ANNUAL REPORT 2011

SUSTAINABILITY

WÄRTSILÄ

Sustainability

WÄRTSILÄ

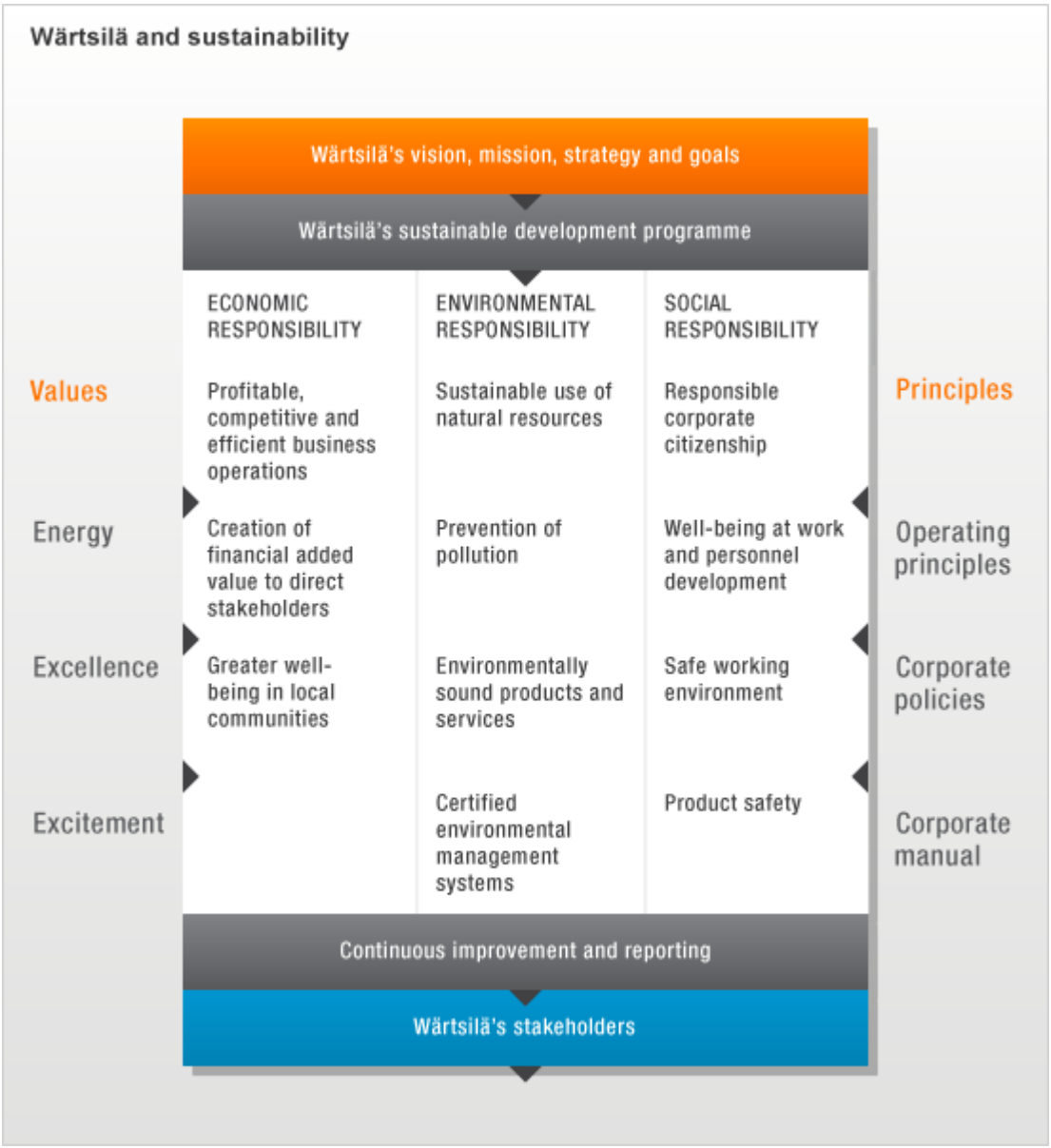
Wärtsilä and sustainability

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 Corporate 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	⊗	
Environmental		
- Product related	⊗	⊗
- Operational	⊗	
Social	⊗	

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 Wärtsilä'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	2011[5]	2010[4]	2009[3]	2008[2]	2007[1]
Economic (EUR million)					
Net sales	**4 209**	4 553	5 260	4 612	3 763
Cost of goods, materials and services purchased	**-2 694**	-2 927	-3 593	-3 134	-2 576
Value added distributed to stakeholders	**1 514**	1 626	1 667	1 479	1 187
Wages and salaries	**770**	773	735	693	592
Taxes and social dues	**322**	326	337	288	242
Net financial items	**16**	13	34	9	8
Dividends	**178**	271	173	148	408
Retained earnings for business development	**228**	242	388	340	-64
R&D expenses	**162**	141	141	121	122
Environmental					
Total energy consumption (TJ)	**1 735**	1 916	2 194	2 383	2 595
Electricity consumption (MWh)	**145 078**	149 047	164 022	151 169	134 543
Heat consumption (MWh)	**31 805**	41 401	37 060	50 193	40 085
Light fuel oil (t)	**3 409**	3 623	5 662	5 432	5 816
Heavy fuel oils (t)	**7 652**	9 020	15 652	22 145	16 237
Natural gas (t)	**10 486**	12 347	11 792	11 160	22 379
Other fuels (t)	**4 173**	3 729	3 326	1 711	1 380
Total water consumption (1 000 m^3)	**9 775**	10 292	8 128	11 712	11 160
Consumption of domestic water (1 000 m^3)	**830**	840	808	622	634
Consumption of cooling water (1 000 m^3)	**8 945**	9 452	7 320	11 090	10 526
Emissions of nitrogen oxides (t)	**765**	826	1 290	1 633	1 348
Emissions of carbon dioxide (t)	**68 897**	80 234	96 749	122 669	101 705
Emissions of sulphur oxides (t)	**265**	277	595	840	471
Particulates (t)	**20**	19	28	65	30
VOC (t)	**58**	61	170	152	79
Non-hazardous waste (t)	**42 865**	38 392	49 946	35 055	32 142
Hazardous waste (t)	**42 288**	5 175	5 857	5 154	7 472
Social					
Training days (days/employee)	**3.0**	3.1	3.7	3.3	3.3
Number of lost-time injuries, total	**267**	333	470	548	444
Lost-time injuries (number/million working hours)	**6.3**	7.8	12.9	16.3	14.6
Absence rate (% of total working hours)	**2.2**	2.4	2.6	2.4	2.3

[1]The data includes all Wärtsilä companies except those mentioned in the Sustainability Report 2007 Report Scope section.

[2]The data includes all Wärtsilä companies except those mentioned in the Sustainability Report 2008 Report Scope section.

[3]The data includes all Wärtsilä companies except those mentioned in the Sustainability Report 2009 Report Scope section.

[4]The data includes all Wärtsilä companies except those mentioned in the Sustainability Report 2010 Report Scope section.

[5]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 the 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, 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 e.g. environmental issues, Code of Conduct, anti-corruption as well as occupational health and safety issues. Wärtsilä monitors sustainability performance by utilising the information provided by various sustainability tools and activities such as internal audits.

Voluntary commitments

Wärtsilä joined the Sustainable Shipping Initiative in 2011. Wärtsilä has joined the UN Global Compact initiative in 2009. Wärtsilä has also signed an agreement in 2008, whereby 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, Anticorruption 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

Continuous improvement process: performance measurement, setting targets, taking actions and reviewing the results.

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 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 and Operational Development Board	Quality, Environmental, Health and Safety and Operational Development issues	Overall responsibility of Wärtsilä's operational development, owner of Wärtsilä processes, governing the work of IM, Process, Quality and Environmental, Health and Safety management and development plans and expenditure of the covered areas
Wärtsilä Group Quality Team	Quality	Quality road map, targets and guidelines based on business strategies and targets, overall quality process responsibility and cross-divisional quality alignment and harmonisation
Wärtsilä EHS Management Team	Environmental, Occupational health and safety (EHS)	EHS management system development, corporate level measuring and target setting and monitoring of the legislation development
Wärtsilä Environmental Forum	Environmental aspects related to Wärtsilä products	Creating and updating Wärtsilä's environmental strategy, coordinating environmental technology development, monitoring legislation development and environmental statements

Management systems

Proportion of Wärtsilä companies with certification	
ISO 14001	61%
ISO 9001	73%
OHSAS 18001	50%

Business Process Management

The Process Management Unit has been established in the Group Quality organisation to ensure that the company's operations are developed consistently and in line with its strategic directions. The Unit is responsible for development and harmonisation of corporate business processes, including business information and supporting business applications, which are developed on a continuous basis to improve the quality and effectiveness of customer service. The working processes are developed based on the initiatives of the Businesses, The Division and the Functions. These joint development projects are governed by the Quality and Operational Development Board, the Business Boards and the Functional Management Teams.

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 the 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 other 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.

Supply chain management

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.

Stakeholder relations

Wärtsilä's aim is to engage in an open and constructive dialogue with its various stakeholders. Wärtsilä maintains actively relations with its stakeholders and develops its activities, products and services based on the feedback received from them. At the corporate level, the company has defined its most important stakeholders to be its customers, owners, suppliers, employees and 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. Priorities vary from one company 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, Customer Relationship Online (CROL®)	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 (My Voice)
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 of the Year 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

Stakeholder	Channel of dialogue	Assessments
The 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

Wärtsilä participates in activities of the following organisations:

Stakeholder	Organisation	Nature of activity
Interest groups (Finland)	Confederation of Finnish Industries (EK), Chambers of Commerce, The Federation of Finnish Technology Industries	Active membership
Industrial and trade organisations	European Association of Engine Manufacturers (Euromot), European Marine Equipment Council (EMEC), Engine Manufacturers Association (EMA), Cogen Europe and VDMA, Exhaust Gas Cleaning System Association (EGCSA)	Participation in activities
Standardisation organisations	European Committee for Standardization (CEN), International Organization for Standardization (ISO)	Participation in activities
International organisations	International Maritime Organization (IMO), International Council on Combustion Engines (CIMAC)	Participation in activities (IMO), Board membership and participation in activities (CIMAC)
Other	World Alliance for Decentralized Energy (WADE), European Federation for Quality Management (EFQM), European Energy Forum (EEF), Global Reporting Initiative (GRI), Global Compact Nordic Network	Board membership (WADE), Participation in activities, Organisational Stakeholder (GRI)

Wärtsilä in sustainable development indices

Wärtsilä is included in the following sustainability indices:

- FTSE4Good Index
- ASPI Eurozone® Index
- OMX GES Sustainability Nordic Index and OMX GES Sustainability Finland Index
- ECPI Global Carbon Equity Index
- Ethibel ESI Excellence Europe Index and ESI Excellence Euro Index

Furthermore, Wärtsilä is the only company in its sector to be included in both the Ethibel Pioneer and the Ethibel Excellence Investment Registers. It has also been rated a Prime company by oekom research.

FTSE4Good Index Series is a series of benchmark and tradable indices for socially responsible investors. The inclusion criteria are designed to help investors minimise social, environmental and ethical risks. The criteria focus on corporate responsibility, human rights, environmental actions, social and stakeholder engagement and countering bribery.

The ASPI Eurozone® 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.

Wärtsilä has been included in the Ethibel PIONEER and Ethibel EXCELLENCE Investment Registers since 28 January 2005 and monitored regarding its CSR profile since then. These investment registers form the basis for the European Collective Quality labels ETHIBEL PIONEER and ETHIBEL EXCELLENCE, which are awarded to investment funds and financial products only. The ESI Excellence Europe Index and the ESI Excellence Euro Index are composed of companies belonging to the Ethibel Register based on a best-in-class approach combined with ethical exclusion criteria.

The ECPI Global Carbon Equity Index is an investable index picking companies best equipped to tackle a world of rising carbon emissions and tougher climate legislation from carbon intensive sectors such as Utilities, Basic Materials, Industrial and Energy.

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.

Recognitions

During 2011, Wärtsilä received the following external recognitions:

Wärtsilä's Annual Report 2010 won the Annual Report competition organised by Procom, the Finnish Association of Communications Professionals. A broad range of the largest Finnish companies participated in the evaluation.

A Wärtsilä Power Plant project in Bangladesh won the "Oscar" of Asian power industry in the category "Best Fast-Track Power Project in Asia" at this year's Asian Power Awards 2011 held in Kuala Lumpur, Malaysia.

Wärtsilä was awarded the Finnish Media's Choice award for its sustainability report for the year 2010 in Finland's Corporate Responsibility Reporting 2011 competition.

Wärtsilä Indonesia participated in Human Capital Study Indonesia (IHCS) 2011 and received an award for Human Capital Initiative for Reward System. IHCS 2011 was conducted by Dunamis Consulting Indonesia, one of the best consultants in Human Resources Management, in collaboration with Business Review Magazine.

Wärtsilä-Hyundai Engine Company (WHEC) has received the "World Class Product" certification from Korea International Trading Association. WHEC was selected from amongst 21 other manufacturers.

Creating economic added value

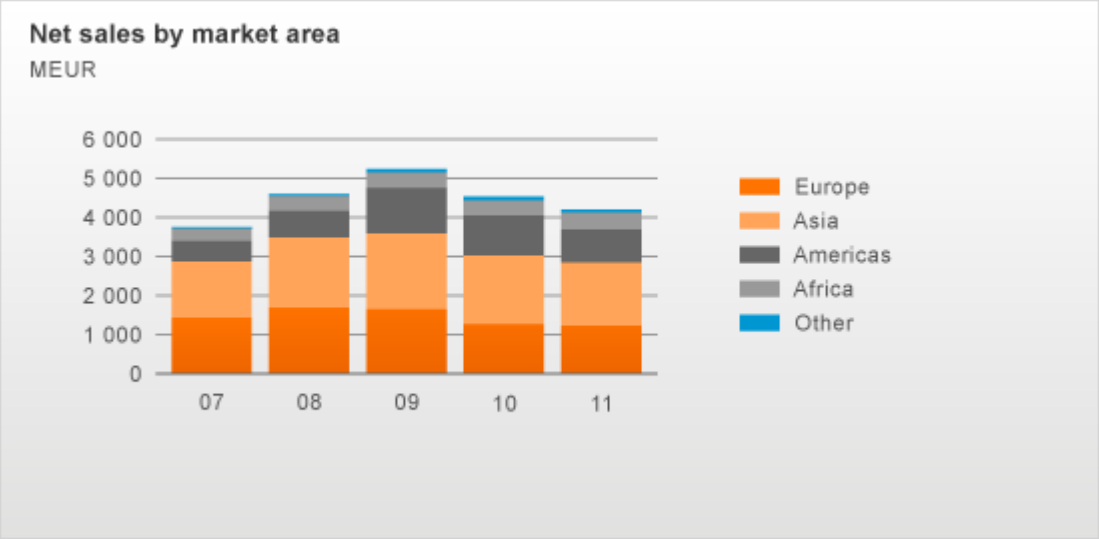
Wärtsilä's purpose is to create value for its various stakeholders. The focus is on profitability and raising shareholder value. Achieving this depends on our ability to satisfy the expectations of our other stakeholders as well. These include providing customers with high-quality and environmentally 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. Despite the tough market conditions, Wärtsilä has performed well. Profitability remained resilient and totalled EUR 469 million, 11.1% of net sales. Wärtsilä's net sales totalled EUR 4,209 million, decreasing by 7.6% compared to the previous year. Europe's share of net sales was 30%, Asia's 38%, the Americas' 20% and others' 12%. 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%.

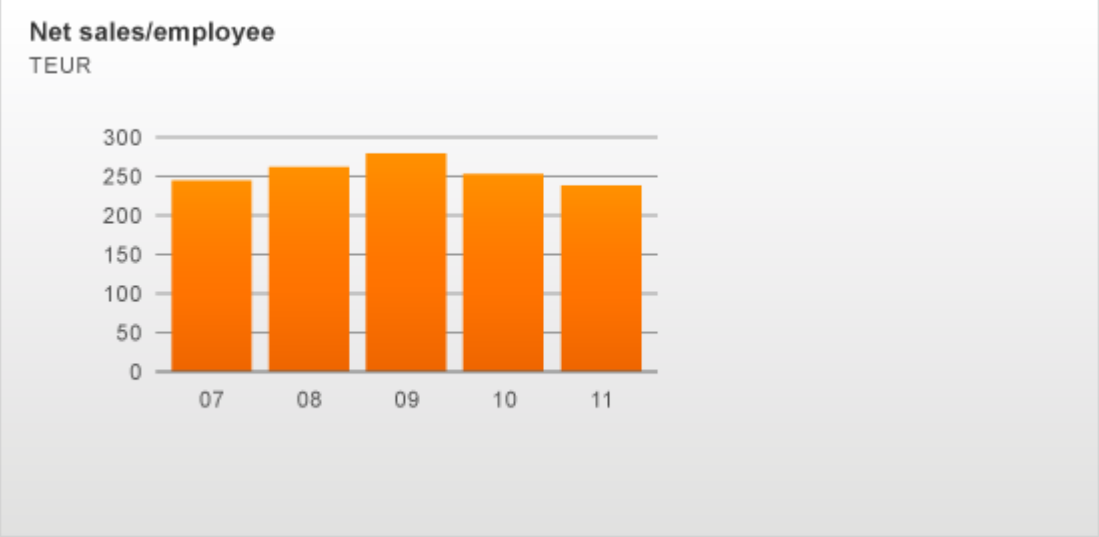
Added value to Wärtsilä's stakeholders

MEUR		2011	2010	2009	2008	2007
Customers	Net sales	**4 209**	4 553	5 260	4 612	3 763
Suppliers	Cost of goods, materials and services purchased	**-2 694**	-2 927	-3 593	-3 134	-2 576
	Value added	**1 514**	1 626	1 667	1 479	1 187
Distribution of value added	Distributed to stakeholders					
Employees	Wages and salaries	**770**	773	735	693	592
Public sector	Taxes and social dues	**322**	326	337	288	242
Creditors	Net financial items	**16**	13	34	9	8
Shareholder	Dividends	**178**	271	173	148	408
Communities	Donations given	**1**	1	1	1	1
For business development		**228**	242	388	340	-64

Customers

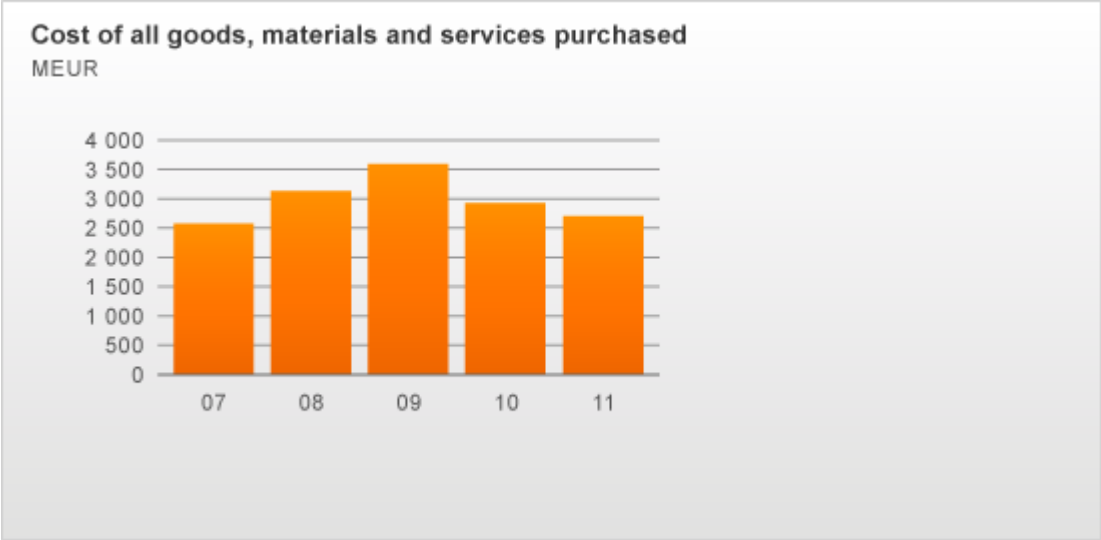
Wärtsilä creates added value for its customers by providing products, solutions and services that fulfil their needs and expectations. The development of high-quality, reliable and environmentally sound solutions and services depends on long-term collaboration and continuous interaction with customers. 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.





Suppliers

Suppliers play a significant role in our delivery process. We aim to have deep partnerships 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, partnerships 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 partnerships can also help a local supplier to expand internationally by becoming a part of our global supply chain. In 2011, the value of goods, materials and services purchased by Wärtsilä was EUR 2,694 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.



Employees

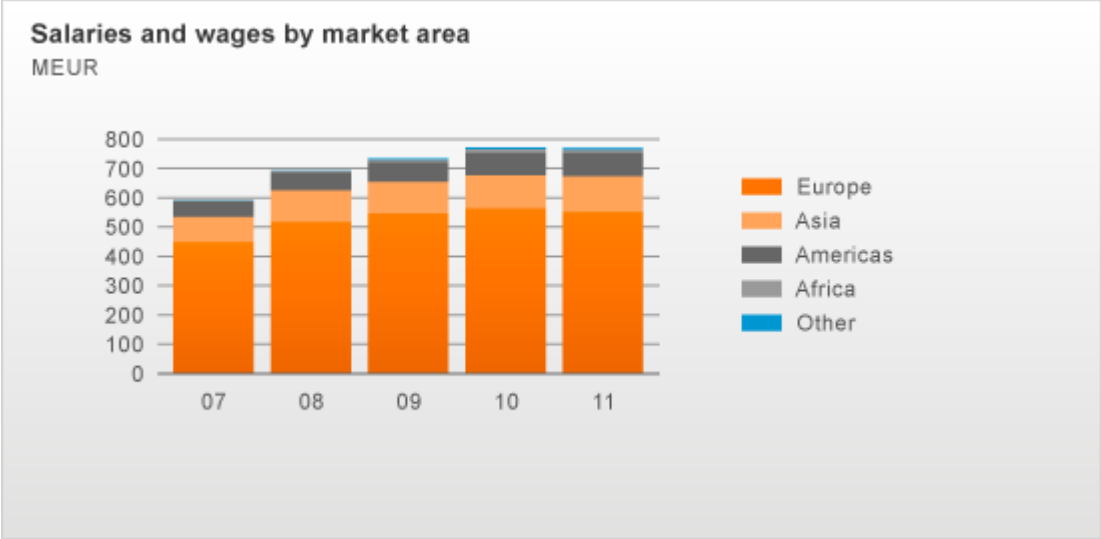
At the end of 2011, Wärtsilä had 17,913 employees worldwide. We also employed thousands of people indirectly through our supply chain. In order to be able to recruit competent and motivated people, we endeavour to offer employees competitive salaries, opportunities for continuous personal development 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 770 million in 2011. 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.



Hiring principles

In principle, all open vacancies are published both externally and internally ensuring equal opportunity to apply to Wärtsilä 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.

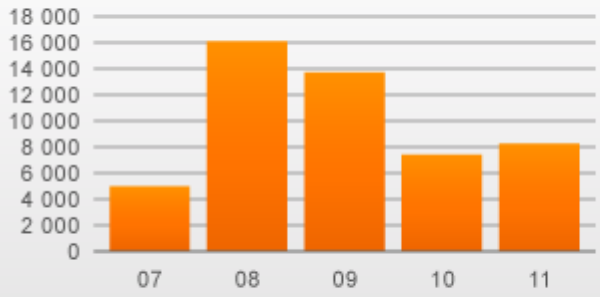
Public sector

Wärtsilä pays various social dues and taxes to the governments of different countries. Income taxes and social dues in the financial period 2011 were EUR 323 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.

Wärtsilä companies also receive subsidies from the public sector. The value of the subsidies received in 2011 was EUR 8 million, and they were among others related to R&D projects.

Subsidies received from the public sector

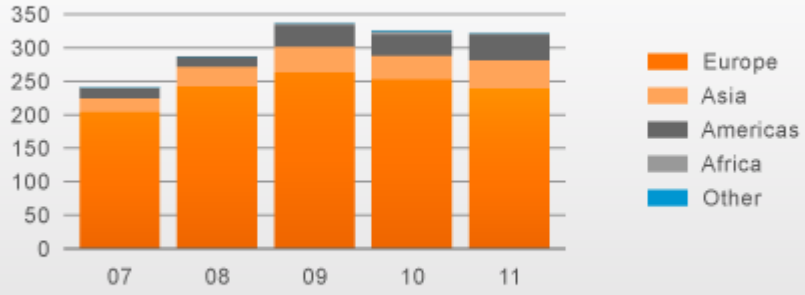
TEUR



The 2007-2008 figures from 14 major Wärtsilä companies. The 2009-2011 figures from 15 major Wärtsilä Companies and the parent company.

Taxes and social costs by market area

MEUR



Creditors

In 2011, Wärtsilä's net financial items totalled EUR -16 million. At the end of the year, Wärtsilä's net interest bearing debt amounted to EUR 58 million, the solvency ratio was 41.3% and gearing was 0.04.

Shareholder value

Dividends totalling EUR 178 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 2011 earnings per share (EPS) was EUR 1.44 and Wärtsilä's market capitalisation was EUR 4,402 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, national defence, disabled war veterans and medical and technical research. Wärtsilä's Board of Directors contributed altogether EUR 60,000 to these activities in 2011.

Donations to good causes by the Board of Directors

TEUR	2011	2010	2009	2008	2007
Total	**60**	670	70	70	70

Donations to local organisations[1]

TEUR	2011	2010	2009	2008	2007
Total	**940**	421	527	463	485

[1] The 2007-2008 figures include the data from 14 major Wärtsilä companies. The 2009-2011 figures include the data from 15 major Wärtsilä companies and the parent company.

Wärtsilä and emission trading

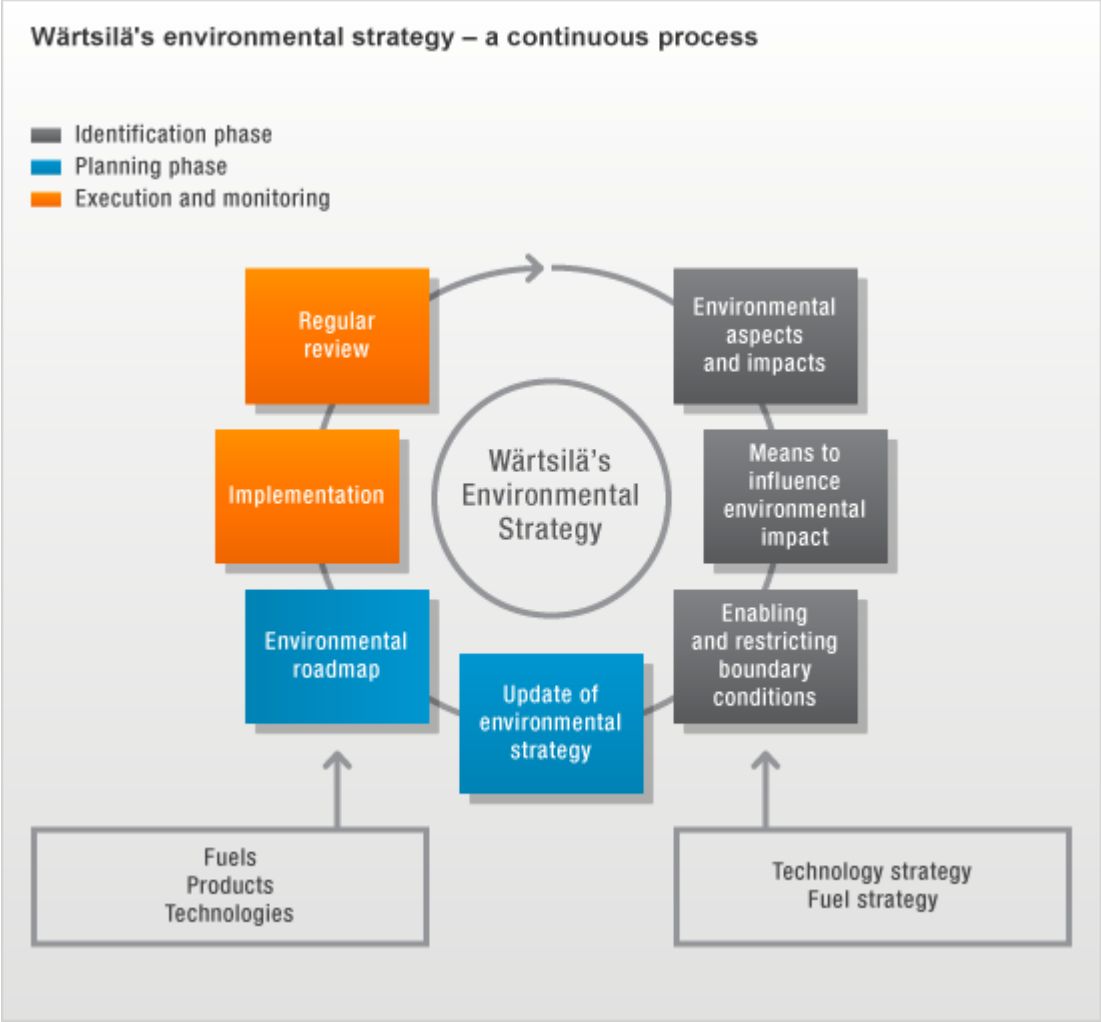
Wärtsilä Italia S.p.A is the only subsidiary that falls into the scope of the EU Emission Trading Scheme (ETS) because of the heating plant of the factory. The EU ETS has not had any impact on the company's profitability. Wärtsilä's response to climate change is to develop and provide products, solutions 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 Corporate Governance review.

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, Occupational Health and Safety and the Environment, and it is co-ordinated and monitored by the Environmental Forum, the Quality and Operational Development Board and the EHS management team. 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.

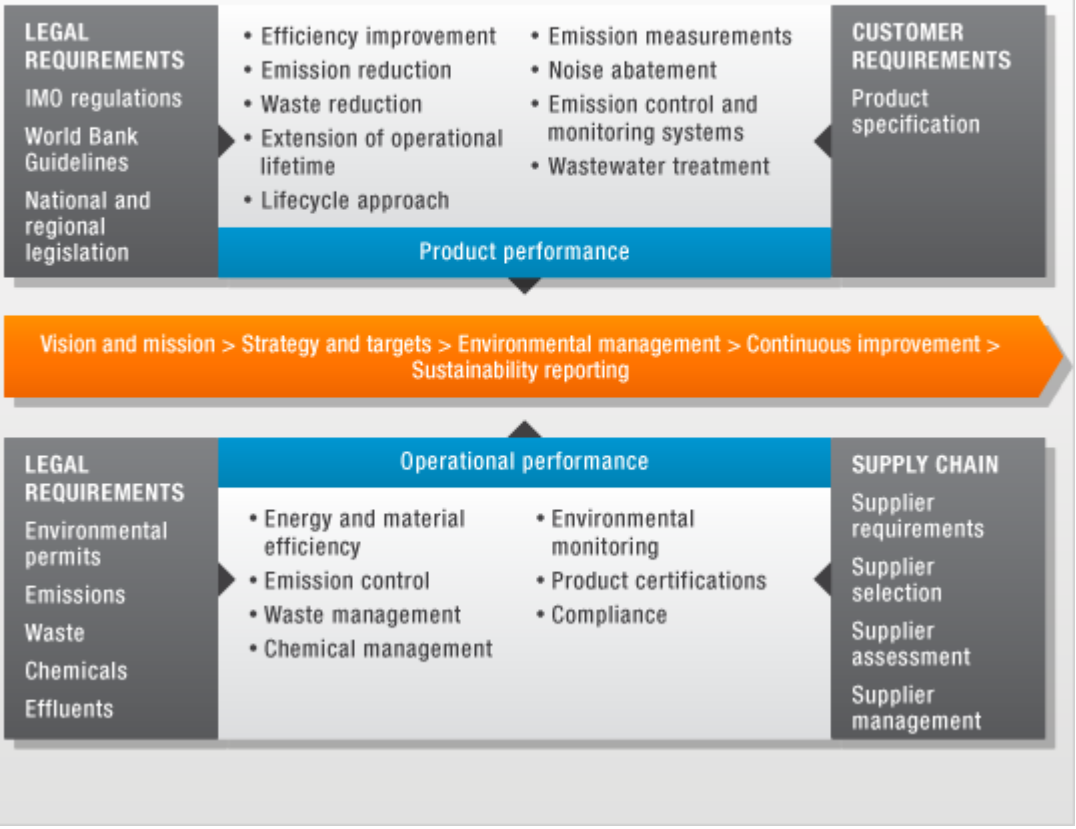
Wärtsilä has defined a process for the development of a product environmental strategy and its targets. The process includes the identification of aspects and impacts of the products, the means to influence these impacts, the identification of enabling and restricting boundary conditions and the analyses 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 2011, 40 Wärtsilä companies operated with a certified environmental management system. These certified environmental management systems cover roughly 91% of Wärtsilä's total workforce.

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 started in 2011. The energy audits will be conducted in France, Norway, Singapore, the Netherlands and the UK. The energy audits identify the savings potential and measures to improve energy efficiency. During 2011, Wärtsilä also created a framework for identifying energy saving potential for companies outside the audit scope. The local rollout of the framework takes place in 2012-2013. Energy saving actions are monitored on an annual basis. By 2011, energy savings of 12.4 GWh have been reached, which represents about 26% of the final target.
To create solutions for enabling small-scale LNG to replace liquid fuel infrastructure.	2015	New target: First status review in 2012
To enable emission reductions through gas conversion projects.	2015	New target: First status review in 2012
To increase total net electrical efficiency in simple and combined cycle power plants in cyclic operations.	2015	New target: First status review in 2012

Target	Schedule	Status
To influence in developing dynamic power markets in order to enable wide scale renewable integration.	2015	New target: First status review in 2012
To enable the reduction of power losses by 3-5% in electrical propulsion using medium voltage system.	2015	New target: First status review in 2012
To develop performance management solutions for different vessel types enabling better efficiency of the plant.	2012	New target: First status review in 2012
To develop 10 new Wärtsilä Optimiser solutions enabling customer to optimise the life-cycle performance.	2015	New target: First status review in 2012
To reduce GHG emissions by 3% through improving the engine efficiency.	2015	New target: First status review in 2012

Target	Schedule	Status
To expand the gas portfolio.	2015	First deliveries of LNGPac, 2-stroke DF introduced to licencees, first gas-fuelled single main engine classified installation delivered, first W20DF engine delivered, mechanical drive application released and delivered, gas valve unit enclosure delivered.
To stimulate growth for LNG-fuelled OSV's.	2015	Wärtsilä will deliver liquefied natural gas (LNG) propulsion equipment for two advanced offshore supply vessels. These are the first U.S. flagged LNG offshore vessels and they operate in the Gulf of Mexico. Wärtsilä will design a new LNG-powered Platform Supply Vessel (PSV) for a Norwegian operator. In addition to design, Wärtsilä will deliver the propulsion machinery, automation and other equipment for the same vessel.
To expand the field of LNG applications beyond present vessel types and to facilitate LNG re-engining	2015	New target: First status review in 2012
To deliver environmental and energy efficiency consultancy projects: 10 projects.	2015	New target: First status review in 2012

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	New target: First status review in 2012

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. Wärtsilä is capable of delivering a Green Passport for all of its portfolio products.
To conduct 3 life-cycle assessments.	2015	New target: First status review in 2012

Wärtsilä Policy for Quality, Health & Safety and the Environment

Our power solutions and services meet or exceed customers' and other stakeholders' expectations, being:

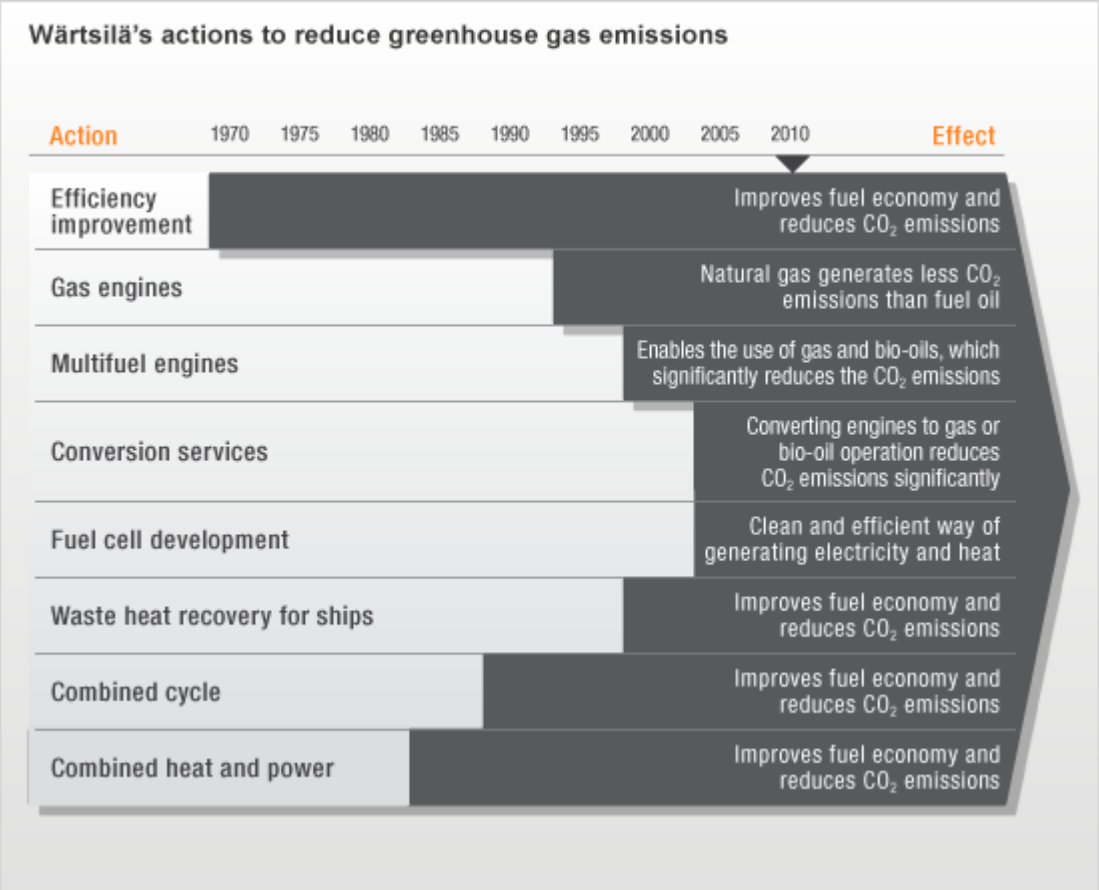
- reliable and safe
- efficient and environmentally sound
- compliant with the applicable legal requirements and regulations.

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.

Wärtsilä's Board of Management approved the policy in January 2007.

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.



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 LNG carriers and also for other types of vessels. This single solution means that the total CO_2 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. CO_2 emissions can be reduced even more effectively with renewable energy sources, such as liquid biofuels.

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. We also convert oil-fuelled engines for gas or biofuel use.

Fuel cell development

A fuel cell is a clean, efficient and reliable method of producing energy, making it a highly attractive option for distributed power generation. Read more on the latest developments of Wärtsilä's fuel cell programme in the section Creating new solutions.

Waste heat recovery for ships

In addition to general use of waste heat, steam-based combined cycles have been applied in ship applications for a long time. For applications in which waste heat is limited in amount and temperature, we are designing and commercialising an ORC system to fulfil marine environment requirements.

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 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 recently introduced Wärtsilä 20DF engine. 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.

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_2 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 frontrunner, 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

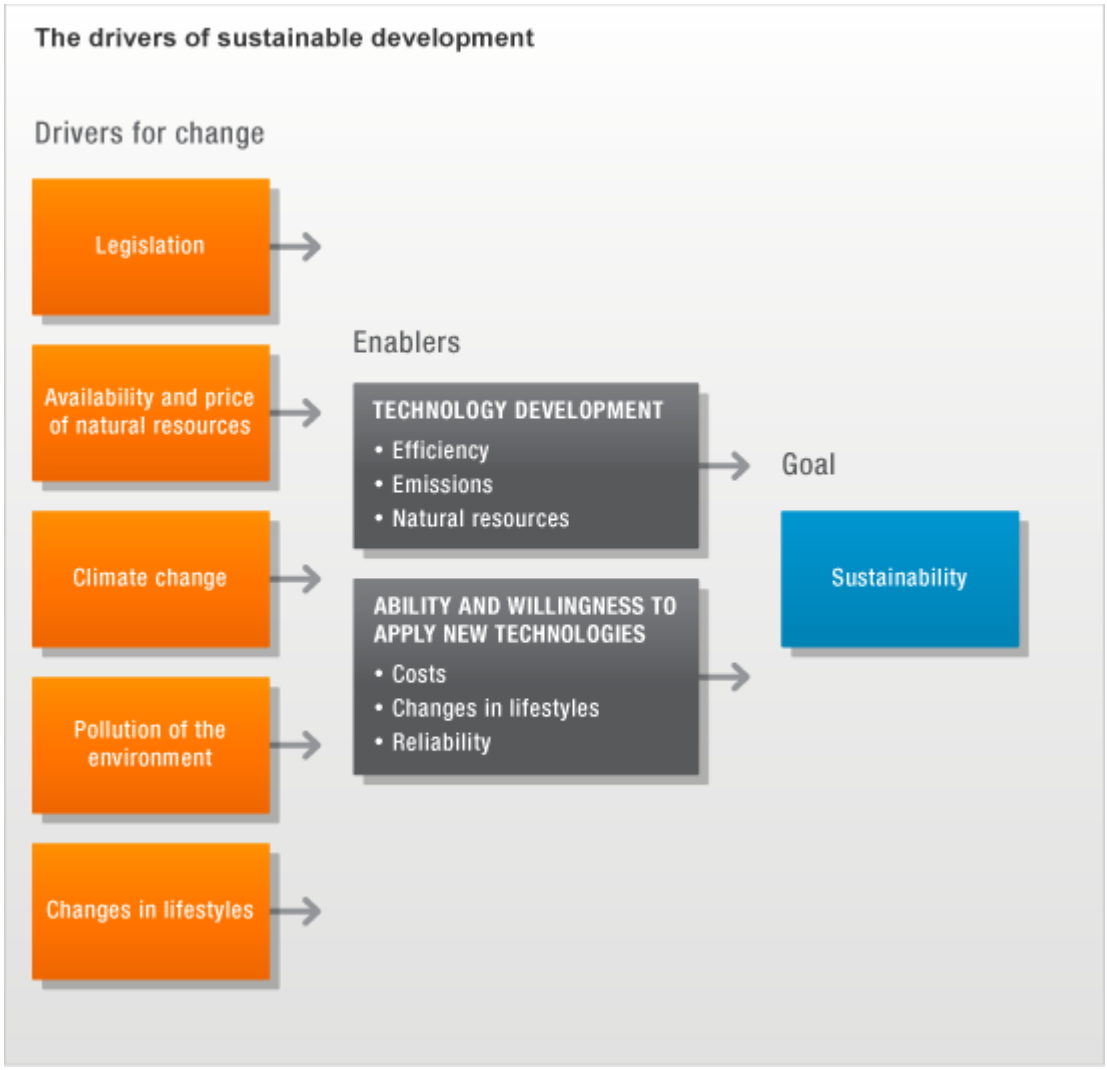
Our most important role in sustainability is to supply environmentally sound solutions and services, which enable our customers to develop their business in a sustainable way. This requires us to continuously invest in technology development and in an ongoing search for new solutions.

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 to effluent and ballast water treatment. With a proactive approach to meeting future demands, Wärtsilä has developed both primary and secondary 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

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, creates 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.



Legislation and initiatives

Concerning Wärtsilä's products, the environmental requirements are set at the international level mainly by the International Maritime Organization (IMO), the European Union and the World Bank. In the stationary field of national and regional regulations, such as those of the US EPA, Germany, Japan and India are considered important for our products. Along with the introduction of the new Industrial Emission Direction of the EU, a new benchmark has also been established for gas engines.

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.

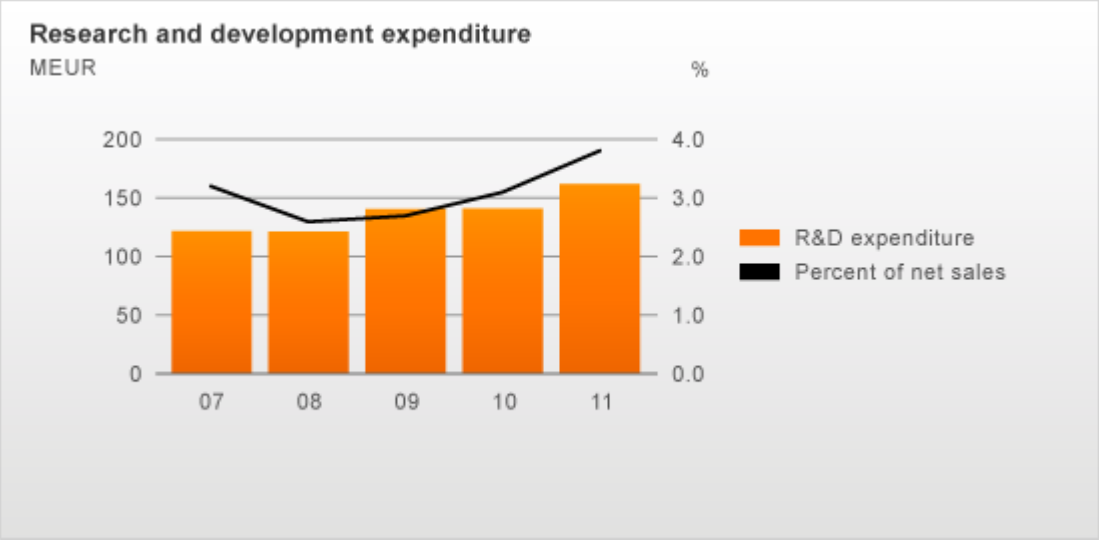
Wärtsilä's R&D focus

Wärtsilä develops efficient and cost-competitive products and solutions based on customer needs by combining innovative technologies. Product and solution development is based on effective work process management to ensure that the set targets are reached. The performance of the products and their features are verified through simulations, functional tests and long-term validation. Wärtsilä actively develops the commonality and modularity of its products and designs products that are easy to manufacture. A substantial proportion of the company's investments in product development is targeted at reducing environmental impacts.

Wärtsilä's R&D activities focus on products and solutions that are fuel-efficient, reliable and safe, self-diagnostic, cost-efficient to operate and that produce minimal environmental impacts throughout their lifecycles. The company takes a proactive approach to managing its intellectual and industrial property rights through incentive schemes for its employees that encourage innovation and initiative. A paramount priority in Wärtsilä's R&D activities is to develop and safeguard the company's critical areas of expertise.

R&D Costs

	2011	2010	2009	2008	2007
R&D costs (MEUR)					
	162	141	141	121	122



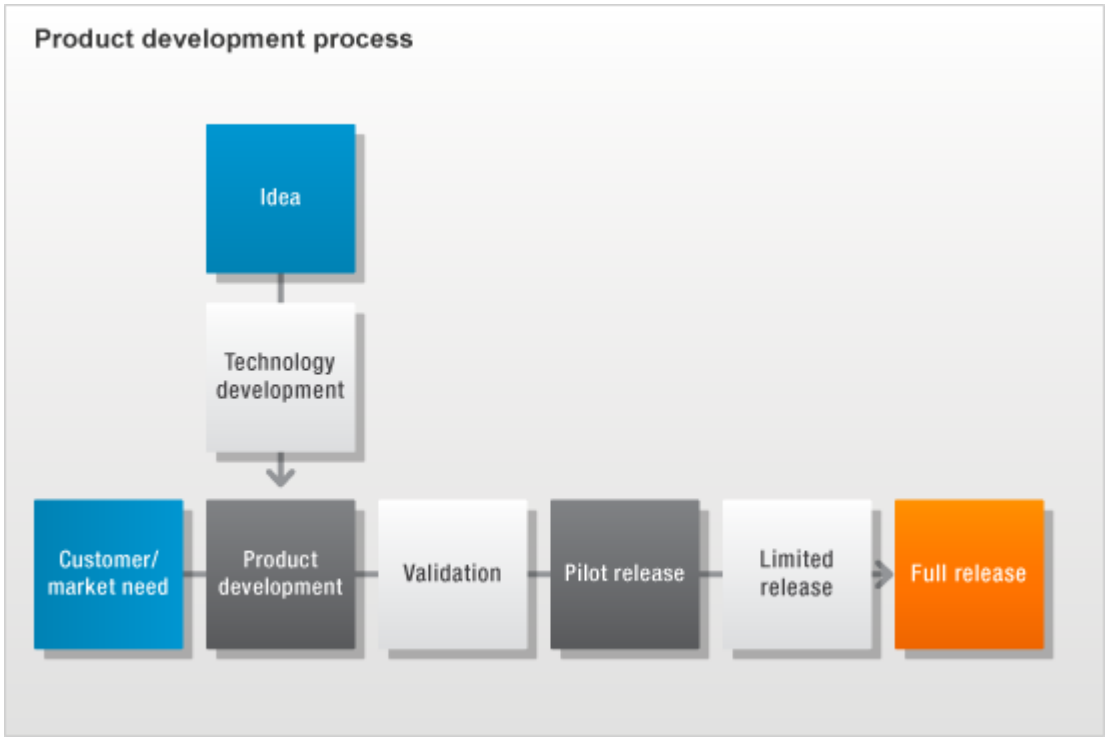
Ensuring reliability and safety

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.



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 efficiency for ships

Improving total ship efficiency reduces lifecycle costs and emissions. By combining our knowledge of automation, machinery, propulsion and ship design into a single integrated solution, a truly efficient ship operation can be achieved. From a longer viewpoint, 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%
- counter-rotating propulsion
- optimisation of the hull design.

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

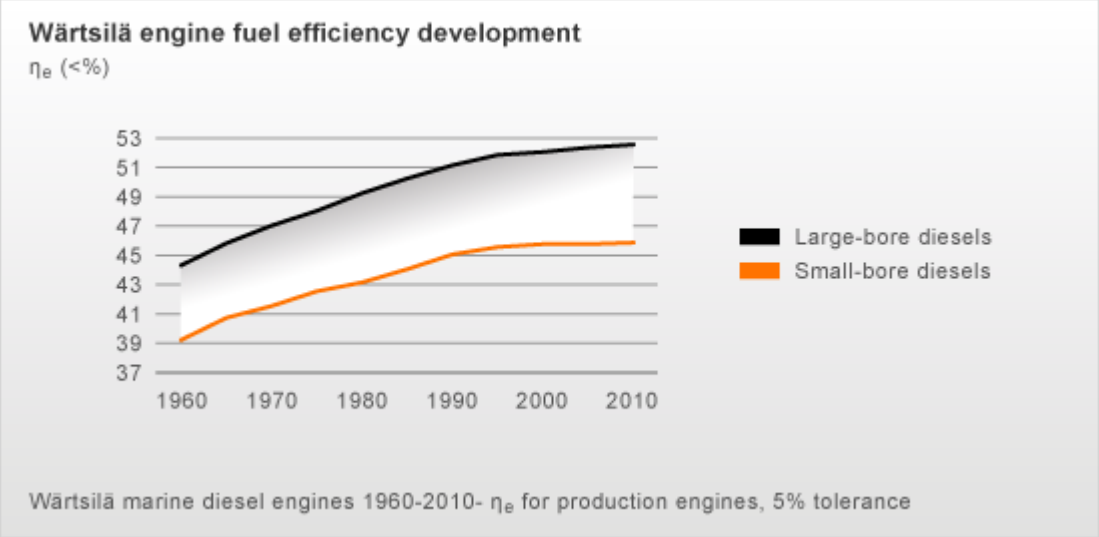
System integration enables efficiency improvements, while customers benefit from having proven solutions from a single supplier. With lifecycle support yards can better optimise their building schedules and owners get proven solutions that are easier to manage.

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. Innovative technologies, including two-stage turbocharging, variable inlet and exhaust valve timing and electronically controlled fuel injection, such as common-rail, are important contributors in this task. Wärtsilä has announced its first product with two-stage turbocharging.



Wärtsilä marine diesel engines 1960-2010- η_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. Organic rankine cycle products are being considered. Further improvements can be expected by designing engines for secondary cycles.

Propeller efficiency upgrades

Successful conversions to achieve propeller efficiency increases of up to 10% can be established in different vessel markets, such as the dredging industry, ferries, fishing vessels and tankers. This improvement is made possible by exchanging the open type propeller for one operating in a nozzle. Wärtsilä continued exploring project specific knowledge regarding the interaction between the propulsor and the ship's hull in order to avoid added resistance.

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%. 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 euro a year. The deliverable 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.

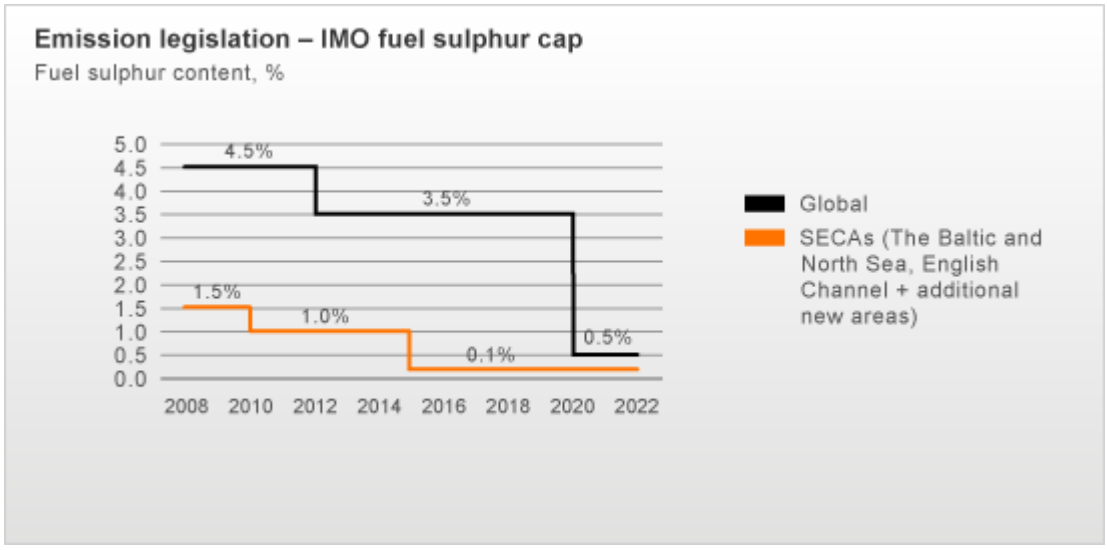
Reducing sulphur dioxide emissions

Marine scrubber

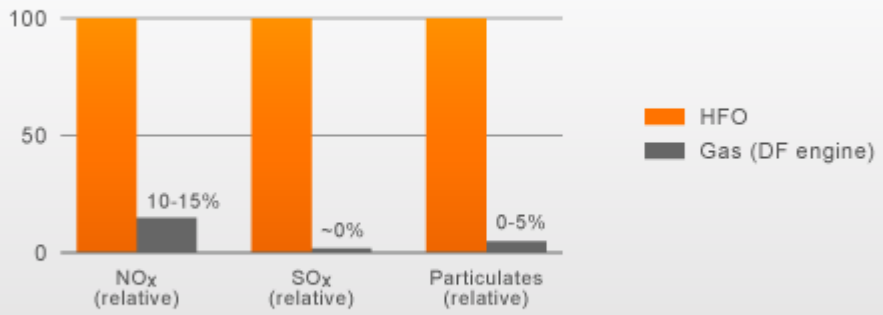
Various desulphurisation techniques have been used in Wärtsilä power plant applications. On the marine side, scrubbers can be found economically very attractive in meeting the future IMO sulphur requirements. Wärtsilä's on-going development and commercialisation project regarding a fresh water marine scrubber is proceeding successfully. This technology developed by Wärtsilä is the first such certified solution in the world and has now been approved by three major classification societies. Wärtsilä delivered a marine scrubber to a containership in August 2011. This is the first commercial marine scrubber project for a main engine. As a next stage, the development project for a novel hybrid scrubber capable of being operated both with fresh and sea water is ongoing.

Low sulphur fuels

The coming regulations limiting the sulphur content in marine fuels will inevitably create some new challenges for customers. Low sulphur fuels have, in most cases, lower viscosity than ordinary fuels, and this will affect the behaviour of the fuel injection systems in diesel engines. Therefore, modifications are often recommended, not only for the engine but also possiblyfor boilers. Wärtsilä will be able to offer its customers support in adapting to future low sulphur fuel qualities.

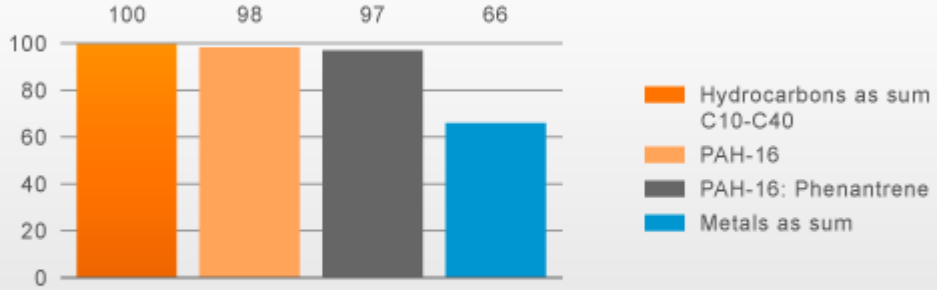


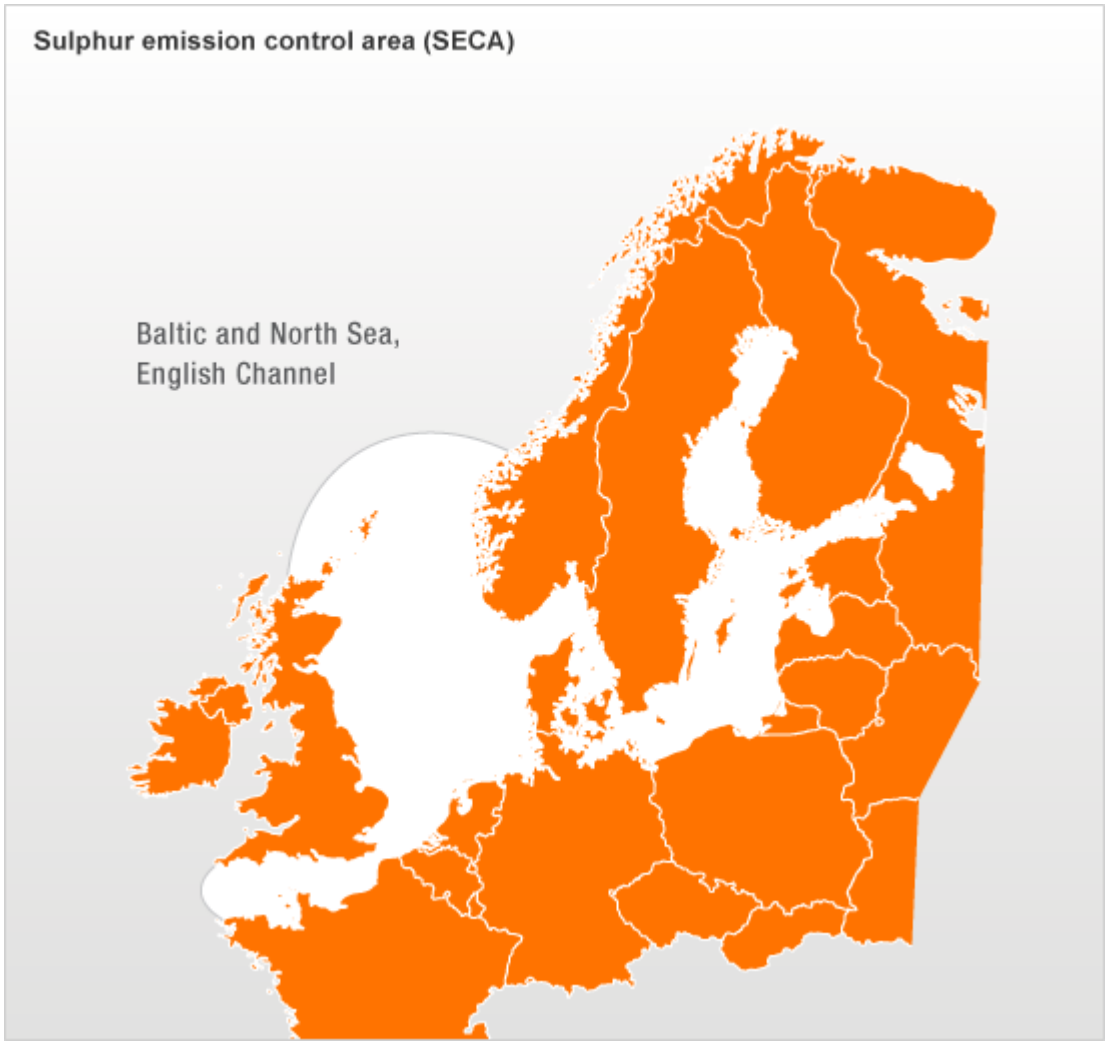
Comparison of typical NO_x, SO_x and particulate emissions – influence of fuel type

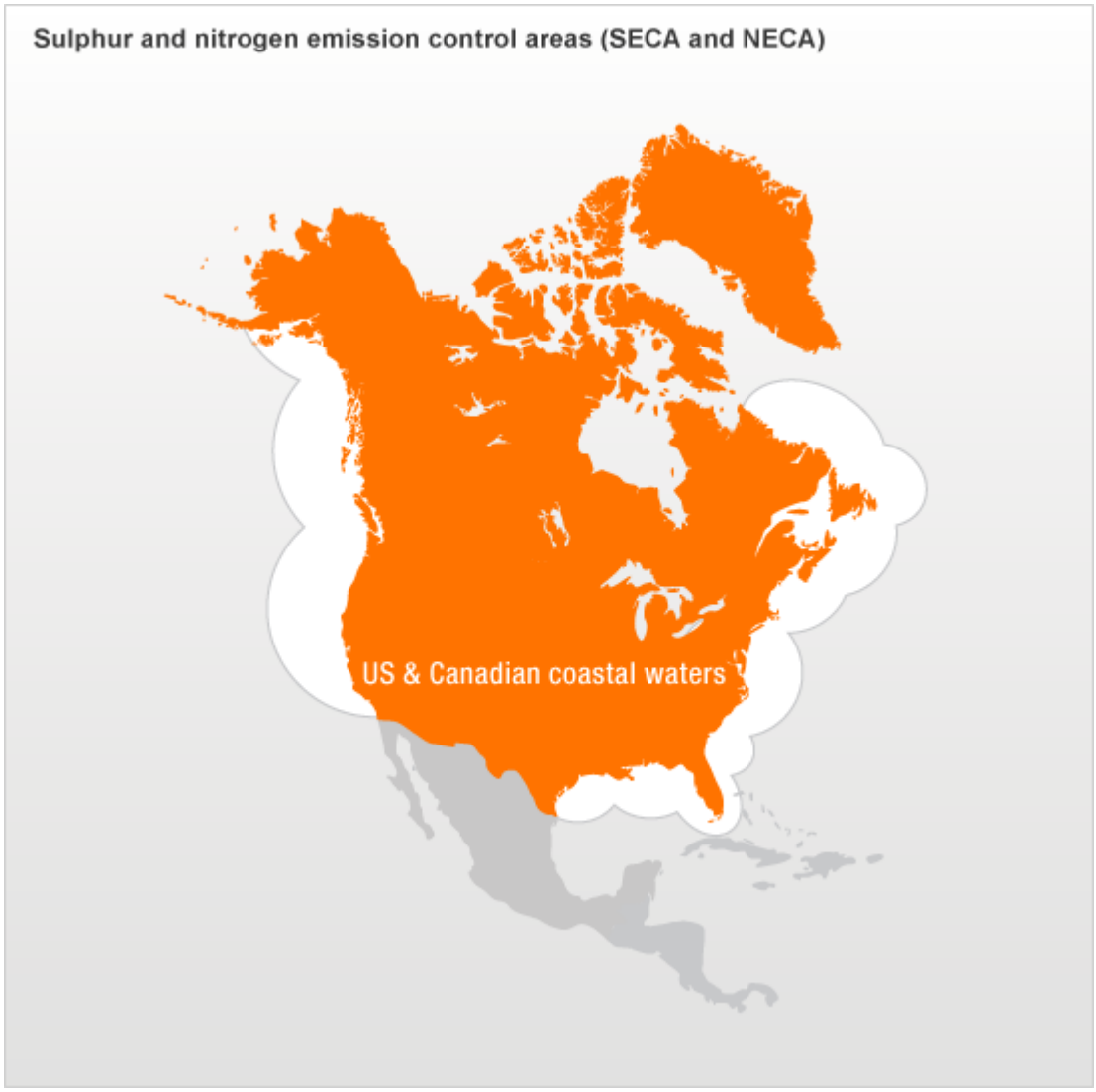


Reduction of components in the bleed-off treatment unit

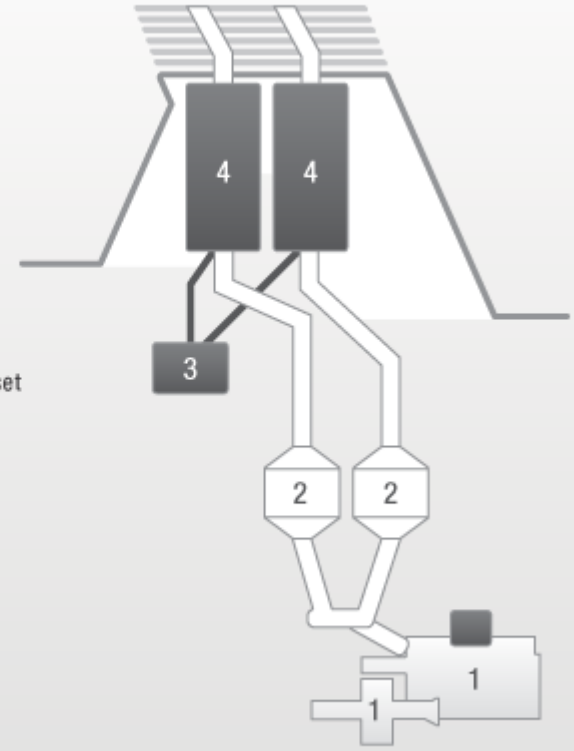
Fuel sulphur content 3.4% m/m, Reduction (%)




Sulphur emission control area (SECA)
Baltic and North Sea,
English Channel

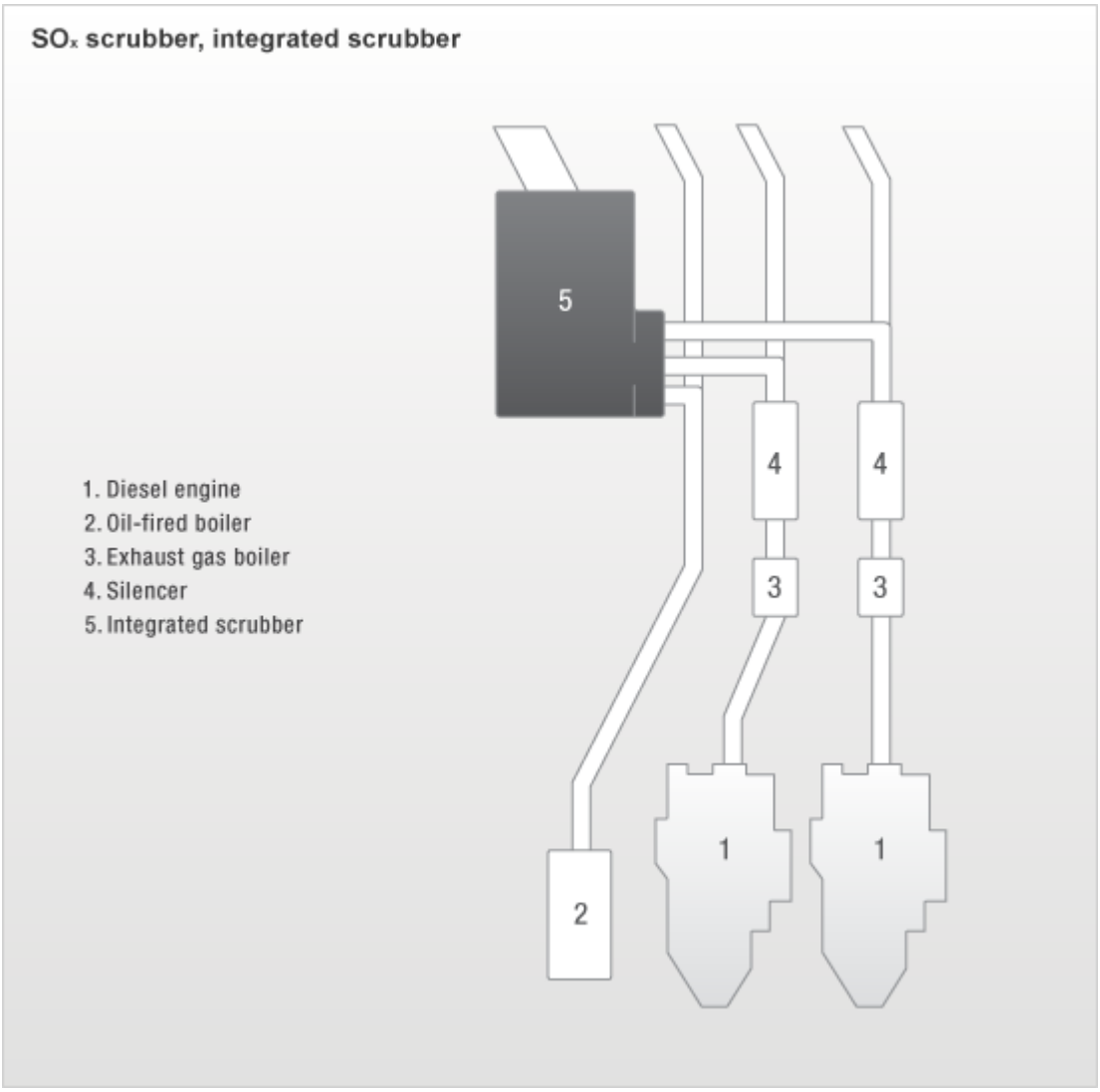

Sulphur and nitrogen emission control areas (SECA and NECA)
US & Canadian coastal waters

SO_x scrubber, main stream scrubber



1. Diesel engine and generating set
2. Selective Catalytic Reduction
3. Exhaust gas boiler
4. Scrubber

SO_x scrubber, integrated scrubber



Reducing nitrogen oxide emissions

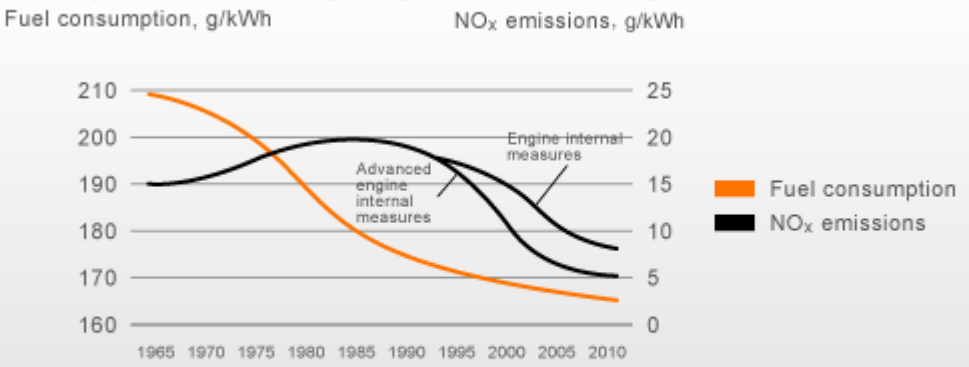
The IMO NO_x Tier II rules have been in force as of 2011. The Tier II NO_x limit is 20% below the 2010 emissions levels. All Wärtsilä portfolio products are IMO NO_x Tier II compliant. The next NO_x emissions level, IMO Tier III, will be valid from 2016 onwards. This is expected to demand a reduction of 80% in NO_x levels from Tier I levels in the NO_x Emission Control Areas. An 80% NO_x 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_x 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_x emissions requirements: Selective Catalytic Reduction (SCR) and Exhaust Gas Recirculation (EGR).

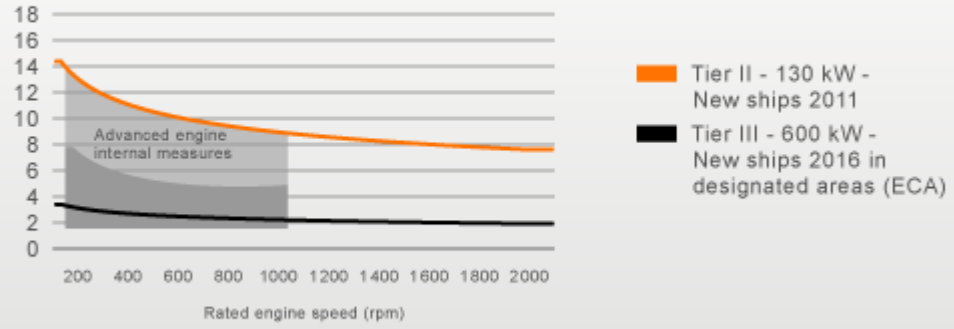
Selective Catalytic Reduction will play an important role in the future, and it is essential to ensure that combinations of SCR and scrubbers are applicable. Wärtsilä has experience in SCR systems with a wide range of fuels. Wärtsilä is able to deliver also SCR solutions for high sulphur applications, 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_x emissions

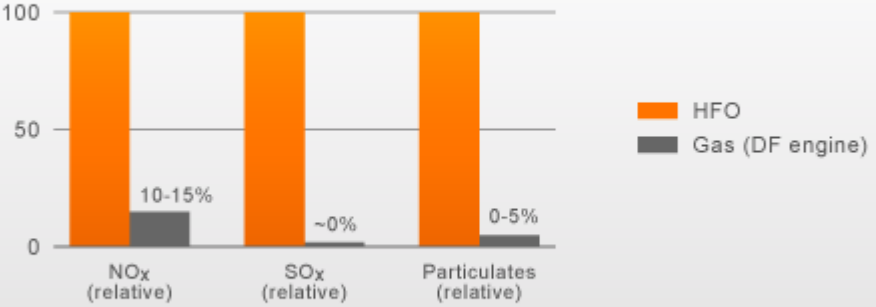


Emission legislation – marine application (IMO)

Revised MARPOL Annex VI, NO_x (g/kWh)



Comparison of typical NO_x, SO_x and particulate emissions – influence of fuel type



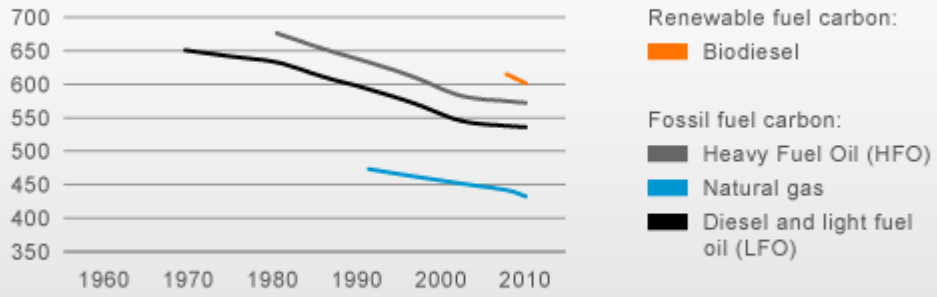
Reducing greenhouse gas emissions

In addition to improving the efficiency of its solutions, Wärtsilä is continuously developing technologies for reducing the CO_2 and total hydrocarbons (THC) emissions for both diesel and gas engines. 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 emission reduction, which reduces the THC levels by 30-90%. Complementing the pure engine development work, efforts are underway to design, test and validate a combined catalyst-based methane reduction system for the engine.

In addition, substantial reductions of methane emissions can also be achieved by reducing the engine speed when reducing load. Some of the engine optimisations can also be retrofitted on existing older engines. These measures can include optimising combustion space, the tuning of parameters, skip firing at low loads and a general level of optimised machinery selection.

Development of specific carbon dioxide emissions of Wärtsilä engines

Specific carbon dioxide (CO_2) emissions



Water solutions

In 2004, the International Maritime Organization (IMO) adopted the Global Ballast Water Convention, which mandates ballast water treatment on newbuildings and existing vessels to protect local biodiversity from non-indigenous invasive species. These may cause a negative economic impact on society, reduced output from fisheries and added costs for 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 2012. In addition, the US Coast Guard will announce its own regulatory guidelines in 2012, which will be based on EPA (Environmental Protection Agency) recommendations.

Wärtsilä has, together with the technology provider Trojan Marinex, a division of Trojan Technologies, introduced an advanced ballast water treatment system based on filtration and UV treatment. The technology is free of any harmful residual products, has high biological efficacy and is safe for personnel, for vessels and for the environment.

The system features a compact design that allows for easy installation onboard, whether it is for a new build or a conversion project, while its low power consumption contributes towards reduced energy costs.

During 2011, in addition to operational testing at sea, the product has been subject to a series of other tests, including those for land-based filtration optimisation and certification validation. Type approval certification is expected to be obtained in mid-2012. Four unit sizes have thus far been released. An additional three unit sizes will be released during 2012 for a full product portfolio with capacities stretching from 150 to 1,500 m³/h.

	IMO	US Coast Guard		
		phase 1	phase 2	
Organisms > 50 µm	< 10	< 10	< 0.01	/ m³
Organisms 10-50 µm	< 10	< 10	< 0.01	/ ml
Escherichia coli	< 250	< 250	< 126	cfu* / 100 ml
Intestinal enterococci	< 100	< 100	< 33	cfu* / 100 ml
Toxicogenic vibro cholera	< 1	< 1	< 1	cfu* / 100 ml
Implementation year	*2012*	*2012*	*2016*	
**) cfu = colony-forming units*				

Creating new solutions

Development of groundbreaking technology to cut emissions

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

The application of two-stage turbocharging technology on Wärtsilä diesel engines has been developed through close co-operation between Wärtsilä and ABB Turbo Systems. In this programme, Wärtsilä is focusing on developing advanced engine technology, which with the turbocharger is able to reach the highest possible performance and become a cost-effective commercial solution for its customers. ABB Turbo Systems is delivering the turbocharging technology with defined performance in terms of airflow, pressure ratios and efficiency.

Development of fuel cell technology

A fuel cell is a clean, efficient and reliable method of producing energy, making it a highly attractive option for distributed power generation. Wärtsilä has been developing fuel cell technology for decentralised power generation and marine applications since 2000. The company’s fuel cell development team is focusing on developing, designing and manufacturing a solid oxide fuel cell (SOFC) system. In this work, Wärtsilä is taking advantage of its extensive know-how in combined heat and power generation and the company's in-depth knowledge of its marine customers’ needs.

Part of the R&D programme covers the development of the WFC20 and WFC50 units, as well as 20 kW and 50 kW SOFC units. During 2011, Wärtsilä achieved record electrical efficiency of 49.8% with the WFC20 unit operated in Vaasa, where the fuel cell is driven by biogas collected from a landfill. After the summer, the unit was restarted for continuous operation and has since then exceeded the set milestone for 5,000h operation. Development of larger units has continued through testing product platforms in the 50 kW power range and conducting pre-studies of over 100 kW units. During the year, Wärtsilä signed a co-operation agreement with an additional stack supplier, Versa Power Systems Inc., in order to further strengthen the supply chain for fuel cell technology.

Enabling gas operations in ships

Multifuel operation using Wärtsilä’s Dual Fuel (DF) technology offers environmental advantages of gas engines. It allows low CO_2, NO_x, SO_x and particulate emissions, while having redundancy in terms of liquid fuel in case gas is not available. DF technology also allows a choice of fuel based on the cost and availability of gas compared to liquid fuel. The use of DF technology with gas as the fuel is an optimum solution for vessels that spend a lot of time in ECA zones and for vessels that carry gas with them, i.e. LNG carriers.

Wärtsilä is developing a complete portfolio of medium-speed gas engines and related fuel handling equipment in order to be able to deliver solutions for LNG tankers and gas-fuelled ships in general. Wärtsilä is also developing 2-stroke gas engine technology.

Expanding the fuel versatility

Wärtsilä is using more resources on 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 studies 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 burning rock refinery process, different kind of condensates coming from oil and gas wells, jatropha oil, fish oil, chicken oil, traditional animal fats and different kinds of synthetic oils.

Enabling 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 more sustainable energy infrastructure. Wärtsilä's dynamic grid stability solutions make it possible to install much larger quantities of variable, non-dispatchable wind power capacity to the electrical grids without losing system stability. The same dynamic 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 are high energy efficiency over a wide load range, multifuel operation, no water usage and the ability to locate the power generation facility in 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_2 emissions worldwide.

The HERCULES program

HERCULES Beta within the EU's 7th framework programme was finished in December 2011. This 40-month and EUR 26 million project was steered by two leading engine designers and manufacturers, Wärtsilä and MAN Diesel and Turbo, and it brought together 32 partners across Europe. One aim of the project was to develop new technologies to reduce gaseous and particulate emissions from marine engines. A second objective was to increase engine efficiency and reliability, which in turn will reduce specific fuel consumption, carbon dioxide emissions and lifecycle costs. The project has resulted in technologies for more than 50% reduction in NO_x emissions and 10% improvement in fuel consumption.

The technological themes of the HERCULES initiative have, since its inception in 2002, been higher efficiency, reduced emissions and increased reliability for marine engines. However, for taking marine engine technology a step further towards improved sustainability in energy production and total energy economy, an extensive integration of the multitude of identified new technologies is required. Following the original vision, leading parties have applied for and been awarded a third phase called HERCULES-C, as a continuation of the very successful HERCULES programmes. The HERCULES-C Project is scheduled to run over a three-year period 2012-2014 and has a budget of EUR 17 million, bringing the total combined budget of the HERCULES programmes (2004-2014) to EUR 76 million.

Cleen

The Future Combustion Engine Power Plant (FCEP) research programme was started on 1 January 2010. The program 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, emissions reduction methods, heat recovery systems and power conversion technologies. In addition, fuel flexibility and the use of renewable fuels in combustion engines are central research areas.

The programme objectives and scope have been set by the industry together with the research institutions, thereby enabling deep co-operation in jointly executing the programme and promoting breakthrough innovations across broad interfaces.

The total cost of the FCEP programme is EUR 38 million. It will be covered by the participating companies (EUR 12.8 million) and research institutes (EUR 5.1 million). The remaining EUR 20 million has been applied for from the Finnish Funding Agency for Technology and Innovation (Tekes). The first half of the four year program has been successfully accomplished. The research will continue as planned during the third year of the program with a special focus in utilising the established research network and infrastructure to facilitate new results and technical solutions in the area. 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 in technical and scientific excellence.

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.

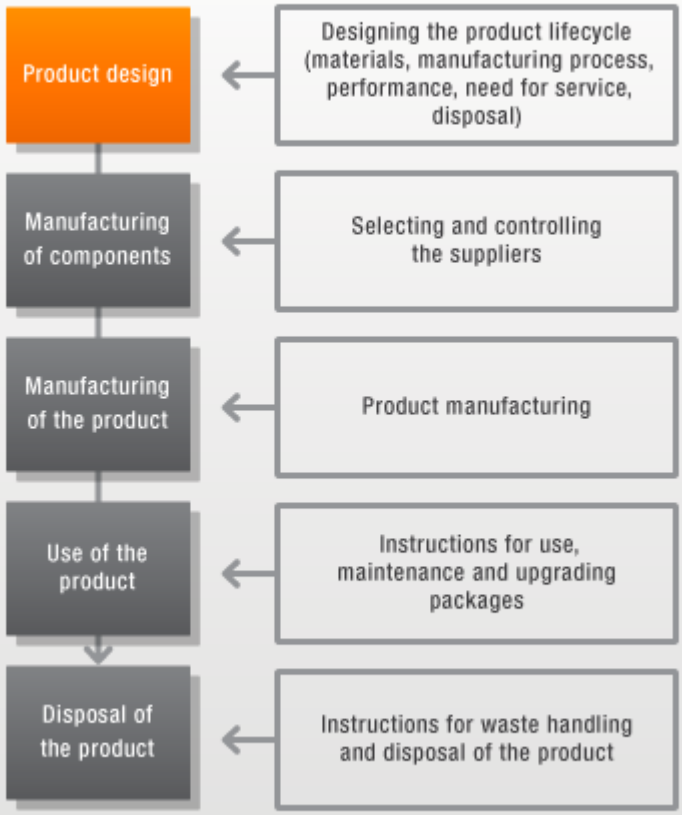
Lifecycle approach

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



Summary of environmental aspects of Wärtsilä's products and solutions

Environmental aspect and product	Environmental impact and component	Wärtsilä's solution	Customers' options
Emission into the air	**Pollution of air**		
Engine and power plants	Climate warming: carbon dioxide (CO_2)	Increasing engine and plant efficiency, multifuel engines	• Using a different fuel • Using a fuel with a lower sulphur content • Investment in secondary emission reduction technologies • Planned or optimised maintenance and correct operation
	Acidification: sulphur oxides (SO_x)	Increasing engine efficiency, marine scrubbers, several FGD technologies, multifuel engines	
	Acidification, eutrophication, lower atmosphere ozone formation: nitrogen oxides (NO_x)	Low NO_x combustion, air humidification technologies, SCR, multifuel engines	
	Human health impacts, visual impacts: particles, smoke	Optimising the combustion process, common-rail fuel injection, electrical filters, marine scrubbers	
	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_4), ozone formation in the lower atmosphere, some carcinogenic compounds: hydrocarbon (THC, VOC)	Oxidation catalysts in gas engines for VOC emissions, optimising the combustion process	

Environmental aspect and product	Environmental impact and component	Wärtsilä's solution	Customers' options
Consumption of raw materials	**Depletion of natural resources**		
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	• Planned or optimised maintenance and correct operation • Personnel training • Overhauling components • Recycling components • Recycling catalysts • Optimising process parameters
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	

Environmental aspect and product	Environmental impact and component	Wärtsilä's solution	Customers' options
Consumption of fuel & lubricating oils	**Depletion of natural resources**		
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	• Planned or optimised maintenance and correct operation • Personnel training • Using environmentally favourable fuels • Using environmentally favourable lubricating oils • Using environmentally favourable seals
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	
Solid and liquid waste	**Increased waste and landfill sites**		
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	• Planned or optimised maintenance and correct operation • Personnel training • Recycling and proper waste disposal • Evaluation of the potential uses of end products • Optimising process parameters
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	

Environmental aspect and product	Environmental impact and component	Wärtsilä's solution	Customers' options
Noise and vibration	**Discomfort**		
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	• Planned maintenance and correct operation of the power plant
Heat emission	**Warming of the atmosphere**		
Engines and power plants	Waste heat from exhaust gases	Heat recovery systems	• Optimising process parameters

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, also 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 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 increase the absolute value of the indicator.

Monitoring environmental impacts

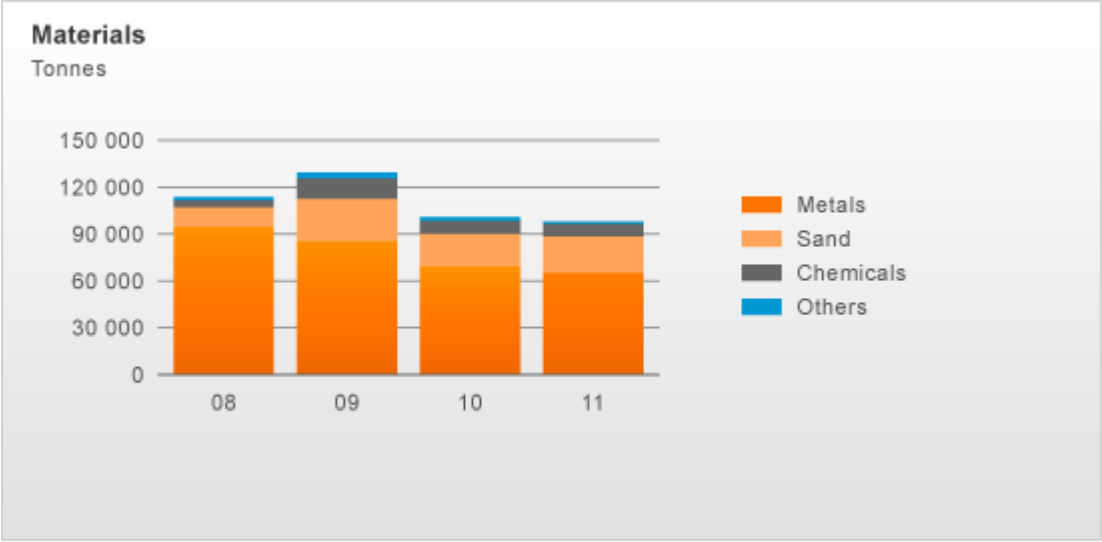
Within Wärtsilä, environmental impacts caused by operational activities are monitored as follows:

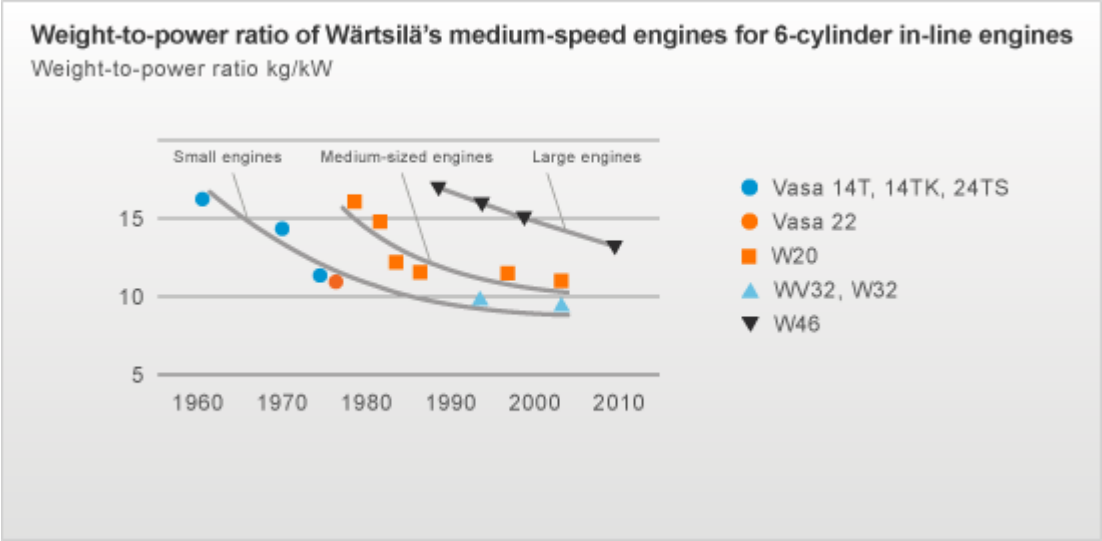
- participation in the monitoring of air quality with other local stakeholders
- measurement of air emissions
- charting of noise levels
- periodical effluent analysis
- soil analysis
- dispersion analyses and bio-indicator surveys.

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 2011, the total material usage was 98,142 tons (100,896). The major material groups were various metals 66% (69), sand 24% (21) and various chemicals 8% (8).

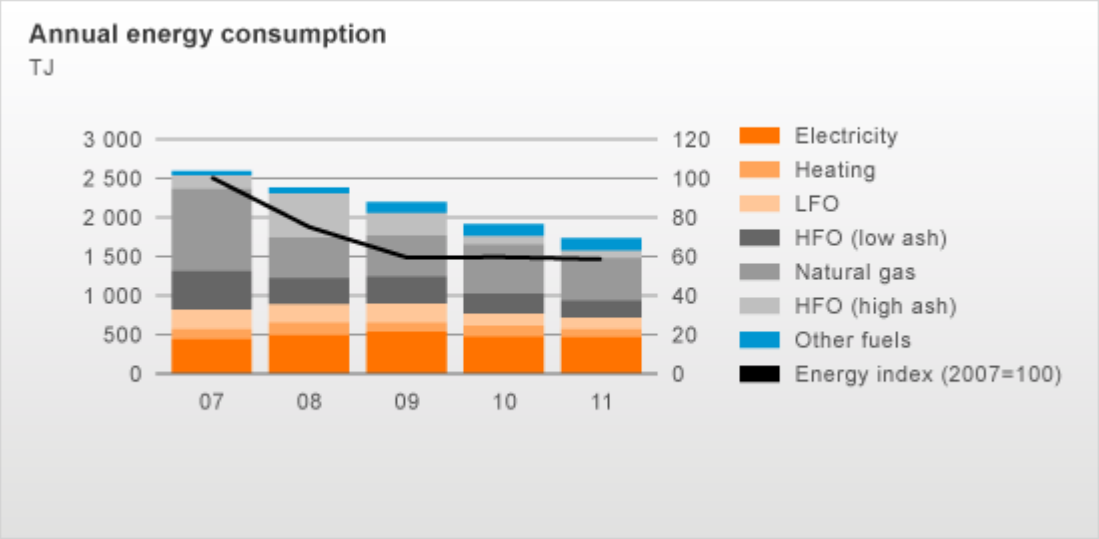




Energy

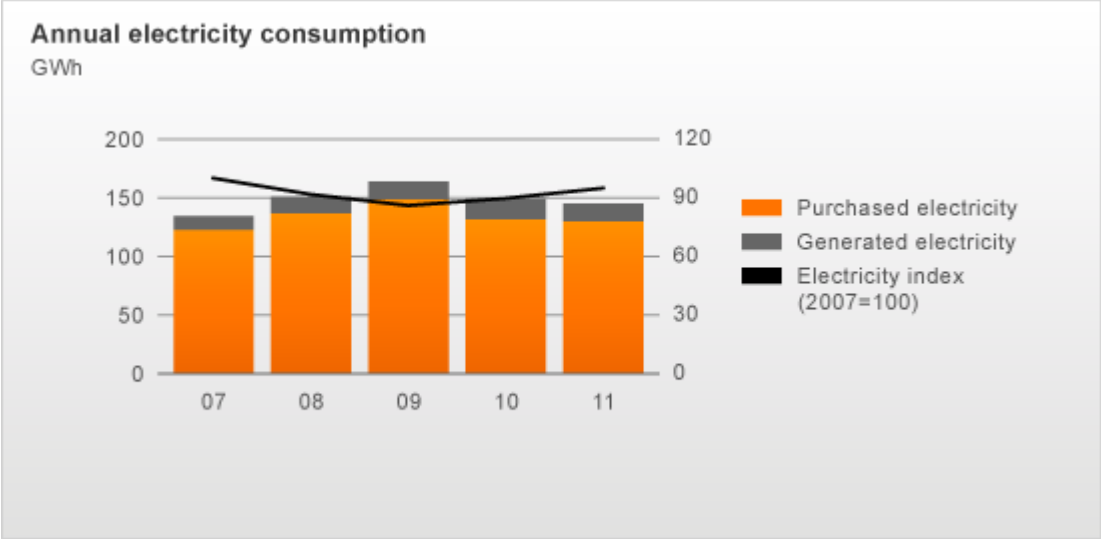
Total energy consumption

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.



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 to local power companies.



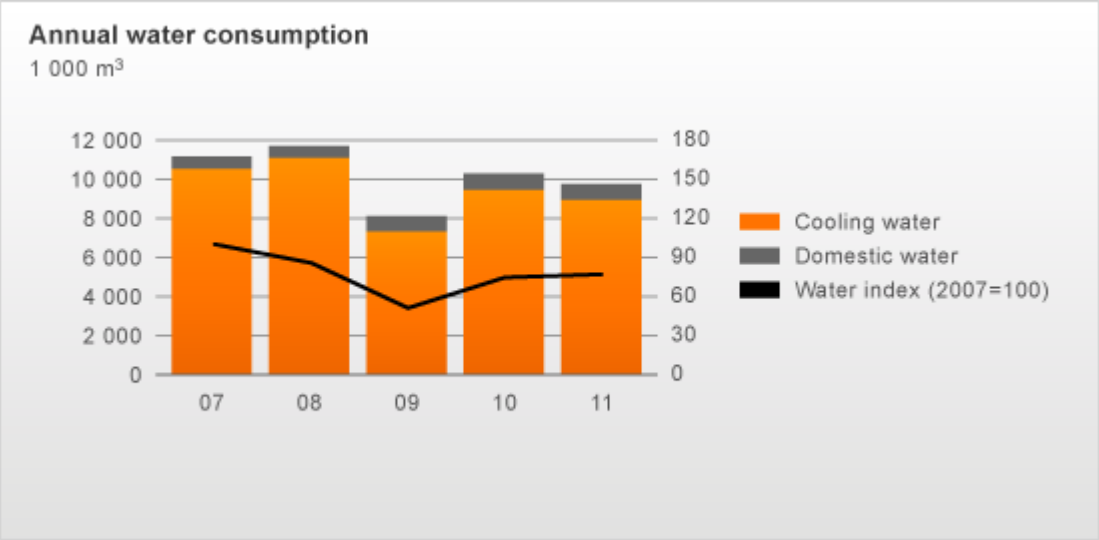
Heat

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 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 sewered and piped to the local wastewater treatment plant. 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.



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_x), sulphur dioxide (SO_2), carbon dioxides (CO_2) 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_2 emissions, Wärtsilä's operations generate indirect CO_2 emissions. In 2011, the calculated secondary CO_2 emissions were 56,610 tons (58,002) (from purchased electricity and heat) and the CO_2 emissions from flights totalled 37,459 tons (35,060).

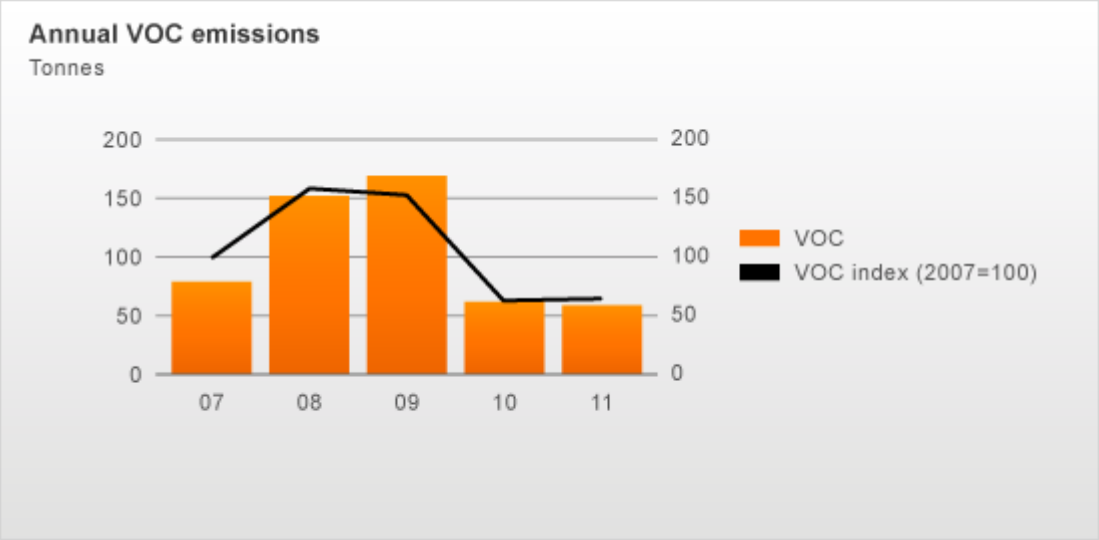
Wärtsilä has taken several measures to reduce its indirect CO_2 emissions. The energy efficiency commitment aims to reduce energy consumption and emissions. In addition, Wärtsilä's focus lies on reducing travelling by implementing a strict travel policy and by using three main virtual meeting concepts: 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 27 Telepresence rooms established in Wärtsilä premises in 17 countries.

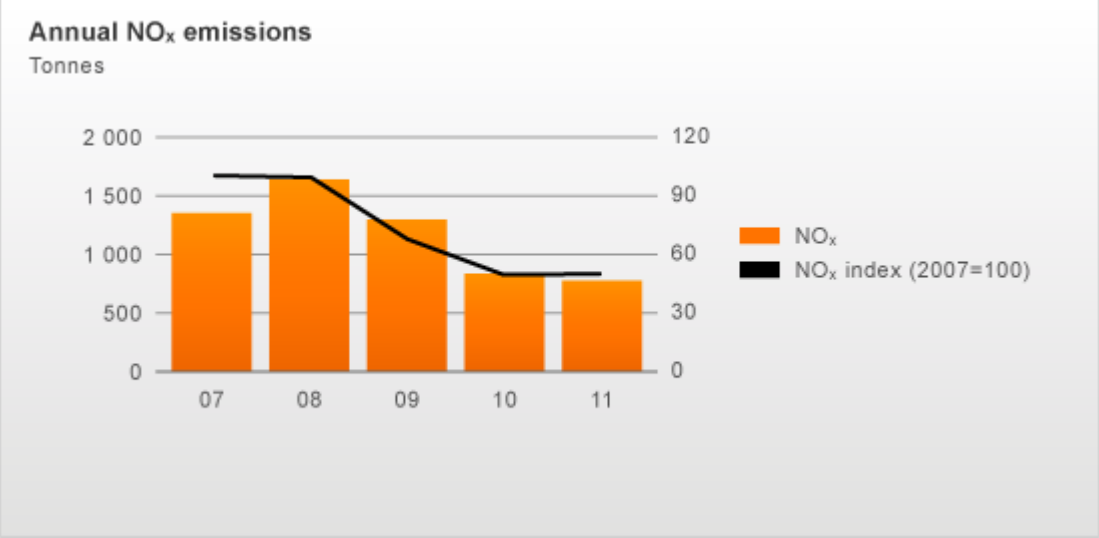
Waste management

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:

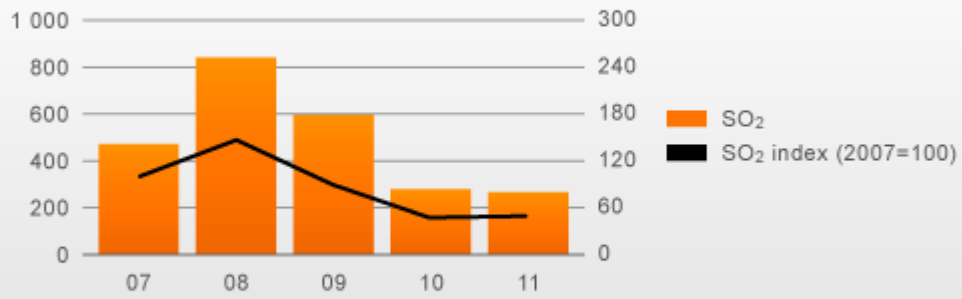
- to reduce the amount of waste generated in processes
- to use waste as a material
- to use waste as energy
- to dispose of waste in an environmentally sound way.





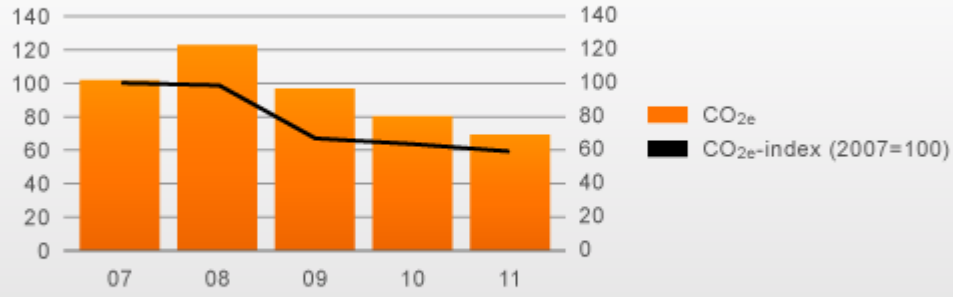
Annual SO_2 emissions

Tonnes



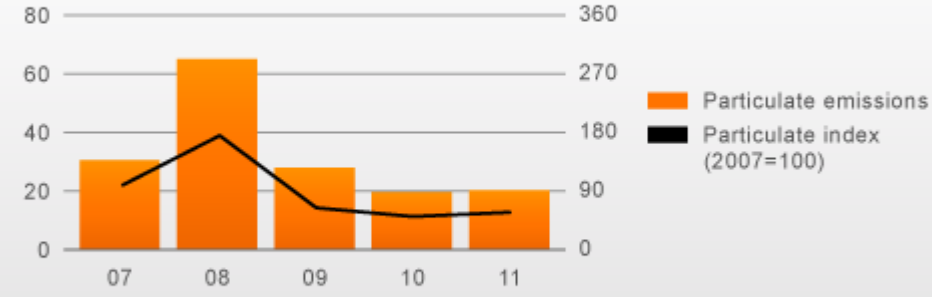
Annual CO_{2e} emissions

1 000 tonnes



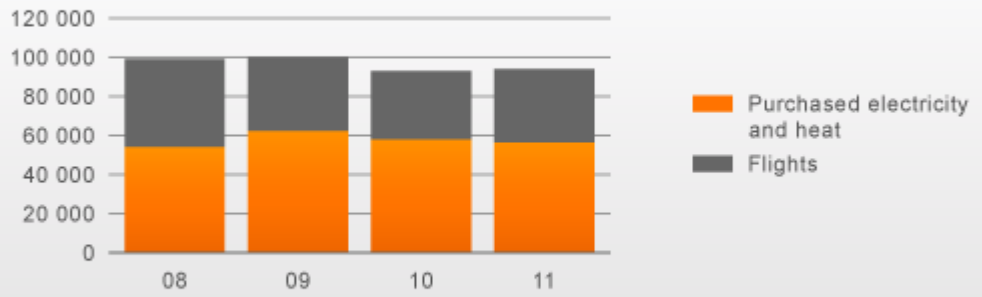
Annual particulate emissions

Tonnes



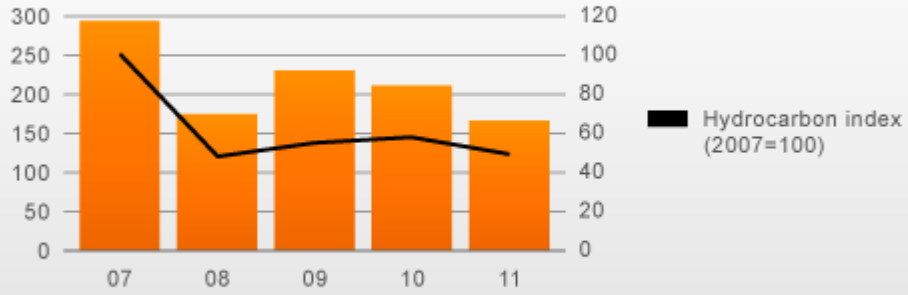
Indirect CO_2 emissions

Tonnes



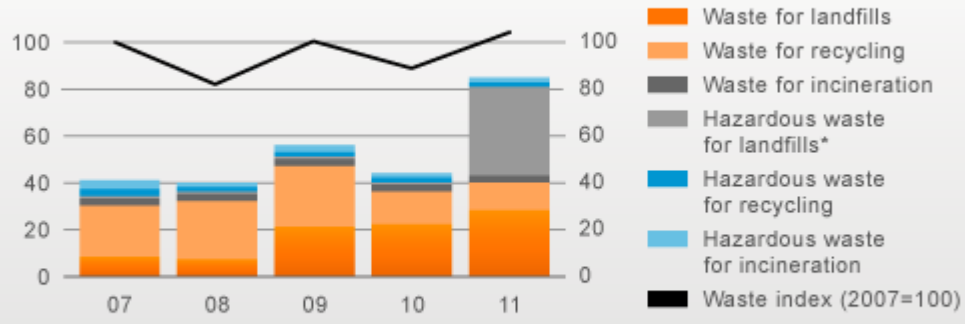
Total hydrocarbons

Tonnes



Annual waste

1 000 tonnes



* The hazardous waste for landfills 2011 includes 36269 t of contamined soil, which is 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

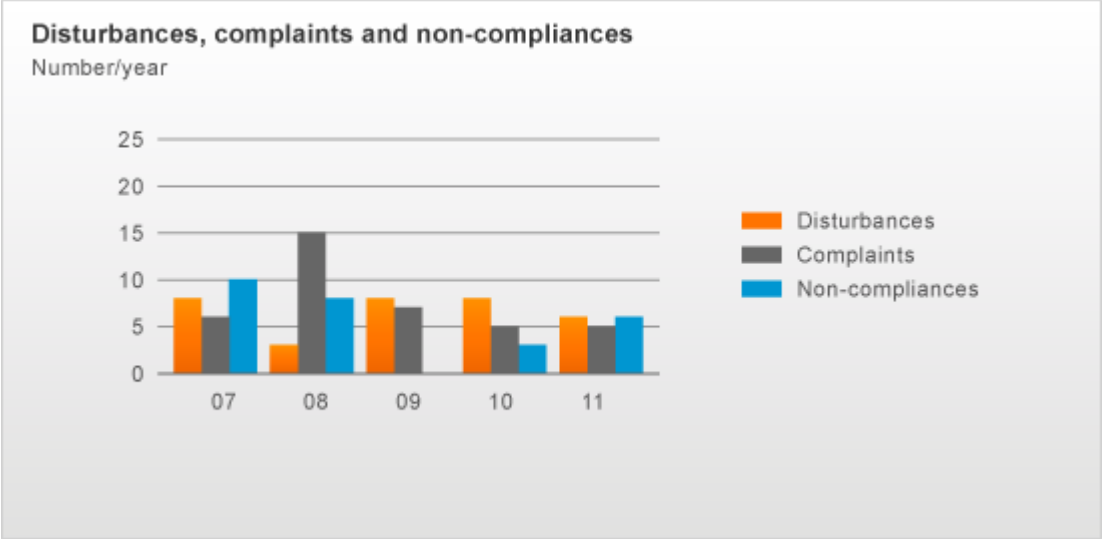
The number of disturbances, complaints and incidents of non-compliance are presented in the figure below. Reported disturbances cover incidents in which the Wärtsilä company concerned has usually been obliged to report the disturbance to the authorities. The following main environmental disturbances occurred in Wärtsilä's business locations in 2011:

- 1 fire
- 2 soil contaminations
- 2 fuel oil spills
- 1 oily water spill

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

Cases of non-compliance

Wärtsilä India Ltd. had 2 non-compliance cases: one related to water consumption exceeding permit conditions and another related to height of a shot blasting shop chimney. The water consumption has been limited to within the permit limits. The chimney height case has been solved by deciding to move to a facility with a sufficiently high chimney. Wärtsilä Azerbaijan LLC had 2 non-compliance cases related to missing hazardous waste and environmental discharges permission documentations. Both documentations will be arranged during the first quarter of 2012. Wärtsilä Philippines Inc. had one non-compliance case related to canteen water discharge oil and grease content exceeding the permit limit. The issue has been solved. Wärtsilä UK Ltd. had one non-compliance case related to water piping found installed against the water regulations. The corrective actions will be taken during spring 2012.



Non-compliance cases presented in previous reports

The earlier non-compliance cases of Wärtsilä India Ltd. were directed to activity. Chimneys with the required heights have been installed and a revision of the waste permit conditions has been reached with the authorities. Wärtsilä Singapore Pte Ltd. has solved the stagnant water and mosquito breeding problem found in the area of the real estate. Wärtsilä Danmark A/S has used a temporary solution to waste water treatment in 2011, and a permanent solution will be implemented during the first quarter of 2012.

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	2011	2010	2009	2008	2007
Environmental capital expenditures	**0.9**	2.9	1.1	2.6	2.5
Environmental operating expenditures	**6.1**	5.5	4.2	5.4	4.1

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
To make Wärtsilä a workplace where all employees have a the opportunity to show their best and develop their career – To build a company of equal opportunities - Target 2012: More than 50% of the open vacancies* filled from internal applicant pool including promotions and lateral moves - Target 2012: An average 5 training days/employee per year	continuous	New target: the first status review in 2012
To develop a new way of working in supplier relations, safeguarding Wärtsilä's sustainability commitment - Target 2012: Implementation of revised model for supplier assessment and development	2015	New target: the first status review in 2012
Development discussion coverage 100%	continuous	In 2011, the coverage was 89%.
To implement certified EHS management systems implemented in all subsidiaries (excluding purely sales offices)	continuous	5 new OHSAS 18001 certified companies during 2011. The management system coverage is presented in the management system section.

Target	Schedule	Status
To reach the long-term goal for zero lost time injuries	continuous	In 2011, Wärtsilä continued the strong efforts to improve, consolidate and spread the safety culture. Wärtsilä issued a “Safety Starts with you” video in 12 languages, and a global safety handbook was distributed to Wärtsilä companies. The positive trend continued, the lost-time injury frequency rate was 6.3 compared to the previous year's 7.8.
To ensure Code of Conduct commitment throughout the organisation - Target 2012-2013: 95% coverage of participation in Code of Conduct learning module	2013	New target: the first status review in 2012
To reinforce the Anti-corruption/broker training of key employee groups and obtaining anti-corruption commitments from all key employees trained - Target 2012: To identify the key employees (all sales personnel, company presidents and controllers) to be included in the training by each business. - Target 2013: Training of key employees to achieve 85% completion rate. - Target 2014: Training of key employees to achieve 95% completion rate.	2014	New target: the first status review in 2012
To conduct three community support projects by 2015.	2015	New target: the first status review in 2012.

Target	Schedule	Status
To improve well-being at work and increase productivity by reducing the sickness day cost. - Target 2012: To conduct in Germany, Finland, Spain, Norway and Italy analysis and action plans for improvement.	2015	New target: the first status review in 2012.
*Open vacancies in job levels 3-6		

Personnel

Structural changes in 2011

In June 2011, Wärtsilä signed an agreement to establish a joint venture for manufacturing medium-speed marine engines in China together with Jiangsu CuiXing Marine Offshore Engineering. Wärtsilä's share of the joint venture is 49% and Jiangsu CuiXing's share is 51%. The joint venture's production facilities in the Rugao city of Nantong, in Jiangsu province in Eastern China will focus on the assembly and testing of engines. Operations are planned to start early in 2013.

In July 2011, Wärtsilä announced the acquisition of Cedervall, one of the leading manufacturers of shaft seal and bearing systems for the marine industry. Cedervall is headquartered in Gothenburg, Sweden, and the company has subsidiaries in Spain, China and Singapore, with manufacturing facilities in Sweden, China and Spain. The company employs 211 people.

Wärtsilä inaugurated its new spare parts distribution centre in Kampen, the Netherlands in November 2011. The Central Distribution Centre is the core of Wärtsilä Global Logistics Services and integrates eight spare parts warehouses into one global supply chain operation. The new distribution centre began its operations in December 2010 and was fully operational by the end of 2011. The Central Distribution Centre will employ approximately 140 people.

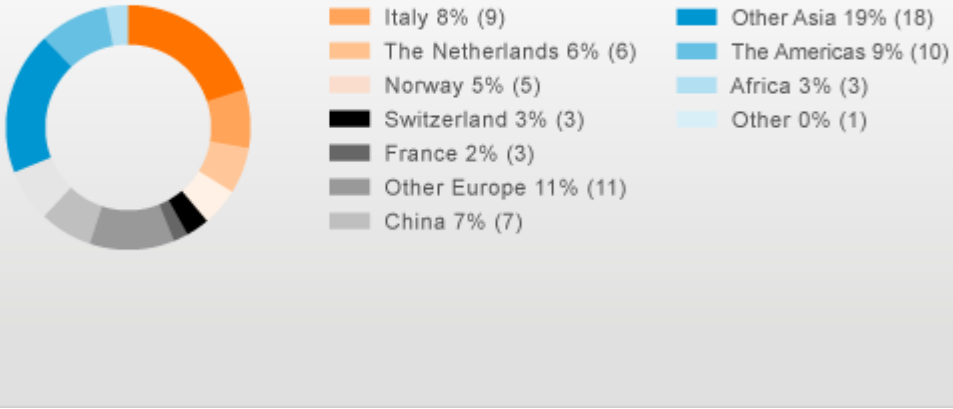
A global project concerning support functions was kicked off already in March 2010. The global evaluation of every support function was carried out in the spring, and implementation plans were drawn up during the autumn. The main part of the implementation of the new business support functions has been done in due course in 2011 in order to create a new organisational design for the support functions. The main target was to improve the implementation of global initiatives, to harmonise processes across the Group's companies and businesses and to reduce overlapping work.

Personnel

In addition to direct employment, Wärtsilä employed also indirectly an external workforce totalling 2,374 man-years in subcontracting at its factories and units. The units located in Finland had a total personnel of 3,504 employees.

Personnel by country

%

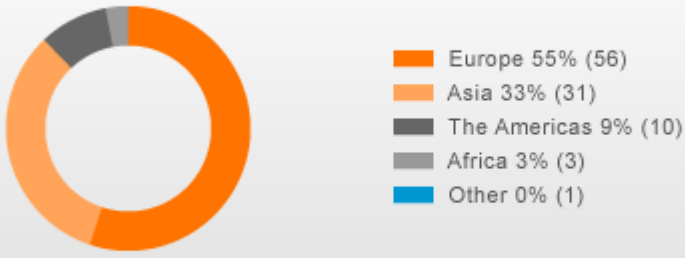


Personnel by business

%

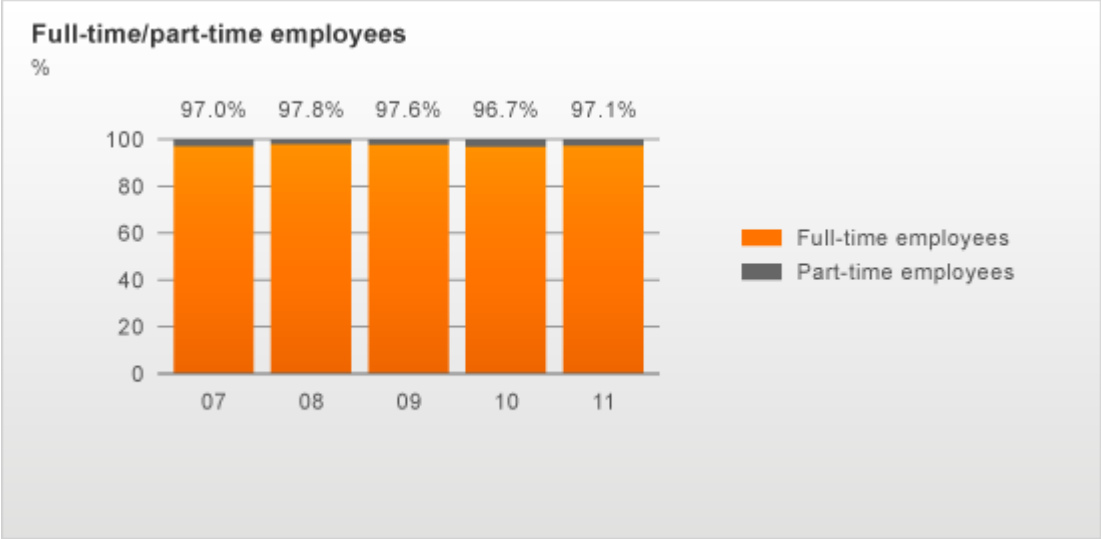
Personnel by market area

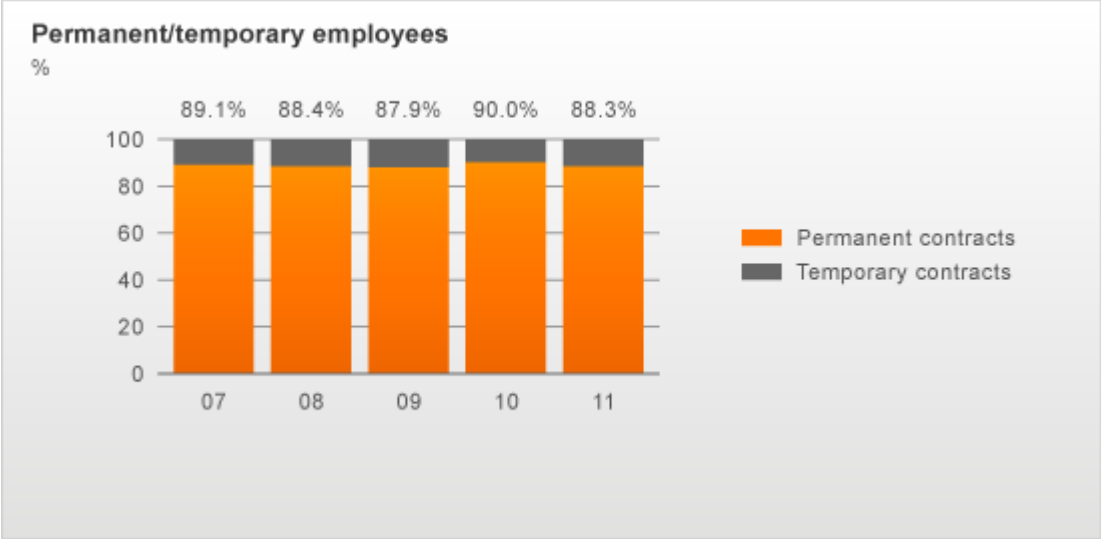
%

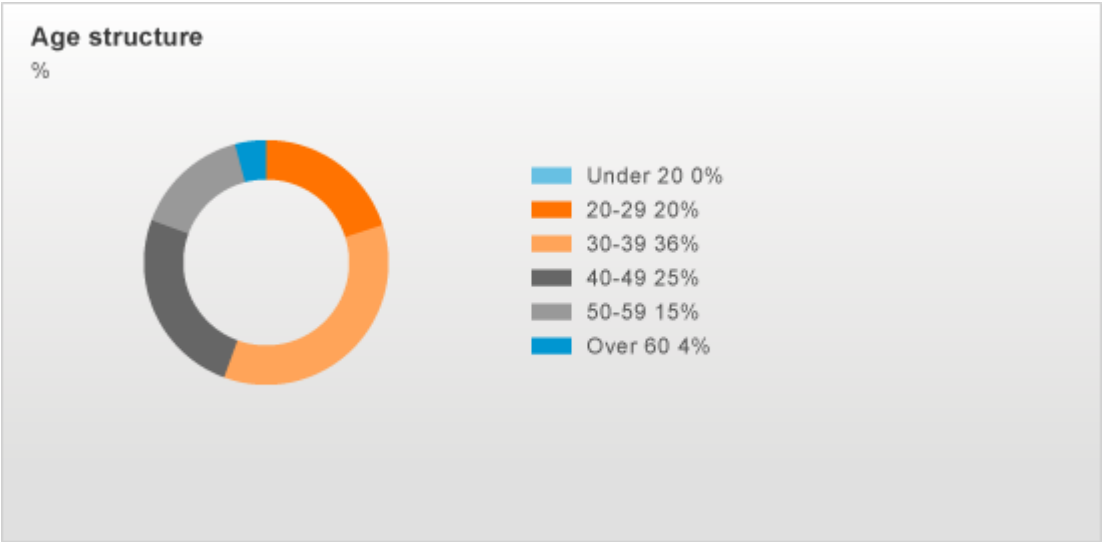


Number of employees per business

	No. of employees	Change
Power Plants	855	20
Ship Power	999	30
Services	11 168	18
Industrial Operations	4 091	-119
Other	800	436







All in all, 617 employees were reduced globally during 2011 based on the redundancy programs started in 2010. 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 and acquired Cedervall with 211 employees. Wärtsilä had 17,913 employees at the end of 2011 (17,528).

People management in 2011

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.

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

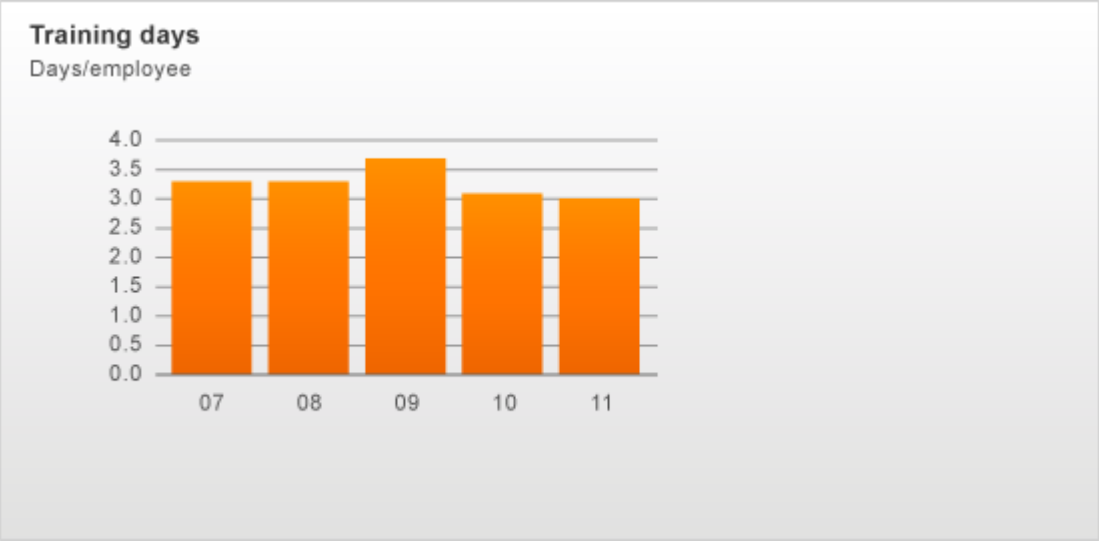
The performance management process supports Wärtsilä in reaching its business targets by translating business strategies to team and individual objectives. Each Wärtsilä employee needs to know and understand Wärtsilä's business strategy and its goals. More importantly, they need

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. An annual executive development programme was held in November, and six global leadership development programmes for senior managers were carried out during 2011. The number of managerial training days is also followed regularly as one of the HR KPIs.

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 54,424 training days a year, averaging 3.0 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

Days/employee	2011	2010	2009	2008	2007
Managers and superiors	**3.4**	3.2	3.9	2.7	5.3
Other white-collar employees	**2.5**	2.9	3.8	3.3	2.9
Blue-collar employees	**3.4**	3.3	3.5	3.5	2.8

Engagement

The positive trend in development discussion compliance has continued. The global, average coverage of annual development discussions was 89%. Strategy communication started in every division in December 2011 and will continue in 2012 both in the town hall meetings, online and in the individual development discussions, in which the targets for the next year are set. Wärtsilä will conduct its sixth global employee satisfaction survey, MyVoice, in March 2012.

Employee Practices

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

Equal opportunities

Wärtsilä 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 Wärtsilä.

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, colour, 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 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 labour 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 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 fulfil 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. Private initiatives are evaluated by experts within the company and, if found to be feasible, are put into effect.

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 2011

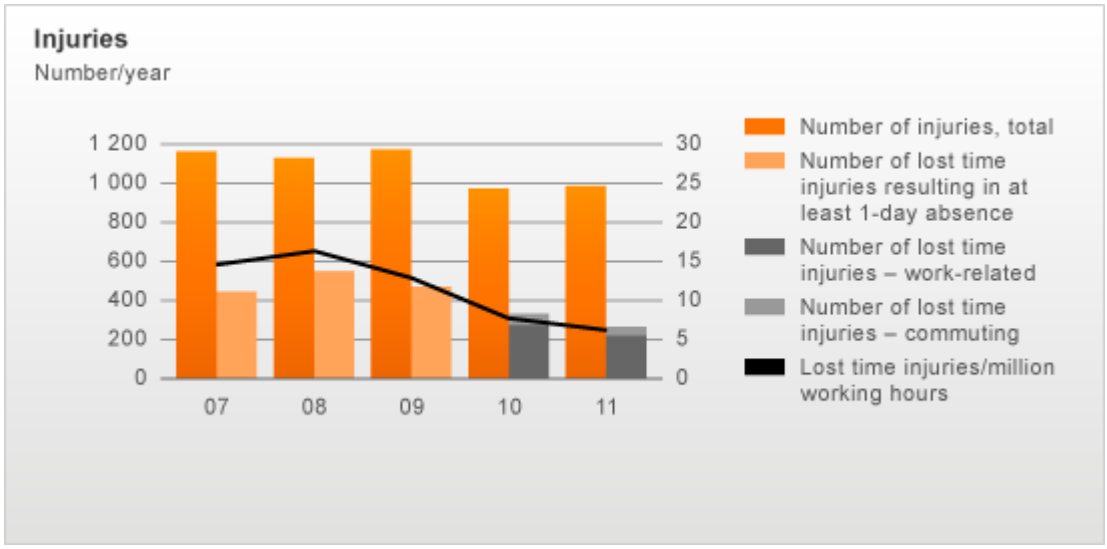
Number of employees at 31 Dec. 2011		17 913
Number of nationalities		114
Change in number of employees (net employment creation)		-191
Average age of employees	years	38.8
Male/female ratio	%	86/14
Executive positions globally: male/female ratio	%	90/10
Employee turnover (resigned)	%	8.6
Total payroll costs	MEUR	770
Aggregate coverage of different bonus schemes	%	60
Development discussions held annually	%	89

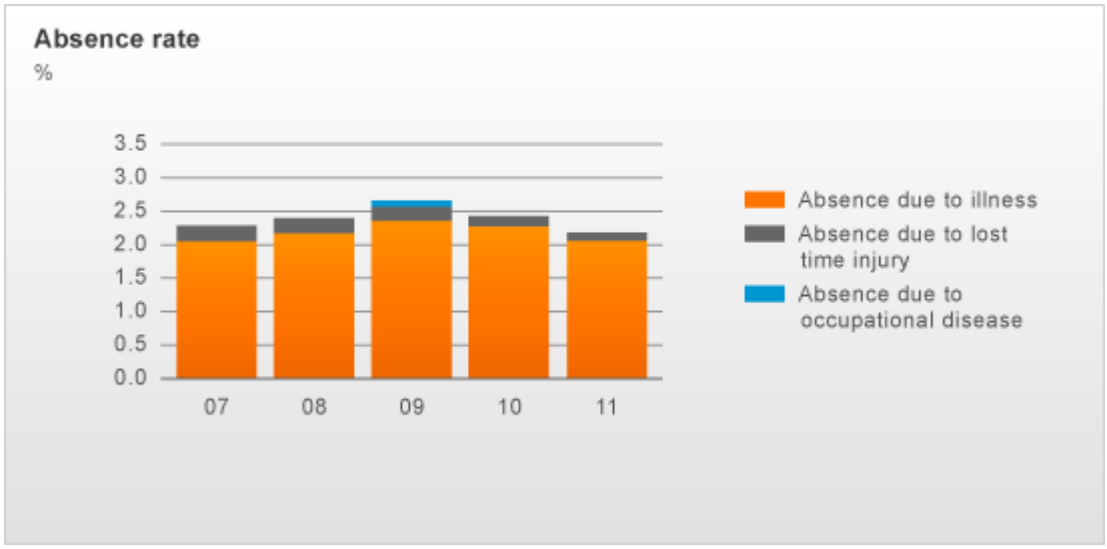
Occupational health and safety

Wärtsilä's occupational health and safety principles are defined in 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, providing written instructions, the use of protective equipment and the continuous improvement of occupational health and safety performance. At the end of 2011, 33 Wärtsilä companies operated with a certified occupational health and safety management system. These certified occupational health and safety management systems cover roughly 73% of Wärtsilä's total workforce.

The objective of Wärtsilä's QHSE policy is to prevent and manage health and safety risks to the personnel and stakeholders. In addition to the management system, Wärtsilä companies apply occupational health and safety programmes as required by local legislation, which are normally implemented by occupational health and safety committees consisting of representatives of the companies' management and personnel. Accidents are recorded and investigated in the manner required by local legislation. 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. In 2011, Wärtsilä continued strong efforts to improve, consolidate and spread the safety culture. Wärtsilä issued a "Safety Starts with you" video in 12 languages, and a global safety handbook was distributed to Wärtsilä companies. Wärtsilä also started a practice of sharing the lessons learned of incidents which have happened within the global network.

The positive trend in reducing lost time injuries continued, and Wärtsilä achieved a good result in 2011 with a lost time frequency index of 19.3%, below that of the previous year. Wärtsilä regrets to report one fatal occupational accident during the review period. A Wärtsilä employee had a fatal accident in our customer´s premises in India. During the reporting period two warnings were received. Wärtsilä Australia received an Improvement Notice because of a missing guard rail at a power plant site. Wärtsilä BLRT Lietuva received a warning concerning ergonomic aspects missing from a risk assessment. Both companies have taken the necessary actions.





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 114 different 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. Wärtsilä Korea Ltd. was charged a penalty fee of EUR 7,869 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. In Wärtsilä Ship Design Poland Sp.z.o.o., two employees violated the Wärtsilä Code of Conduct by misusing confidential information related to Wärtsilä personnel. These employees received written warnings in accordance with the local labour legislation.

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.

Conducting business in weak governance zones

As a truly international company, Wärtsilä has delivered solutions to more than 160 countries. Wärtsilä 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 Wärtsilä Code of Conduct applies to all Wärtsilä employees. Wärtsilä supports its solutions globally during their entire lifecycle, often spanning up to 30 years. Thus, Wärtsilä 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. Wärtsilä 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

Wärtsilä 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. Wärtsilä has received certifications for supply chain security management, such as C-TPAT and AEO through its network companies. The security personnel of Wärtsilä have been trained according to our policy, guidelines and best practices. Wärtsilä participates in the work of ASIS Finland and ASIS International.

Impact on communities

Wärtsilä aims to contribute towards the well-being of local communities in which the company is present. This can be reached e.g. 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 Wärtsilä'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.

Wärtsilä'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. Read more about Wärtsilä's concrete actions in the Inside Stories section.

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

Suppliers

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 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 solve deviations from requirements. In the assessment 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 and quality plans and social performance.

In 2011, Wärtsilä rated more than 300 of its key suppliers and conducted dozens of supplier evaluations. Wärtsilä Supplier Development activities are continuously implemented globally. Through the utilisation of the Supplier Development Toolbox, we will improve our suppliers' quality and delivery reliability level to all our business units. The most important tool in the Supplier Development Toolbox is the utilisation of the Part Quality Assurance Plan. The purpose of the part quality assurance is to make sure that the supplier is able to produce the intended parts in a rational and efficient way. All strategic purchasing functions within the Wärtsilä businesses, Industrial Operations and Corporate Supply Management have been merged and streamlined to further achieve economies of scale in purchasing activities within Wärtsilä. Wärtsilä Supply Management (WSM) has one governance model, one team, one target and one voice towards suppliers. This eliminates overlapping work and provides better control over all spend and suppliers. The Supplier Development and Quality team supports Wärtsilä's targets, enabling customer satisfaction by securing the right quality, on time deliveries and optimised cost performance from our suppliers.

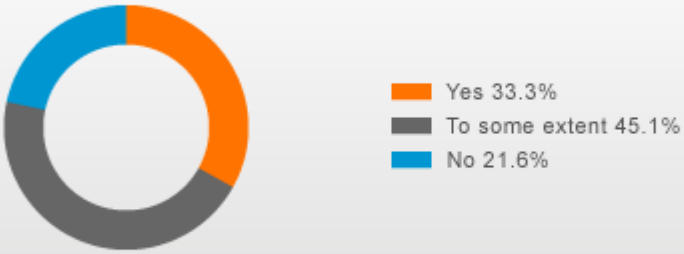
Wärtsilä's Supplier Day 2011 was held on 6-7 September in Helsinki, Finland. Approximately 130 key suppliers participated in the event. During the event, the participants were asked various questions, two of which were related to Wärtsilä's sustainability work. The answers indicated that Wärtsilä's commitment to sustainability can be seen in the supply chain, but there is still room for improvement.

Have you taken any actions in your company to improve the sustainability (environmental, social, economical) performance of your operations?

%

Can Wärtsilä's commitment to sustainability be seen in practice in supplier relations?

%



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 not only to comply with local anti-bribery provisions but also with internationally recognised anti-corruption and anti-bribery principles and to report any cases of bribery. The company renders extensive training for its personnel on anti-corruption principles and the relevant instructions.

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. In October 2009, the public prosecutor further filed a demand for a corporate fine from Wärtsilä Finland 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 were related to a consulting agreement, which was made in conjunction with the project in Kenya. The case was heard before the Pohjanmaa District Court (previously know as the Mustasaari District Court) in November 2009. By its decision on 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 on 21 September 2010, the Vaasa Court of Appeal referred the case back to the District Court for reasons of procedural law. Subsequently, the former senior manager and Wärtsilä Finland Oy submitted a petition for leave to appeal the Court of Appeals decision to the Supreme Court of Finland and on 21 June 2011, the Supreme Court granted the leave for appeal. On 31 December 2011, the case was pending before the Supreme Court of Finland.

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 2011, Wärtsilä did not make any significant 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 2011 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 in the countries where Wärtsilä is present. These days are used to review subjects of topical interest and to discuss existing and future needs and challenges. In 2011, the Ship Power and Power Plants businesses arranged or participated in close to 200 maritime and energy-related events, international and national seminars, exhibitions and conferences worldwide. These events were visited by thousands of customers, potential customers and other stakeholders such as consultants, suppliers, students, etc.

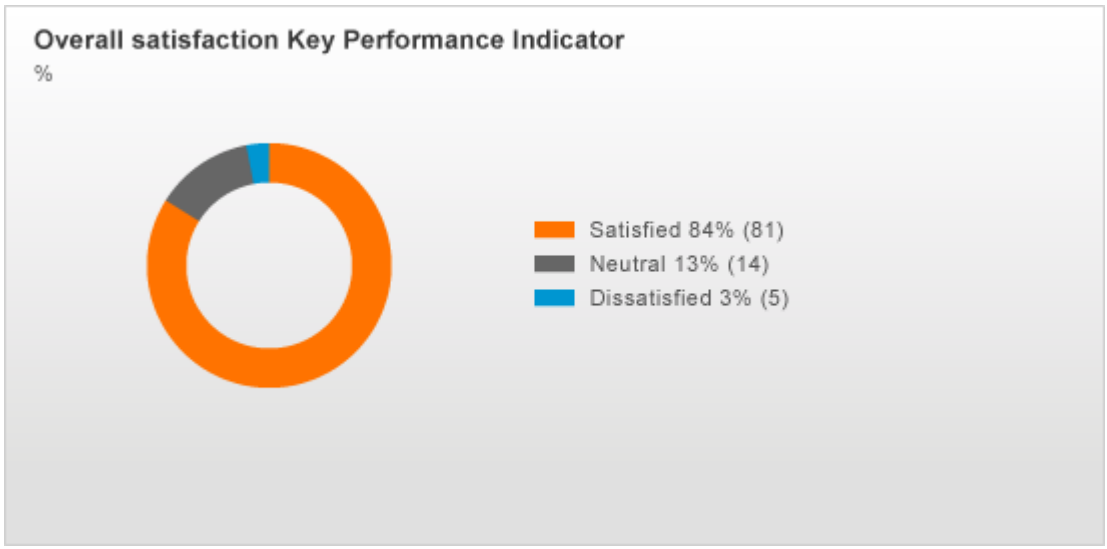
In order to strengthen our customer-focused mindset, we at Wärtsilä use an integrated customer feedback process (CROL). The aim is to achieve an excellent long-term relationship by listening to the customers and acting upon their feedback.

Our customers provide us with important feedback during the project deliveries as well as during the operation period of the installations. This feedback is continuously reviewed and acted upon, both on operative and management level. Wärtsilä strives for world class customer satisfaction by ensuring that expectations for products and services are met.

During 2011, we have received over 2,000 customer opinions. Approximately 300 of these triggered further actions.

CROL results

Overall satisfaction Key Performance Indicator:



The average results of the customer satisfaction survey

	2011	2010	2009	2008	2007
Power Plants	**8.4**	8.3	8.1	8.3	8.1
Ship Power	**8.1**	7.6	7.4	7.4	7.5
Services	**8.3**	7.9	7.9	7.8	7.7
Sample	**2 188**	1 933	1 859	2 204	1 575

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

	2011	2010	2009	2008	2007
Customers					
Net sales (MEUR)	**4 209**	4 553	5 260	4 612	3 763
Net sales by market area (MEUR)					
Europe	**1 249**	1 266	1 654	1 695	1 442
Asia	**1 594**	1 754	1 937	1 792	1 432
Americas	**845**	1 034	1 176	689	520
Africa	**443**	390	399	379	323
Other	**77**	109	94	57	46
Suppliers					
Cost of goods, materials and services purchased (MEUR)	**2 694**	2 927	3 593	3 134	2 576
Employees					
Salaries and wages (MEUR)	**770**	773	735	693	592
Salaries and wages by market area (MEUR)					
Europe	**552**	565	549	520	451
Asia	**119**	111	106	106	84
Americas	**80**	78	66	60	53
Africa	**11**	12	9	6	3
Other	**7**	6	4	1	1
Net sales / employee (TEUR)	**238**	253	279	262	245
Public sector					
Taxes and social dues (MEUR)	**322**	326	337	288	242
Taxes and social costs by market area (MEUR)					
Europe	**240**	253	264	243	205
Asia	**41**	35	37	28	19
Americas	**38**	31	32	15	16
Africa	**2**	5	3	1	1
Other	**1**	2	1	0	0
Subsidies received (TEUR)	**8 263**	7 406	13 725	16 095	4 995
Net financial items (MEUR)	**-16**	-13	-34	-9	-8
Community					
Donations given, Board of Directors (TEUR)	**60**	670	70	70	70
Donations given, Wärtsilä companies (TEUR)	**940**	421	527	463	485
Expenditure					
R&D costs (MEUR)	**162**	141	141	121	122
Environmental costs					
Environmental capital expenditures (MEUR)	**0.9**	2.9	1.1	2.6	2.5
Environmental operating expenditures (MEUR)	**6.1**	5.5	4.2	5.4	4.1

Environmental data

	2011	2010	2009	2008	2007
Materials					
Total material usage (t)	**98 142**	100 896	129 320	113 772	
Metals (t)	**65 263**	69 194	85 351	94 431	
Sand (t)	**23 072**	20 739	27 157	12 515	
Chemicals (t)	**7 963**	8 500	12 932	4 551	
Others (t)	**1 844**	2 462	3 880	2 275	
Energy					
Total energy consumption (TJ)	**1 735**	1 916	2 194	2 383	2 595
Electricity consumption (MWh)	**145 078**	149 047	164 022	151 169	134 543
Purchased electricity (MWh)	**129 885**	131 562	148 780	136 491	122 372
Generated electricity (MWh)	**15 109**	17 485	15 242	14 678	12 171
Sold electricity (MWh)	**36 893**	39 958	60 881	91 025	77 410
Heat consumption (MWh)	**31 805**	41 401	37 060	50 193	40 085
Light fuel oil (t)	**3 409**	3 623	5 662	5 432	5 816
Heavy fuel oils (t)	**7 652**	9 020	15 652	22 145	16 237
Natural gas (t)	**10 486**	12 347	11 792	11 160	22 379
Other fuels (t)	**4 173**	3 729	3 326	1 711	1 380
Water					
Total water consumption (1 000 m³)	**9 775**	10 292	8 128	11 712	11 160
Consumption of domestic water (1 000 m³)	**830**	840	808	622	634
Consumption of cooling water (1 000 m³)	**8 945**	9 452	7 320	11 090	10 526
Emissions					
Emissions of nitrogen oxides (t)	**765**	826	1 290	1 633	1 348
Emissions of carbon dioxide (t) (direct)	**68 897**	80 234	96 749	122 669	101 705
Emissions of carbon dioxide (t) (indirect)	**56 610**	58 002	62 211	54 112	
Emissions of carbon dioxide (t) (indirect - flights)	**37 459**	35 060	37 882	45 014	
Emissions of sulphur oxides (t)	**265**	277	595	840	471
Emissions of total hydrocarbons (t)	**166**	211	230	174	294
Particulates (t)	**20**	19	28	65	30
Emissions of VOC (t)	**58**	61	170	152	79

Waste					
Total waste (t)	**85 153**	43 566	55 803	40 209	39 614
Non-hazardous waste (t)	**42 865**	38 391	49 946	35 055	32 142
Hazardous waste (t)	**42 288**	5 175	5 857	5 154	7 472
Waste for landfills (t)	**27 808**	21 682	20 752	6 807	7 749
Waste for recycling (t)	**12 444**	14 221	26 332	25 133	21 520
Waste for incineration (t)	**2 614**	2 542	2 862	3 115	2 873
Hazardous waste for landfills (t)	**38 054**	1 127	852	694	520
Hazardous waste for recycling (t)	**2 082**	2 161	2 305	2 220	2 733
Hazardous waste for incineration (t)	**2 152**	1 887	2 699	2 240	4 219
Compliance with legislation					
Disturbances	**6**	8	8	3	8
Non-compliance	**6**	3	0	8	10
Complaints	**5**	5	7	15	6

Social data

	2011	2010	2009	2008	2007
Personnel					
Number of employees in the end of the year	**17 913**	17 528	18 541	18 812	16 336
Personnel by business					
Services	**11 168**	11 150	11 219	11 011	9 563
Ship Power	**999**	969	1 140	1 601	2 940
Power Plants	**855**	835	835	904	826
Industrial Operations	**4 091**	4 210	4 911	4 883	2 642
Other	**800**	364	436	413	365
Personnel by market area					
Europe	**9 813**	9 790	10 889	11 048	9 641
Asia	**5 830**	5 503	5 610	5 692	4 946
Americas	**1 700**	1 700	1 610	1 577	1 372
Africa	**484**	443	410	416	299
Other	**86**	92	78	79	78
Average age of employees	**38.8**	38.9	38.8	38.0	38.2
Permanent employees (%)	**88**	90	88	88	89
Temporary employees (%)	**12**	10	12	12	11
Full-time employees (%)	**97**	97	98	98	97
Part-time employees (%)	**3**	3	2	2	3
Employee turnover (resigned) (%)	**8.6**	9.8	10.5	10.2	
Net employment creation	**-191**	-814	-310	2 044	1 779
Training days (days/employee)	**3.0**	3.1	3.7	3.3	3.3
Managers and superiors	**3.4**	3.2	3.9	2.7	5.3
Other white-collar employees	**2.5**	2.9	3.8	3.3	2.9
Blue-collar employees	**3.4**	3.3	3.5	3.5	2.8
Development discussions held annually (%)	**89**	72	78	67	70
Gender diversity					
Male/female ratio (%)	**86/14**	86/14	86/14	86/14	87/13
Executive positions globally: male/female ratio (%)	**90/10**	90/10	87/13		
Regional diversity					
Number of nationalities	**114**	109	110	111	102
Injuries					
Total number of injuries	**987**	971	1 169	1 127	1 159
Number of lost tome injuries resulting in at least					
1 day absence, total	**267**	333	470	548	444
Number of lost time injuries - work-related	**221**	274			
Number of lost time injuries - commuting	**46**	59			
Lost time injuries / million working hours	**6.3**	7.8	12.9	16.3	14.6

Absence rate					
Absence due to illness (% of total working hours)	**2.1**	2.3	2.4	2.2	2.0
Absence due to lost time injury					
(% of total working hours)	**0.1**	0.2	0.2	0.2	0.2
Absence due to occupational diseases					
(% of total working hours)	**0.0**	0.0	0.0	0.0	0.1
Fatalities					
Number of fatalities, total	**1**	1	2	0	3
Employees	**1**	0	1	0	2
Contractors	**0**	1	1	0	1
Non-compliances					
Number of non-compliance cases	**4**	2	4	3	2
Fines of non-compliance cases (EUR)	**7 869**	26 157	17 659	2 352	1 300
Customer satisfaction					
Ship Power	**8.1**	7.6	7.4	7.4	7.5
Services	**8.3**	7.9	7.9	7.8	7.7
Power Plants	**8.4**	8.3	8.1	8.3	8.1
Sample	**2 188**	1 933	1 859	2 204	1 575

Report scope

Wärtsilä's Sustainability Reporting 2011 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), 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 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 Espana S.A.
Cedervall Zhangjiagang Marine Products Co. Ltd.
Cedervall Singapore Pte.

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. They relate mainly to development of the Ship Power and Services businesses.

Coverage of operational data

Operational data, % of Wärtsilä companies

	2011	2010	2009	2008	2007
Economic	100	100	100	100	100
Environmental	92	93	84	85	90
Social	92	93	84	85	90

Operational data, % of personnel

	2011	2010	2009	2008	2007
Economic	100	100	100	100	100
Environmental	98	98	98	95	96
Social	98	98	98	95	96

Operational data, % of product manufacturing

	2011	2010	2009	2008	2007
Economic	100	100	100	100	100
Environmental	100	100	100	100	100
Social	100	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 Trieste, Italy and in Mulhouse, France, and Wärtsilä North America was 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

These reports and their sustainability data are available on Wärtsilä's website: www.wartsila.com.

Sustainability Report Project Team

Mikael Troberg Director, Testing and Validation, Industrial Operations
Ari Suominen Director, Technology, Industrial Operations
Juhani Hupli Vice President, Ship Power Technology
Leonardo Sonzio Director, Environmental Services
Jussi Heikkinen Vice President, Marketing and Business Development, Power Plants
Pauliina Tennilä Director, Investor Relations
Natalia Valtasaari IR Officer
Harri Mäkelä Sustainability Officer
Marko Vainikka Director, Sustainability
(contact person: marko.vainikka@wartsila.com)

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 2011 .

Subsidies: The data of this indicator included 15 major Wärtsilä subsidiaries and the parent company in 2011 .

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 Lipasto database emission factors. The indirect CO_2 emissions (scope 2) are calculated by using the emission factors from the GHG Protocol. The CO_2 emissions of air travel are based on calculations by travel agency and are based on DEFRA defined factors.

Environmental hazards 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 lost time injuries resulting in absence from work of at least one day.

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

Employee turnover is calculated from permanent employees. The number of resigned 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.-31.12.2011 presented in connection with the electronic Wärtsilä Annual Report 2011.

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 2011", as well as on product sustainability performance presented on selected and marked pages at 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 2011 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 two site visits and an additional video conference, 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, 10. February 2012

KPMG OY AB

Pekka Pajamo	Nina Killström
Authorized Public Accountant	*Corporate Responsibility Advisor*

GRI and UNGC index

1 Strategy and analysis

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

2 Organisational profile

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

2.5 Number of countries and location of operations	This is Wärtsilä Operating environment Notes to the Consolidated Financial Statements	www.wartsila.com	●	
2.6 Nature of ownership and legal form	Shares and shareholders		●	
2.7 Markets served	This is Wärtsilä Operating environment		●	
2.8 Scale of reporting organisation	This is Wärtsilä Shareholders Operating environment		●	
2.9 Significant changes	2011 in brief Board of Directors' report		●	
2.10 Awards received in the reporting period	Recognitions		●	
3 Report parameters				
3.1 Reporting period	Our reporting		●	
3.2 Date of most recent report	Our reporting		●	
3.3 Reporting cycle	Our reporting		●	
3.4 Contact point for questions regarding the report	Our reporting		●	
3.5 Process for defining report content	Our reporting		●	
3.6 Boundary of the report	Our reporting		●	
3.7 Limitations on the report's scope or boundary	Our reporting		●	
3.8 Basis for reporting subsidiaries and joint ventures	Our reporting		●	
3.9 Data measurements techniques and bases of calculations	Our reporting Reporting rules and principles		●	
3.10 Explanation of re-statements	Our reporting		●	

3.11 Significant changes from previous reporting periods	Our reporting		●	
3.13 Assurance policy and practice	Our reporting		●	
4 Governance, Commitments and Engagement				
4.1 Governance structure	Corporate Governance		●	
4.2 Position of the Chairman of the Board	Board of Directors		●	
4.3 Independence of the Board members	Board of Directors		●	
4.4 Mechanism for shareholder and employee consultation	Annual General Meeting		●	
4.5 Executive compensation and linkage to organisation's performance	Salary and remuneration report 2011		●	
4.6 Processes for avoiding coflicts of interest	Corporate Governance		●	
4.7 Processes for determining expertise	Corporate Governance		●	
4.8 Implementation of mission and values statements; code of conduct	Strategy Wärtsilä and sustainability Code of Conduct		●	●
4.9 Procedures of the Board for overseeing risk management	Corporate Governance Board of Directors' report		●	
4.10 Processes for evaluating the Board's performance	Corporate Governance Board of Directors' report		●	
4.11 Precautionary principle	Risks and risk management Wärtsilä and sustainability Environmental performance		●	●

4.12 Voluntary charters and other initiatives	Strategy Sustainability performance management		●	●
4.13 Memberships in associations	Activities in organisations		●	●
4.14 List of stakeholder groups	Stakeholder relations		●	
4.15 Identification and selection of stakeholders	Stakeholder relations		●	●
4.16 Approaches to stakeholder engagement	Channels of dialogue		●	●
4.17 Key topics raised through stakeholder engagement	Stakeholder relations Wärtsilä and sustainability		●	●

5 Management Approach and Performance Indicators

Economic Performance Indicators

Disclosure on management approach	Economic performance Financial targets			●
EC1 Direct economic value generated and distributed	Economic performance		●	
EC2 Risks and opportunities due to climate change	Risks and risk management Wärtsilä and emission trading		●	●
EC3 Coverage of defined benefit plan obligations	Employees		●	
EC4 Significant subsidies received from government	Public sector		●	
EC5 Entry level wage compared to minimum wage	Employees		◐	●
EC6 Spending on local suppliers	Suppliers		●	
EC7 Local hiring	Employees		●	●
EC8 Infrastructure investments provided for public benefit	Community support		●	

EC9 Significant indirect impacts	Economic performance Impact on communities		◐	
Environmental				
Disclosure on management approach	Environmental performance Summary of environmental aspects Environmental targets			●
EN1 Materials used by weight or volume	Materials, energy and water		◐	●
EN2 Recycled materials used	Materials, energy and water	Reporting system under development	◐	●
EN3 Direct energy consumption	Materials, energy and water		●	●
EN4 Indirect energy consumption	Materials, energy and water		●	●
EN5 Energy saved due to conservation and efficiency improvements	Environmental targets		◐	●
EN6 Initiatives to provide energy efficient or renewable energy based products and services	Towards more sustainable solutions	www.wartsila.com/sustainability	●	●
EN7 Initiatives to reduce indirect energy consumption	Environmental targets Emissions and wastes		◐	●
EN8 Total water withdrawal	Materials, energy and water		●	●
EN9 Water sources significantly affected	Materials, energy and water		●	●
EN10 Percentage and total volume of water recycled and reused			-	●
EN11 Location and size of land holdings in biodiversity-rich habitats	Environmental costs and liabilities		●	●
EN12 Description of significant impact of activities, products and services on biodiversity	Environmental costs and liabilities	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	Emissions and wastes		●	●
EN17 Other relevant indirect greenhouse gas emissions	Emissions and wastes	Reporting system under development	◐	●
EN18 Initiatives to reduce greenhouse gas emission	Emissions and wastes	www.wartsila.com/sustainability	●	●
EN19 Emissions of ozone-depleting substances		Not applicable	-	
EN20 NO_x, SO_x, and other significant air emissions	Emissions and wastes		●	●
EN21 Total water discharge	Materials, energy and water		●	●
EN22 Total amount of waste	Emissions and wastes		●	●
EN23 Significant spills	Compliance with legislation		●	●
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	Power Plants review Ship Power review Services review Environmental performance	www.wartsila.com/sustainability	●	●
EN27 Reclaimable products and reuse		www.wartsila.com/sustainability	◐	●
EN28 Significant fines and sanctions for non-compliance with environmental regulations	Compliance with legislation		●	●
EN29 Environmental impacts of transportation			-	
EN30 Total environmental protection expenditures and investments	Environmental costs and liabilities		●	●
Social				

Disclosure on management approach	Personnel and social performance Social targets			●
LA1 Breakdown of workforce	Personnel		●	
LA2 Breakdown of employee turnover	Employee practices		●	●
LA3 Employee benefits	Employee practices		●	
LA4 Coverage of collective bargaining agreements	Employee practices	www.wartsila.com/sustainability	●	●
LA5 Minimum notice period regarding operational changes	Employee practices		●	●
LA6 Representation in joint health and safety committees	Occupational health and safety		●	●
LA7 Injury, lost time injury, fatalitites, absence rates	Occupational health and safety		●	●
LA8 Education and prevention programmes regarding serious diseases	Occupational health and safety	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	Personnel		●	
LA11 Programmes for skills management	Personnel		●	
LA12 Employees receiving regular performance and career development reviews	Employee practices		●	
LA13 Composition of governance bodies and breakdown of employees	Corporate Governance Personnel Employee practices		●	●
LA14 Ratio of basic salary of men to women by employee category	Employees Employee practices		◐	●
Human rights				
Disclosure on management approach	Personnel and social performance Social targets			●
HR1 Investment agreements that include human rights clauses	Human and labour rights		●	●

HR2 Suppliers and contractors that have undergone human rights screening	Suppliers		●	●
HR3 Human rights related training for employees	Sustainability performance management	Part of Code of Conduct training	-	●
HR4 Incidents of discrimination and actions taken	Human and labour rights		●	●
HR5 Supporting right to freedom of association and collective bargaining in risk areas	Human and labour rights		●	●
HR6 Measures taken to eliminate child labour in risk areas	Wärtsilä and sustainability Human and labour rights		●	●
HR7 Measures taken to eliminate forced labour in risk areas	Wärtsilä and sustainability Human and labour rights		●	●
HR8 Human rights related training for security personnel	Security practices		●	●
HR9 Incidents involving rights of indigenous people and actions taken	Human and labour rights		●	●
Society performance				
Disclosure on management approach	Personnel and social performance Social targets			●
SO1 Managing impacts of operations on communities	Impact on communities		●	
SO2 Business units analysed for corruption risks	Preventing corruption and bribery Risks and risk management		●	●
SO3 Anti-corruption training	Preventing corruption and bribery		●	●
SO4 Actions taken in response to incidents of corruption	Preventing corruption and bribery		●	●

SO5 Public policy positions and participation in public policy development and lobbying	Political lobbying		●	●
SO6 Contributions to politicians and related institutions	Political lobbying		◐	●
SO7 Legal actions for anti-competitive behaviour, anti-trust and monopoly practices	Competition regulation		●	
SO8 Fines and sanctions for non-compliance with laws and regulations	Social data		●	
Product responsibility				
Disclosure on management approach	Personnel and social performance Product liability			●
PR1 Assessment of health and safety impacts of products	Product liability		●	●
PR2 Non-compliance with regulations concerning health and safety impacts of products	Product liability		●	●
PR3 Product information required by procedures	Product liability		●	●
PR4 Non-compliance with regulations concerning product information and labelling	Product liability		●	●
PR5 Customer satisfaction	Customer satisfaction		●	
PR6 Adherence to marketing communications laws, standards and voluntary codes	Product liability		●	
PR7 Non-compliance with marketing communications regulations and voluntary codes	Product liability		●	
PR8 Complaints regarding breaches of customer privacy	Product liability		●	●
PR9 Fines for non-compliance concerning the provision and use of products and services	Product liability		●	