors, can be present.

## Anti-fraud

Wärtsilä does not tolerate fraudulent behaviour or activities, such as embezzlement, fraud or theft. Such violations will lead to immediate termination of employment and are subject to criminal sanctions.

## Implementation

Wärtsilä takes an active approach to the application of this code and promotes its implementation through the effective communication of its contents to employees. Wärtsilä monitors the application of this code internally.

Suppliers and business partners are an important and integral part of the total value chain of the products and services of Wärtsilä. They are expected to conduct their businesses in compliance with the same high legal and ethical standards and business practices as Wärtsilä. Wärtsilä promotes the application of this code by monitoring the actions of its suppliers and business partners.

In the case that questions arise regarding the interpretation of, or compliance with, this code, Wärtsilä Legal Affairs should be contacted.

The application of the code will be reviewed from time to time by the Board of Management, which may decide on necessary revisions or interpretations.

## Reporting violations

Any Wärtsilä employee becoming aware of a potential violation of this code must contact his or her superior or Wärtsilä Legal Affairs. The president of the respective subsidiary must be informed, unless he or she is party to the alleged violation, in which case the Group General Counsel of Wärtsilä Corporation must be contacted. Wärtsilä will investigate all reported matters with discretion. Wärtsilä shall not take any adverse actions as a result of such reporting against any employee reporting in good faith what he or she believes to be a violation of this code.

## Sanctions

Violation of this code may lead to a warning, the termination of employment and the payment of damages. Additionally, certain violations of a criminal nature can lead to criminal sanctions, such as fines or imprisonment.

# Wärtsilä's management system

Wärtsilä's management system aims to generate added value for Wärtsilä's various stakeholders, achieve the company's strategic objectives, support sustainability performance, manage operating risks and enhance Wärtsilä's performance through the continuous improvement process. The system includes a range of tools, such as systems for managing quality, the company's environmental responsibilities and occupational health and safety. Management reviews are conducted at various levels of the organisation to monitor the effectiveness of the system, the achievement of targets and the development of key performance indicators. Wärtsilä's processes are developed in the Businesses, the Business lines, the Division and the Functions. These development projects are governed by the Wärtsilä Operational Development Board and Council, the Business Boards and the Functional Management Teams.

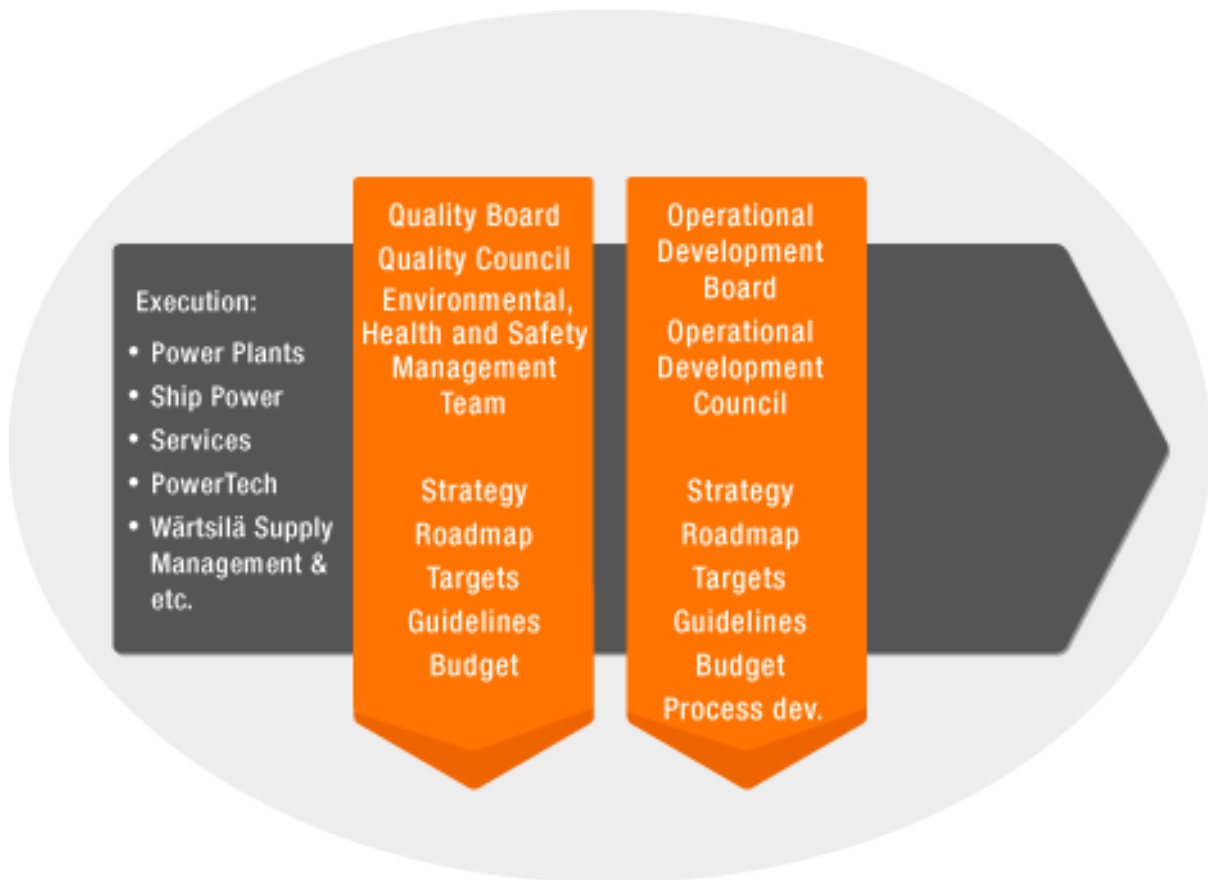
Wärtsilä's Board of Management is responsible for defining the company's main strategies, principles and policies and for the management system itself. The Board of Management regularly monitors the effectiveness and performance of the management system. Responsibilities are distributed to the line organisation at all levels of the company, and the management system defines a specific sphere of responsibility for each Wärtsilä employee. Work groups for developing the management system are appointed at the corporate level and in most Wärtsilä subsidiaries. At the Group level, the following work groups coordinate the development of product and operational issues:

Work group	Focus	Main tasks
Wärtsilä Quality Board	Quality, environmental, health and safety issues	Overall responsibility for Wärtsilä's Quality and Environmental, Health and Safety management, development plans and expenditure of the covered areas.
Wärtsilä Operational Development Board	Operational development issues	Overall responsibility for Wärtsilä's operational development and owner of Wärtsilä processes, governing the work of IM, Process, Quality and Environmental, Health and Safety management and the operational development plans and budget of the covered area.
Wärtsilä Quality Council	Quality	Quality road map, targets and guidelines based on business strategies and targets and overall quality development for the approval of the Wärtsilä Quality Board. Cross-divisional quality alignment and harmonisation.
Wärtsilä Operational Development Council	Operational development	Operational development road map, targets and guidelines based on business strategies and targets and overall operational development process responsibility for the approval of the Wärtsilä Operational Development Board. Cross-divisional operational development alignment and harmonisation.
Wärtsilä EHS Management Team	Environmental, health and safety (EHS)	EHS management system development, corporate level measuring and target setting and monitoring of legislation developments.

## Management systems

Proportion of Wärtsilä companies with certification	
ISO 14001	62%
ISO 9001	74%
OHSAS 18001	56%

## Group quality and operational development (QOD) planning and execution



## Product liability

Wärtsilä strives to develop environmentally sound, reliable and safe products. Wärtsilä supports its customers throughout the entire service lives of Wärtsilä products by developing environmentally sound solutions and also by offering these solutions for use with products that are already in operation. Reconditioning engines and components lengthens the service life of products, while modernising engines can improve the performance of installations to the level where they meet both existing and future requirements.

Wärtsilä's engines are designed to meet the requirements of the European Commission's Machinery Directive, the SOLAS Convention and other relevant safety directives, while Wärtsilä's propulsion systems are designed to comply with the SOLAS and the safety requirements of relevant classification bodies. New types of engines must also meet international safety requirements. Type approval is acquired from classification societies before new products are launched. Wärtsilä's products are delivered with appropriate user guides that include basic information about the products and full instructions for their use.

Wärtsilä's Ship Design follows class society and flag state rules in the design process to secure safe and compliant designs for its clients. Class approval is required for drawings and calculations to be delivered to the client before construction of the vessel starts.

## Supply Chain Management

Wärtsilä has defined its processes for choosing suppliers, determining their requirements and developing the supply relationship. Wärtsilä offers its suppliers a partnership that strengthens the competitiveness of both parties. A precondition of this partnership is an open and continuous dialogue. Partnership thinking is also applied in Wärtsilä's research and development activities, where the company often collaborates with universities and key suppliers.

Wärtsilä's supplier requirements address both general features and issues relating to quality, product-specific requirements, environmental management, occupational health and safety, social responsibility and legal compliance. These requirements are included in standard supply contracts. Wärtsilä controls regularly that suppliers comply with these requirements by using performance indicators and audits. Suppliers must demonstrate their compliance with these requirements in order to receive approved supplier status. The main priorities in Wärtsilä's supplier evaluations are supplier selection, conformance with requirements and performance reviews.

Wärtsilä assesses and manages its suppliers through its Supplier Management System. Wärtsilä regularly conducts supplier evaluations. These are divided into three categories: pre-assessment, auditing and performance review. A pre-assessment is made of potential new suppliers before the supplier relationship begins. Audits are conducted for new suppliers and for suppliers whose performance does not meet Wärtsilä's requirements. Performance reviews are carried out to identify and solve deviations from requirements. In the evaluation of a supplier, Wärtsilä focuses on several critical indicators in which Wärtsilä expects the suppliers to have high standards and performance: compliance with relevant legislation; environmental, occupational health and safety and quality management; process mapping, risk management; quality plans and social performance.

## Stakeholder relations

Wärtsilä aims to engage in an open and constructive dialogue with its various stakeholders. Wärtsilä takes active care of its relations with stakeholders and develops its activities, products and services based on the feedback received from them. At the corporate level, Wärtsilä has defined its most important stakeholders to be its customers, owners, suppliers, employees and the society. Wärtsilä's subsidiaries define their own primary stakeholders which, in addition to the ones mentioned above, include local residents close to production plants, educational institutes and public authorities. The priorities in managing stakeholder relations vary within Wärtsilä from one subsidiary to another. Wärtsilä continuously enhances its reporting performance both on its own initiative and in response to feedback from its stakeholders.

Main expectations of Wärtsilä's stakeholders and Wärtsilä's goals





## Channels of dialogue

Stakeholder	Channel of dialogue	Assessments
Customers	Regular contact with customers, lifecycle support for products, customer events and seminars, customer days, customer magazines, the internet, conferences and exhibitions, product documentation, customer feedback system	System for measuring customer satisfaction and quality.
Employees	Open and continuous communication between management and employees, annual development discussions, information meetings and internal communications (intranet), employee magazines, training events, national statutory employee bodies and European Works Council, occupational health and safety committees, suggestion system, continuous improvement process (CIP), Technology and Innovation Award, Customer Care Award	Employee satisfaction surveys (MyVoice).
Owners, investors	Management meetings with investors, financiers and analysts, stakeholder magazines, general meetings, information meetings, stock exchange and press releases, annual and interim reports, capital markets days, the internet, investor relations surveys, sustainability questionnaires	Investor relations surveys, sustainability surveys and indices.
Suppliers	Open and active dialogue between the sourcing organisation and suppliers, supplier portal, supplier development, supplier management system, Supplier Days, Supplier Award	Supplier assessments.
Society	Reporting to, and co-operation with, public officials on issues such as the environment and occupational health & safety, meetings with decision makers, position papers, Open Doors days, sustainability report, corporate presentations, local communications, the internet	Stakeholder feedback, corporate image surveys.
Organisations	Membership, regular contact, participation in activities of local trade and industrial organisations, active role in working groups, contact with various public bodies, e.g. through ministries, reports	
Universities	Opportunities for practical training and degrees, R&D projects, participation in recruitment fairs and seminars, sponsorship of student activities, lectures	Preferred employer surveys.
Media	National and international business media and journals, trade publications, interviews and press releases, main annual publications, meetings, visits, factory tours	Surveys conducted among business journalists, media surveys, reporting comparisons.

## Activities in organisations

In 2012, Wärtsilä participated in several relevant activities organised by various national and international organisations and associations. The key organisations for Wärtsilä and the nature of Wärtsilä's activities are shown in the table below.

Stakeholder	Organisation	Nature of activity
Interest groups	Confederation of Finnish Industries (EK), Finland Chamber of Commerce (ICC Finland), The Federation of Finnish Technology Industries	Membership and participation in activities.
Industrial and trade organisations	European Association of Engine Manufacturers (Euromot), International Council on Combustion engines (CIMAC), Engine Manufacturers Association (EMA), World Alliance for Decentralized Energy (WADE), EURELECTRIC, Cogen Europe, Verband Deutscher Maschinen- und Anlagenbau (VDMA), Exhaust Gas Cleaning System Association (EGCSA), Cruise Line International Association (CLIA), European Cruise Council (ECC)	Board membership and participation in activities of specific working groups (CIMAC, WADE, Euromot, VDMA, Cogen Europe, Italcogen, Cogen Turkey).  Membership and participation in activities (EURELECTRIC, EMA, EGSA, CLIA, ECC).
Standardisation organisations	European Committee for Standardisation (CEN), International Organisation for Standardisation (ISO)	Participation in activities.
International organisations	International Maritime Organisation (IMO), United Nations Economic Commission for Europe (UNECE)	Participation in activities.
Other	European Federation for Quality Management (EFQM), European Energy Forum (EEF), Global Reporting Initiative (GRI), UN Global Compact Nordic Network	Participation in activities (EFQM, EEF), Organisational stakeholder (GRI).

## Wärtsilä in sustainable development indices

Wärtsilä is included in the following sustainability indices:

- FTSE4Good Index
- ASPI Eurozone<sup>®</sup> Index
- OMX GES Sustainability Nordic Index and OMX GES Sustainability Finland Index

Wärtsilä has also been rated a Prime company by oekom research.



FTSE4Good Index Series is an equity index series that is designed to facilitate investment in companies that meet globally recognised corporate responsibility standards. The inclusion criteria are designed to help investors minimise social, environmental and governance risks, meeting stringent criteria on themes such as supply chain management, human rights, environmental management, climate change, and countering bribery.



The ASPI Eurozone<sup>®</sup> Index consists of the 120 listed Eurozone companies that perform best in social and environmental terms. The stocks are selected on the basis of the ratings of the European Corporate Social Responsibility Ratings Agency Vigeo.



The OMX GES Sustainability Nordic Index and the OMX GES Sustainability Finland Index are based on risk ratings, which are analyses of risks in the companies' methods of dealing with the environment, human rights and corporate governance. The analysis is based on international norms on Environmental, Social and Governance issues in accordance with the UN Principles for Responsible Investments. They evaluate both the companies' present status and readiness for the future. The analysis model is easy to implement and gives an immediate overview of a company's

sustainability status, which can reduce investment risk. The Nordic sustainability index comprises the 50 best rated companies on the Nordic stock exchanges. The Finnish index comprises the 40 best rated companies on the Helsinki stock exchange.



Oekom research awards Prime status to those companies which according to the oekom corporate rating are among the leaders in their industry and which meet industry-specific minimum requirements on the field of corporate responsibility.

## Recognitions

### During 2012, Wärtsilä received the following external recognitions:

In the European Travel Buyer Awards 2012, Wärtsilä Travel was the winner in the category of Best Travel Policy Compliance Programme.

Wärtsilä's internal safety training video, "Safety starts with you", won the 2012 intermedia-globe Gold Award and the intermedia-globe Grand Award at the World Media Festival.

Wärtsilä Seals & Bearings Product Company UK was awarded an SC21 Bronze Award (Supply Chains for the 21st Century). The award was assessed on Manufacturing Excellence, Business Excellence, Customer Relationship Management, Certification, and Quality & Delivery.

A Wärtsilä built power plant, the LCEC Generation Plant in Lovington, New Mexico, USA, was listed as the Gas-Fired Top Plant Award Winner by POWER Magazine. Each year, POWER Magazine selects the most noteworthy gas-fired power plants worldwide to be designated Top Plants.

The Smart Power Generation web site was awarded a Lovie Awards silver medal in the Corporate Communications category. The web site was setup by Wärtsilä Power Plants to share information and offer a platform for discussions about the future of power systems and energy production, especially with regard to maximising the use of renewable energy.

Wärtsilä's stakeholder magazine Twentyfour7, won a silver prize for excellence in magazine design at the magazine publishing industry's Folio Awards competition.

## Creating economic added value

Wärtsilä's purpose is to create value for its various stakeholders. The focus is on profitability and raising shareholder value. Achieving this depends on our ability to satisfy the expectations of our other stakeholders as well. These include providing customers with high-quality and environmentally sound products, solutions and services, building long-term partnerships with suppliers, offering employees competitive compensation and working conditions and contributing to the well-being of the local communities in which we operate. Good economic performance establishes a platform for the other aspects of sustainability – environmental and social responsibility.

Despite the difficult conditions in the global economy, Wärtsilä has performed well. Supported by growth in Asia and good development in all the Businesses, Wärtsilä's full year net sales grew by 12% to EUR 4,725 million with profitability at 10.9%. Europe's share of net sales was 25%, Asia's 43%, the

Americas' 21% and others' 11%. Our long-term target is to grow faster than global GDP, and our operating profit margin (EBIT%) target is 14% at the peak of the cycle. Even at the trough of the cycle, our target is to keep the operating profit margin above 10%.

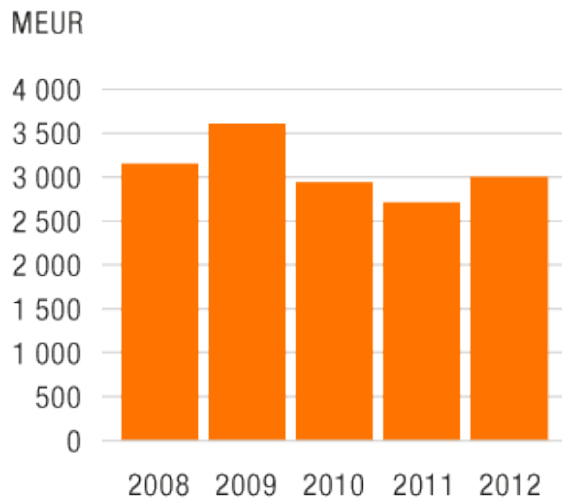
### Added value to Wärtsilä's stakeholders

MEUR		2012	2011	2010	2009	2008
Customers	Net sales	4 725	4 209	4 553	5 260	4 612
Suppliers	Cost of goods, materials and services purchased	-3 007	-2 694	-2 927	-3 593	-3 134
	Value added	1 717	1 514	1 626	1 667	1 479
Distribution of value added	Distributed to stakeholders					
Employees	Wages and salaries	887	770	773	735	693
Public sector	Taxes and social dues	317	322	326	337	288
Creditors	Net financial items	30	16	13	34	9
Shareholder	Dividends	197	178	271	173	148
Communities	Donations given	1	1	1	1	1
For business development		285	228	242	388	340

## Suppliers

Suppliers play a significant role in our delivery process. We aim to have close and excellent relationships with our key suppliers in order to ensure that both parties have a mutual understanding of and are able to respond to our strict process and product requirements. Apart from financial benefits, close relationships create added value for suppliers through the knowledge and development support we offer them, and at the same time Wärtsilä gains from the supplier competence. Successful relationships can also help a local supplier to expand internationally by becoming a part of our global supply chain. In 2012, the value of goods, materials and services purchased by Wärtsilä was EUR 3,007 million. Wärtsilä has more than 3,700 active suppliers, most of whom are located in Europe, where we have our main production units. We are also continuously investing in developing a strong supply chain network in Asia.

## Cost of all goods, materials and services purchased



## Employees

At the end of 2012, Wärtsilä had 18,887 employees worldwide. We also employed thousands of people indirectly through our supply chain. In order to be able to recruit competent and motivated people, we endeavour to offer employees competitive salaries, opportunities for continuous personal development and a good working environment. Developing employee skills and competences is of critical importance both for our business performance and for the development of our employees. Wages and salaries totalled EUR 887 million in 2012. This figure includes basic salaries as well as payments based on various profit sharing and incentive schemes, which cover some 60% of the total workforce.

### Pension cover

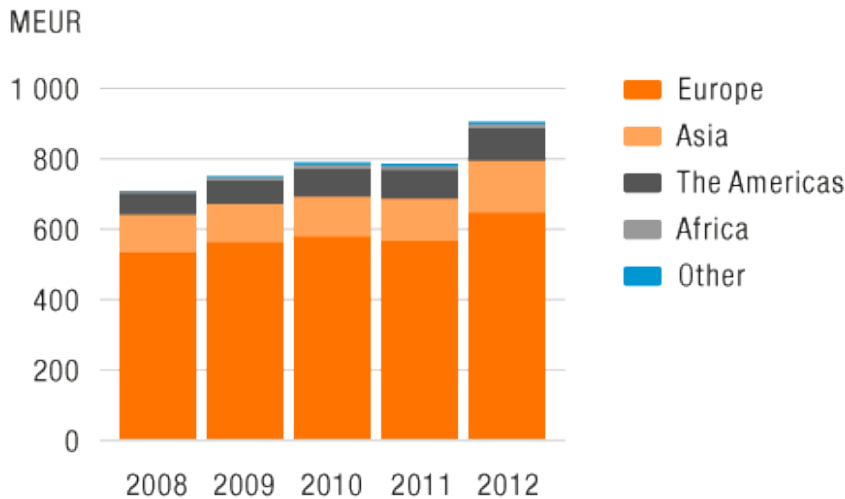
The pension cover is based on the legislation and agreements in force in each country. In Finland, most of the pension obligations are covered by the Employee Pensions system (TyEL). The largest defined benefit plans are used in the Netherlands, Switzerland and the United Kingdom. Most of these defined benefit pension plans are managed by pension funds, and their assets are not included in the Group's assets. Wärtsilä's subsidiaries make their payments to pension funds in accordance with the local legislation and practices in each country. Authorised actuaries in each country have performed the actuarial calculations required for the defined benefit plans. More information on the Group's pension obligations can be found in the Financial Review, [Note 21. Pension obligations](#).

### Wage levels

Wärtsilä applies and follows the local employment legislation in all countries and respects the local collective labour agreements, which often define the minimum wage levels. In addition, entry level salaries are benchmarked against the market references by function and educational qualification. Laws and regulations give the minimum level, but often the actual salaries exceed these levels. A total compensation package is tailored for each country on the basis of corporate rewarding guidelines and

local market practices. The base salary is set to meet market conditions, the demands of the job and individual competence and performance.

### Salaries and wages by market area



### Hiring principles

In principle, all open vacancies are published both externally and internally ensuring equal opportunity to apply to Wäertsilä positions. If there is no specific reason like a competence transfer need from other countries to hire expatriates to the position, local residents are hired. This principle also applies to senior management. Senior management includes global business and corporate management and local company management positions.

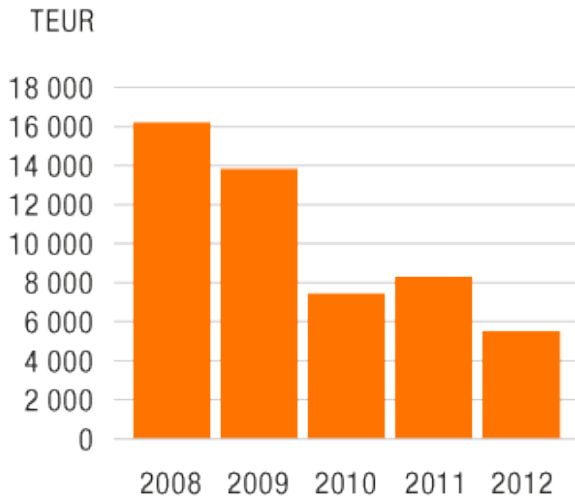
## Public sector

Wäertsilä pays various social dues and taxes to the governments of different countries. Income taxes and social dues in the financial period 2012 were EUR 317 million. The social costs for employees contribute to the funding of pensions, unemployment and other social benefits that provide security and improve the quality of life for the company's employees and their families.

Wäertsilä companies also receive subsidies from the public sector. The value of the subsidies received in 2012 was EUR 6 million, and they were among others related to R&D projects.

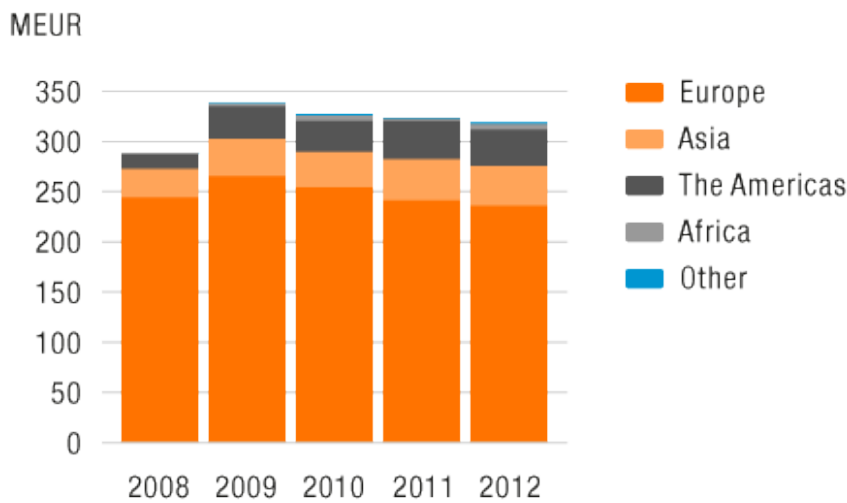


### Subsidies received from the public sector



The 2008 figure from 14 major Wärtsilä companies. The 2009-2012 figures from 15 major Wärtsilä companies and the parent company.

### Taxes and social costs by market area



## Creditors and shareholders

### Creditors

In 2012, Wärtsilä's net financial items totalled EUR -30 million. At the end of the year, Wärtsilä's net interest bearing debt amounted to EUR 567 million, the solvency ratio was 42.0% and gearing was 0.31.

### Shareholder value

Dividends totalling EUR 197 million are proposed to be paid to the company's shareholders. Our dividend policy is to pay a dividend equivalent to 50% of the operational earnings per share. The dividends paid per share are presented in the notes to the financial statements. At the end of 2012 earnings per share (EPS) was EUR 1.72 and Wärtsilä's market capitalisation was EUR 6,454 million.

## Community support

At the national level, we provide financial support for a number of national, cultural and social activities. The Board of Directors has supported activities focused on children and youth, nature conservation, national defence, disabled war veterans and medical and technical research. Wärtsilä's Board of Directors contributed altogether EUR 103,600 to these activities in 2012. Additionally, many Wärtsilä companies provide support to local organisations for similar activities in their countries of operation.

### Donations to good causes by the Board of Directors

TEUR	2012	2011	2010	2009	2008
Total	104	60	670	70	70

### Donations to local organisations<sup>1</sup>

TEUR	2012	2011	2010	2009	2008
Total	456	940	421	527	463

<sup>1</sup> The 2008 figures include the data from 14 major Wärtsilä companies. The 2009-2012 figures include the data from 15 major Wärtsilä companies and the parent company.

## Wärtsilä and emission trading

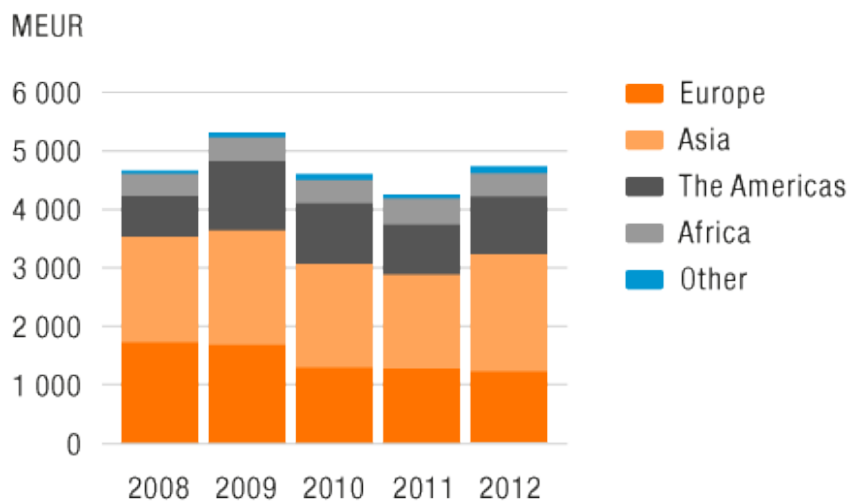
Wärtsilä Italia S.p.A is the only subsidiary that falls into the scope of the EU Emission Trading Scheme (ETS) because of the heating plant of the factory. The EU ETS has not had any impact on the company's profitability. Wärtsilä's response to climate change is to develop and provide products, solutions and services that enable our customers to reduce their greenhouse gas emissions. We also advise and support our customers in utilising the Kyoto Protocol's Flexibility Mechanisms (JI and CDM) in their power plant projects. More information about Wärtsilä's solutions for climate change can be found in the [Environmental Performance](#) section. The potential business risks related to climate

change and Wärtsilä's products are presented under the sustainability and climate change risks in the Risk Management chapter of the Governance review.

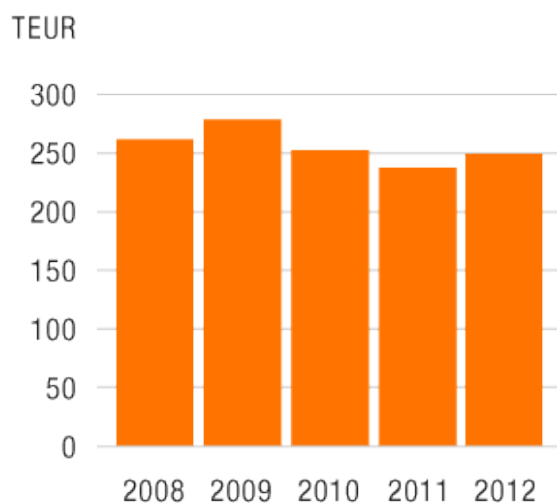
## Customers

Wärtsilä creates added value for its customers by providing products, solutions and services that fulfil their needs and expectations. The development of high-quality, reliable and environmentally sound solutions and services depends on long-term collaboration and continuous interaction with customers. We provide our customers with service throughout the product lifecycle, thus ensuring optimal performance during the product's lifetime. The modernisation of installed products can also extend their service life.

### Net sales by market area



### Net sales/employee



## Environmental performance

The environment is the key element in Wärtsilä's approach to sustainability. For us, environmental responsibility has two dimensions: products and operations. Most of our efforts to improve our environmental performance, also within our operations, are conducted as part of product development and improvement. This work is supported by operational measures, which are based on achieving high environmental standards and continuous improvement.

To continually improve environmental performance within the company's operations requires the organisation to constantly work in a systematic way. This work is guided by our strategy and its environmental targets, the Code of Conduct and the company's policies relating to Quality, Environmental, Health and Safety, and it is co-ordinated and monitored by the EHS Management team and the Quality Board. In developing our operations, processes and products, we endeavour to use the latest technologies available for improving efficiency in areas such as material and energy consumption as well as for reducing and managing emissions and waste.

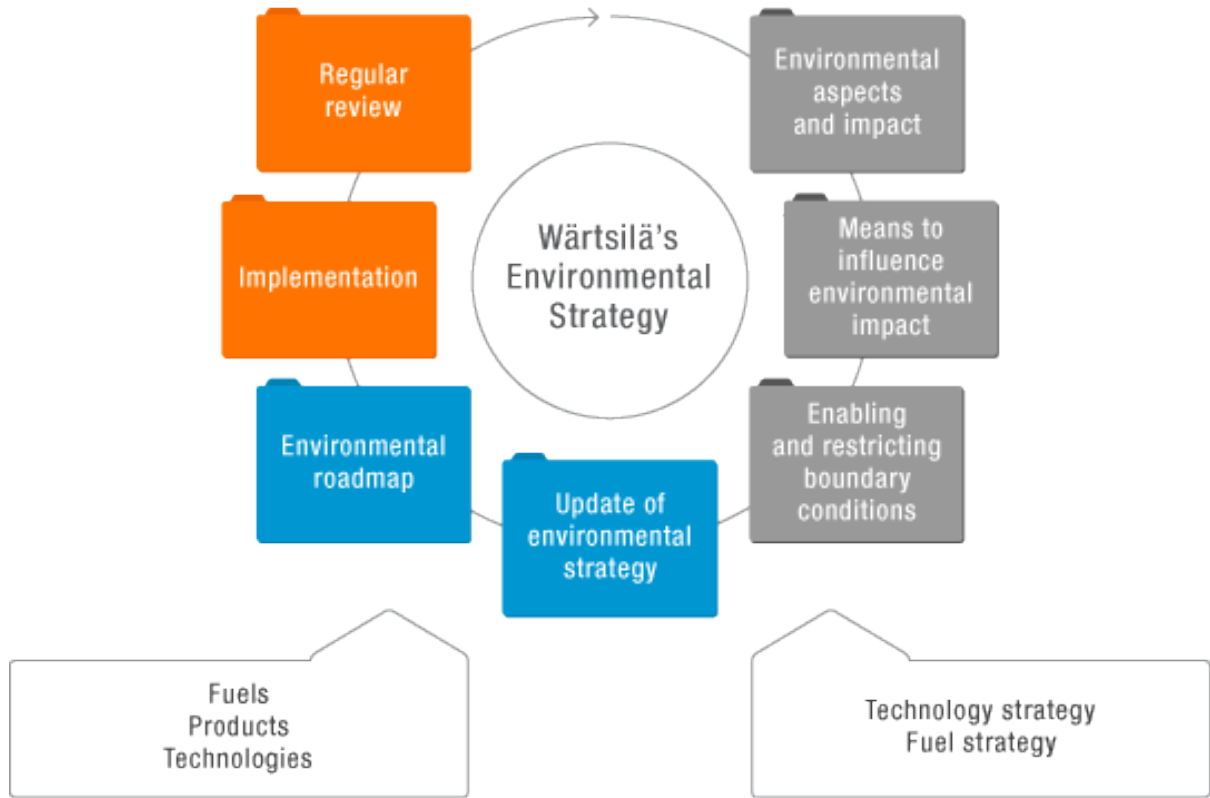
Wärtsilä has defined a process for the development of a product environmental strategy and its targets. The process includes the identification of aspects and impacts of the products, the means to influence these impacts, the identification of enabling and restricting boundary conditions and the analyses of the information and the preparation and implementation of the strategy and the targets.

Wärtsilä continuously develops and improves its operations and products with the help of certified environmental management systems. Our principle is to apply the certified EHS (Environmental, Health and Safety) management systems based on ISO 14001 and OHSAS 18001 in all Group companies, excluding those companies focusing purely on sales. These units are required to apply Wärtsilä's internal EHS model. Our EHS management systems cover all the operations of our subsidiaries, which means that we are able to promote environmental protection and reduce adverse impacts on a wide front.

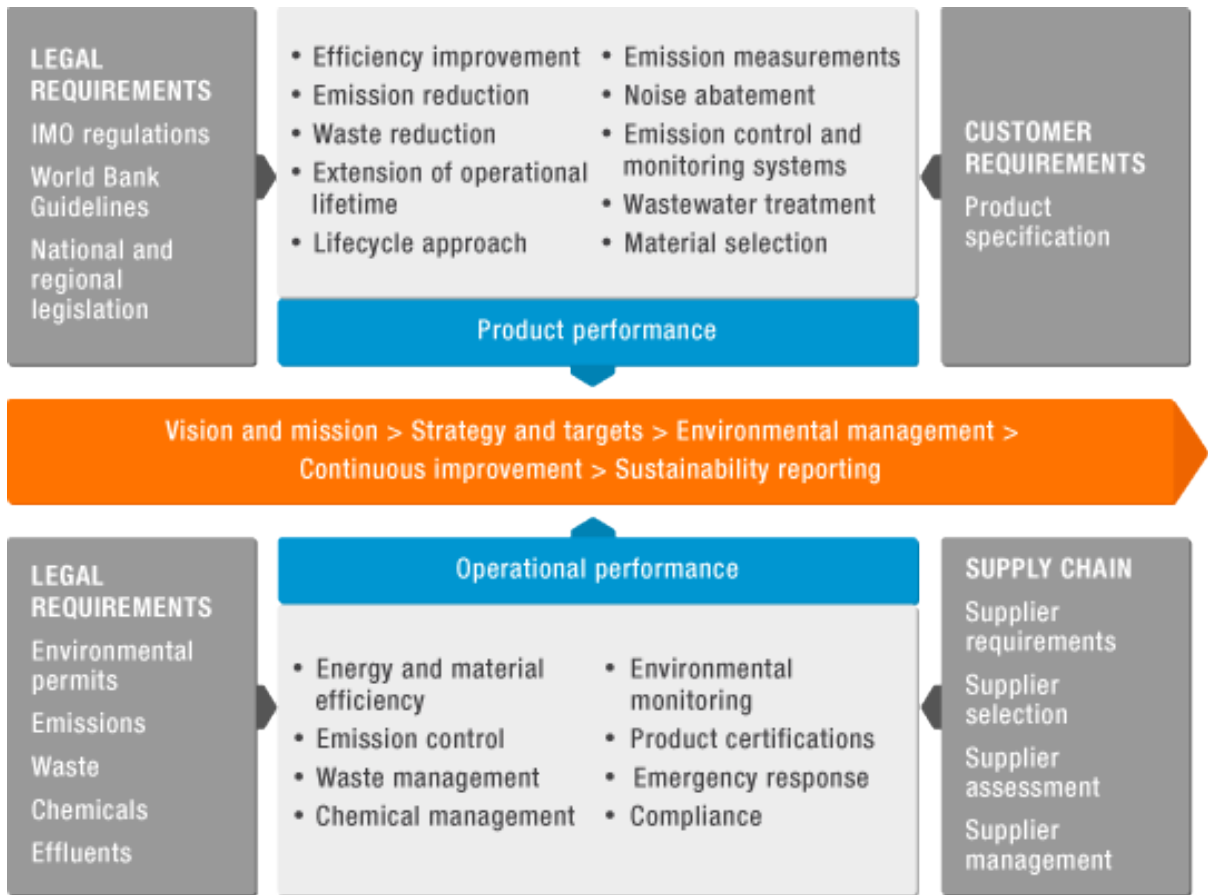
The company's EHS management system focuses especially on complying with legal requirements, identifying and reducing environmental aspects, impacts and risks, training personnel and clearly defining their responsibilities, full documentation of activities and procedures, action in emergencies and continuous improvement of environmental performance. The company's subsidiaries set their own targets covering significant environmental aspects of their operations and monitor the overall performance of the management systems. At the end of 2012, 41 Wärtsilä companies operated with a certified environmental management system. These certified environmental management systems cover roughly 90% of Wärtsilä's total workforce.

Wärtsilä's environmental strategy – a continuous process

- Identification phase
- Planning phase
- Execution and monitoring



### Environmental management in Wärtsilä



## Wärtsilä's targets for reducing GHG and other emissions

Target	Schedule	Status
To reduce energy consumption by at least 10% in terms of absolute consumption (GWh) by 2016 compared to mean energy consumption in 2005.	2016	The second phase of the Wärtsilä energy audit scheme continued in 2012. Energy audits were conducted in France, Norway, Singapore, the Netherlands and the UK. The energy audits identify the savings potential and measures to improve energy efficiency. During 2012, Wärtsilä started to conduct energy reviews for identifying energy saving potential for companies outside the audit scope. The timeframe for the rollout of energy reviews is 2012-2014. Energy saving actions are monitored on an annual basis. By 2012, energy savings of 19.9 GWh have been reached, which represents about 42% of the final target.

<p>To create solutions for enabling small-scale LNG to replace liquid fuel infrastructure.</p>	<p>2015</p>	<p>Wärtsilä Oil and Gas (Hamworthy Asker) delivered several regasification units to land and floating import terminals, FSRUs. By combining the technology of Wärtsilä Oil and Gas and the company's CHP know-how, we are now able to offer a fully integrated LNG receiving terminal and power plant solution. The integration of regasification, boil-off gas handling, and power and heat generation creates a unique combination offering superior economy and high efficiency.</p> <p>Examples of Hamworthy's competence areas are the following delivered plants; the small scale liquefaction plant delivered to Sköldvik (Gasum) in 2010 and the medium scale LNG plant delivered to Kollnes (Gasnor) in 2007.</p> <p>An ongoing project is a biogas liquefaction plant to produce biofuel for busses in Oslo. The plant can replace diesel in up to 135 busses, and reduce CO<sub>2</sub> emissions by 10,000 tonnes a year.</p>
<p>To enable emission reductions through gas conversion projects.</p>	<p>2015</p>	<p>Since 2004, Wärtsilä has performed gas conversions for more than 20 power plants and one marine installation, totaling 780 MW.</p> <p>During 2012 Wärtsilä has handed over one power plant gas conversion for 110 MW and has two power plant gas conversions under work, totaling 75 MW.</p>
<p>To increase total net electrical efficiency in simple and combined cycle power plants in cyclic operations.</p>	<p>2015</p>	<p>Wärtsilä has continued developing fast starting and stopping capabilities of engines. Significant improvements in both starting and stopping times have been reached, thus also increasing the cyclic efficiency of the power plants, both in simple and combined cycle mode.</p> <p>Wärtsilä has also developed concepts for minimising the environmental impact depending on the amount of operating cycles per year. This has been achieved by minimising the stand by energy consumption through the utilisation of new technologies and improved engine control systems.</p> <p>Furthermore, major developments have been achieved in ramp up and ramp down rates, enabling optimal fuel economy at transient loads and maximum revenues from reserve markets.</p>
<p>To influence in developing dynamic power markets in order to enable wide scale renewable integration.</p>	<p>2015</p>	<p>Wärtsilä has participated in many studies which have assessed the value of flexibility for the power systems. Wärtsilä has also assessed various power market models and their ability to secure adequate flexibility in the power systems. Wärtsilä has conducted an active dialogue with various stakeholders concerning dynamic power markets.</p>



To enable the reduction of power losses by 3-5% in electrical propulsion using medium voltage system.	2015	The development of a solution is on track. The solution is targeted to be available for customer deliveries in early 2014.
To develop performance management solutions for different vessel types enabling better efficiency of the plant.	2012	Wärtsilä 3C is available for customers.  An optimiser platform is also available and in the pilot phase. Optimiser platforms enable vessel data availability onshore. Propulsion efficiency measurement is available. Econometer is available. The system gives guidance for the optimum use of power plant over the voyage. Trim optimisation is available in connection with 3C.
To develop 10 new Wärtsilä Optimiser solutions enabling customer to optimise the life-cycle performance.	2015	Phase I development was completed Q3/2012 and commercial roll-out starts in the first quarter of 2013. There are several solutions developed already that enable OPEX savings, as well as solutions that enhance Wärtsilä's CBM capabilities and usability enhancements for the operators.
To reduce GHG emissions by 3% through improving the engine efficiency.	2015	Technology under development and first concept studies show positive trends.
To expand the gas portfolio.	2015	First deliveries of LNGPac to newbuilding (Viking Grace). Design available for LNGPac using containers. LNGPac sold to 6 installations.
To stimulate growth for LNG-fuelled OSV's.	2015	Wärtsilä was awarded a contract to supply liquefied natural gas (LNG) propulsion equipment for three advanced offshore supply vessels. These vessels will operate in the Gulf of Mexico.  Wärtsilä was contracted to supply ship design and integrated machinery solutions for two advanced offshore supply vessels operating on LNG in the North Sea.  In all of these five orders for LNG powered OSVs, Wärtsilä will supply the LNG storage tank and gas handling system. Through the acquisition of Hamworthy, Wärtsilä significantly strengthened its capabilities in this area.
To expand the field of LNG applications beyond present vessel types and to facilitate LNG re-engining.	2015	Solutions sold to 5 new gas fuelled vessel types.  Wärtsilä was awarded the following contracts - DF engine for a 200 gross tonnage Guideship to Korea - A complete propulsion package for LNG carrier, which will mainly operate in North Sea and Baltic Sea - The first LNG powered tugs to operate coastline of China - DF engines for OPV (Navy), the vessel will operate in Baltic Sea.  DF engines to an inland waterway vessel, which will operate on inland waterways in Netherlands, Germany, Switzerland, Belgium and France

To deliver environmental and energy efficiency consultancy projects: 10 projects.	2015	<p>During 2012 Wärtsilä has focused mostly on consultancy projects related to reduction of air and water pollution. In practice Wärtsilä has delivered around 7 consultancy projects.</p> <p>Typically the consultancy activity consists of the following: a ship onboard inspection; proposal of technologies and specific configurations to achieve the desired emission reduction; economical calculations; drawings and schematics illustrating the necessary ship modifications and the principles of installations of the equipment onboard the vessel.</p>
---	------	---

In addition to the targets presented above, Wärtsilä has set internal sales targets for its environmental products.

### Wärtsilä's targets for reducing the emissions to the water

Target	Schedule	Status
To develop further the dry concepts for high-efficiency combined cycle solutions.	2015	The dry concepts for high efficiency combined cycle solutions have been developed with promising results. As a consequence of the extensive development work also a patent application has been filed. The main drivers for the solution are to minimise the environmental impact, both in terms of fuel and water savings. The new solution is, due to its common cooling system for the entire plant, extremely flexible and highly efficient, especially at part loads, and has minimum impact from varying ambient conditions.

### Wärtsilä's targets for improving the overall performance

Target	Schedule	Status
To provide a Green Passport for all Ship Power products.	2012	The target has been reached in 2011. Wärtsilä is capable of delivering a Green Passport for all of its portfolio products.
To conduct 3 life-cycle assessments.	2015	The potential product categories for the life-cycle assessment were reviewed. First life cycle assessment starts in 2013.

## Wärtsilä Quality, Environmental and Health & Safety Policy

We provide lifecycle power solutions and services which meet or exceed our customers and other stakeholders' expectations being:

- Reliable and safe
- Efficient and Environmentally sound
- Compliant with the applicable legal requirements and regulations

We continually improve our performance and reduce adverse environmental impact, through objectives set by management, to satisfy our customers and other stakeholders.

Our business premises provide a safe and healthy working environment for our employees and partners.

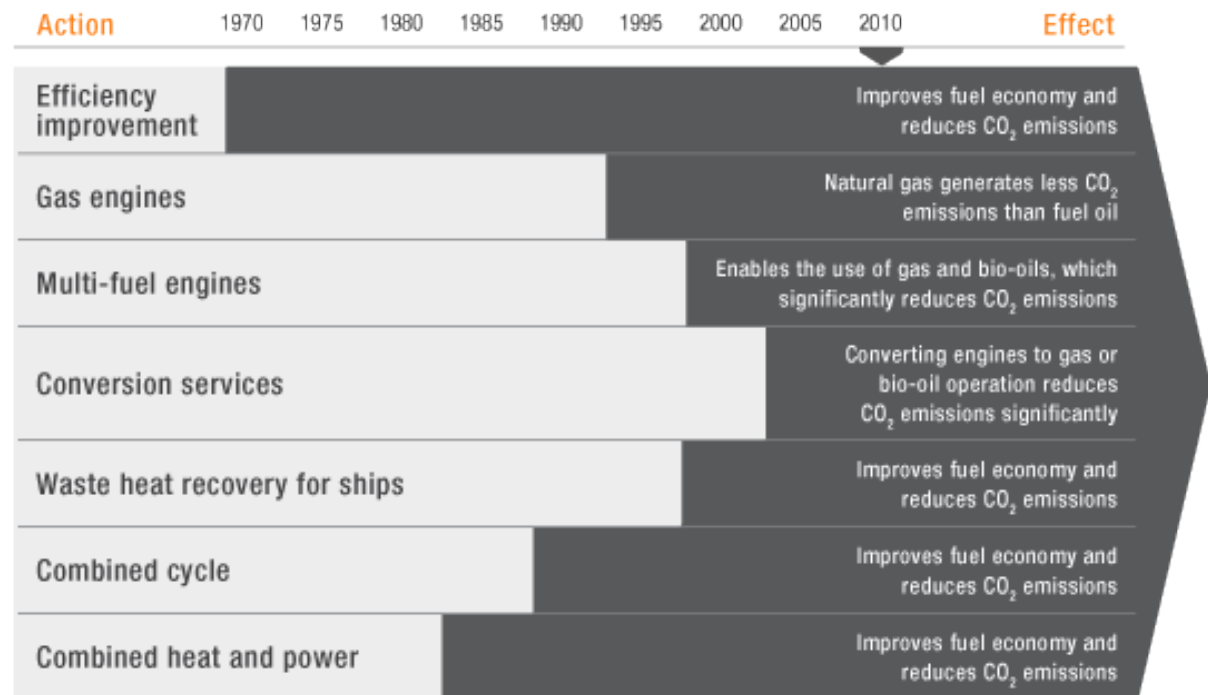
Our skilled organisation acts as a responsible global citizen.

Approved by Wärtsilä Board of Management 15.3.2012.

## Solutions for greenhouse gas emissions reduction

Wärtsilä has developed various solutions to assist in reducing greenhouse gases (GHG). As a result of our long-term development work, we have managed to develop a range of engines that feature both high efficiency and low emissions. Wärtsilä's technologies and solutions provide various alternatives to reduce the climate change impact.

## Wärtsilä's actions to reduce greenhouse gas emissions



### Engine efficiency improvement

High efficiency is important in the control of climate change, and with low emissions our products meet the various environmental regulations. The efficiency of Wärtsilä diesel and gas engines ranges between 42-52%, depending on the engine type.

### Gas and multifuel engines

The Wärtsilä dual-fuel (DF) engine is another innovation that has a significant effect on controlling climate change. Thanks to the technology developed by Wärtsilä, our customers can flexibly employ the same engine using various fuels. This also makes it possible to reduce the impact on the environment.

DF engines are used in power plants and for powering a wide range of different kind of vessels. This single solution means that the total CO<sub>2</sub> emissions from all our current customers' LNG-carrier applications will be reduced by several millions of tons, when compared to traditional gas transportation. At the same time, the availability of gas will be improved and the environmental impacts of gas transportation will be reduced. For other applications an efficient way to reduce CO<sub>2</sub> emissions are the use of biofuels. Wärtsilä engines adapted for biofuel are today in operation both in land based power plants and as main engines in marine applications.

### Modernisations and conversion services

Wärtsilä applies new technologies also to its existing products, which makes it possible to further reduce their environmental impact. With the help of our service products, we can improve the efficiency of older engines and reduce their emissions to the same level as those of our newer products. Slow steaming packages for vessels are available to meet the new power demand originating from reduced service speeds. We also convert oil-fuelled engines for gas or biofuel use.

## Waste heat recovery for ships

In addition to waste heat recovery systems Wärtsilä has also introduced a Boosting Energy Efficiency catalogue, which contains more than 50 different efficiency improvement actions for saving energy in ships. Please visit [www.wartsila.com](http://www.wartsila.com) for a more complete view of the solutions introduced in this catalogue.

## Environmentally advanced vessel solutions

The new Wärtsilä Gas Platform Supply Vessel (PSV) design represents a state-of-the-art vessel featuring outstanding energy efficiency, a unique hull form, fuel flexibility and outstanding vessel performance in areas such as fuel economy and cargo capacity. This is a unique configuration of the gas electric propulsion system based on a combination of the Low Loss Concept for Electric Propulsion and the wide range of DF engines. Wärtsilä's ability to offer total concept solutions that include the design of the vessel, the propulsion plant, electric & automation and a host of fuel saving and environmentally sustainable options has given the company a notable competitive edge - particularly in the area of speciality vessels such as Gas PSVs.

## Innovative design solutions for flare gas utilisation

Wärtsilä delivers innovative flare gas ignition and flare gas recovery systems for the oil and gas industry enabling flares to be completely put out saving the environment for emissions of greenhouse gases and other pollutants related to flaring.

Wärtsilä has developed an integrated solution for flare gas utilisation, based on our proven flare gas ignition and recovery systems and the new GasReformer. This solution transforms flare gas into a composition that enables its use for fuel gas in gas engines and feed gas to LNG plants.

With current installations, Wärtsilä's flare gas recovery solutions reduce the global CO<sub>2</sub> emissions of about 1 million ton per annum which is equivalent to approximately 250,000 cars. As of today, the total reduction in the emissions of greenhouse gases from our flare gas recovery systems is about 5 million tons.

## Innovative design solutions to enable reductions of atmospheric emissions of volatile organic compounds from offshore oil installations

Wärtsilä delivers systems that eliminate the release of hydrocarbon vapors to the atmosphere by an innovative solution replacing the tank vapor atmosphere with a recycled hydrocarbon atmosphere. While normally tank vapor atmosphere is a mixture of hydrocarbons and flue gases, removing flue gases enables recycling of the atmosphere and thus the tanks are venting to a closed system. With current installations, Wärtsilä's hydrocarbon blanketing solutions are annually eliminating a loss of 500,000 barrels of oil equivalents being released to the atmosphere.

## Combined cycle

Many steam combined cycle diesel engine plants have been delivered during the recent years. Today, the focus is strongly on introducing high-efficiency gas engine combined cycle solutions, specifically intended for plant sizes of several hundred megawatts.

## Combined heat and power

Combined heat and power plants (CHP) cover various types of recovery and utilisation of heat energy, in addition to electricity generation. The energy can be utilised as heat, such as hot water or steam, or as cooling by means of chillers. The most recent step is an exhaust gas driven chiller, which is believed to offer a cost-competitive CHP solution for various market areas.

Solution	Power (MW)	Fuel	Annual CO <sub>2</sub> reductions (t)	Reference technology and fuel
Single cycle engine power plant	50	HFO	58 871	Boiler plant/Coal
Single cycle engine power plant	50	HFO	43 687	Gas turbine /LFO
Single cycle engine power plant	50	Gas	26 342	Single cycle gas turbine/Gas
CHP engine plant (total eff. 90%)	30 + 30 (Heat)	Gas	83 552	Boiler plant/Coal (El.) + Boiler plant/LFO (Heat)
DF engines in LNG carriers	40	Gas	41 000	Steam boiler
LNG cruise ship	68	Gas	43 000	Cruise ship/HFO
Gas engine conversion	50	Gas	57 200	Diesel engine/HFO

As the industry forerunner, Wärtsilä has a responsibility to develop and supply advanced solutions that enable the environmental impact of its customers to be reduced. This is Wärtsilä's main role in the combat against climate change.

## Towards more sustainable solutions

Our most important contribution to sustainability is to supply environmentally sound solutions and services, which enable our customers to develop their business in a sustainable way. This requires us to continuously invest in technology development and in an ongoing search for new more efficient and environmentally sound solutions.

Investing in research and product development benefits Wärtsilä's customers as well as the environment, both in the short-term and over a longer time span. The growth in the world's energy needs, combined with increasingly stringent environmental requirements and the scarcity of natural resources create a challenging operating climate for companies in Wärtsilä's line of business. Wärtsilä has responded to these challenges by improving the energy efficiency of its products while simultaneously reducing their emissions.

Wärtsilä gives strong priority to developing and applying technologies that reduce the environmental impacts of its products. In order to meet the needs of our customers, to be prepared for future requirements and to remain an industrial frontrunner, Wärtsilä's product development must be at all times innovative, determined and willing to explore new technologies. We strive to develop environmentally sound products and solutions across a wide front, including technologies related to

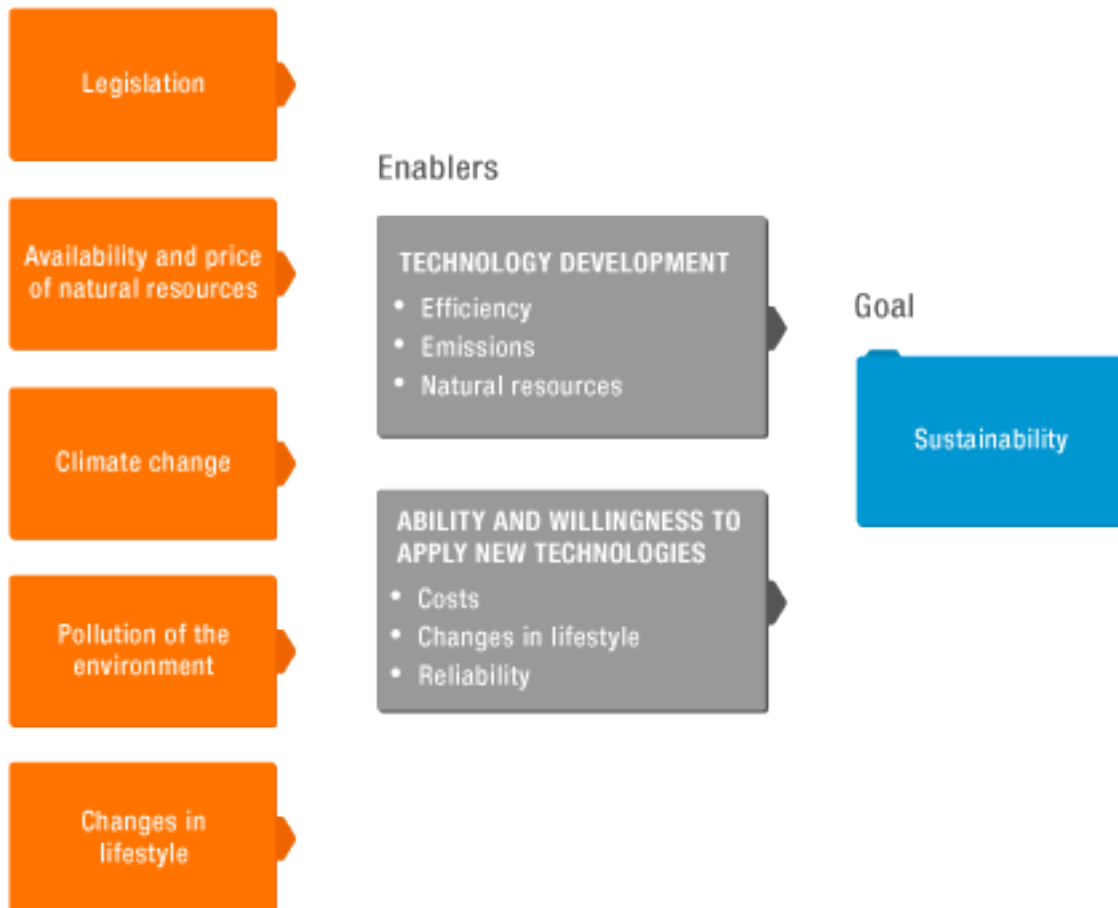
efficiency improvement, the reduction of gaseous and liquid emissions, waste reduction, noise abatement as well as effluent and ballast water treatment. With a proactive approach to meeting future demands, Wärtsilä has developed both primary and secondary abatement technologies and broadened the range of usable fuels.

### Key features of Wärtsilä's environmentally sound solutions include:

- Reliability, safety and long lifetime
- Solutions to reduce emissions
- Alternatives to heavy fuel oil
- Flexibility in fuel use
- Solutions to maximise efficiency with lowest lifecycle cost
- Solutions to minimise water consumption
- Optimisation of vessel design and operations

### The drivers of sustainable development

#### Drivers for change





## Legislation and initiatives

The environmental requirements concerning Wärtsilä's products are set at the international level mainly by the International Maritime Organization (IMO), the UNECE (United Nations Economic Commission for Europe) and the World Bank. In the stationary field of national and regional regulations, such as those of the U.S. EPA, the European Union, Germany, Japan and India are considered important for our products.

The IMO regulates emissions of nitrogen oxides from ship engines and the sulphur content of the fuel, as well as ballast water treatment, with continuously tightening requirements entering into force when member states ratifies the regulations. The World Bank/International Finance Corporation (IFC) has published the Thermal Power Plants' EHS (Environmental Health and Safety) Guidelines, which are technical reference documents with general and industry-specific examples of Good International Industry Practices based on the IFC's environmental and social standards. The EHS Guidelines are today the minimum environmental standard in global power plant projects, and are adhered to in most finance activities for projects in emerging markets. The EU Industrial Emissions Directive has been approved by the European Parliament and entered into force at the beginning of 2011.

Wärtsilä actively monitors legislative initiatives and changes in environmental legislation to ensure the company's ability to respond appropriately to future operating limitations. Wärtsilä's R&D activities follow the requirements of the changing operating environment, developing products that give the company a competitive edge.

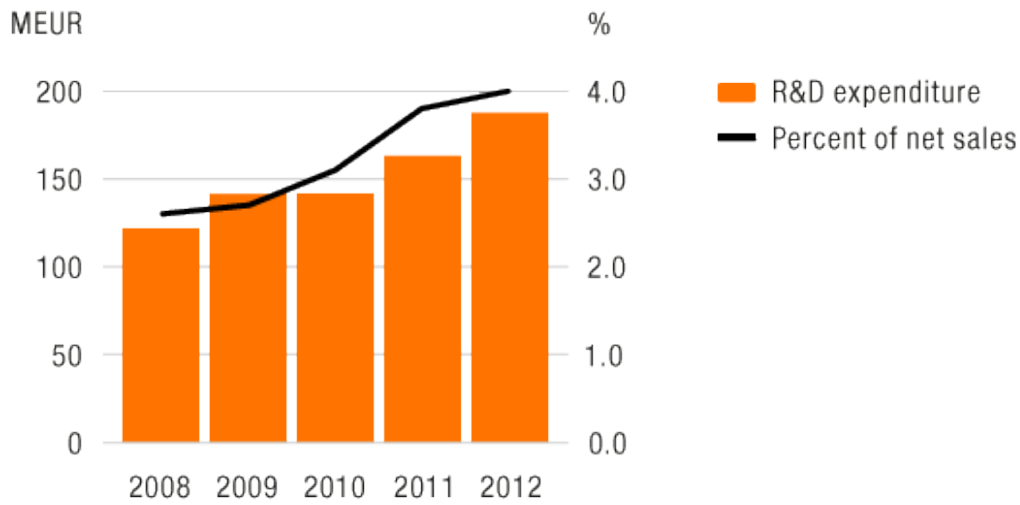
## Wärtsilä's R&D focus

Wärtsilä continuously strives for technology leadership. This is achieved by developing reliable, efficient, and cost-competitive technologies and products based on customer needs and combined with innovative technologies. Wärtsilä's R&D activities are focused on technologies, products, and solutions that are fuel-efficient, reliable, safe, self-diagnostic, cost-efficient to operate, and that produce minimal environmental impacts throughout their lifecycles. At Wärtsilä, we protect innovation through close attention to Intellectual Asset Management, while key competences are maintained in-house to ensure that they are competitive. We build networks and clusters to acquire key competences and capacity by committing to long-term relationships with suppliers, engineering companies, university partners, and licensees and other OEMs (Original Engine Manufacturers). Resources are dedicated and invested into simulation and virtual validation, as well as testing and validation, and we actively develop product platform concepts and design products that are easy to manufacture and service. A substantial proportion of the company's investments in product development are targeted at reducing environmental impacts.

### R&D Costs

MEUR	2012	2011	2010	2009	2008
	188	162	141	141	121

### Research and development expenditure

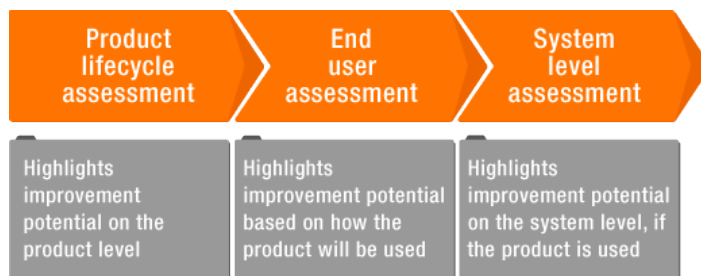


## Lifecycle approach

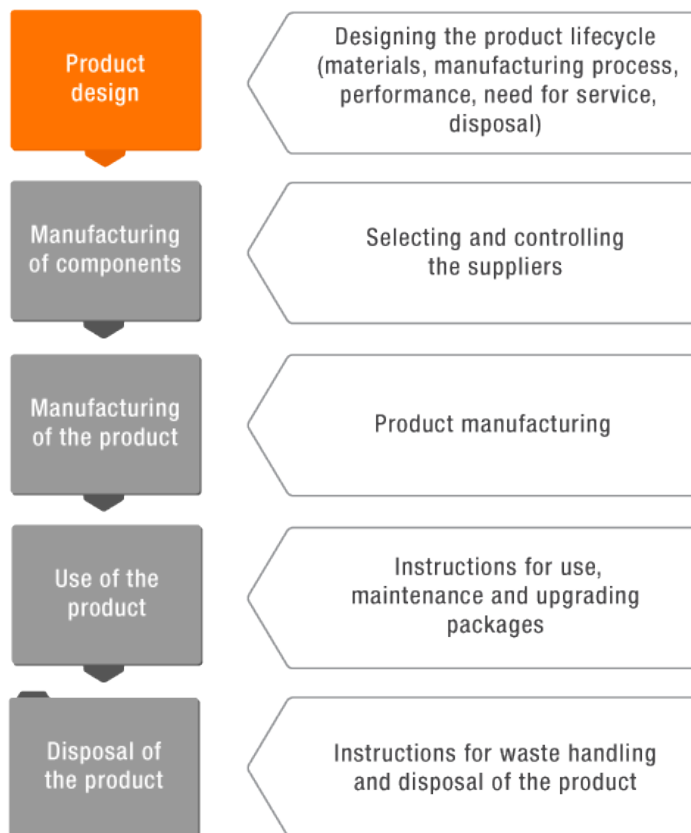
Since Wärtsilä's products have such a long operational life, identifying their lifecycle impacts is essential for understanding their total environmental impact. Based on the results of these lifecycle assessments, the majority of the environmental impacts of a diesel engine arise during the operation of the engine. These derive from the exhaust emissions and from the fuel supply chain relating to its operation. Wärtsilä manages the lifecycle of its products through product design, careful selection of suppliers, production methods, optimising transportation, maintenance and repair during the products' operational lifetime and by training and advising customers in using products and systems in the most efficient way. Wärtsilä offers service agreements and introduces products that help customers to optimise their operations. Furthermore, Wärtsilä actively supports customers in selecting suitable solutions in the early phase of projects.

In addition to lifecycle assessments, Wärtsilä has also utilised other assessment levels, such as end-user and system level assessments, in order to identify the improvement potential of existing technologies in new application areas and the development needs for the solutions offered.

### Multilevel assessment approach



## Environmental impacts – product lifecycle



## Ensuring reliability and safety

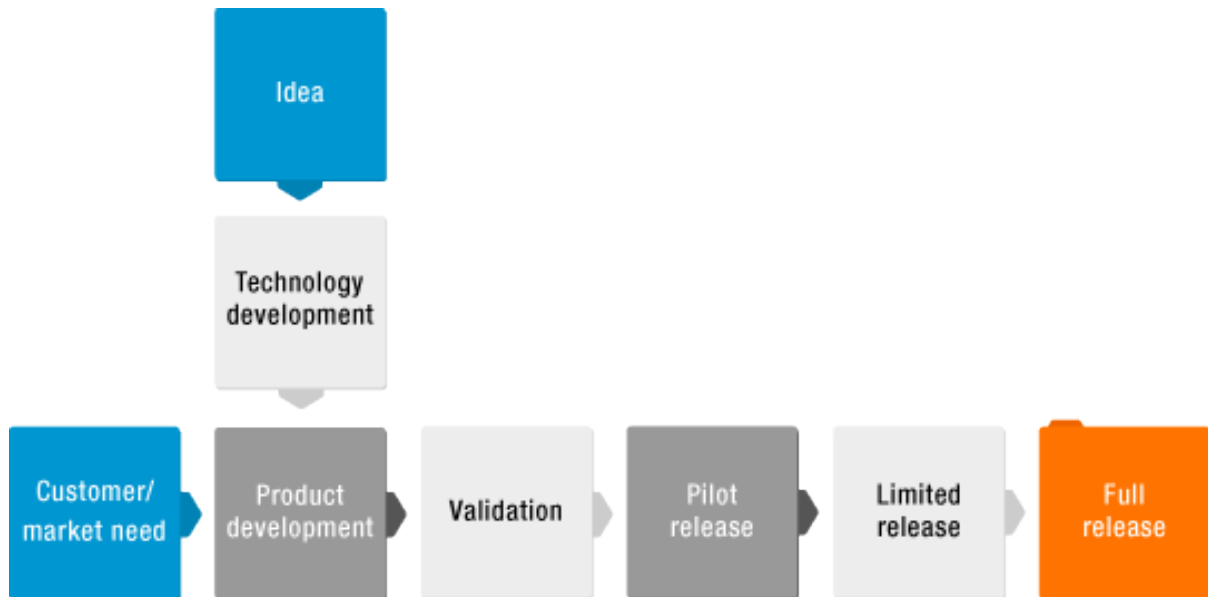
The long operational lifetime and the application of Wärtsilä products highlight the importance of reliability and safety. Wärtsilä's development process is geared to ensuring the reliability and safety features of the end product, and extensive validation and testing programmes are undertaken before the product is fully released. New technologies are validated before they are introduced in products. Validation is done with partners in existing installations.

By focusing on the initial stages of the development process, the development time for new solutions can be reduced without compromising the emphasis on reliability and safety. Individual components are validated during their design by using advanced calculations and simulation tools. This method enables Wärtsilä to identify areas of improvement at an early stage in the process, thereby reducing the amount of component testing needed. The actual component and technology testing allows a speedy validation of the systems, which results in faster development and market introduction for new products.

In always seeking newer and better solutions, Wärtsilä is able to perform validation testing on existing installations in co-operation with its customers. The customer benefits by getting the first insight into new technologies, while Wärtsilä gains long-term experience under controlled conditions. A typical field installation operates for 6,000 hours per year.

When the product has successfully passed all the process steps and its performance meets Wärtsilä's high standards, it can be brought to the market.

### Product development process



## Improving efficiency

Energy efficiency has always been a priority for Wärtsilä, and remarkable gains in the efficiency of our products and solutions have been achieved over the years. For example, a peaking efficiency of 52% for the best engines is one of the highest efficiency ratings among existing prime movers. However, improving the efficiency of a single component does not necessarily guarantee the best overall outcome. For instance, more can be achieved through comprehensive ship design, systems integration and machinery optimisation. Similarly, in power plants, by combining various technologies an overall efficiency rating of 90% is possible.

### Total ship efficiency

Improving total ship efficiency reduces lifecycle costs and emissions. By combining our knowledge of automation, machinery, propulsion and the control of them with an optimised ship design into a single integrated solution, a truly efficient ship operation can be achieved. From a long-term perspective, the potential for improving energy efficiency has been estimated to be 30-50%. This will be achieved by optimising component performance, ship design, waste heat recovery and the recovery of other losses, weather and voyage routing and by taking advantage of potential new technologies.

The efficiency of the ship can be improved also by using concepts, such as:

- the Low Loss Concept, which reduces the losses in the electrical power train by 30-50%
- optimisation of the hull design

Several joint development programmes with customers are currently ongoing and aimed at significantly reducing their operating costs.

System integration enables efficiency improvements, while customers benefit from having proven solutions from a single supplier. With lifecycle support yards can better optimise their building schedules and owners get proven solutions that are easier to manage.

## Engine efficiency

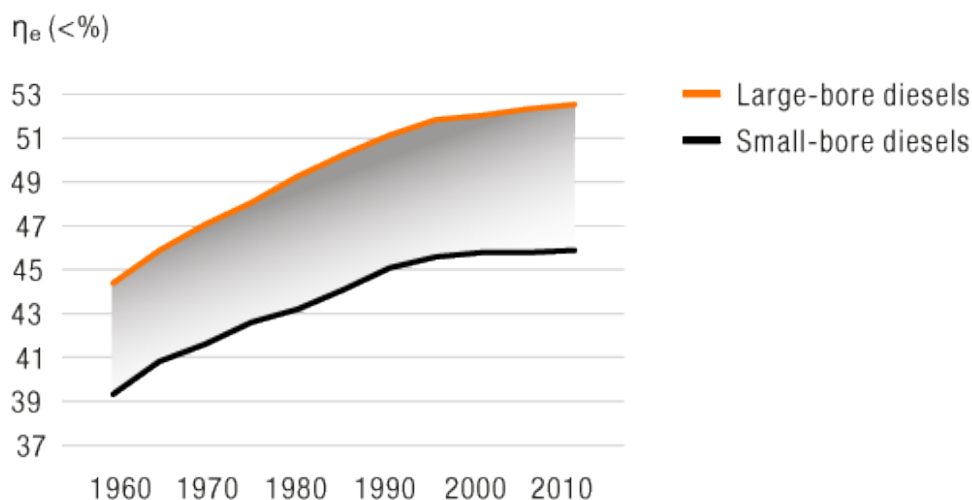
Engine efficiency has always been high on our agenda. However, the improvement of efficiency is becoming more challenging by the day as the emissions requirements become increasingly stringent. Amongst the reasons for our success in this field, integrated engine functionalities that enable low emissions and high engine efficiency have been a major factor. Air and fuel admissions are controlled by an automated system that provides optimal combustion under all operative conditions.

Wärtsilä's extensive experience in component design has led to the development of combustion chambers capable of withstanding higher cylinder pressures and temperatures. This contributes to engine efficiency directly and positively.

Wärtsilä has several ongoing programmes aimed at ensuring the high efficiency of its engines, at the same time significantly reducing their emissions. Development of innovative technologies, for example two-stage turbocharging, is an important part of achieving our goals.

### Wärtsilä engine fuel efficiency development

The amount of fuel energy content, which an engine is able to turn into useful power.



Wärtsilä marine diesel engines 1960-2010  $\eta_e$  for production engines, 5% tolerance.

## Heat recovery and energy conversion improvements

The utilisation of fuel energy can be further improved by using heat recovery concepts and secondary cycles. Steam-based combined cycles are applied widely in diesel engine applications and are expected to gain a foothold also in bigger gas engine plants. Further improvements can be expected by designing engines for secondary cycles.

## Propeller efficiency upgrades

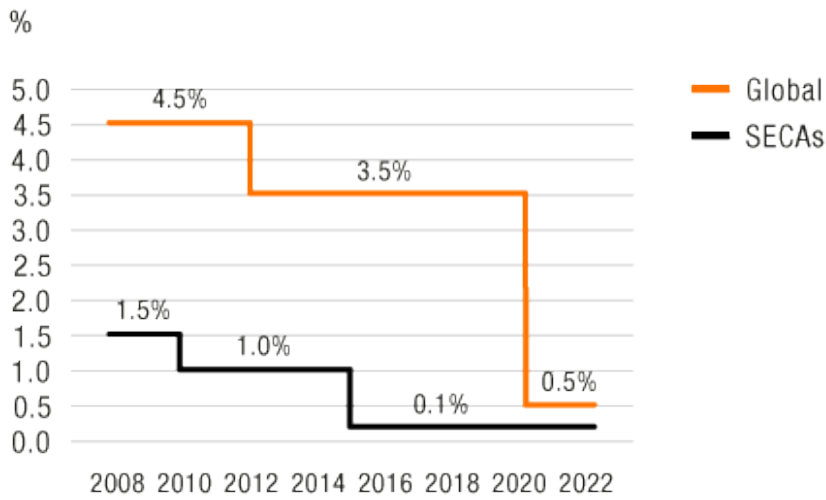
The propeller's efficiency, amongst other parameters, is an important consideration for achieving economic sailing. Fouling, surface roughening and leading edge damage to the propeller, when in service, can result in efficiency losses of 3-7%. Also, by replacing outdated existing propellers with new ones designed based on the latest knowledge, propeller designs and operating profile of the vessel, significant savings with short payback periods can be achieved. For ships such as oil tankers and container vessels with annual fuel costs exceeding EUR 5 million, propulsion degradation can easily cost several hundred thousands of euros a year. The results of ongoing projects investigating the efficiency loss of propellers in service will be the performance based maintenance of a ship's propeller and will thus increase the vessel's overall efficiency throughout its lifecycle.

## Reducing sulphur dioxide emissions

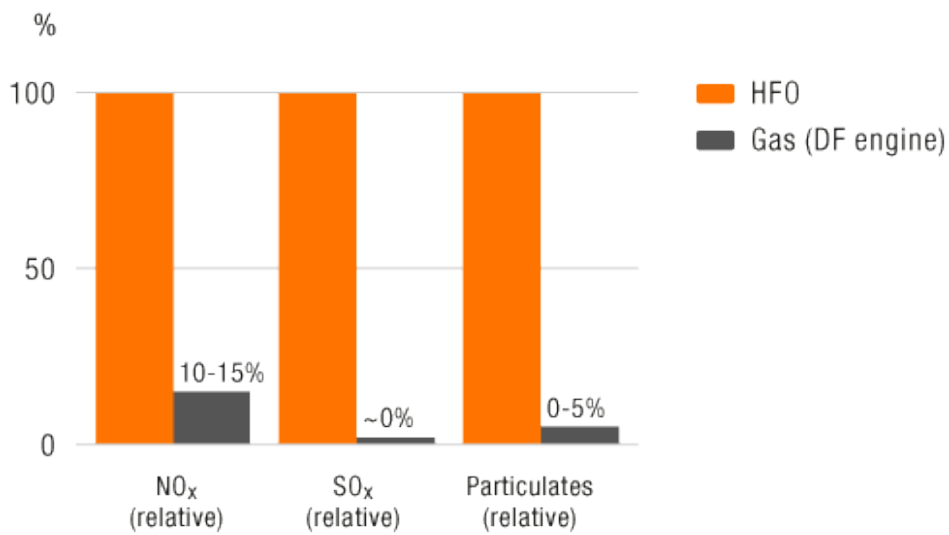
Marine sulphur emissions can be reduced in three different ways: by decreasing the sulphur content of the fuel used, by removing sulphur from the exhaust gas or by changing fuel, for example by starting to use natural gas.

Several methods can be used for de-sulphurizing exhaust gases. Wet scrubbing is an obvious alternative for ships, as the scrubbing medium is readily available. With the acquisition of Hamworthy, Wärtsilä has broadened the product portfolio to also include open-loop and hybrid systems. Hamworthy brings 50 years of experience in scrubbing applications for Inert Gas Systems, and the most extensive reference list on Exhaust Gas Cleaning Systems. As the only maker with a full-scale test facility, Wärtsilä is committed to refining the current designs, as well as developing new solutions. Current work is focused on validating the hybrid designs and development of a new generation scrubber aimed mainly at the Cruise & Ferry market where space is at a premium.

Emission legislation – IMO fuel sulphur cap

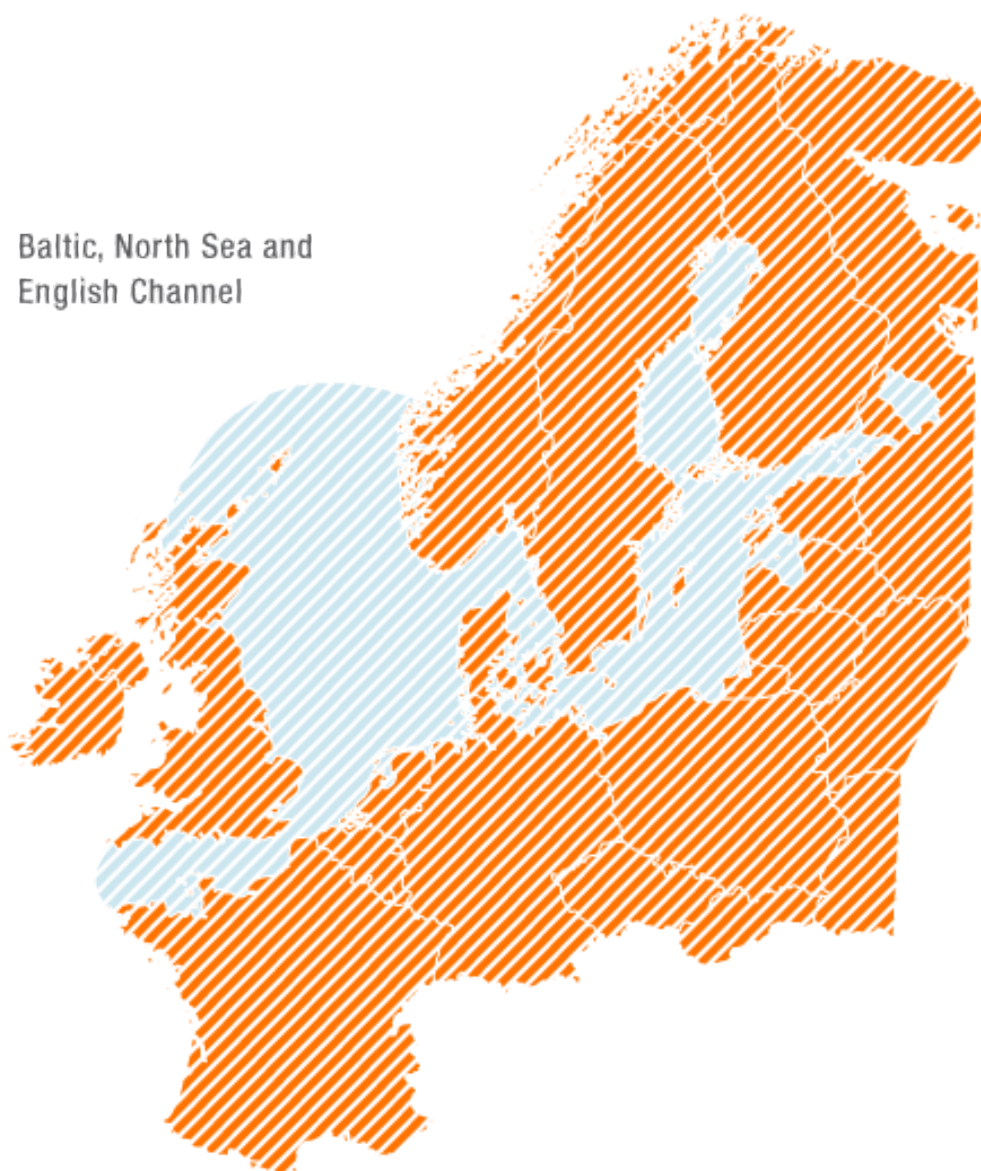


Comparison of typical NO<sub>x</sub>, SO<sub>x</sub> and particulate emissions – influence of fuel type





## Sulphur emission control areas (SECA)





## Sulphur and nitrogen emission control areas (SECA and NECA)



## Reducing nitrogen oxide emissions

The IMO NO<sub>x</sub> Tier II rules have been in force as of 2011. The Tier II NO<sub>x</sub> limit is 20% below the 2010 emissions levels. All Wärtsilä portfolio products are IMO NO<sub>x</sub> Tier II compliant. The next NO<sub>x</sub> emissions level, IMO Tier III, will be valid from 2016 onwards. This is expected to demand a reduction of 80% in NO<sub>x</sub> levels from Tier I levels in the NO<sub>x</sub> Emission Control Areas. An 80% NO<sub>x</sub> reduction requires a step change in terms of engine technology and product offerings. Wärtsilä is looking into different solutions involving:

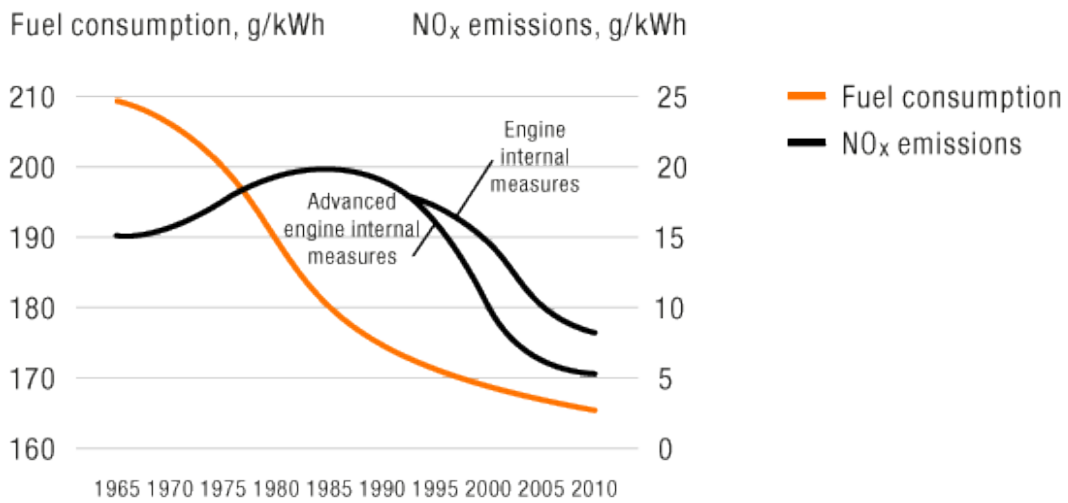
- Engine internal technologies
- Aftertreatment technologies
- Fuel (gas) related technologies

Gas engines already comply with IMO NO<sub>x</sub> Tier III, but development of other technologies will be needed, as will the integration between them. A driving factor in this work is the lifecycle cost of the

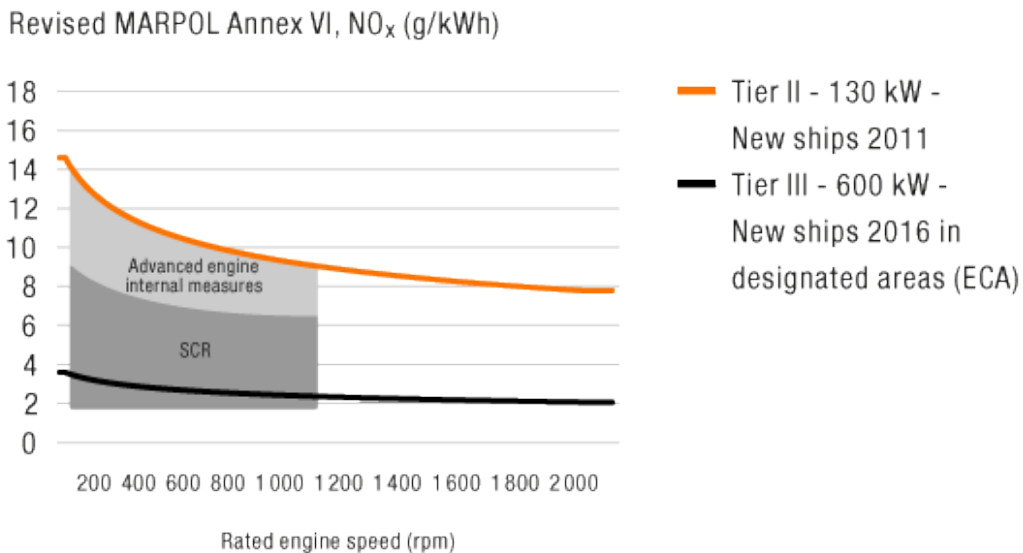
solution. There will be two basic engine technologies that enable diesel engines to reach Tier III NO<sub>x</sub> emissions requirements: Selective Catalytic Reduction (SCR) and Exhaust Gas Recirculation (EGR).

Selective Catalytic Reduction will play an important role in the future, and it is essential to ensure that combinations of SCR and scrubbers are applicable. Wärtsilä has experience in SCR systems with a wide range of fuels. Wärtsilä is able to deliver also SCR solutions for high sulphur applications, thus ensuring the compatibility of SCR solutions with scrubbers. However, further development and commercialisation work will be carried out to optimise the system for a wider scope of applications and will take into consideration various side effects and boundary conditions.

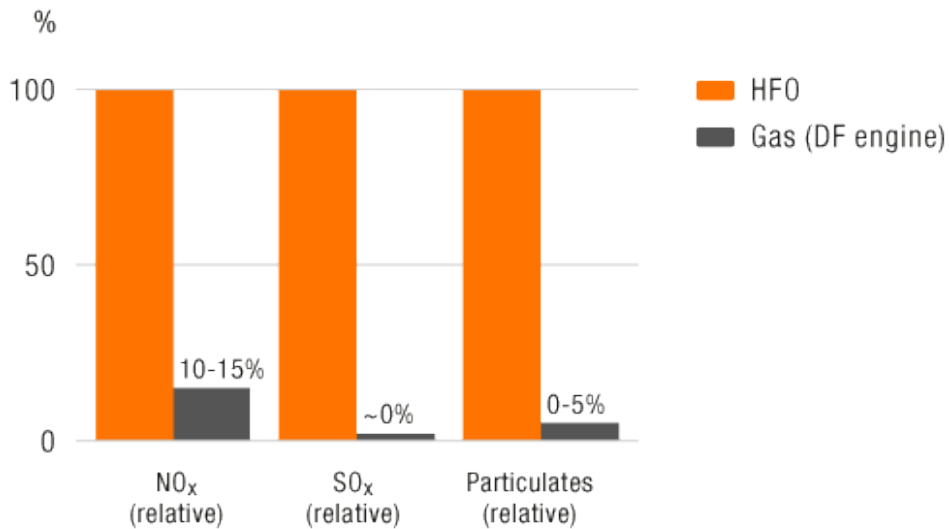
**Development of diesel engine specific fuel consumption and NO<sub>x</sub> emissions**



**Emission legislation – marine application (IMO)**



### Comparison of typical NO<sub>x</sub>, SO<sub>x</sub> and particulate emissions – influence of fuel type



## Reducing greenhouse gas emissions

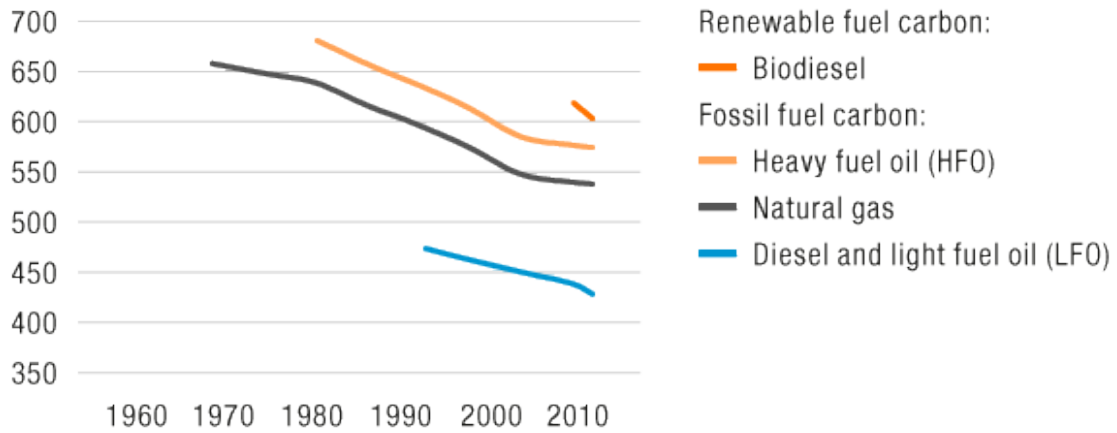
In addition to improving the efficiency of its solutions, Wärtsilä continuously develops technologies for reducing greenhouse gas linked emissions from both diesel and gas engines. The most important of such emissions are carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>). Wärtsilä has put significant emphasis on the research and development of gas engine technology and as a result is a world leader in this field. For gas engines, Wärtsilä is developing technologies such as Ultra Low THC (Total Hydro Carbons) emission reduction, which reduces the THC levels by 30-90% by utilising both primary and secondary technologies.

By the end of 2012 many benefits have materialised and especially at low load the methane slip is reduced by as much as 75%.

Many of the engine optimisations can also be retrofitted on existing older engines. These measures can include optimising combustion space, updating the software that is controlling the combustion, and a general optimisation of the machinery power management.

**Development of specific carbon dioxide emissions of Wärtsilä engines**

Specific carbon dioxide (CO<sub>2</sub>) emissions



## Water solutions

In 2004, the International Maritime Organization (IMO) adopted the Global Ballast Water Convention, which mandates the management of ballast water and sediments on both new builds and existing vessels to protect local biodiversity from non-indigenous invasive species. These may cause a negative economic impact on society, reduce output from fisheries and adding substantial costs associated with control and clean up measures. It is estimated that around USD 1.4 trillion per year is spent on clean-ups, economic losses and environmental damage related to ballast water transportation from one ecological zone to another. The convention is expected to come into force during 2013. In addition, the US Coast Guard announced its own regulatory guidelines in June 2012, which mirror the performance requirements set out in the IMO Convention, but require equipment to be assessed on more stringent test protocols based on U.S. EPA (US Environmental Protection Agency) guidelines.

A choice of three ballast water management systems (BWMS) are available from Wärtsilä, two AQUARIUS<sup>®</sup> models obtained through the acquisition of Hamworthy in 2012 and Marinex UV from an ongoing joint development with Trojan Technologies. The Wärtsilä AQUARIUS<sup>®</sup> UV BWMS was granted IMO Type Approval in December 2012 and both AQUARIUS<sup>®</sup>EC and Marinex UV type approvals are expected mid 2013.

The type approval of Wärtsilä's AQUARIUS<sup>®</sup>UV endorses BWMS market entry and provides ship owners with greater cost effective BWMS technology choice and installation flexibility through its modular design approach and further reaffirms the company's commitment to develop environmental solutions for the marine industry.

	IMO	US Coast Guard	
Organisms > 50 µm	< 10	< 10	/ m <sup>3</sup>
Organisms 10-50 µm	< 10	< 10	/ ml

Escherichia coli	< 250	< 250	cfu* / 100 ml
Intestinal enterococci	< 100	< 100	cfu* / 100 ml
Toxicogenic vibro cholera	< 1	< 1	cfu* / 100 ml
<i>Implementation year</i>	<i>2012</i>	<i>2012</i>	
* cfu = colony-forming units			

## Creating new solutions

### Developing groundbreaking technology to cut emissions

Wärtsilä and ABB Turbo Systems are co-operating in a joint programme to develop a new and groundbreaking application for two-stage turbocharging on large diesel engines. This advanced engine technology, together with two-stage turbocharging, offers significant advantages in fuel consumption and engine emissions.

In this programme, Wärtsilä is focusing on developing an advanced engine technology, which with the turbocharger, is able to reach the highest possible performance, thus creating a cost-effective commercial solution for its customers. ABB Turbo Systems is delivering the turbocharging technology with defined performance parameters in terms of airflow, pressure ratios and efficiency.

The technology will be implemented in specific market segments where lifecycle costs are of the highest importance. The first industrialized engine has been delivered from the Vaasa factory where the engine's performance, as well as the manufacturing process, has been validated.

### Enabling gas operations in ships

Wärtsilä's Dual Fuel (DF) technology offers both fuel choice flexibility and environmental advantages when operated in gas mode. Emissions of CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub> and particulates are significantly reduced, while the DF technology provides the possibility to run the engine on liquid fuel should gas not be available. It also allows a choice of fuel based on cost and availability. The use of DF technology with gas as a fuel option is an optimal solution for vessels that spend a lot of time in ECA zones, and for vessels that carry gas with them, such as LNG carriers.

Wärtsilä is developing a complete portfolio of medium-speed gas engines and related fuel handling systems for LNG tankers and gas-fuelled ships. Wärtsilä is also developing 2-stroke gas engine technology.

### Enabling ship power production from captured emissions of Volatile Organic Compounds

Wärtsilä continues to improve the efficiency of power production by utilizing ship based VOC recovery systems. This is achieved by closely integrating the VOC capture plant with a dedicated combustion and power unit. The overall system efficiency is thereby improved by 20-40%. The invention is patent pending and due to be tested in 2013.

## **Enabling more efficient utilization of auxiliary engines on Very Large Gas Carriers**

During recent years, Wärtsilä has developed a next generation system for the liquefaction of vapor from the Liquefied Petroleum Gas stored onboard VLGCs. By an inventive combination of larger liquefaction units, variable speed drive, and an integrated condensation unit for the less volatile cargo carried by the VLGC, the power out-take can be tuned for optimal loading of the auxiliary engine. The resulting emission reductions average between 1-1.5 tons/day/ship. The first vessel with this design will be commissioned during 2013.

## **Enabling liquefied biogas to be available for public transportation**

Wärtsilä has increased its product portfolio of gas liquefiers with the development of a new liquefier process featuring improved efficiency compared to current competing technologies. The process has been developed with scalability in mind, and is equally well suited for both smaller farmland bio digesters and larger industrial bio digesters. The first commercial plant is under development and is scheduled to be commissioned during the second quarter 2013. The estimated emission reductions that this plant offers is some 12,000 tons per annum. In parallel to the commercial plant, a test facility is under development to ensure that the focus on efficiency and system improvements can be maintained.

## **Enabling LNG as fuel on LPG carriers combined with an onboard cargo handling system lowers fuel consumption**

Wärtsilä is developing a combined LNG fuel and cargo handling system for Liquefied Petroleum Gas carriers. The system utilizes the cold energy from the LNG fuel to liquefy the cargo boil off vapor during the voyage. The expected emission reductions from the auxiliary engines alone are in the region of 3.5-4.5 tons/day/ship.

## **Expanding fuel flexibility**

Wärtsilä's power plant solutions are fuel flexible. The plants can be designed as dual fuel plants or can be converted from one fuel to another during the plant's lifecycle. Wärtsilä sees an increasing demand for large scale dual fuel power plant projects, especially in those markets where a natural gas infrastructure is under development. Wärtsilä dual fuel power plants can provide electricity from day one with liquid fuels, and then switch to natural gas when it becomes available. This approach maximizes the plants' availability and efficiency over the lifecycle.

Wärtsilä is devoting more resources to the use of alternative fuels as part of its pro-active approach to providing cost-effective, flexible, and environmentally sound solutions for its customers. Wärtsilä is studying different fuel sources, such as vegetable oils, animal fats and emulsions, in its fuel laboratory. During recent years, we have tested engines running on tyre based pyrolysis oil, oil from a rock burning refinery process, different kinds of condensates coming from oil and gas wells, jatropha oil, fish oil, chicken oil, traditional animal fats, and different kinds of synthetic oils. Wärtsilä has also tested and developed solutions for operating engines on condensates, which enables them to operate on locally available fuels in oil fields and to utilise flare gases, thereby reducing greenhouse gas emissions.

## **Enabling a global transition to a more sustainable electricity infrastructure**

Wärtsilä develops its products and market approach to offer high value solutions for a more modern and sustainable energy infrastructure. Wärtsilä's flexible power solutions make it possible to install much larger quantities of variable, non-dispatchable wind and solar power capacity to the electrical



systems without jeopardizing system stability. The same flexible power plant solutions offer unique value in grid contingency situations where dynamic features, such as extremely fast starting (5 minutes to full load), loading and stopping, are of paramount importance. Additional benefits include a high energy efficiency level over a wide load range, multifuel operation, no water usage, and the ability to locate the power generation facility within the load pockets, i.e. in cities, even in California where they have the most stringent emission requirements. The combination of wind power and Wärtsilä dynamic power plants offers high potential for dramatically reducing CO<sub>2</sub> emissions worldwide.

### **Enabling efficient performance without water consumption**

Standard Wärtsilä power plants are equipped with closed loop cooling systems. The system enables efficient performance without water consumption. This feature is available for the Wärtsilä Flexicycle plants, where waste heat is used for additional power generation. Continuous work is ongoing in order to increase the power plant output and efficiency without the need to use water in the plant.

## **Long-term research activities**

### **The HERCULES programme**

The long-term HERCULES R&D programme was conceived in 2002, and has been set up within the context of the EU's sixth and seventh Framework programmes. In sharing a joint vision, the two major low- and medium-speed engine manufacturers, Wärtsilä and MAN Diesel & Turbo, have been collaborating with universities, research institutions, and other industrial partners to develop new technologies for marine engines. In the third phase that started in 2012, the HERCULES-C project aims at taking marine engine technology a step further towards improved sustainability in energy production and total energy economy. This is to be achieved through extensive integration of the new technologies developed in the first two phases, HERCULES-A and HERCULES-B. This challenge is being addressed by adopting a combined approach for engine thermal process optimisation, systems integration, engine reliability, and extended lifetime. The particular objectives are:

- Further substantial reductions in fuel consumption, while optimising power production and usage
- Near-zero emissions
- Maintaining the technical performance of engines throughout their operational lifetime

HERCULES-C comprises 47 sub-projects under 10 work packages, involving the complete spectrum of marine diesel engine technology. It is planned to run for three years, from 2012 to 2014, with a total budget of EUR 17 million. The project has been made possible by a EUR 9.4 million funding through the European Commission Framework Programme 7.

### **CLEEN – Cluster for Energy and the Environment**

CLEEN Ltd. maintains and develops a world-class open innovation platform for market-driven joint research between industry and academia, and is part of SHOK (Strategic Centres for Science, Technology and Innovation). Wärtsilä is participating in the Future Combustion Engine Power Plant (FCEP) research programme under CLEEN, which was started on 1 January 2010. The programme focuses on research topics and development efforts in the areas of reciprocating engine technologies and related power plant technologies. The key areas of research include improvements in the combustion process, energy efficiency, emission reduction methods, heat recovery systems, and power conversion technologies. Other central research areas include automation & control, fuel

flexibility, and the use of renewable fuels in combustion engines. The programme objectives and scope have been set jointly by the industry and research institutions, thereby enabling deep co-operation in executing the programme, and promoting breakthrough innovations across broad interfaces.

The total FCEP programme budget is EUR 37.8 million. This is covered by the participating companies (EUR 12.9 million) and research institutes (EUR 5.1 million), with the remaining EUR 19.8 million coming from the Finnish Funding Agency for Technology and Innovation (Tekes). This four year programme has been successfully underway for three years, and the research will continue as planned during the fourth and final year with a special emphasis on utilising the established research network and infrastructure to facilitate new results and technical solutions. The FCEP consortium consists of the leading combustion engine and power equipment manufacturers, supported by local research institutes and universities. The 17 consortium partners represent a very high level of technical and scientific excellence in this field.

## Co-operation with stakeholders

Co-operation throughout the value chain is becoming ever more important. It is necessary for understanding the requirements of the end customer, for understanding and optimising the performance of the value chain and for safeguarding the expertise needed.

Wärtsilä's research organisation has long-term co-operation agreements with research institutes, engineering consultants, licensees and other corporate partners in fields that are of crucial importance to the well-being of society and the conservation of the environment. Wärtsilä also co-operates with a number of leading European universities that conduct research into engine technologies.

Co-operation with customers and suppliers creates added value for the entire supply chain as well as for the end customer. Identifying and achieving common goals succeeds best through co-operation with the whole supply chain. Wärtsilä has gained promising results in working closely with various stakeholders towards improving reliability, overall efficiency and the environmental performance of its solutions.

Wärtsilä continuously collaborates with major low-speed engine licensees in the fields of product development, testing, manufacturing and sales. Wärtsilä collaborates with Samsung Heavy Industries in the development of gas-fuelled merchant vessels. Wärtsilä also collaborates with Becker Marine Systems with the aim of furthering the development of marine propeller-rudder systems. Wärtsilä co-operates with Shell Oil Company, with the aim of promoting and accelerating the use of liquefied natural gas (LNG) as a marine fuel.

Wärtsilä is involved in an increasing number of customer development cases in which innovative solutions are researched with the aim of building the next generation of more efficient ships.



## Summary of environmental aspects of Wärtsilä's products and solutions

Environmental aspect and product	Environmental impact and component	Wärtsilä's solution	Customers' options
<b>Emission into the air</b>	<b>Pollution of air</b>		
Engine and power plants	Climate warming: carbon dioxide (CO <sub>2</sub> )	Increasing engine and plant efficiency, multifuel engines	<ul style="list-style-type: none"> <li>• Using a different fuel</li> <li>• Using a fuel with a lower sulphur content</li> <li>• Investment in secondary emission reduction technologies</li> <li>• Planned or optimised maintenance and correct operation</li> </ul>
	Acidification: sulphur oxides (SO <sub>x</sub> )	Increasing engine efficiency, scrubbing technology, several FGD technologies, multifuel engines	
	Acidification, eutrophication, lower atmosphere ozone formation: nitrogen oxides (NO <sub>x</sub> )	Low NO <sub>x</sub> combustion, air humidification technologies, SCR, multifuel engines	
	Human health impacts, visual impacts: particles, smoke	Optimising the combustion process, common-rail fuel injection, electrical filters, scrubbing technology	
	Reduces oxygen uptake in the lungs: carbon monoxide (CO)	Optimising injection, compression and the shape of the combustion space, oxidation catalysts (gas engines)	
	Climate warming (CH <sub>4</sub> ), ozone formation in the lower atmosphere, some carcinogenic compounds: hydrocarbon (THC, VOC)	Oxidation catalysts in gas engines for VOC emissions, optimising the combustion process	
Pump systems	Emissions from diesel engine powered fire water systems	Choosing power source with environmental focus	

Environmental aspect and product	Environmental impact and component	Wärtsilä's solution	Customers' options
<b>Consumption of raw materials</b>	<b>Depletion of natural resources</b>		
Engines	Cast iron, alloy and structural steel, aluminium alloys. Main chemical elements of engines: Fe 90.8%, Al 2.7%, C 2.2%	Long product life, using recycled materials, material efficiency, automated filters, modernising engines, overhauling and recycling components	<ul style="list-style-type: none"> <li>• Planned or optimised maintenance and correct operation</li> <li>• Personnel training</li> <li>• Overhauling components</li> <li>• Recycling components</li> <li>• Recycling catalysts</li> <li>• Optimising process parameters</li> </ul>
Propulsion systems and seals	Metals, bronze, rubber. Main chemical elements of propulsion systems: Cu 80.1%, Al 9.3%, Ni 4.9%	Long product life, using recycled materials, material efficiency	
Power plants	Several different materials such as steel, concrete, insulation material, water	Prefabricated modules, material efficiency	
Secondary cleaning technologies	Alloy and structural steel, different types of catalyst materials, reagents (e.g. ammonia urea), water	Developing primary technologies, developing secondary technologies	
Pump systems	Nickel, aluminium, bronze and stainless steel	Systems with long life, recyclable metals	
Oil & Gas systems	Several different materials such as steel, insulation materials, cast iron, alloys	Using recycled materials, material efficiency, new technologies	

Environmental aspect and product	Environmental impact and component	Wärtsilä's solution	Customers' options
<b>Consumption of fuel &amp; lubricating oils</b>	<b>Depletion of natural resources</b>		
Engines and power plants	Liquid oil-based fuels (e.g. LFO, HFO, refinery residues), gas fuels (e.g. LNG, NG, CNG) and biofuels (e.g. rapeseed and palm oil, biomass), lubricating oil	Improving energy efficiency, reducing the consumption of lubricating oil, multifuel engines, utilising biofuels and alternative fuels in power production	<ul style="list-style-type: none"> <li>Planned or optimised maintenance and correct operation</li> <li>Personnel training</li> <li>Using environmentally favourable fuels</li> <li>Using environmentally favourable lubricating oils</li> <li>Using environmentally favourable seals</li> </ul>
Propulsion systems	Lubricating oil, hydraulic oil	Improving the total operating efficiency of ships, increasing the service life and reducing the consumption of lubricating oil, preventing oil leakages	
Pump systems	Diesel fuel, lubricating oil, hydraulic oil	Focus on choosing the most environmentally sound solutions by having strategic suppliers with the proper environmental focus	
Oil & Gas systems	Lubricating oil, hydraulic oil, chemicals	Focus on choosing the most environmentally sound solutions by having strategic suppliers with the proper environmental focus	
<b>Solid and liquid waste</b>	<b>Increased waste and landfill sites</b>		
Engines	Lubricating oil used, filters and components, waste oil	Using recyclable materials and optimising the use of material, automated filters, long service intervals, overhauling components, reducing the consumption of fuel	<ul style="list-style-type: none"> <li>Planned or optimised maintenance and correct operation</li> <li>Personnel training</li> <li>Recycling and proper waste disposal</li> <li>Evaluation of the potential uses of end products</li> <li>Optimising process parameters</li> </ul>
Power plants	Construction waste, ash, waste water, waste oil, office waste	Prefabricated, ready-to-install modules	
Secondary cleaning systems	End products and catalysts of flue gas decontamination	Evaluating the potential uses of end products, developing dry primary technologies	
Pump systems	Lubricating oil, used components	Using recyclable materials and optimising the use of material	
Oil & Gas systems	Filters, waste oil, waste water (sea water cooling)	Using flushable waste water filters and recyclable materials	

Environmental aspect and product	Environmental impact and component	Wärtsilä's solution	Customers' options
<b>Noise and vibration</b>	<b>Discomfort</b>		
Engines and power plants	Structure-borne noise, flue gas noise, airborne noise	Efficient noise reduction solutions and damping systems, e.g. re-positioning wall structures and noise-generating sources	<ul style="list-style-type: none"> <li>Planned maintenance and correct operation of the power plant</li> </ul>
Pump systems	Structure-borne and airborne noise	Efficient hydraulic design and driver selection	
<b>Heat emission</b>	<b>Warming of the atmosphere</b>		
Engines and power plants	Waste heat from exhaust gases	Heat recovery systems	<ul style="list-style-type: none"> <li>Optimising process parameters</li> </ul>

## Environmental performance indicators

The environmental impacts of Wärtsilä's operations largely relate to manufacturing. The main environmental aspects of manufacturing relate to the use of energy and natural resources and thus also to the emissions that are produced by the manufacturing processes. Product development also requires the testing of products and individual components which, alongside manufacturing, loads the environment. However, the positive impacts of product improvements on the environment far outweigh the negative impacts of testing when taking the product's entire lifecycle into account.

The main reasons for significant fluctuations in certain reported environmental performance indicators from year to year are:

- changes in production volumes
- changes in R&D testing programmes
- changes in company structure (divestments, mergers & acquisitions)
- changes in the reporting scope and coverage.

The environmental indices used in connection with performance indicators are linked to the development of net sales. Therefore, increased investments in R&D during any particular year do not impact net sales but may increase the absolute value of the indicator.

### Monitoring environmental impacts

Within Wärtsilä, environmental impacts caused by operational activities are monitored as follows:

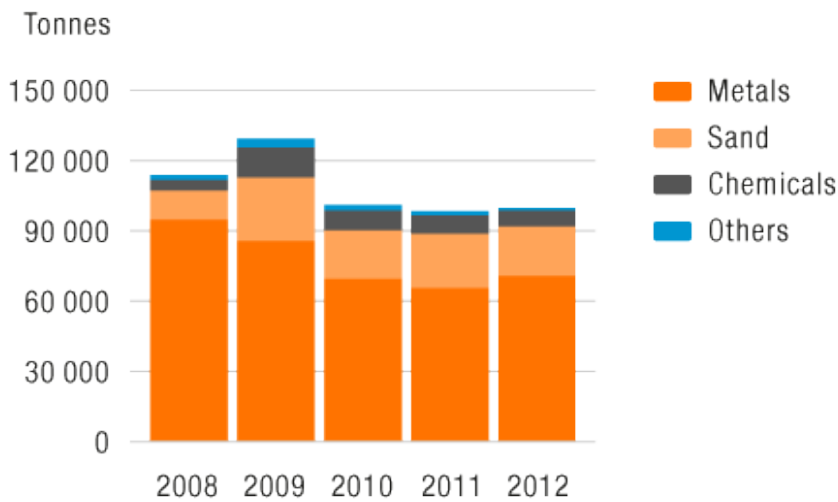
- participation in the monitoring of air quality with other local stakeholders
- measurement of air emissions
- charting of noise levels
- periodical effluent analysis
- soil analysis
- dispersion analyses and bio-indicator surveys.

# Materials, energy and water

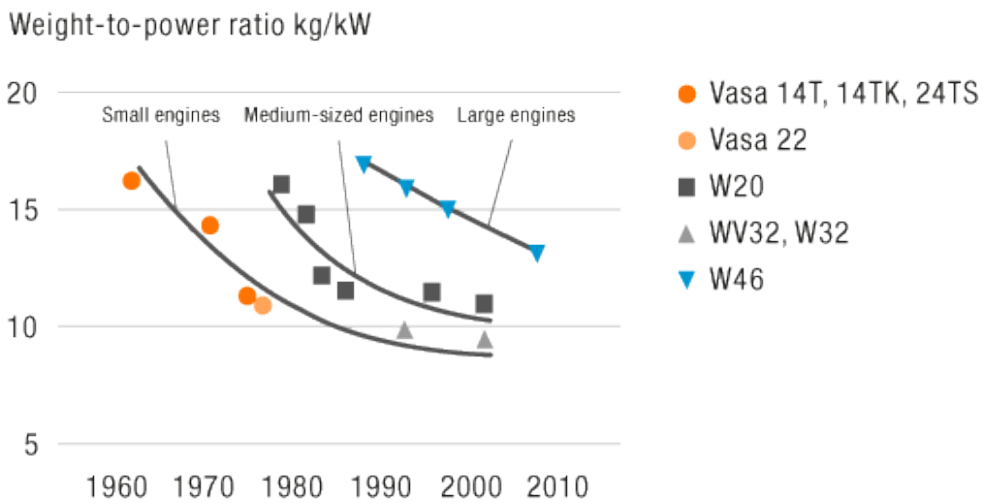
## Materials

The main materials used in Wärtsilä products are various metals: cast iron, alloy and structural steel, aluminium alloys and bronze. Recycled material content of these metals vary depending on the material and supplier in question. Recycled material, such as end-of-life coins and bronze propellers, is used for example in the casting of new propellers. In 2012, the total material usage was 99,570 tons (98,142). The major material groups were various metals 71% (66), sand 21% (24) and various chemicals 7% (8).

### Materials



### Weight-to-power ratio of Wärtsilä's medium-speed engines for 6-cylinder in-line engines

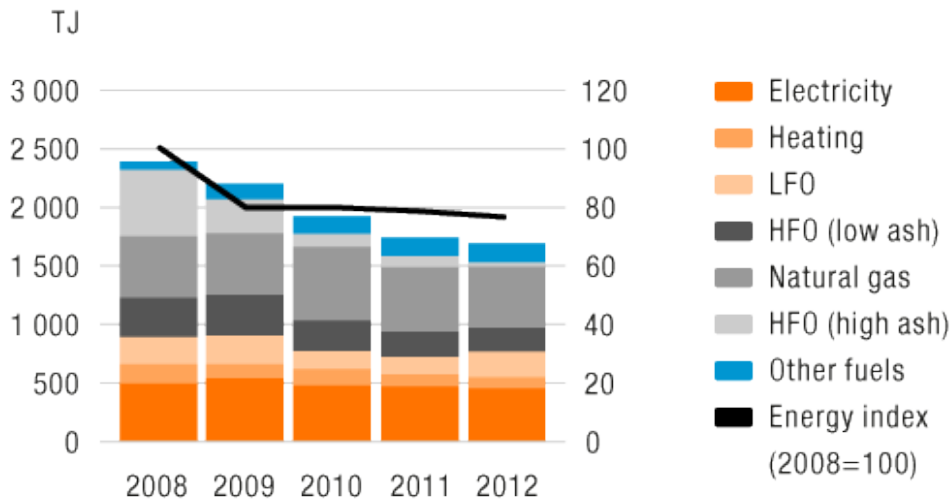


## Energy

### Total energy consumption

The total energy consumption (in terajoules, TJ) includes the electricity, heat and fuels used in Wärtsilä companies in recent years. The fuels are used mainly in engine testing, but also in heating, production and transportation.

### Annual energy consumption

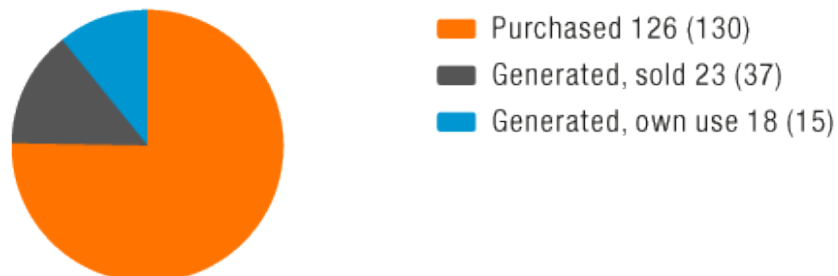


### Electricity

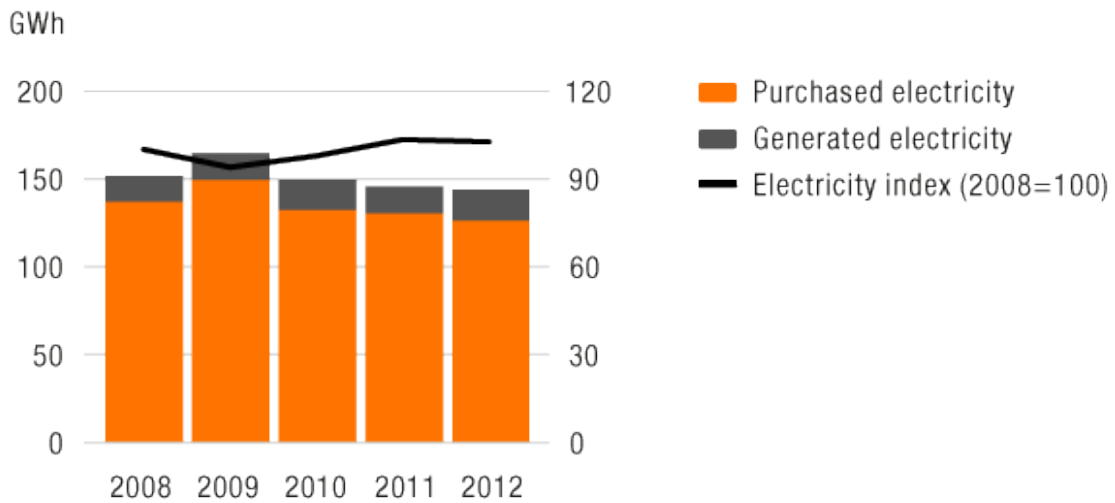
Wärtsilä uses electricity in its manufacturing operations - for example in machining components - and in service workshops and offices. Both the electrical and the heat energy generated during engine test runs can be utilised. Wärtsilä's aim is to use the electrical energy for its own purposes while also selling part of this electrical energy to local power companies. Due to the nature of engine test runs, the production of electricity and the company's electricity demand are not equivalent; this allows the surplus energy to be sold to local power companies.

### Electricity balance 2012

GWh



## Annual electricity consumption



## Heat

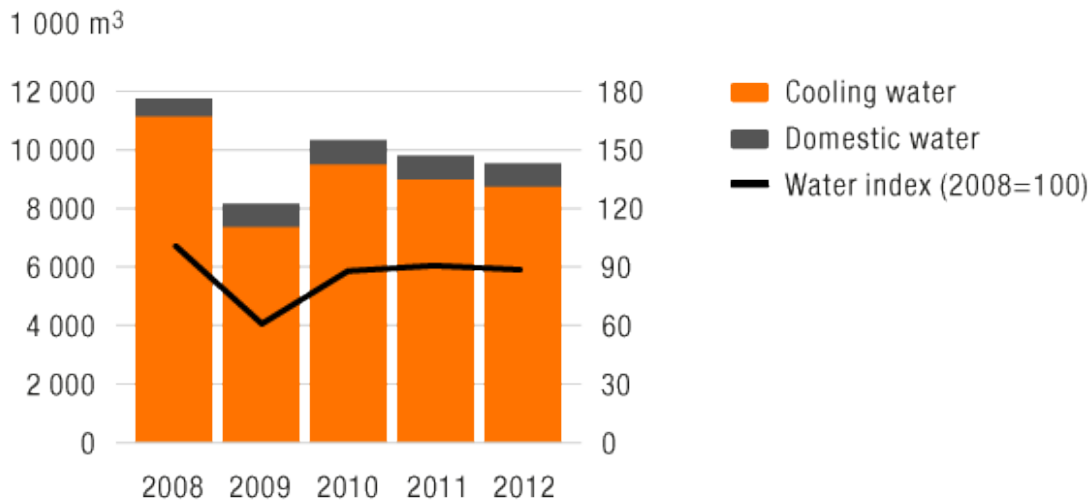
Heating for factories and offices accounts for most of Wärtsilä's consumption of heat energy. In several factories, the heat generated in engine test runs is used for heating. Some factories and offices are connected to a local district heating network, some have their own heating plant and some use electricity for heating.

## Water

Wärtsilä's water consumption can be divided into two categories: domestic use and cooling use. Domestic water from municipal waterworks is used mainly for sanitary purposes and by industrial equipment, such as machine tools and washing machines. Some factories also use domestic water to produce moulds. Heat emissions into water systems arise from engine cooling and process cooling water. Wärtsilä companies use water from the local watercourse for their engine and process cooling needs. In such cases, the cooling water system is kept separate so that only heat is released into the natural water system. Wastewater is sewerred and piped to the local wastewater treatment plant or treated on site before being discharged. If the effluent is not suitable for sewage treatment, it is taken away for appropriate processing, for example to a special treatment plant for hazardous wastes.

## Annual water consumption

Total annual water consumption split by the purpose of use. Out of cooling water about 99% comes from local surface watercourses where only heat is released along with clean water, and about 1% of cooling water comes from municipal water utilities.



## Emissions and wastes

### Emissions to the air

The primary sources of manufacturing noise are the engine test runs and the ventilation machinery on factory roofs. This noise is mostly low frequency and is therefore not easily detected by the human ear. Wärtsilä has specifically addressed the issue of noise protection using technical means and has succeeded in lowering noise levels considerably. However, noise abatement is a continuous need and requires regular monitoring.

Air emissions are mainly caused by test runs and the painting of completed engines or other Wärtsilä products. Test run emissions consist of nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), carbon dioxides (CO<sub>2</sub>) and particles, as well as small amounts of other emission components. The painting of engines and other Wärtsilä products generates VOC (volatile organic compounds) emissions. Engine emissions are reduced through research and development, as well as product development and testing. These measures also generate emissions, but their results reduce the future emissions of manufactured engines.

In addition to direct CO<sub>2</sub> emissions, Wärtsilä's operations generate indirect CO<sub>2</sub> emissions. In 2012, the calculated secondary CO<sub>2</sub> emissions were 54,011 tons (56,610) (from purchased electricity and heat) and the CO<sub>2</sub> emissions from flights totalled 39,033 tons (37,459).

Wärtsilä has taken several measures to reduce its indirect CO<sub>2</sub> emissions. The energy efficiency commitment aims to reduce energy consumption and emissions. In addition, Wärtsilä's focus lies on reducing travelling by implementing a strict travel policy and by using three main virtual meeting concepts: Office Communicator, which enables live chats between two people or more; Live meetings allowing multi-person meetings from personal computers, in which presentation material can be



shared and the Telepresence videoconferencing system. Wärtsilä Live and Telepresence are in everyday use. Approximately 400 Live-meetings are arranged daily, and there are 32 Telepresence rooms established in Wärtsilä premises in 18 countries.

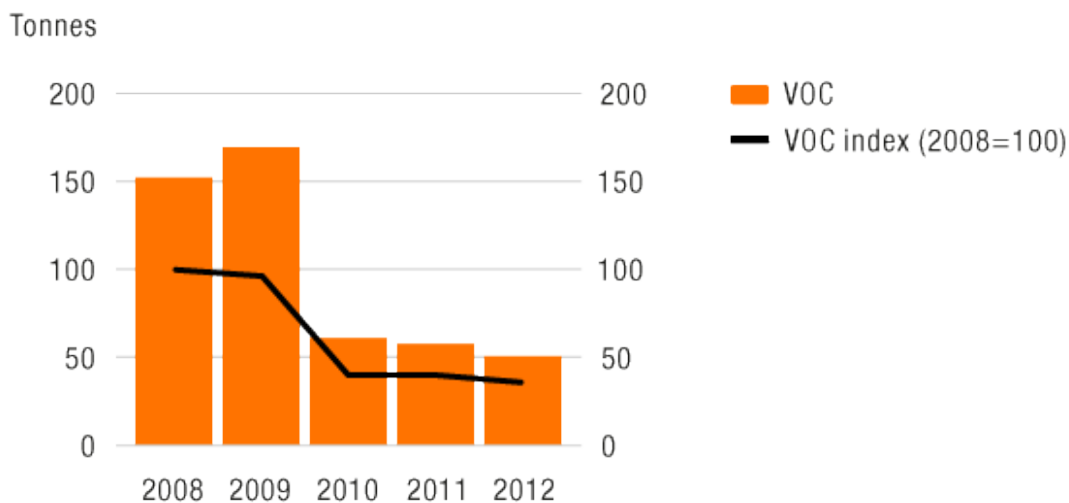
## Waste management

Manufacturing activities cause various wastes. These are divided into two main categories: hazardous and non-hazardous wastes. Hazardous wastes include cutting fluids, various types of waste oil, paints and solvents, oily wastes, solid wastes etc. Hazardous wastes are taken to a hazardous waste disposal facility for appropriate treatment. All Wärtsilä companies sort their waste according to local municipal regulations. Generally speaking, the main sorting categories are waste to be incinerated, crude waste for landfills, clean cardboard and waste paper. Waste wood, scrap metal and metal swarf are collected separately. Only coarse waste and in some cases waste wood are removed for landfill disposal. Other wastes are used either as raw materials or for energy.

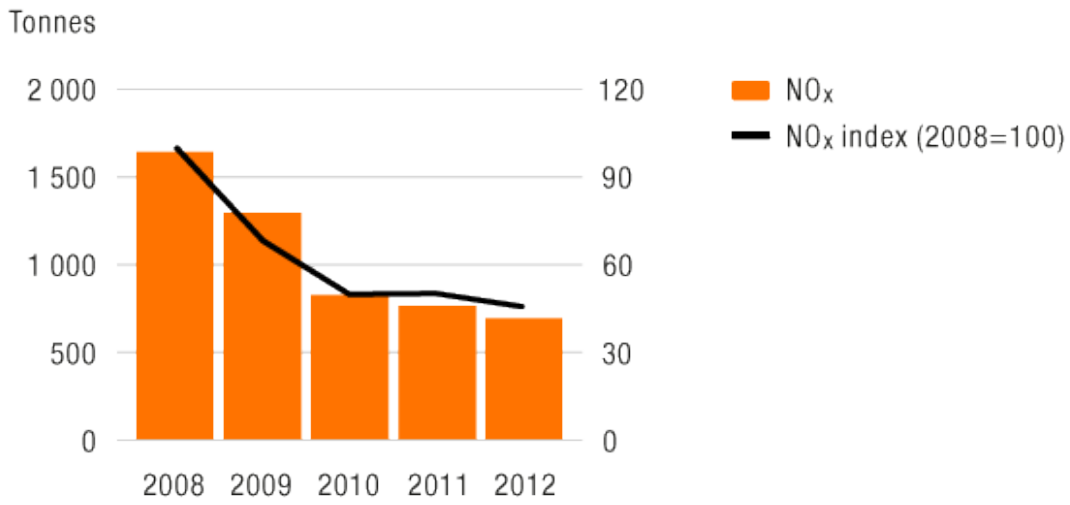
Waste management in Wärtsilä has four aims:

- to reduce the amount of waste generated in processes
- to use waste as a material
- to use waste as energy
- to dispose of waste in an environmentally sound way.

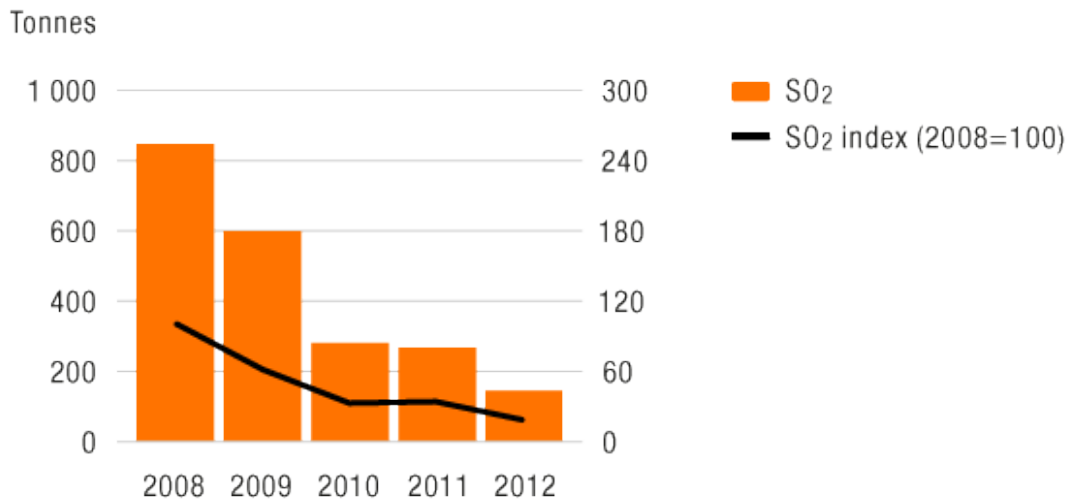
### Annual VOC emissions



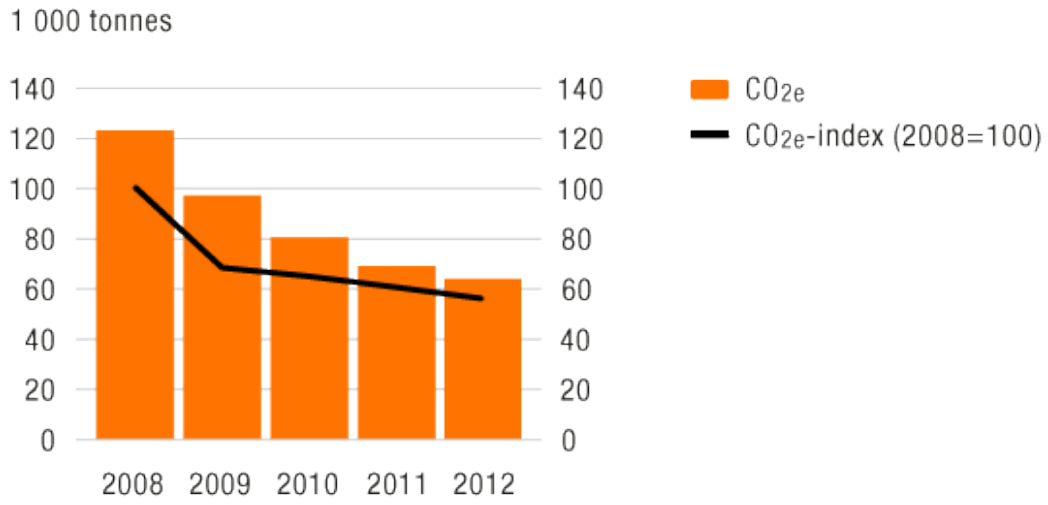
### Annual NO<sub>x</sub> emissions



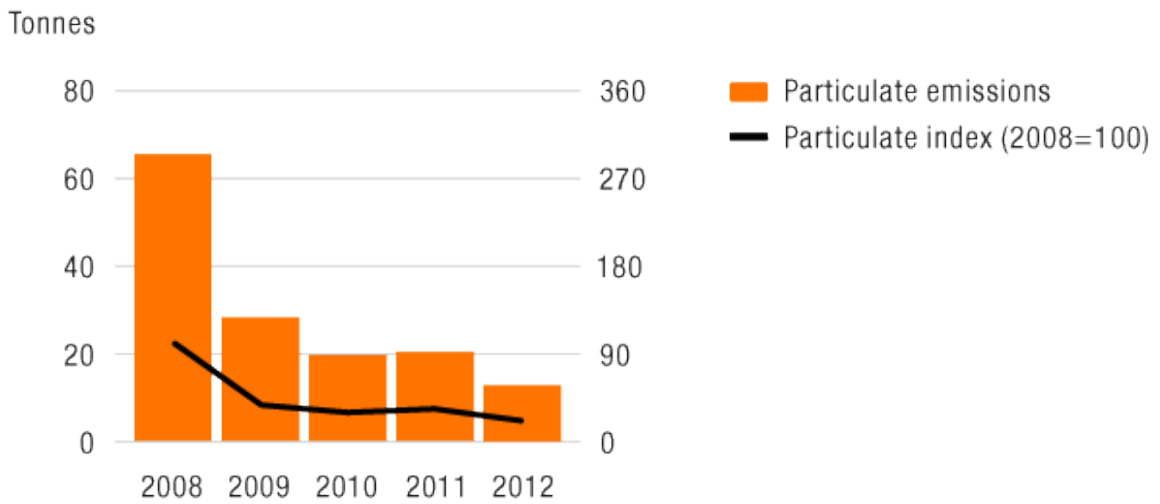
### Annual SO<sub>2</sub> emissions



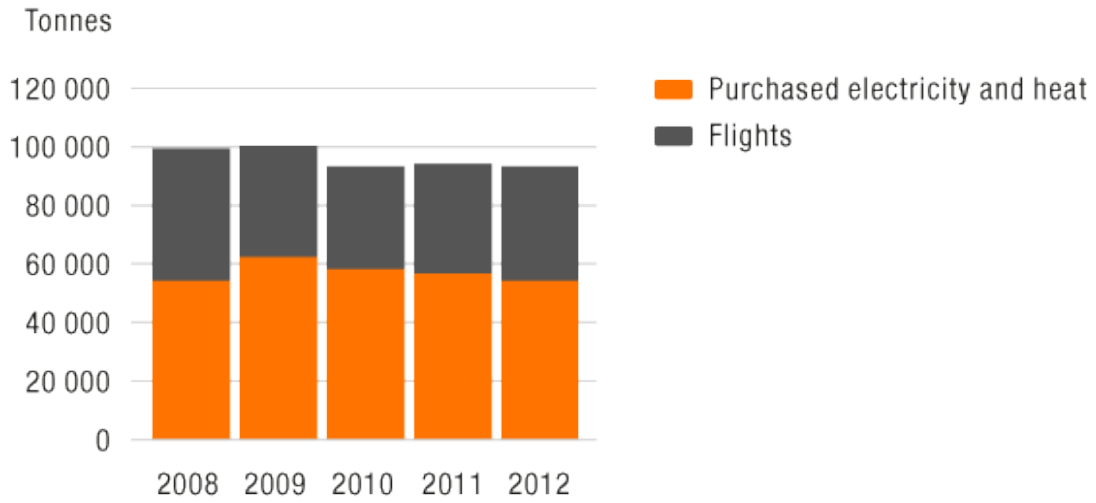
### Annual CO<sub>2e</sub> emissions



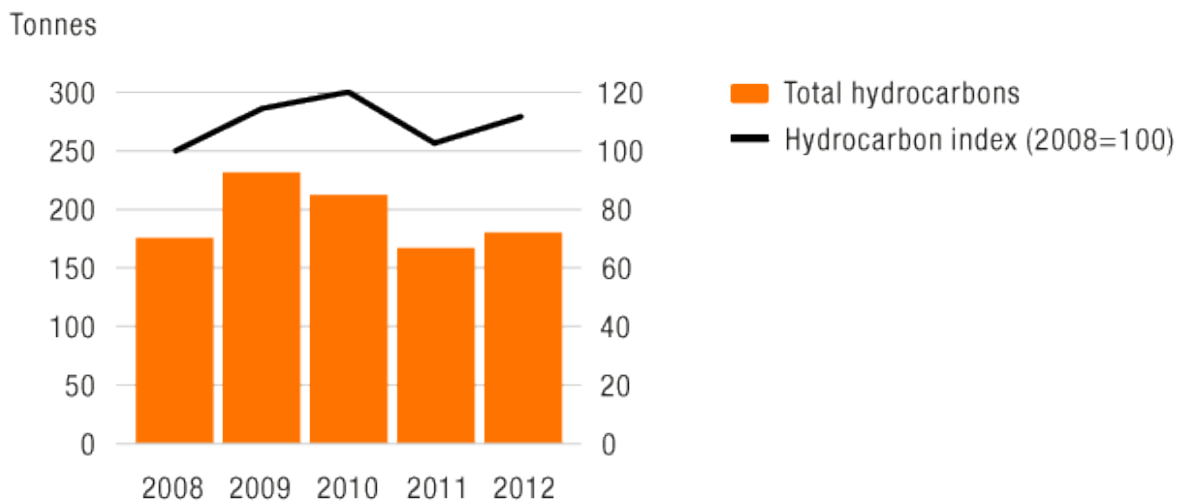
### Annual particulate emissions



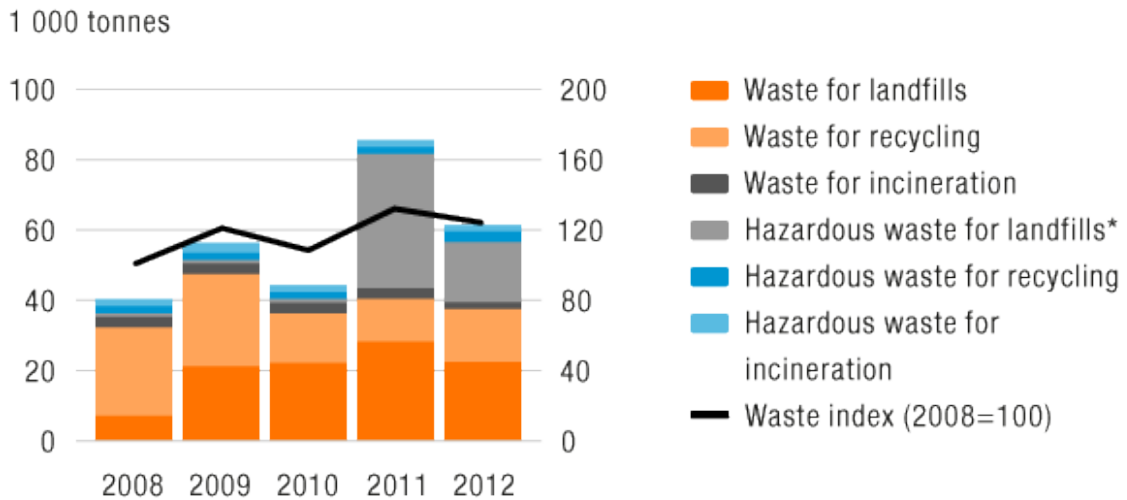
### Indirect CO<sub>2</sub> emissions



### Total hydrocarbons



## Annual waste



\* The hazardous waste for landfills include 36,269 t of contaminated soil in 2011, and 16,541 t of contaminated soil in 2012, which are not considered as operational waste.

## Compliance with legislation

Wärtsilä companies comply with the local environmental legislation. The operations of Wärtsilä's manufacturing companies require a valid environmental permit. Wärtsilä companies have the required environmental permits, the terms of which are generally met. Incidents of non-compliance are described in the following chapters.

### Environmental disturbances and complaints

The number of disturbances, complaints and incidents of non-compliance are presented below.

Reported disturbances cover incidents in which the Wärtsilä company concerned has usually been obliged to report the disturbance to the authorities. The following main environmental disturbances occurred in Wärtsilä's business locations in 2012:

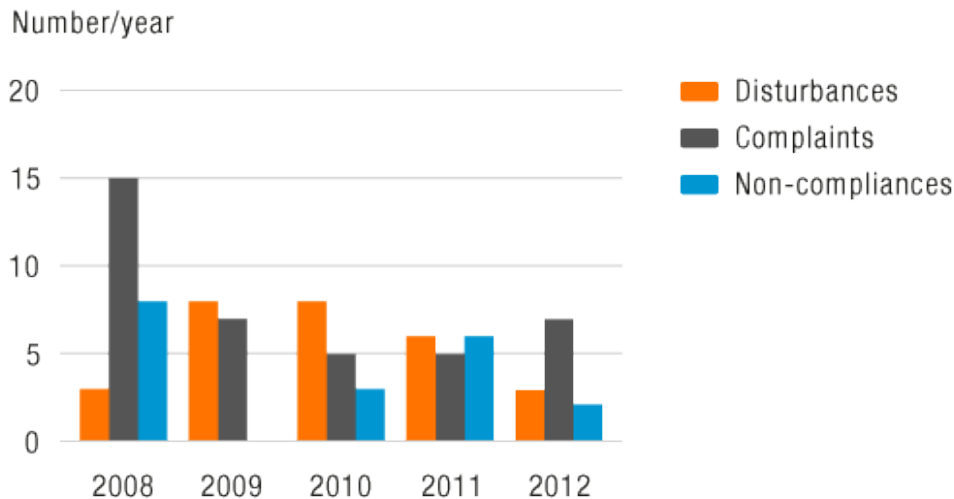
- 1 soil contamination
- 1 oily water discharge
- 1 washing chemical discharge

All the above disturbances were investigated and appropriate corrective actions were taken in each case. The complaints made by occupants of neighbouring sites were mainly related to noise and smoke. All complaints were investigated and an appropriate corrective action was taken wherever necessary.

## Cases of non-compliance

Wärtsilä Netherlands B.V. had one non-compliance case related to having started building demolition activities without a prior remediation plan. A remediation plan has been submitted to the authorities. The water consumption of Wärtsilä India Ltd. continued to exceed permit limits. Additional water saving measures will be taken and a re-examination of the permit conditions on water consumption will be requested in spring 2013.

### Disturbances, complaints and non-compliances



### Non-compliance cases presented in previous reports

Wärtsilä Azerbaijan LLC arranged the required environmental permits. Wärtsilä UK Ltd. corrected the piping installations to align with water regulations. Wärtsilä Danmark A/S has implemented a permanent solution to the waste water treatment. The status of earlier non-compliance cases of Wärtsilä India Ltd is the following: A chimney with sufficient height was built. The water consumption has been reduced and additional measures are planned for 2013.

## Environmental costs and liabilities

Concerning Wärtsilä's operations, we have defined expenditures as environmental expenditures if they are related to soil, water and air pollution control, waste management, environmental management or noise control.

### Wärtsilä real estate and environmental responsibilities

The real estate that Wärtsilä owns or leases is mainly located in urban areas. The company is not aware of any properties that are situated in areas where biodiversity could be endangered. Environmental risks and liabilities are identified and reviewed as part of the overall risk management. In Wärtsilä's operations, potential liabilities are primarily related to the company's real estate. Environmental liabilities are systematically scrutinised in conjunction with every acquisition or sale of

real estate. Wärtsilä has recognised certain cases where potential environmental liabilities may exist, but these are not expected to have a significant financial impact on Wärtsilä.

### Environmental capital expenditures and operating expenses

MEUR	2012	2011	2010	2009	2008
Environmental capital expenditures	0.8	0.9	2.9	1.1	2.6
Environmental operating expenditures	6.3	6.1	5.5	4.2	5.4

## Personnel and social performance

Wärtsilä's aim is to provide the best value and service to our customers by continuously developing our competencies and way of working. The strategic goal of Wärtsilä's social responsibility and people strategy is to bring the business strategy alive by developing Wärtsilä's organisation and competencies to meet the evolving business needs.

Our aim is to have energetic, competent and motivated personnel with exciting and meaningful jobs and career opportunities led by excellent leaders. We recognise good performance and respect diversity. We also endeavour, by applying high standards of occupational health and safety, to offer a hazard-free workplace to our employees, contractors and others working in different parts of the corporation.

Good corporate citizenship is accomplished through active co-operation, open communication and good relationships with our stakeholders. Wärtsilä's operations and relations with its stakeholders are based on the company's Code of Conduct, with which each Wärtsilä company and individual is required to comply.

## Wärtsilä's social targets

Target	Schedule	Status
<p>To make Wärtsilä a workplace where all employees have the opportunity to show their best and develop their career – To build a company of equal opportunities.</p> <p>- Target 2012: More than 50% of the open vacancies* filled from internal applicant pool including promotions and lateral moves.</p> <p>- Target 2012: An average 5 training days/employee per year.</p>	Continuous	<p>Open vacancies filled: 51% internal selections and 49% external selections.</p> <p>3.4 trainings days/employee during 2012.</p>

<p>To develop a new way of working in supplier relations, safeguarding Wärtsilä's sustainability commitment.</p> <p>- Target 2012: Implementation of revised model for supplier assessment and development.</p>	2015	<p>The model for supplier assessment and development was reviewed in 2012, and will be applied in 2013.</p> <p>In 2012, a Supplier Handbook was developed to address better Wärtsilä's requirements to suppliers. A great part of this handbook is describing sustainability related requirements for suppliers.</p>
Development discussion coverage 100%.	Continuous	84% of All personnel have completed development discussions in 2012.
To implement certified EHS management systems in all subsidiaries (excluding purely sales offices).	Continuous	3 new OHSAS 18001 certified companies and one new ISO 14001 certified company during 2012. The management system coverage is presented in the management system section.
To reach the long-term goal for zero lost time injuries.	Continuous	In 2012, Wärtsilä continued improving, consolidating and spreading the safety culture. Over 3,200 employees completed the 4-hour e-learning focusing on Wärtsilä's Zero Injury approach. The positive trend continued, the lost-time injury frequency rate was 5.5 compared to the previous year's 6.3.
<p>To ensure Code of Conduct commitment throughout the organisation.</p> <p>- Target 2012-2013: 95% coverage of participation in Code of Conduct learning module.</p>	2013	E-learning module was published in 11 languages in spring 2012. At the end of 2012 12,392 employees covering 66% of total employees has successfully participated in the training.
<p>To reinforce the Anti-corruption/broker training of key employee groups and obtaining anti-corruption commitments from all key employees trained.</p> <p>- Target 2012: To identify the key employees (all sales personnel, company presidents and controllers) to be included in the training by each business.</p> <p>- Target 2013: Training of key employees to achieve 85% completion rate.</p> <p>- Target 2014: Training of key employees to achieve 95% completion rate.</p>	2014	<p>A new Anti-Corruption Policy was launched in September 2012. The implementation of the Policy is to be done via a tailored e-learning course from 2013 onwards. All key employees and also other English literate personnel with computer access will be trained. Additional nine language versions of the e-learning course will be prepared in 2013.</p> <p>Broker Directive was updated in December 2012. New target is to identify and train the key employees (all sales personnel, company presidents and controllers of each business) in addition to the Anti-corruption training.</p>



To conduct three community support projects by 2015.	2015	First project started in 2012. Wärtsilä supports the building of 2 schools in Southern Sudan.
To improve well-being at work and increase productivity by reducing the sickness day cost.  - Target 2012: To conduct analysis and action plans for improvement in Germany, Finland, Spain, Norway and Italy.	2015	Targeted countries informed. Current status analysis and action planning pending - postponed to 2013.
* Open vacancies in job levels 3-6		

## Personnel

### Structural changes in 2012

In 2011 the management announced the Hamworthy acquisition, which was then closed on 31 January 2012. Hamworthy was divided into two business units, Flow and gas solutions and Environmental solutions. Integration to Wärtsilä Ship Power business started immediately and was led by global integration team. The acquisition brought important growth synergies to Wärtsilä in the offshore, marine gas applications and environmental solutions markets. Wärtsilä Hamworthy employs in total 1,200 people globally.

In May 2012 Wärtsilä signed a contract to acquire the assets and business of MMI Boiler Management Pte Ltd., the Singapore-based company specialising in the service and maintenance of boilers for marine and industrial applications. MMI Boiler Management has its main operations in Singapore and coverage throughout Southeast Asia and the Pacific region. The acquisition further strengthens Wärtsilä's boiler services offering and enhances our leading position in the global marine services market. Furthermore, it supports our Services' strategy of constantly developing the offering with value-enhancing services within existing customer segments. MMI Boiler Management has a strong market position in Southeast Asia and the Pacific region, particularly within the offshore segment. The company's activities include the service, maintenance, repair and installation of boilers, for both marine and land-based customers. MMI and the company employed 138 employees.

In July 2012 it was announced that Wärtsilä and Metso Corporation had received the relevant regulatory approvals from the European Commission for the transaction whereby Wärtsilä sells its share in MW Power Oy to Metso. According to the agreement published on 31 May 2012, Wärtsilä sold its 40 per cent share in the joint venture MW Power, to the other joint venture party Metso. Metso thus acquired full ownership of MW Power. Wärtsilä and Metso signed a contract in September 2008 to form the MW Power joint venture, which combined Metso's Heat & Power business and Wärtsilä's Biopower business.

On 20 December 2012 Wärtsilä and Yuchai Marine Power Co. Ltd. (YCMP), a subsidiary of Guangxi Yuchai Group, signed an agreement in Zhuhai, China to establish a 50/50 joint venture for manufacturing medium-speed marine engines in Zhuhai City, Guangdong Province. The joint venture will serve the increasingly dominant Chinese shipbuilding industry, with the focus being on the assembly and testing of Wärtsilä 20, Wärtsilä 26 and Wärtsilä 32 engines. Operations are planned to

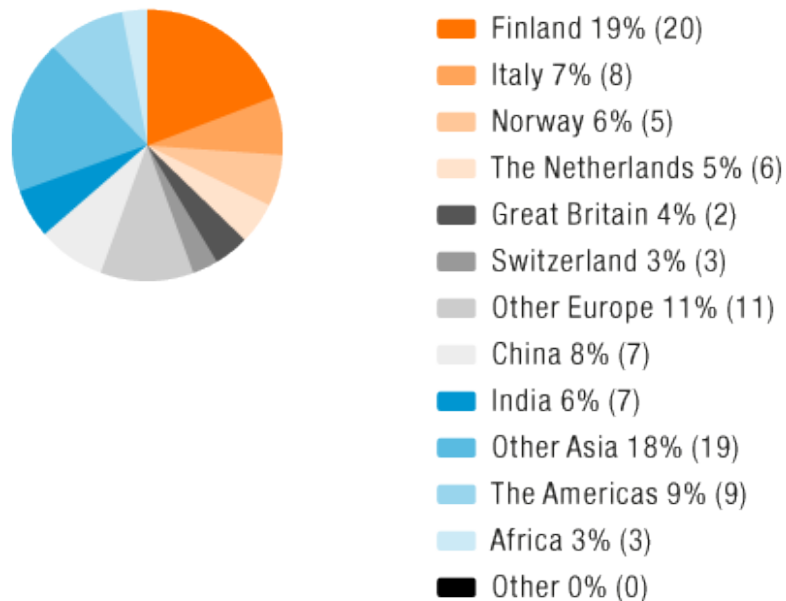
start in 2014. The joint venture is subject to approval by the relevant authorities. The joint venture with YCMP is a further step in Wärtsilä's strategy to continuously strengthen its competitiveness, to capitalize on significant growth opportunities, and increase its focus on the offshore and special segments in China, the world's largest shipbuilding country.

During the spring 2012 a global project concerning organizational realignment and redesign was started. The change in structures and responsibilities were mostly done in Ship Power and in Industrial Operations divisions. Through the change 961 people were transferred from Industrial Operations into Ship Power business lines. The main goal of the change is on the one hand to redesign the organisation to better support more entrepreneurial way of working and leading business, and on the other hand, build in more transparency and more clear business accountability by establishing global business lines with end to end responsibility into Ship Power global division. The Industrial Operations division was also renamed PowerTech. A detailed transition plan was finalised in September and the new organisation became effective as of 1 October 2012.

## Personnel

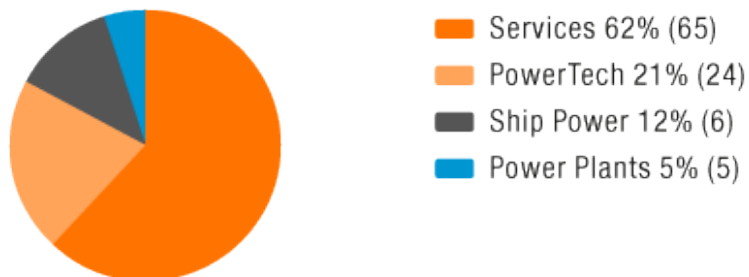
In addition to direct employment, Wärtsilä employed also indirectly an external workforce totalling 2,878 man-years in subcontracting at its factories and units. The units located in Finland had a total personnel of 3,640 employees.

### Personnel by country

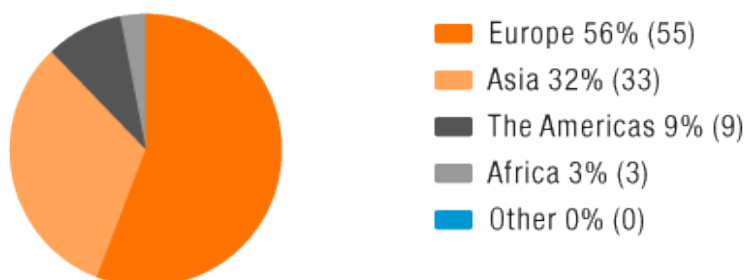


### Personnel by business

The increase in Ship Power personnel relates mainly to the Hamworthy acquisition.



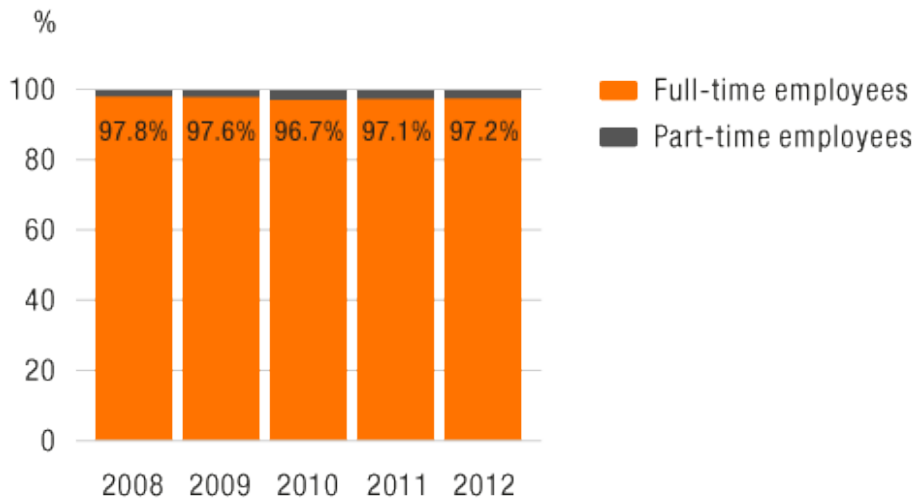
### Personnel by market area



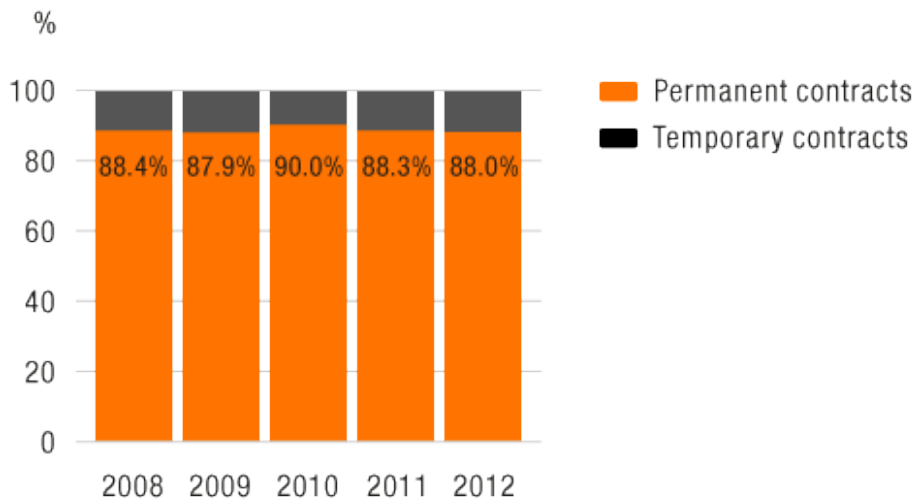
### Number of employees per business

	No. of employees	Change
Power Plants	932	77
Ship Power	2 139	1 140
Services	11 163	-5
PowerTech	3 811	-280
Other	842	42

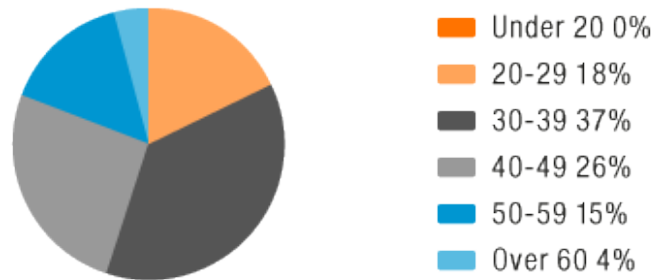
### Full-time/part-time employees



### Permanent/temporary employees



## Age structure



All in all, 336 employees were reduced globally during 2012 based on the different local and global redundancy programs started in 2011.

In addition, part of the expired temporary employment, voluntary leavers and retirements was not replaced. At the same time, Wärtsilä continued to recruit in the critical competence areas. Major part of open vacancies were filled by Wärtsilä employees.

On 20 August Wärtsilä Finland Oy announced the start of the consultation process regarding the reorganisation of the Fuel Cell function. The negotiations regarding the adjustments started due to Wärtsilä's renewed product development strategy, where the development of fuel cells is not seen as a contributing activity to company operations in a mid-term perspective. The consultation process originally affected 30 persons. In spring 2012 Wärtsilä started to evaluate possibilities together with an external cooperation partner with the aim of securing continuation of the activities. The establishment agreement of a new company, where Wärtsilä has a minority of ownership, was signed in December 2012. Nine employees from former Fuel Cell function will be employed by the new company.

On 1 November Wärtsilä announced its plans to align the manufacturing footprint and increase flexibility to adjust to the challenging market situation and ensure our competitiveness. The plan involved the moving of assembly and testing of Controllable Pitch Propellers and Gear boxes to China and Italy respectively. A group consisting of members from the local propulsion manufacturing management proposed to Wärtsilä a management buyout (MBO) for the current machine park and to become a supplier to Wärtsilä of machining activities.

On 23 November the two parties reached an agreement to proceed with the MBO proposal, and that a new company was to be started up at the premises of Wärtsilä in Rubbestadneset from January 2013 onwards. The new company was registered on 6 December with the name Olvondo Industries AS. The agreement comes into force on 1 January 2013 and from this date 88 Wärtsilä employees within the gear and propeller manufacturing will have a new employer.

In Finland temporary lay-offs at Wärtsilä's Delivery Centre Vaasa realised starting 17 December with a four week temporary lay-off period and through shortened work weeks until end of June 2013. During spring 2013 there will also be two more temporary lay-off weeks. The temporary lay-offs concern more than 700 persons. The temporary lay-offs will be around 40 days on an individual level.

Wärtsilä had 18,887 employees at the end of 2012 (17,913).

## People management in 2012

The main goal of Wärtsilä's human resources strategy is to support the group strategies and to bring them alive by developing Wärtsilä's organisation and competencies to meet the business needs. The key action areas of the people strategy are further development of leadership and leadership culture in the company as well as a high-performance culture throughout the organisation by promoting true employee engagement through a culture of open communication, integrity and innovation and finally by ensuring that the businesses have the requisite resources and skilled and motivated people at their disposal. This means supporting organisational design and changes, continuous competence development and stronger performance management processes with target setting, proper feedback, evaluation of overall performance and recognition of strong performance.

In 2012 both Hamworthy integration and change to more entrepreneurial organisation have been major projects and strong focus for human resources as well. In addition to these global changes, many local change initiatives have been concluded.

Wärtsilä Human Resources continued to develop its common people management processes and tools and common ways of working across national and organisational boundaries. Wärtsilä continued to invest in technologies and tools that enable virtual collaboration and conferencing. These measures have brought clear cost savings, and more importantly, they have increased efficiency and enhanced the balance between work and home life by reducing the time needed for travelling.

## Performance management

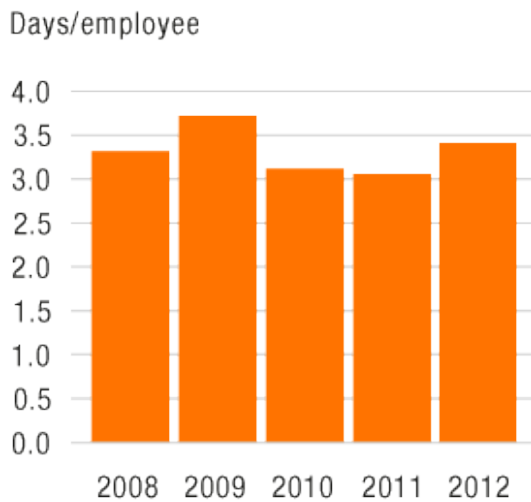
The performance management process supports Wärtsilä in reaching its business targets by translating business strategies to team and individual objectives. Each Wärtsilä employee needs to know and understand Wärtsilä's business strategy and its goals. More importantly, they need to know the targets set for their own units and the main target areas related to their own work. As part of the performance management process, each employee will have a proper performance evaluation based on their overall job performance. Overall performance evaluation will be one of the inputs for the compensation decisions following the principle of performance-based rewarding.

## Learning and development

Wärtsilä continued its leadership development activities in many areas. New learning solutions for line managers have been developed to support the managers in their people management and leadership roles. An annual executive development programme was held in November, and six other global leadership development programmes for senior managers were carried out during 2012. The number of managerial training days is also followed regularly as one of the HR KPIs. Continuous development of new training programs for core competence areas in sales, project management and technology have been developed and delivered during 2012 and they will be part of the learning offering in 2013 as well.

Learning at work, self-learning, mentoring, coaching, job rotation and assignments designed to enable the competence development and the transfer of competence and skills from experienced to younger employees are integral parts of the development of learning and competence within the company. Employees are given formal classroom training at all organisational levels: from induction training for new employees to training courses for the company's top executives. Wärtsilä employees attend a total of 62,040 training days a year, averaging 3.4 days per employee. This indicates the broad scope of this function. Many of the training programs are tailored to the specific strategic competence development needs of the businesses.

## Training days



## Training days

Days/employee	2012	2011	2010	2009	2008
Managers and superiors	3.3	3.4	3.2	3.9	2.7
Other white-collar employees	3.9	2.5	2.9	3.8	3.3
Blue-collar employees	3.0	3.4	3.3	3.5	3.5

## Engagement

The positive trend in development discussion compliance has continued. In 2012 compliance target has included also the blue collar employees. The global, average coverage of annual development discussions was 84%. Strengthening engagement through active strategy communication has been a main target for all Wäertsilä entities. Positive impact of the different communication initiatives was also visible in the sixth global employee satisfaction survey, MyVoice, which was conducted in March 2012.

## Employee Practices

Wäertsilä's corporate policy on equal opportunities and fair employment practices creates a common framework for employee practices in all Wäertsilä companies and contains the following sections: Equal opportunities, Human and labor rights, Well-being at work, No harassment accepted, Remuneration, Implementation and Violations.

### Equal opportunities

Wäertsilä is committed to fostering equal employment opportunities, in which individuals are selected and treated on the basis of their job-relevant merits and abilities and are given equal opportunities within Wäertsilä.

Wärtsilä's policy is to treat all employees equally on the basis of their merits, without discriminating them on the basis of their race, ethnic or national origin, color, gender, family status, sexual orientation, creed, disability, age or political beliefs.

## Employee benefits and remuneration

The basic principle for remuneration in the company is to pay the same wage for the same job and the same performance. The salary is meant to be just, fair and encouraging. Differences in individual salaries are based on how demanding the job is, on differences between competence, work experience and performance and not on gender.

In general, temporary and part time employees are offered the same benefits as permanent employees. In some countries, eligibility is linked to months or years of service – such differences being typically based on collective agreements according to local legislation.

Individual salaries are reviewed once a year in connection with the performance review and in the framework of annual salary increase guidance. The company may pay employees an annual bonus in accordance with company rules and based on separate bonus agreements. Based on financial and individual performance, bonus outcome is determined once a year. Employees may be paid a spot bonus based on exceptional performance. Benefits, such as a company car, service year awards and well-being, fitness and health services, are planned and implemented locally taking into account both company guidelines and national practices.

## Minimum notice period

Wärtsilä complies with European Union directives, local acts of co-operation in the companies and corporations, collective agreements and equivalent regulations concerning consultation and local bargaining. Concerning the termination of employment, Wärtsilä respects national labor union agreements and employment legislation.

In the case of occurrences having significant business or social implications, such as personnel redundancies, the transfer in full or part of production facility location, structural changes, as well as transnational effects, the EWC Working Committee and/or local employee representatives are consulted before decisions about such matters are made or, if that is not possible, as soon as possible. The objective is to provide information about any significant operational change at the time of planning.

## Competency management

Wärtsilä's Competency Management and Development frame is a structured way to carry out long-term competence development plans within our businesses and functions. Wärtsilä has defined sixteen global job families consisting of generic job descriptions for seven different demand levels. In the job description, the most critical competencies of the job are defined and used as a basis for individual position competence requirements. Typically in the connection of annual development discussion, individual competencies are assessed against the job requirements and position profile. Competence assessment of our employees and a comparison with competence targets allow us to analyse competence gaps and create development plans accordingly.

All training and development activities in Wärtsilä strive to develop, maintain and renew the short and long term skills and competencies required to fulfill our strategy. Having the right competencies available at the right time and being able to continuously adapt to a changing business environment are critical success factors for Wärtsilä.



## Consultation and information procedures in Group companies

Wärtsilä's procedures for consultation and information within the Group are arranged in each country according to local legislation. Wärtsilä's Code of Conduct calls for ongoing and open dialogue between the company's management and employee representatives through co-determination bodies, and employees are kept informed of both the Group's situation and that of their particular company. Company management and personnel engage in an open discussion also in those countries where there are no formal co-determination bodies as such. Regular briefings for personnel are an integral part of the operating procedures of Wärtsilä companies. Employee participation in decision-making also extends to occupational health and safety (OHS). Most Wärtsilä units have an OHS committee with representatives from all personnel groups.

In addition to Wärtsilä's procedures for consultation and information for employees at the local level, the European Works Council (EWC) handles issues that affect at least two companies located in the EU and the Group as a whole. The EWC and its working committee play an active role in considering and pursuing corporate level issues.

Dialogue at the individual level is conducted through development discussions, which are held at least once a year. The subjects covered in these discussions range from the Group's and business unit's targets to the individual's job description, competence development, career alternatives, personal targets and feedback. Development discussions are by definition held with all employees.

Employees are able to have a direct impact on the company's operations and their development by making suggestions. Each Wärtsilä employee can offer suggestions for improvement in operations either through the continuous improvement process (CIP) or by submitting private initiatives. CIP-proposals are discussed jointly and need a common decision to be put into effect. Individual initiatives are evaluated by experts within the company and, if found to be feasible, are put into effect. Another global channel for new ideas is the MyDea tool in the Idea Management portal via which new ideas concerning products and solutions, operational development and business are proposed and channeled to the nominated substance owners for comments and further reviews.

Business performance updates are given to all personnel on a regular basis in connection with Wärtsilä interim reporting. The company intranet "Compass" and the employee magazine "Wattsup" are the common global channels for internal communication.

## Recognition of excellent performance

Wärtsilä encourages its employees to be innovative by granting an annual Technology and Innovation Award either to an individual or to a team for the best technical innovation of the year. The award criteria are that the invention must be innovative and environmentally sound, it must represent leading technology, improve a product or process and offer potential for cost savings. Wärtsilä also grants annually a Customer Care Award for a team or individual who actively participated in the initiatives leading to development of business operations, quality improvements in how we serve and partner with customers, customer satisfaction or Wärtsilä values demonstration.

## Personnel in figures 2012

Number of employees at 31 Dec. 2012		18 887
Number of nationalities		107
Change in number of employees (net employment creation)		-416
Average age of employees	years	39.4
Male/female ratio	%	84/16
Executive positions globally: male/female ratio	%	91/9
Employee turnover (resigned)	%	6.9
Total payroll costs	MEUR	887
Aggregate coverage of different bonus schemes	%	60
Development discussions held annually	%	84

## Occupational health and safety

Wärtsilä's occupational health and safety principles are defined in the Code of Conduct, the company's QEHS policy and in the directive on environment, health and safety (EHS). Wärtsilä's subsidiaries are required to have a management system in use that conforms to the QEHS policy and the EHS directive. The main aspects of the management system relate to compliance with legislation, identifying and minimising occupational health and safety risks, personnel training, implementing effective health and safety programmes and instructions, recording and investigating occurred incidents and the continuous improvement of occupational health and safety performance.

The coverage of OHSAS 18001 certifications in Wärtsilä subsidiaries increased during 2012. At the end of 2012, 37 Wärtsilä companies operated with a certified occupational health and safety management system. These certified occupational health and safety management systems cover roughly 80% of Wärtsilä's total workforce.

In addition to the management system, Wärtsilä companies apply occupational health and safety programmes as required by local legislation, which are normally developed by occupational health and safety committees consisting of representatives of the companies' management and personnel. Altogether 71% of Wärtsilä companies have an occupational health and safety committee.

The indicators used to measure occupational health and safety performance include the number of accidents, the time of absence due to sickness and the frequency of accidents. Wärtsilä has set a corporate level target of achieving zero lost time injuries. This target is a long-term commitment from the company to strengthen safety culture, and it requires actions from all Wärtsilä companies and employees. The safety performance of the companies is monitored on a monthly basis and the results are reviewed in the Board of Management.

In 2012, Wärtsilä launched a global Zero Injury training program comprising a 4-hour e-learning and 4-hour practical training session. The target group for the training consists of Wärtsilä's front-line personnel working in factories, workshops and customer premises. The e-learning has been translated into nine major languages in order to ensure effective training in various countries. Over 3,200 employees had completed the e-learning by the end of 2012, and this training will continue during 2013.

Wärtsilä's Safety handbook, issued in 2011, was translated into 13 different languages during 2012, and hard copies were distributed to the Wärtsilä companies in which those languages are in use.

An internal safety training video published by Wärtsilä a year ago won the 2012 intermedia-globe Gold Award and intermedia-globe Grand Award at the World Media Festival. The award ceremony took place on the 9 May 2012, in Hamburg, Germany.

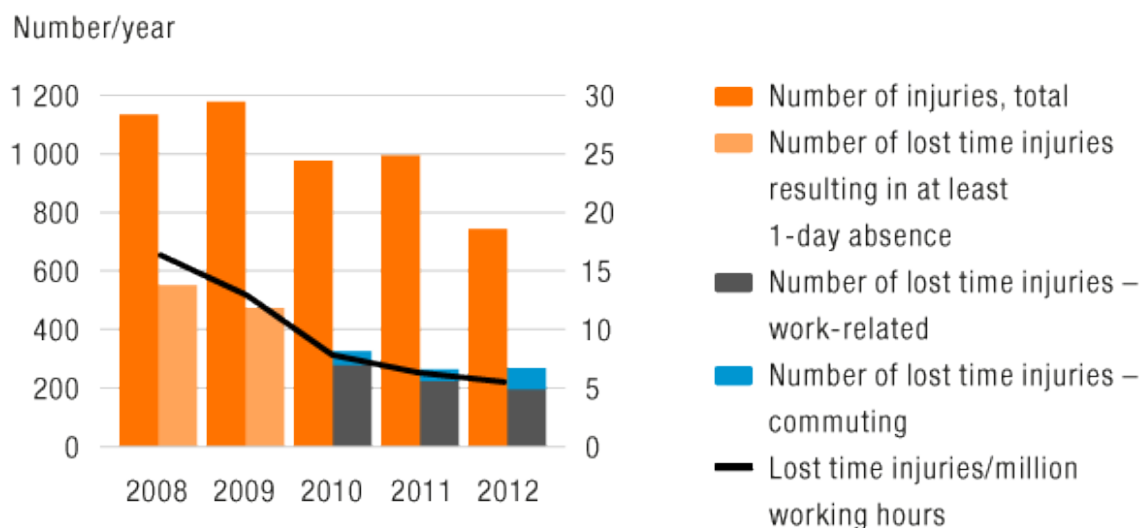
To strengthen Wärtsilä's safety culture, the Board of Management decided to start a safety walk practice, which requires members of the Board of Management and division management teams to conduct regular visits to Wärtsilä's subsidiaries and discuss with employees about safety related topics. This practice has started in the fourth quarter 2012, and full implementation has been scheduled for the year 2013.

The positive trend in reducing lost time injuries continued, and Wärtsilä achieved a good result in 2012 with a lost time frequency index of 12.7%, below that of the previous year. There were no work related fatalities during year 2012.

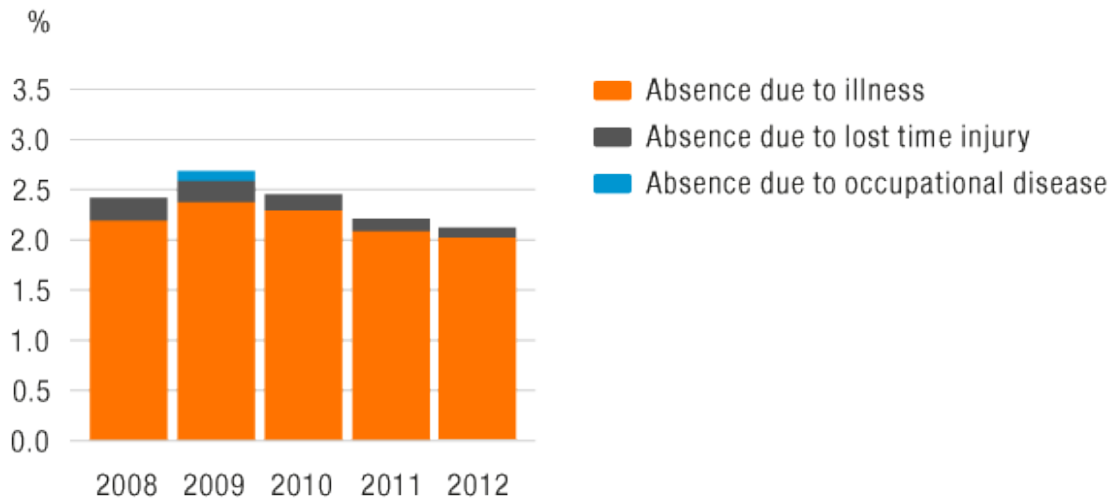
During the report period there were two violations discovered in Wärtsilä subsidiaries. Wärtsilä Finland was imposed a fine of EUR 30,000 due to a personal injury which took place in 2009. The employee gashed his arm when conducting manual lifting, and the court of justice stated that Wärtsilä Finland had not provided adequate lifting tools for this specific operation. Several corrective actions have been taken after this case, and the court also found that safety management in Wärtsilä Finland is on a good level.

Wärtsilä Japan received a notification from a local authority which stated that the company did not provide appropriate instructions for a contracted employee who was handling an organic solvent. Wärtsilä Japan has submitted a report of corrective actions to the respective authority.

## Injuries



## Absence rate



## Human rights

Wärtsilä supports and respects basic human values as outlined in the UN's Universal Declaration of Human Rights. Wärtsilä also supports the Ten Principles of UN Global Compact, of which six principles are related to Human and Labour rights.

Wärtsilä's employees represent 107 nationalities. The company supports fair and equal treatment of all its employees. Wärtsilä supports the work-related rights defined by the International Labour Organization (ILO). Therefore the company works to ensure that there is freedom of association and right to collective bargaining in the company. In those countries where local legislation does not recognise these rights, Wärtsilä endeavours to give employees other channels for expressing their opinions.

Wärtsilä does not accept the use of forced labour or child labour in any form. Wärtsilä is unaware of any cases of breach of human rights, discrimination, infringements of rights at work or the use of forced or child labour. During the reporting period the following misconducts was realized. Wärtsilä Korea Ltd. was charged a penalty fee of EUR 15,079 for not fulfilling its legal obligation to hire disabled persons covering a minimum of 5% of the total headcount. The company has mainly hired blue collar employees, which limits the suitable job offerings to disabled persons.

Since Wärtsilä expects its partners and suppliers to act in compliance with its Code of Conduct, similar measures will also apply to them. The company sets common requirements for its suppliers and regularly monitors conformance with these requirements through numerous performance indicators and audits. All the company's main suppliers are required to comply with Wärtsilä's requirements, in order to gain approved supplier status. Wärtsilä assesses all companies in conjunction with mergers and acquisitions. An integral part of these due diligence assessments is compliance with relevant legislation. More information on supplier performance is presented in [Suppliers section](#).

## Conducting business in weak governance zones

As a truly international company, Wäertsilä has delivered solutions to more than 160 countries. Wäertsilä complies with all relevant guidelines of the OECD and the International Chamber of Commerce and with the sanctions set by the United Nations and the European Union, by supporting their implementation. In addition, the Wäertsilä Code of Conduct applies to all Wäertsilä employees. Wäertsilä supports its solutions globally during their entire lifecycle, often spanning up to 30 years. Thus, Wäertsilä can at times be present in countries facing various uprisings, ethnic conflicts, area disputes or violations of human rights. Conducting business locally emphasises the importance of responsible business practices. Governments and the international community define the proper framework for companies to conduct their business. Wäertsilä complies with relevant legislation and international conventions. We are committed to sustainable development and responsible business conduct, and we promote the Ten Principles of the UN Global Compact within the sphere of our influence.

## Security practices

Wäertsilä has a corporate security policy and guidelines, which incorporate human rights considerations and international best practices. The policy is also applied to third party organisations. Wäertsilä has received certifications for supply chain security management, such as C-TPAT and AEO through its network companies. The security personnel of Wäertsilä have been trained according to our policy, guidelines and best practices. Wäertsilä participates in the work of ASIS Finland and ASIS International.

## Impact on communities

Wäertsilä aims to contribute towards the well-being of local communities in which the company is present. This can be reached for example by creating employment, by paying taxes and social dues, by providing training and education to employees, by co-operating with local stakeholders and by supporting local development.

The guiding principle of Wäertsilä's Code of Conduct is to promote openness and good interaction with its stakeholders locally. This applies as much to the families of personnel, our neighbours, educational institutions and the media as to local authorities and officials. The methods used towards this end include Open Door days, press briefings and different modes of communication for different target groups.

Wäertsilä's impact on employment, the public sector and the company's activities for charitable purposes are described in the Economic Performance section of this report.

Measures to evaluate the impacts on local communities in case of operational changes of Wäertsilä subsidiaries are determined case by case.

## Suppliers

Wärtsilä has implemented measures to regularly track its suppliers' performance. As part of the supplier evaluation, Wärtsilä conducts a rating based upon Wärtsilä's supplier requirements. This rating includes an evaluation of compliance with Wärtsilä's sustainability requirements related to legal compliance, environmental, occupational health and safety management and social performance. This rating is a result of pre-qualification questionnaires and conducted audits.

Based on this rating, the suppliers can be approved, approved with limitations or remarks, or banned. During 2012, 194 suppliers were rated for the first time, and 273 suppliers received a renewal of their rating. By the end of 2012, Wärtsilä has rated 665 of its key suppliers, and this covers 93% of the total spent on Wärtsilä Supply Management supplies.

This rating is part of the quarterly supplier reviews conducted by Wärtsilä Supply Management. The rating is reviewed regularly, as are the results of conducted audits.

In 2012, three suppliers were banned because of non-compliance with Wärtsilä's requirements for environmental, health and occupational safety management, or through non-compliance with legislation.

Wärtsilä Supplier Development activities are implemented continuously on a global basis. One global action item in 2012 has been the production of a Supplier Handbook, which clarifies Wärtsilä's expectations of its suppliers. There is a major emphasis on introducing sustainability related supplier requirements. As a new requirement, Wärtsilä is introducing a list of substances that are either prohibited or restricted in Wärtsilä's products, materials and processes. This list is named as Wärtsilä's Black and Grey list, and is based on international regulations, conventions and European REACH legislation.

On 20 and 22 March 2012, Suppliers' Days were successfully held in Shanghai, China and Busan, South Korea respectively. Altogether, 150 Chinese supplier representatives and 70 internal Wärtsilä representatives participated in the China event. In South Korea, there were 50 supplier representatives and 25 internal participants. In these events, the importance of Wärtsilä's supplier requirements was emphasised, including the commitment to conduct business in a sustainable fashion.

## Preventing corruption and bribery

Wärtsilä's Code of Conduct, Anti-Corruption Policy and Broker Directive expressly prohibit the company and its employees from offering or accepting any kind of benefit considered to be a bribe and from taking actions that could give rise to a conflict of interest or breach of loyalty. The instructions make it compulsory to comply with anti-corruption laws of all the countries in which Wärtsilä does or intends to do business and to report any cases of corruption and bribery. The company renders extensive training for its personnel on anti-corruption principles and applicable legislation as well as the relevant company policies and procedures.

The company had one case of alleged bribery during the review period related to a 2001 project in Kenya. In May 2009, the public prosecutor in Finland brought charges against a former senior manager of Wärtsilä Finland Oy for aggravated bribery before the Pohjanmaa District Court (previously known as the Mustasaari District Court). In October 2009, the public prosecutor further filed a demand

for a corporate fine from Wärtsilä Finland Oy as a result of the charges against the former senior manager. It is to be noted that the demand for a corporate fine was only ancillary to the charges brought against the former senior manager. Both the senior manager and Wärtsilä Finland Oy regarded the charges as unfounded. The charges related to a consulting agreement which was made in conjunction with the project in Kenya. By its decision of 18 December 2009, the District Court dismissed all the charges against the individual and the demands against Wärtsilä Finland Oy. In February 2010, the public prosecutor filed an appeal with the Vaasa Court of Appeal. By its decision of 21 September 2010, the Vaasa Court of Appeal referred the case back to the District Court for reasons of procedural law as no evaluation of the evidence had been conducted by the District Court for purposes of its decision. Subsequently, the former senior manager and Wärtsilä Finland Oy submitted a petition for leave to appeal the Court of Appeal decision to the Supreme Court of Finland which granted the leave. On 29 March 2012, the Supreme Court rendered its decision upholding the Court of Appeal decision. Hence, the case is currently pending before the Pohjanmaa District Court, with the main hearing in the case starting on 29 January 2013 in relation to the originally issued charges.

## Political lobbying

Wärtsilä's policy is to engage in an open dialogue and discussion with both local and international public authorities and officials. The aim of the dialogue is to share information and improve the quality of regulation. Wärtsilä participates in public consultations in the areas of importance to the company. During 2012, Wärtsilä did not make any contributions to political parties.

## Competition regulation

Wärtsilä has a compliance programme for managing risks relating to competition law in place, and the company's corporate management is strongly committed to implementing this programme. The cornerstone of the programme is a competition law manual, which is kept up-to-date, providing information on competition rules and instructions for Wärtsilä's internal procedures. As before, Wärtsilä arranged a number of competition law training seminars in 2012 for the relevant personnel in order to further promote knowledge of competition laws and thus ascertain full compliance with them.

## Product liability

Wärtsilä's occupational health and safety policy defines procedures for ensuring product safety. Further information about issues relating to product safety is given in the [Wärtsilä and sustainability section](#). During the review period, no instances of non-compliance related to product liability were identified.



## Customer satisfaction

Wärtsilä continuously develops and deepens relations with its customers. Wärtsilä supports its customers in the design, start up, and operation of the equipment and systems it delivers, as the requirements of each customer dictate. Dialogue with customers is vital when developing operations, products and services.

Wärtsilä arranges Customer Days for existing and potential customers at locations in various parts of the world. These events are used to review subjects of topical interest from both local and global perspectives, and to discuss existing and future needs and challenges. In 2012, the Ship Power and Power Plants businesses arranged or participated in some 300 industry-related events globally, including international and national seminars, exhibitions, and conferences. These events were visited by thousands of customers, potential customers, and other stakeholders such as investors, consultants, suppliers, students, and other interested parties.

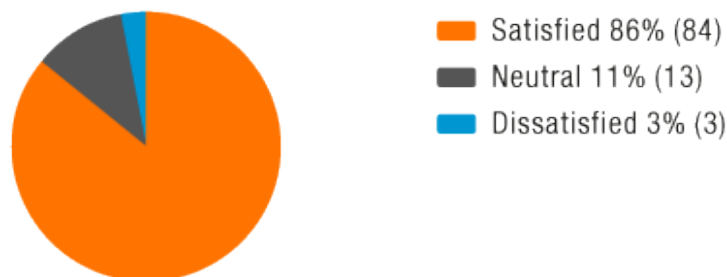
In order to strengthen our customer-focused mindset, we at Wärtsilä use an integrated customer feedback process (CROL). The aim is to achieve excellent long-term relationships by listening to customers and acting upon their feedback. Challenges may arise in our kind of business – but if we are there, listening to our customer, taking a pro-active approach and solving the challenges, relationships will develop.

Our customers provide us with important feedback during project deliveries as well as during the operation period of the installations. This feedback is continuously reviewed and acted upon, both on the operative and management level, to ensure that we meet our customers' expectations.

During 2012 we received over 3,000 feedback forms from our customers, from different interactions and activities we have with them. Over 300 of these customer feedback forms triggered a corrective action, which our front-line personnel started to work on directly.

### Customer satisfaction results

#### Overall satisfaction key performance indicator





### The average results of the customer satisfaction survey

	2012	2011	2010	2009	2008
Power Plants	8.5	8.4	8.3	8.1	8.3
Ship Power	8.1	8.1	7.6	7.4	7.4
Services	8.4	8.3	7.9	7.9	7.8
Sample	3 022	2 188	1 933	1 859	2 204

The assessment scale is 1-10, the highest grade being 10. The index presented above is a calculated average based on all the received feedback.

## Our figures

The operational performance data in this report has been compiled from the economic, environmental and social records of the Wärtsilä companies. Whilst every effort has been made to ensure that the information is neither incomplete nor misleading, it cannot be considered as reliable as the financial information published in the Financial review.

## Economic data

	2012	2011	2010	2009	2008
<b>Customers</b>					
Net sales (MEUR)	4 725	4 209	4 553	5 260	4 612
Net sales by market area (MEUR)					
Europe	1 202	1 249	1 266	1 654	1 695
Asia	2 009	1 594	1 754	1 937	1 792
Americas	994	845	1 034	1 176	689
Africa	398	443	390	399	379
Other	122	77	109	94	57
<b>Suppliers</b>					
Cost of goods, materials and services purchased (MEUR)	3 007	2 694	2 927	3 593	3 134
<b>Employees</b>					
Salaries and wages (MEUR)	887	770	773	735	693
Salaries and wages by market area (MEUR)					
Europe	631	552	565	549	520
Asia	145	119	111	106	106
Americas	91	80	78	66	60
Africa	12	11	12	9	6
Other	8	7	6	4	1
Net sales / employee (TEUR)	250	238	253	279	262
<b>Public sector</b>					
Taxes and social dues (MEUR)	317	322	326	337	288
Taxes and social costs by market area (MEUR)					
Europe	234	240	253	264	243
Asia	39	41	35	37	28
Americas	36	38	31	32	15
Africa	6	2	5	3	1
Other	2	1	2	1	0
Subsidies received (TEUR)	5 543	8 263	7 406	13 725	16 095
Net financial items (MEUR)	-30	-16	-13	-34	-9
<b>Community</b>					
Donations given, Board of Directors (TEUR)	104	60	670	70	70
Donations given, Wärtsilä companies (TEUR)	456	940	421	527	463
<b>Expenditure</b>					
R&D costs (MEUR)	188	162	141	141	121
Environmental costs					
Environmental capital expenditures (MEUR)	0.8	0.9	2.9	1.1	2.6
Environmental operating expenditures (MEUR)	6.3	6.1	5.5	4.2	5.4

## Environmental data

	2012	2011	2010	2009	2008
<b>Materials</b>					
Total material usage (t)	99 570	98 142	100 896	129 320	113 772
Metals (t)	70 323	65 263	69 194	85 351	94 431
Sand (t)	21 279	23 072	20 739	27 157	12 515
Chemicals (t)	6 730	7 963	8 500	12 932	4 551
Others (t)	1 238	1 844	2 462	3 880	2 275
<b>Energy</b>					
Total energy consumption (TJ)	1 691	1 735	1 916	2 194	2 383
Electricity consumption (MWh)	143 810	145 078	149 047	164 022	151 169
Purchased electricity (MWh)	125 761	129 885	131 562	148 780	136 491
Generated electricity (MWh)	18 007	15 109	17 485	15 242	14 678
Sold electricity (MWh)	22 568	36 893	39 958	60 881	91 025
Heat consumption (MWh)	27 910	31 805	41 401	37 060	50 193
Light fuel oil (t)	5 096	3 409	3 623	5 662	5 432
Heavy fuel oils (t)	5 920	7 652	9 020	15 652	22 145
Natural gas (t)	9 767	10 486	12 347	11 792	11 160
Other fuels (t)	4 025	4 173	3 729	3 326	1 711
<b>Water</b>					
Total water consumption (1 000 m <sup>3</sup> )	9 546	9 775	10 292	8 128	11 712
Consumption of domestic water (1 000 m <sup>3</sup> )	799	830	840	808	622
Consumption of cooling water (1 000 m <sup>3</sup> )	8 747	8 945	9 452	7 320	11 090
<b>Emissions</b>					
Emissions of nitrogen oxides (t)	697	765	826	1 290	1 633
Emissions of carbon dioxide (t) (direct)	63 762	68 897	80 234	96 749	122 669
Emissions of carbon dioxide (t) (indirect)	54 011	56 610	58 002	62 211	54 112
Emissions of carbon dioxide (t) (indirect - flights)	39 033	37 459	35 060	37 882	45 014
Emissions of sulphur oxides (t)	145	265	277	595	840
Emissions of total hydrocarbons (t)	180	166	211	230	174
Particulates (t)	13	20	19	28	65
Emissions of VOC (t)	51	58	61	170	152
<b>Waste</b>					
Total waste (t)	62 517	85 153	43 566	55 803	40 209
Non-hazardous waste (t)	39 512	42 865	38 391	49 946	35 055
Hazardous waste (t)	23 005	42 288	5 175	5 857	5 154
Waste for landfills (t)	21 988	27 808	21 682	20 752	6 807
Waste for recycling (t)	15 423	12 444	14 221	26 332	25 133
Waste for incineration (t)	2 101	2 614	2 542	2 862	3 115
Hazardous waste for landfills (t)	17 376	38 054	1 127	852	694
Hazardous waste for recycling (t)	3 200	2 082	2 161	2 305	2 220
Hazardous waste for incineration (t)	2 429	2 152	1 887	2 699	2 240

## Compliance with legislation

Disturbances	3	6	8	8	3
Non-compliance	2	6	3	0	8
Complaints	7	5	5	7	15

## Social data

	2012	2011	2010	2009	2008
<b>Personnel</b>					
Number of employees at the end of the year	18 887	17 913	17 528	18 541	18 812
Personnel by business					
Services	11 163	11 168	11 150	11 219	11 011
Ship Power	2 139	999	969	1 140	1 601
Power Plants	932	855	835	835	904
PowerTech	3 811	4 091	4 210	4 911	4 883
Other	842	800	364	436	413
Personnel by market area					
Europe	10 490	9 813	9 790	10 889	11 048
Asia	6 084	5 830	5 503	5 610	5 692
Americas	1 693	1 700	1 700	1 610	1 577
Africa	533	484	443	410	416
Other	87	86	92	78	79
Average age of employees	39.4	38.8	38.9	38.8	38.0
Permanent employees (%)	88	88	90	88	88
Temporary employees (%)	12	12	10	12	12
Full-time employees (%)	97	97	97	98	98
Part-time employees (%)	3	3	3	2	2
Employee turnover (resigned) (%)	6.9	8.6	9.8	10.5	10.2
Net employment creation	-416	-191	-814	-310	2 044
Training days (days/employee)	3.4	3.0	3.1	3.7	3.3
Managers and superiors	3.3	3.4	3.2	3.9	2.7
Other white-collar employees	3.9	2.5	2.9	3.8	3.3
Blue-collar employees	3.0	3.4	3.3	3.5	3.5
Development discussions held annually (%)	84	89	72	78	67
<b>Gender diversity</b>					
Male/female ratio (%)	84/16	86/14	86/14	86/14	86/14
Executive positions globally: male/female ratio (%)	91/9	90/10	90/10	87/13	
<b>Regional diversity</b>					
Number of nationalities	107	114	109	110	111
<b>Injuries</b>					
Total number of injuries	742	987	971	1 169	1 127
Number of lost time injuries resulting in at least 1 day absence, total	238	267	333	470	548

Number of lost time injuries - work-related	194	221	274		
Number of lost time injuries - commuting	44	46	59		
Lost time injuries / million working hours	5.5	6.3	7.8	12.9	16.3
<b>Absence rate</b>					
Absence due to illness (% of total working hours)	2.0	2.1	2.3	2.4	2.2
Absence due to lost time injury (% of total working hours)	0.1	0.1	0.2	0.2	0.2
Absence due to occupational diseases (% of total working hours)	0.0	0.0	0.0	0.0	0.0
<b>Fatalties</b>					
Number of fatalities, total	0	1	1	2	0
Employees	0	1	0	1	0
Contractors	0	0	1	1	0
<b>Non-compliances</b>					
Number of non-compliance cases	3	4	2	4	3
Fines of non-compliance cases (EUR)	45 079	7 869	26 157	17 659	2 352
<b>Customer satisfaction</b>					
Ship Power	8.1	8.1	7.6	7.4	7.4
Services	8.4	8.3	7.9	7.9	7.8
Power Plants	8.5	8.4	8.3	8.1	8.3
Sample	3 022	2 188	1 933	1 859	2 204

## Report scope

Wärtsilä's Sustainability Reporting 2012 is prepared according to the GRI (Global Reporting Initiative) sustainability Reporting Guidelines (G3).

Wärtsilä reports those core indicators which are of most relevance to its operations, products and stakeholders. The Sustainability section of the Annual Report examines the company's economic, environmental and social performance. The core indicators chosen are of importance at the corporate level and are based on the core indicators of the G3 guidelines. Reporting of the product performance, which is done mainly on the internet ([www.wartsila.com](http://www.wartsila.com)), describes the environmental aspects and impacts of Wärtsilä's products, the measures taken by Wärtsilä to reduce these impacts and the environmentally advanced solutions that Wärtsilä has developed.

### Coverage of the report

This report covers Wärtsilä's businesses. At the company level, the report includes the parent company and its subsidiaries as well as its manufacturing, service and sales units. The report excludes Wärtsilä's associated companies, joint ventures and supply chain companies.

Wärtsilä's businesses comprise of the Ship Power, Power Plants and Services businesses and PowerTech (ex-Wärtsilä Industrial Operations). The first three of these generate external net sales while the fourth is an internal function.

The economic performance data covers all Wärtsilä companies. The data on environmental and social performance covers all Wärtsilä companies except the following:

Wärtsilä Ship Design Russia CJSC  
Wärtsilä Tanzania Ltd.  
Cedervall Söner AB  
Cedervall Zhangjiagang Marine Products Co. Ltd.  
Cedervall Singapore Pte.

All the former Hamworthy plc subsidiaries:

Wärtsilä Hamworthy Ltd  
Wartsila Water Systems Ltd  
Wärtsilä Valves Limited  
Wärtsilä Hamworthy Inc.  
Wärtsilä Serck Como GmbH  
Wärtsilä Moss AS  
Wärtsilä Suzhou Ltd.  
Wärtsilä Hamworthy Middle East FZC  
Wärtsilä Svanehøj A/S  
Wartsila Pumps Pte. Ltd.  
Wärtsilä Oil and Gas Systems AS  
Wartsila Baltic Design Centre Sp.Z.o.o.  
Wärtsilä Hamworthy Korea Ltd.

These companies will be included in Wärtsilä's sustainable development reporting in the forthcoming years. Wärtsilä's Sustainability Reporting is an integrated part of its annual reporting, and therefore Wärtsilä publishes its sustainability data annually.

## Significant changes in Group structure

The structural changes that apply to Wärtsilä are described in the Business review. The most important change is the acquisition of Hamworthy plc. Certain rearrangements were also made between the Wärtsilä businesses.

## Coverage of operational data

### Operational data, % of Wärtsilä companies

	2012	2011	2010	2009	2008
Economic	100	100	100	100	100
Environmental	79	92	93	84	85
Social	79	92	93	84	85

### Operational data, % of personnel

	2012	2011	2010	2009	2008
Economic	100	100	100	100	100
Environmental	94	98	98	98	95
Social	94	98	98	98	95

### Operational data, % of product manufacturing

	2012	2011	2010	2009	2008
Economic	100	100	100	100	100
Environmental	93	100	100	100	100
Social	93	100	100	100	100

## Reporting profile

### Data collection

The data on the products' environmental performance is based on measured test results. Performance data on the environmental and social aspects of sustainability has been collected from the Wärtsilä companies using a detailed questionnaire. Economic performance data is based mainly on audited financial accounts.

The sustainability data is collected and reported according to Wärtsilä's specific internal reporting guidelines that include all the definitions and instructions necessary for this purpose. Environmental expenditure and investments are reported applying the Eurostat instructions.

Each company has a nominated individual responsible for collection and consolidation of the data, and for its quality and reliability. The management of each company approves the data before it is consolidated at the Group level. The companies report their sustainability data using Wärtsilä's CSM reporting system. The reported data is checked at both local and Group levels before its consolidation.

The content of this Sustainability Report was reviewed and approved by Wärtsilä's Board of Management.

KPMG Oy Ab has independently assessed the report against GRI principles for defining content and quality. As part of the assurance process, KPMG assesses local level data management and processes, evaluates the relevance and reliability of the data reported to headquarters and assesses whether the reporting guidelines of Wärtsilä are well understood and applied. This is achieved through conducting site visits and video conferencing. Site assurances were carried out in Mumbai and Khopoli, India and Wärtsilä Switzerland, Wärtsilä Netherlands and Wärtsilä Japan were assessed through video conferencing.

Wärtsilä self-declares an Application level of "A+" according to the GRI G3 guidelines for this report. KPMG has checked our reporting and has confirmed it to be Application level "A+".

### Additional sources of information

Wärtsilä has previously published the following reports:

Wärtsilä Environmental Report 2000  
Wärtsilä Sustainability Report 2002  
Wärtsilä Sustainability Report 2004  
Wärtsilä Sustainability Report 2005  
Wärtsilä Annual Report 2006  
Wärtsilä Annual Report 2007  
Wärtsilä Annual Report 2008  
Wärtsilä Annual Report 2009  
Wärtsilä Annual Report 2010  
Wärtsilä Annual Report 2011

These reports and their sustainability data are available on Wärtsilä's website: [www.wartsila.com](http://www.wartsila.com).

### Sustainability Report Project Team

Marko Vainikka Director, Corporate Relations and Sustainability (contact person:  
marko.vainikka@wartsila.com)  
Harri Mäkelä Sustainability Officer  
Pauliina Tennilä Director, Investor Relations  
Natalia Valtasaari IR Officer





# Reporting principles

## Economic performance data

The economic performance data is based on audited financial accounting and covers all Wärtsilä subsidiaries unless otherwise stated.

**Donations:** The data of this indicator included 15 major Wärtsilä subsidiaries and the parent company in 2012.

**Subsidies:** The data of this indicator included 15 major Wärtsilä subsidiaries and the parent company in 2012.

## Environmental performance data

**Total energy consumption** includes both direct and indirect energy usage. The direct energy usage includes the fuels used by Wärtsilä subsidiaries. The indirect energy usage includes the purchased electricity and heat. Since the efficiency of purchased electricity and heat generation is not known, the energy conversion is done directly from the purchased values.

**Heat and electricity data** is based on either invoices or measured values.

**Water consumption:** The reported figures are based on either measured values or invoices. The cooling water usage might also be calculated from the heat load in some units.

**Emissions:** The reported figures are mainly based on measured values, based on which specific emission factors are determined. The specific emission factors are determined for various fuels and engine types. The emissions of the heating boilers are either measured or calculated. The emissions of vehicles are calculated by using the VTT (Technical research centre of Finland's) Lipasto database emission factors. The indirect CO<sub>2</sub> emissions (scope 2) are calculated by using the emission factors from the GHG Protocol. The CO<sub>2</sub> emissions of air travel are based on calculations by Wärtsilä's travel agency and are based on DEFRA (the UK government Department for Environment, Food and Rural Affairs) defined factors.

**Environmental hazards:** As such are considered major incidents, which generally require communication to local authorities.

## Social performance data

**Injuries:** The reported figures include all types of reported cases other than lost time injuries.

**Lost time injuries:** The reported figures include all the reported injuries resulting in absence from work of at least one day.

**LTI frequency** is expressed as reported lost time injuries per million working hours. The working hours are actual paid working hours. The lost time injury rate does not include commuting injuries.

**Employee turnover** is calculated from permanent employees. The number of resigned permanent employees is divided by the headcount of permanent employees at the beginning of the reporting period.

# Independent Assurance Report

## To the Board of Management of Wärtsilä Oyj Abp

We have been engaged by the Board of Management of Wärtsilä Oyj Abp (hereafter: Wärtsilä) to provide limited assurance on Wärtsilä's Sustainability Information from the reporting period 1.1.-31.12.2012 presented in connection with the electronic Wärtsilä Annual Report 2012.

The sustainability information subject to the limited assurance engagement (hereafter: the Sustainability Information) includes the data and assertions presented in the "Sustainability" -section and its sub-sections in the Report, as well as the following sub-sections of the "Business" section: "Ship Power and Sustainability", "Power Plants and Sustainability", and "Services and Sustainability". The Sustainability Information also includes data and assertions in the Inside Stories specifically marked with "Sustainability assured 2012", as well as on product sustainability performance presented on selected and marked pages at [www.wartsila.com](http://www.wartsila.com).

The Board of Management of Wärtsilä is responsible for the presented Sustainability Information as well as for preparing and presenting the Sustainability Information in accordance with the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines 3.0. The Board of Management of Wärtsilä has approved the presented Sustainability Information.

Our responsibility is to carry out a limited assurance engagement and to express a conclusion on the Sustainability Information subject to the assurance based on the work performed. We have conducted the engagement in accordance with the International Standard on Assurance Engagements (ISAE 3000): Assurance engagements other than audits or review of historical financial information, issued by the International Auditing and Assurance Standards Board. Amongst others, this standard requires that the assuring party complies with the requirements of the IFAC Code of Ethics for Professional Accountants to ensure their independence. Our assurance report is made in accordance with the terms of our engagement with Wärtsilä. We do not accept or assume responsibility to anyone other than Wärtsilä for our work, for this assurance report, or for the conclusions we have reached.

The evaluation criteria used for our assurance are the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines 3.0.

### Limitations of the engagement

Sustainability related data and information are subject to inherent limitations applying to data accuracy and completeness, which are to be taken into account when reading our assurance report. The presented Sustainability Information is to be considered in connection with the explanatory information on data collection, consolidation and assessments provided by Wärtsilä. Our assurance report is not intended for use in evaluating Wärtsilä's performance in executing the sustainability principles Wärtsilä has defined. To assess the financial state and performance of Wärtsilä, the Wärtsilä audited Financial Statements for the year ended 31 December 2012 is to be consulted.

### The work performed in the engagement

Our assurance procedures are designed to obtain limited assurance on whether the information subject to the assurance engagement is presented in accordance with the Sustainability Reporting Guidelines of the Global Reporting Initiative 3.0 in all material respects. A limited assurance engagement consists of making inquiries, primarily of persons responsible for the preparation of the sustainability information presented, and applying analytical and other evidence gathering procedures,

as appropriate. The evidence gathering procedures mentioned above are more limited than for a reasonable assurance engagement, and therefore less assurance is obtained than in a reasonable assurance engagement.

In our engagement we have performed the following procedures:

- Interviews with two members of senior management to reassert our understanding of the connection between Wärtsilä's sustainability procedures and Wärtsilä's business strategy and operations as well as sustainability objectives;
- An assessment of data management processes, information systems and working methods used at the Head Office to gather and consolidate the presented Sustainability Information, and a review of Wärtsilä's related internal documents and guidelines;
- Comparison of Sustainability Information to underlying rules of procedure, management and reporting systems as well as documentation;
- An assessment of the presented Sustainability Information against the GRI reporting principles;
- A review of the presented Sustainability Information, including the performance data and assertions, subject to the engagement, and an assessment of information quality and reporting boundary definitions;
- Assessment of data accuracy and completeness through a review of the original numerical information received from Wärtsilä's subsidiaries as well as through samples the Group's information systems;
- Assessment of the local reporting processes of Wärtsilä's subsidiaries on a sample basis through a site visit and three video conferences, conducted to Wärtsilä sites selected on the basis of a risk analysis taking into account both qualitative and quantitative information.

## Conclusions

Based on the assurance procedures performed, nothing has come to our attention that causes us to believe that the information subject to the assurance engagement is not presented in accordance with the Sustainability Reporting Guidelines of the Global Reporting Initiative 3.0 in all material respects.

Helsinki, 8 February 2013

KPMG OY AB

Virpi Halonen  
*Authorized Public Accountant*

Nathalie Clément  
*Senior Manager, Advisory*

# GRI and UNGC index

## 1 Strategy and analysis

GRI content	Links	Remarks	GRI / UNGC	
1.1 CEO's statement	<a href="#">Message to the Shareholders</a>		●	●
1.2 Key impacts, risks and opportunities	<a href="#">Risk and risk management</a> <a href="#">Strategy</a> <a href="#">Power Plants and sustainability</a> <a href="#">Ship Power and sustainability</a> <a href="#">Services and sustainability</a> <a href="#">Wärtsilä and sustainability</a> <a href="#">Towards more sustainable solutions</a> <a href="#">Environmental targets</a> <a href="#">Social targets</a>		●	●

## 2 Organisational profile

2.1 Name of the organisation	<a href="#">This is Wärtsilä</a>		●	
2.2 Primary brands, products and services	<a href="#">Operating environment</a> <a href="#">Power Plants review</a> <a href="#">Ship Power review</a> <a href="#">Services review</a> <a href="#">PowerTech review</a>		●	
2.3 Operational structure	<a href="#">This is Wärtsilä</a> <a href="#">Operating environment</a> <a href="#">Notes to the Consolidated Financial Statements</a>		●	
2.4 Location of organisation's headquarters	<a href="#">Shares and shareholders</a>	Helsinki, Finland	●	

2.5 Number of countries and location of operations	<a href="#">This is Wärtsilä Operating environment Notes to the Consolidated Financial Statements</a>	<a href="http://www.wartsila.com">www.wartsila.com</a>	●	
2.6 Nature of ownership and legal form	<a href="#">Shares and shareholders</a>		●	
2.7 Markets served	<a href="#">This is Wärtsilä Operating environment</a>		●	
2.8 Scale of reporting organisation	<a href="#">This is Wärtsilä Shareholders Operating environment</a>		●	
2.9 Significant changes	<a href="#">2012 in brief Board of Directors' report</a>		●	
2.10 Awards received in the reporting period	<a href="#">Recognitions</a>		●	

### 3 Report parameters

3.1 Reporting period	<a href="#">Our reporting</a>		●	
3.2 Date of most recent report	<a href="#">Our reporting</a>		●	
3.3 Reporting cycle	<a href="#">Our reporting</a>		●	
3.4 Contact point for questions regarding the report	<a href="#">Our reporting</a>		●	
3.5 Process for defining report content	<a href="#">Our reporting</a>		●	
3.6 Boundary of the report	<a href="#">Our reporting</a>		●	
3.7 Limitations on the report's scope or boundary	<a href="#">Our reporting</a>		●	
3.8 Basis for reporting subsidiaries and joint ventures	<a href="#">Our reporting</a>		●	
3.9 Data measurements techniques and bases of calculations	<a href="#">Our reporting Reporting rules and principles</a>		●	
3.10 Explanation of re-statements	<a href="#">Our reporting</a>		●	
3.11 Significant changes from previous reporting periods	<a href="#">Our reporting</a>		●	

3.13 Assurance policy and practice	<u>Our reporting</u>		●	
------------------------------------	----------------------	--	---	--































## 4 Governance, Commitments and Engagement

4.1 Governance structure	<u>Governance</u>		●	
4.2 Position of the Chairman of the Board	<u>Board of Directors</u>		●	
4.3 Independence of the Board members	<u>Board of Directors</u>		●	
4.4 Mechanism for shareholder and employee consultation	<u>Annual General Meeting</u>		●	
4.5 Executive compensation and linkage to organisation's performance	<u>Salary and remuneration report 2011</u>		●	
4.6 Processes for avoiding conflicts of interest	<u>Governance</u>		●	
4.7 Processes for determining expertise	<u>Governance</u>		●	
4.8 Implementation of mission and values statements; code of conduct	<u>Strategy</u> <u>Wärtsilä and sustainability</u> <u>Code of Conduct</u>		●	●
4.9 Procedures of the Board for overseeing risk management	<u>Governance</u> <u>Board of Directors' report</u>		●	
4.10 Processes for evaluating the Board's performance	<u>Governance</u> <u>Board of Directors' report</u>		●	
4.11 Precautionary principle	<u>Risks and risk management</u> <u>Wärtsilä and sustainability</u> <u>Environmental performance</u>		●	●
4.12 Voluntary charters and other initiatives	<u>Strategy</u> <u>Sustainability performance management</u>		●	●
4.13 Memberships in associations	<u>Activities in organisations</u>		●	●
4.14 List of stakeholder groups	<u>Stakeholder relations</u>		●	
4.15 Identification and selection of stakeholders	<u>Stakeholder relations</u>		●	●

4.16 Approaches to stakeholder engagement	<u>Channels of dialogue</u>		●	●
4.17 Key topics raised through stakeholder engagement	<u>Stakeholder relations</u> <u>Wärtsilä and sustainability</u>		●	●

## 5 Management Approach and Performance Indicators

Economic Performance Indicators				
Disclosure on management approach	<u>Economic performance</u> <u>Financial targets</u>			●
EC1 Direct economic value generated and distributed	<u>Economic performance</u>		●	
EC2 Risks and opportunities due to climate change	<u>Risks and risk management</u> <u>Wärtsilä and emission trading</u>		●	●
EC3 Coverage of defined benefit plan obligations	<u>Employees</u>		●	
EC4 Significant subsidies received from government	<u>Public sector</u>		●	
EC5 Entry level wage compared to minimum wage	<u>Employees</u>		●	●
EC6 Spending on local suppliers	<u>Suppliers</u>		●	
EC7 Local hiring	<u>Employees</u>		●	●
EC8 Infrastructure investments provided for public benefit	<u>Community support</u>		●	
EC9 Significant indirect impacts	<u>Economic performance</u> <u>Impact on communities</u>		●	
Environmental				
Disclosure on management approach	<u>Environmental performance</u> <u>Summary of environmental aspects</u> <u>Environmental targets</u>			●
EN1 Materials used by weight or volume	<u>Materials, energy and water</u>		●	●

EN2 Recycled materials used	<u>Materials, energy and water</u>	Reporting system under development		
EN3 Direct energy consumption	<u>Materials, energy and water</u>			
EN4 Indirect energy consumption	<u>Materials, energy and water</u>			
EN5 Energy saved due to conservation and efficiency improvements	<u>Environmental targets</u>			
EN6 Initiatives to provide energy efficient or renewable energy based products and services	<u>Towards more sustainable solutions</u>	<a href="http://www.wartsila.com/sustainability">www.wartsila.com/sustainability</a>		
EN7 Initiatives to reduce indirect energy consumption	<u>Environmental targets</u> <u>Emissions and wastes</u>			
EN8 Total water withdrawal	<u>Materials, energy and water</u>			
EN9 Water sources significantly affected	<u>Materials, energy and water</u>			
EN10 Percentage and total volume of water recycled and reused			-	
EN11 Location and size of land holdings in biodiversity-rich habitats	<u>Environmental costs and liabilities</u>			
EN12 Description of significant impact of activities, products and services on biodiversity	<u>Environmental costs and liabilities</u>	Not applicable		
EN13 Habitats protected or restored		Not applicable	-	
EN14 Managing impacts on biodiversity		Not applicable	-	
EN15 Species with extinction risk with habitats in areas affected by operations		Not applicable	-	
EN16 Total direct and indirect greenhouse gas emissions	<u>Emissions and wastes</u>			
EN17 Other relevant indirect greenhouse gas emissions	<u>Emissions and wastes</u>	Reporting system under development		
EN18 Initiatives to reduce greenhouse gas emission	<u>Emissions and wastes</u>	<a href="http://www.wartsila.com/sustainability">www.wartsila.com/sustainability</a>		
EN19 Emissions of ozone-depleting substances		Not applicable	-	



EN20 NO <sub>x</sub> , SO <sub>x</sub> , and other significant air emissions	<u>Emissions and wastes</u>		●	●
EN21 Total water discharge	<u>Materials, energy and water</u>		●	●
EN22 Total amount of waste	<u>Emissions and wastes</u>		●	●
EN23 Significant spills	<u>Compliance with legislation</u>		●	●
EN24 Transported, imported, exported or treated hazardous waste		Not applicable	-	●
EN25 Water bodies and habitats affected by discharges of water		Not applicable	-	●
EN26 Mitigating environmental impacts of products and services	<u>Power Plants review</u> <u>Ship Power review</u> <u>Services review</u> <u>Environmental performance</u>	<a href="http://www.wartsila.com/sustainability">www.wartsila.com/sustainability</a>	●	●
EN27 Reclaimable products and reuse		<a href="http://www.wartsila.com/sustainability">www.wartsila.com/sustainability</a>	●	●
EN28 Significant fines and sanctions for non-compliance with environmental regulations	<u>Compliance with legislation</u>		●	●
EN29 Environmental impacts of transportation			-	
EN30 Total environmental protection expenditures and investments	<u>Environmental costs and liabilities</u>		●	●
Social				
Disclosure on management approach	<u>Personnel and social performance</u> <u>Social targets</u>			●
LA1 Breakdown of workforce	<u>Personnel</u>		●	
LA2 Breakdown of employee turnover	<u>Employee practices</u>		●	●
LA3 Employee benefits	<u>Employee practices</u>		●	
LA4 Coverage of collective bargaining agreements	<u>Employee practices</u>	<a href="http://www.wartsila.com/sustainability">www.wartsila.com/sustainability</a>	●	●

LA5 Minimum notice period regarding operational changes	<u>Employee practices</u>		●	●
LA6 Representation in joint health and safety committees	<u>Occupational health and safety</u>		●	●
LA7 Injury, lost time injury, fatalities, absence rates	<u>Occupational health and safety</u>		●	●
LA8 Education and prevention programmes regarding serious diseases	<u>Occupational health and safety</u>	Part of the OHS management systems which cover Wärtsilä employees	●	●
LA9 Health and safety topics covered in formal agreements with trade unions			-	
LA10 Average training hours per year	<u>Personnel</u>		●	
LA11 Programmes for skills management	<u>Personnel</u>		●	
LA12 Employees receiving regular performance and career development reviews	<u>Employee practices</u>		●	
LA13 Composition of governance bodies and breakdown of employees	<u>Governance</u> <u>Personnel</u> <u>Employee practices</u>		●	●
LA14 Ratio of basic salary of men to women by employee category	<u>Employees</u> <u>Employee practices</u>		●	●
Human rights				
Disclosure on management approach	<u>Personnel and social performance</u> <u>Social targets</u>			●
HR1 Investment agreements that include human rights clauses	<u>Human and labour rights</u>		●	●
HR2 Suppliers and contractors that have undergone human rights screening	<u>Suppliers</u>		●	●
HR3 Human rights related training for employees	<u>Sustainability performance management</u>	Part of Code of Conduct training	-	●
HR4 Incidents of discrimination and actions taken	<u>Human and labour rights</u>		●	●

HR5 Supporting right to freedom of association and collective bargaining in risk areas	<u>Human and labour rights</u>		●	●
HR6 Measures taken to eliminate child labour in risk areas	<u>Wärtsilä and sustainability</u> <u>Human and labour rights</u>		●	●
HR7 Measures taken to eliminate forced labour in risk areas	<u>Wärtsilä and sustainability</u> <u>Human and labour rights</u>		●	●
HR8 Human rights related training for security personnel	<u>Security practices</u>		●	●
HR9 Incidents involving rights of indigenous people and actions taken	<u>Human and labour rights</u>		●	●
Society performance				
Disclosure on management approach	<u>Personnel and social performance</u> <u>Social targets</u>			●
SO1 Managing impacts of operations on communities	<u>Impact on communities</u>		●	
SO2 Business units analysed for corruption risks	<u>Preventing corruption and bribery</u> <u>Risks and risk management</u>		●	●
SO3 Anti-corruption training	<u>Preventing corruption and bribery</u>		●	●
SO4 Actions taken in response to incidents of corruption	<u>Preventing corruption and bribery</u>		●	●
SO5 Public policy positions and participation in public policy development and lobbying	<u>Political lobbying</u>		●	●
SO6 Contributions to politicians and related institutions	<u>Political lobbying</u>		●	●
SO7 Legal actions for anti-competitive behaviour, anti-trust and monopoly practices	<u>Competition regulation</u>		●	

SO8 Fines and sanctions for non-compliance with laws and regulations	<u>Social data</u>		●	
Product responsibility				
Disclosure on management approach	<u>Personnel and social performance</u> <u>Product liability</u>			●
PR1 Assessment of health and safety impacts of products	<u>Product liability</u>		●	●
PR2 Non-compliance with regulations concerning health and safety impacts of products	<u>Product liability</u>		●	●
PR3 Product information required by procedures	<u>Product liability</u>		●	●
PR4 Non-compliance with regulations concerning product information and labelling	<u>Product liability</u>		●	●
PR5 Customer satisfaction	<u>Customer satisfaction</u>		●	
PR6 Adherence to marketing communications laws, standards and voluntary codes	<u>Product liability</u>		●	
PR7 Non-compliance with marketing communications regulations and voluntary codes	<u>Product liability</u>		●	
PR8 Complaints regarding breaches of customer privacy	<u>Product liability</u>		●	●
PR9 Fines for non-compliance concerning the provision and use of products and services	<u>Product liability</u>		●	

● = Fully reported    ◐ = Partly reported    - = Not reported    ● = UNGC reported  
 □ = Core indicator    ■ = Additional indicator