

This is Wärtsilä





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Wärtsilä is a global leader in advanced technologies and complete lifecycle solutions for the marine and energy markets. By emphasizing sustainable innovation and total efficiency, Wärtsilä maximises the environmental and economic performance of the vessels and power plants of its customers. In 2016, Wärtsilä's net sales totalled EUR 4.8 billion with approximately 18,000 employees. The company has operations in over 200 locations in more than 70 countries around the world. Wärtsilä is listed on Nasdaq Helsinki.

MISSION

We shape the marine and energy markets with advanced technologies and focus on lifecycle performance, to enhance our customers' business and benefit the environment.

VISION

We will be our customers' most valued business partner.

VALUES

Energy, Excellence, Excitement.

“Wärtsilä is well positioned to benefit from the trends of increasing demand for efficiency and changing energy needs. In order to secure our leading position in sustainable innovation, we must continuously look into new ways of developing our business.”

JAAKKO ESKOLA, PRESIDENT & CEO

NET SALES, EUR

4,801

MILLION

PERSONNEL

18,011

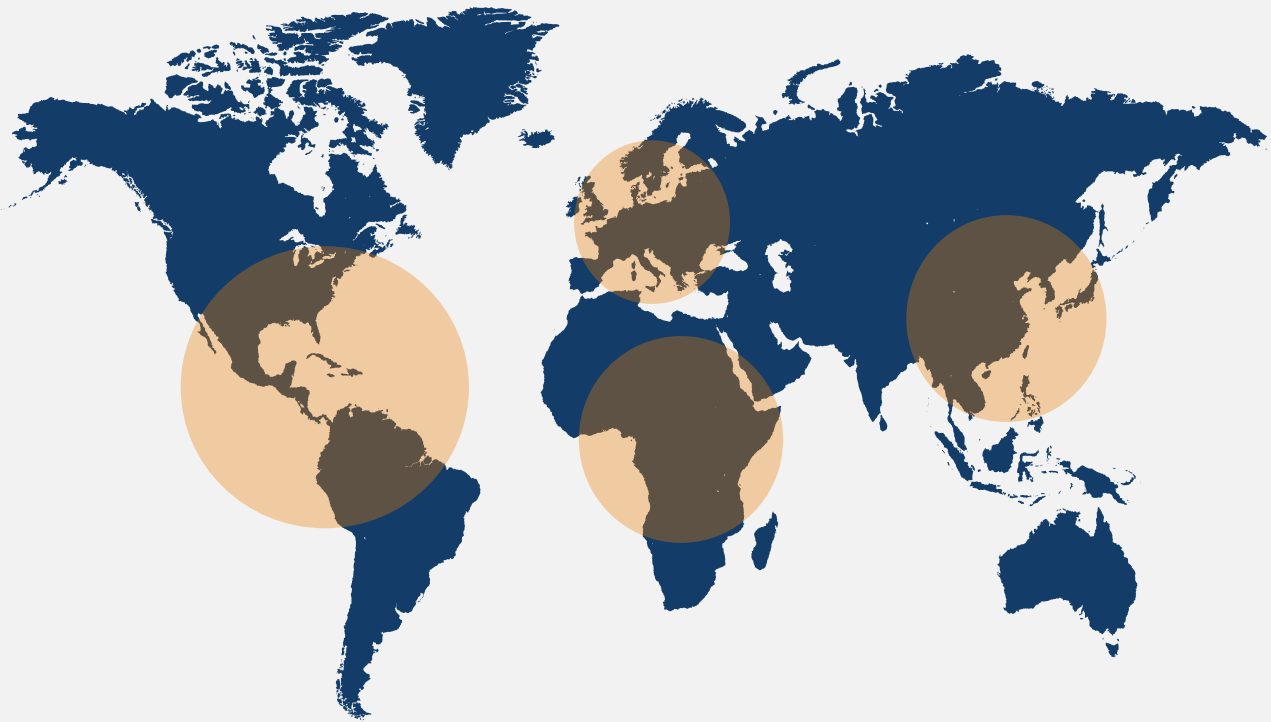
EMPLOYEES

INSTALLED BASE

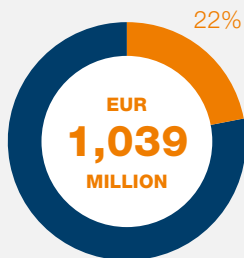
~180,000

MW

Net sales by market area, % of Wärtsilä's total net sales

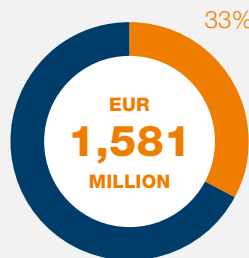


Americas



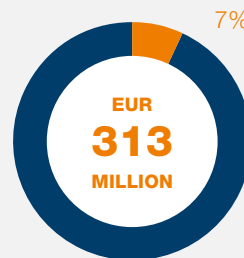
1,919
EMPLOYEES

Europe



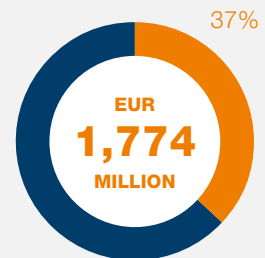
10,399
EMPLOYEES

Africa



612
EMPLOYEES

Asia



4,992
EMPLOYEES

In other areas, net sales totalled EUR 94 million and the number of employees was 89.

Business areas

ENERGY SOLUTIONS



20%

OF WÄRTSILÄ'S
NET SALES

Wärtsilä Energy Solutions is a leading global systems integrator offering a broad range of environmentally sound solutions. Wärtsilä supplies ultra-flexible internal combustion engine based power plants and utility-scale solar photovoltaic (PV) power plants, as well as liquefied natural gas (LNG) terminals and distribution systems. Its flexible and efficient solutions provide superior value to customers and enable a transition to a more sustainable and modern energy system. As of 2016, Wärtsilä had 63 GW of installed power plant capacity in 176 countries around the world.

NET SALES
EUR **943** million

ORDER INTAKE
EUR **1,448** million

NO. OF EMPLOYEES
903

MARINE SOLUTIONS



35%

OF WÄRTSILÄ'S
NET SALES

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

NET SALES
EUR **1,667** million

ORDER INTAKE
EUR **1,285** million

NO. OF EMPLOYEES
6,074

SERVICES



46%

OF WÄRTSILÄ'S
NET SALES

Wärtsilä Services supports its customers throughout the lifecycle of their installations by optimising efficiency and performance. The company's service network of approximately 11,000 professionals in 160 global locations is unmatched in the industry, delivering services to more than 12,000 customers every year. The portfolio of services – from spare parts to complete operational, maintenance, and optimisation services – is constantly being developed, not only to improve the availability of customers' installations, but to support them in growing their businesses. Wärtsilä is committed to providing high quality, expert support, and the availability of services in the most environmentally sound way possible, whenever, wherever.

NET SALES
EUR **2,190** million

ORDER INTAKE
EUR **2,194** million

NO. OF EMPLOYEES
10,567

Market drivers & strengths by business area

ENERGY SOLUTIONS

The demand for power generation is driven primarily by population growth and economic development. As electricity consumption grows, the demand for both new power generation equipment and replacement equipment for older capacity increases correspondingly. Environmental considerations and infrastructure development drive the demand for gas-based power plants. Looking ahead, growth is expected to be higher in non-OECD countries due to increasing industrialisation and improving living standards. In the OECD countries, the ageing installed capacity will drive demand for new investments. Furthermore, the political emphasis towards low carbon power systems means rapidly increasing levels of renewable generation. This has already created a substantial need to add flexibility to power systems.

- + Unique operational and fuel flexibility
- + Energy efficiency and emissions compliance
- + Hybrid solutions for balancing variable solar power production
- + Competitive capital cost and EPC capability

MARINE SOLUTIONS

The global demand for new vessels in the shipbuilding and shipping industries is mainly driven by developments within the global economy and the resulting impact on trade and transportation capacity requirements. The price, availability, and demand for fuel drives development in the oil & gas industry, while in the general shipping industry, fuel costs increase the demand for efficient vessels. Other factors, such as shipyard capacity, newbuild prices, decommissioning and scrapping, as well as interest and freight rates, also affect these industries. Another important driver is the development of environmental regulations and their impact on the demand for optimised vessel efficiency, environmental solutions, and gas as a marine fuel.

- + The broadest portfolio of reliable and high performing products and solutions in the marine and offshore oil & gas industries
- + An unmatched track record in dual-fuel technology and gas systems
- + The most comprehensive selection of options for meeting the needs of customers concerning fuel flexibility, efficiency, and environmental requirements
- + A strong presence in all the major marine and offshore oil & gas segments, thereby allowing shipbuilding cycles to be navigated

SERVICES

The main driver in the service business is the size and development of Wärtsilä's installed equipment base. The market conditions faced by Wärtsilä's customers have a direct impact on the utilisation rate of installations in operation, and dictate the need for services relating to maintenance, lay-down or re-deployments. The lifecycle phase of an installation, as well as structural changes in customers' operating environments, also affects maintenance requirements and possible needs for upgrades or life-extension services. The outsourcing of power plant operations and management to a reliable partner is normal practice in the energy industry and interest for long-term service agreements is increasing also in the marine and oil & gas markets. Such agreements further the optimisation of both maintenance and performance, thereby improving operational efficiency, reducing costs, and creating business growth.

- + Long-term relationships with customers and an in-depth understanding of their operations and needs
- + A complete lifecycle offering and the broadest service portfolio in the industry
- + An unmatched global service network
- + Operations and asset performance optimisation enabled by holistic business understanding and extensive customer legacy
- + State-of-the-art digital solutions for enhancing customers' businesses based on optimising, predicting and solving, utilising benefits of real-time data, and data analytics

Strategy

Wärtsilä aims at profitable growth by providing advanced technologies and lifecycle solutions to its marine and energy market customers.

Increasing environmental awareness and changing energy needs are affecting the way that our customers operate. With our integrated offering of services and products, we are well positioned today to respond to the need for energy efficient, innovative, and flexible solutions. We will meet the increasing demand for gas-based technologies with our industry-leading multiple fuel products and LNG solutions. Our objective is to leverage our project management and engineering competences to achieve growth by offering our customers new and innovative solutions. Our digital transformation will provide increased customer value and optimised performance. Our growth ambitions are supported by our superior global service network.

With our production and supply chain management, we constantly seek new ways to maintain high quality and cost efficiency – often in co-operation with leading industrial partners in our key growth markets. Our market driven investments in R&D and our focus on digitalisation create a strong foundation for securing and strengthening our position at the forefront of market innovation. This innovative culture, together with our constant emphasis on safety, diversity, and high ethical standards, attracts skilled and committed people and provides the basis for a high performing organisation. Our entrepreneurial drive, customer focus, and passion for doing right not only create new opportunities and environmentally sustainable solutions, but also bring value to all our stakeholders.

COMMITTED TO SUSTAINABILITY

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

Our overriding promise is to supply technologies and services that offer high efficiency with low environmental load. Our objective is to continuously improve the environmental performance of our products and services taking into account the lifecycle perspective, as well as to maintain technological leadership through R&D and by utilising new technologies and collaborating with our customers and other stakeholder groups. In doing this, we help our customers and society at large to meet the goals of the tightening global environmental regulations and guidelines.

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



ENERGY SOLUTIONS

Wärtsilä Energy Solutions' mission is to provide superior value to its customers with distributed, flexible, efficient, and environmentally advanced energy solutions, which enable a global transition to a more sustainable and modern energy infrastructure. The aim is that customers recognise Wärtsilä as being the world's best energy solution provider.

Wärtsilä is focused on capturing growth through global system integrator capabilities by offering solutions in the following segments:

- + Engine Power Plants - power generation solutions with a unique combination of energy efficiency, fuel flexibility, and operational flexibility
- + LNG Solutions - small and medium sized LNG terminals and liquefaction solutions with EPC delivery
- + Solar Power Plants - solar PV, energy storage, and hybrid solutions

MARINE SOLUTIONS

The strategic goal of Wärtsilä Marine Solutions is to be the leading provider of innovative products and integrated solutions to the marine and oil & gas industries. To achieve this, the aim is to build on a deep understanding of the customers' needs and:

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

SERVICES

Wärtsilä Services strives to be recognised as a reliable service partner; namely competitive, trusted, and easy to deal with. Wärtsilä is committed to growing its service business by:

- + Developing closer partnerships with existing customers through superior customer service
- + Developing and digitalising the offering to create new competitive advantages
- + Exploring opportunities within new customer segments by leveraging on current competences
- + Acquiring businesses in growing markets

Sustainability

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

WÄRTSILÄ'S SUSTAINABILITY APPROACH

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 strategy is based on three key growth areas, energy efficient solutions, gas-based technology, and innovative solutions, all of which contribute to a more sustainable future in both the energy and the marine industry.

Our strength is our technological leadership and therefore technology plays a central role in our sustainability work. Wärtsilä's Energy Solutions and Marine Solutions businesses focus on developing and providing sustainable solutions for the industries in which they operate, whereas Wärtsilä Services has a key role in supporting our solutions and providing the latest technologies for existing installations through upgrades and modernisation packages.

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.

INNOVATING FOR SUSTAINABILITY

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

Innovation in product development and the willingness to explore new technologies is essential in order to meet the current customer needs, to be prepared for future requirements, and to remain an industrial frontrunner. Wärtsilä strives to develop environmentally sound products and solutions across a wide front, including technologies related

to efficiency improvement, the reduction of gaseous and liquid emissions, waste reduction, noise abatement, as well as effluent and ballast water treatment. The company's proactive approach to meeting future demand has resulted in the development of both primary and secondary abatement technologies, and has broadened the range of usable fuels. Wärtsilä's commitment to invest in research and product development benefits both its customers as well as the environment - in the short-term and over a longer time span.

WÄRTSILÄ'S SUSTAINABILITY GOALS

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

From a sustainability impact point of view, product-related environmental issues are the most significant for Wärtsilä.

THE KEY FEATURES OF WÄRTSILÄ'S ENVIRONMENTALLY SOUND SOLUTIONS INCLUDE:

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

Sustainability highlights



17.3.

Wärtsilä to deliver the Nordic countries' largest biogas plant to provide fuel for buses.



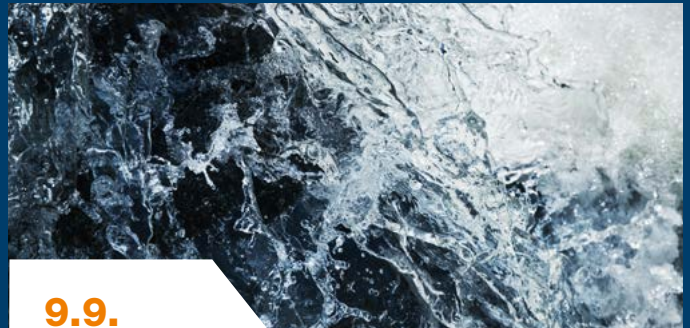
14.4.

The Wärtsilä 31 engine wins the European Marine Engineering Conference's Marine Engines Award.



21.4.

Wärtsilä enters the solar energy business by offering utility-scale solar photovoltaic (PV) solutions.



9.9.

Wärtsilä included in the Dow Jones Sustainability Index.



14.10.

Wärtsilä contracted to power the Mediterranean's first LNG-powered passenger ferry aiming to be an ecoefficient smartship.



20.12.

Wärtsilä contracted to supply Germany with a groundbreaking biohybrid plant which produces bioLNG and LNG.

Solar flares

In April 2016, Wärtsilä announced its entry into the solar energy business, launching utility-scale solar photo-voltaic (PV) solutions. Javier Cavada, President of Energy Solutions, discusses this exciting turn of events and its implications for the industry.

When breaking new ground, it's important to maintain perspective, counsels Javier Cavada. "These developments in solar sound like big news for Wärtsilä, and that's certainly the case, but it's worth pointing out that this is a natural evolution of our Smart Power Generation concept," he emphasises.

For some time now, Wärtsilä has been preaching the benefits of Smart Power Generation, an innovative system that makes use of the company's fast-responding, efficient, and fuel-flexible power plants to support the integration of renewables and maximise customer returns. With this philosophy of transforming the unpredictability of the sun and wind as power sources, for example, into easily handled provisions, the company is very well placed indeed to deal with the various needs of its customers and help them access more energy-efficient, low-emission platforms.

"This concept has been the key ingredient we bring to the market to enable customers to integrate renewables into their supply," Cavada continues. "So in Smart Power Generation we talk about flexibility, stability and very fast ramp-up and ramp-down, stabilising the erratic supply you get from wind and solar. Here, with these PV solutions, we have the next step: Wärtsilä goes solar."

THE SUN'S GRAVITY

As the Smart Power Generation message has filtered down into the market consciousness, demand began to grow for Wärtsilä to play a more active role in renewable energy. Cavada is careful to characterise this first and foremost as a strong 'pull' from customers. "The idea for this model came up repeatedly in several conversations with customers. They understood that we have everything in place to create hybrid solutions including solar with complete power system integration. This means the turnkey capability, abundant lo-

cal presence in the main solar markets, our workshops and global service network – in fact, the entire picture."

The Energy Solutions leader confides that a wide spectrum of opportunities of this nature have been discussed internally, with this strategic development just one scenario of many. Why then solar technology, rather than say: wind turbines?

"After much discussion and deep analysis, finally we saw that as solar solutions are becoming more affordable, the market for these is growing tremendously today and is a place where Wärtsilä has to be positioned," Cavada points out. "We are talking about four-times growth in the coming five years. That's the biggest growth in any sector of power production globally, and it's true in every region, with wind power normally the second."

In solar, Cavada observes, the market is not as mature in terms of technology as wind power. In the latter area, there are very clear market players dominating the proceedings, whereas in solar, there is no one single agent who can bring the various supply strands together to deliver an integrated solution to any location around the world. That is, until now.

NEW HORIZONS

As of April, Wärtsilä now offers utility-scale solar photo-voltaic (PV) solutions as a component of its Energy Solutions offering. These include solar PV power plants of 10 MW and above, and hybrid power plants comprising solar PV plants and internal combustion engines, together with complete systems integration.

To ensure success in a hugely dynamic technological environment, Cavada stresses the importance of flexibility. "Without one's own solar technology, it's best to remain agnostic, and that agnosticism has allowed us to select the best technology players in the market. We can proudly state

“The main value we offer relative to the competition is that we take care of everything.”

that we have signed partnership agreements with the top global companies in this area.”

These partnerships effectively transform the current leaders in solar PV technology into the equivalent of departments within Wärtsilä, sharing their vast knowledge and manufacturing equipment, and guaranteeing availability, price, and delivery time on the company’s behalf.

By leveraging its delivery network and forging these connections, Wärtsilä has ensured that its customers will never be left behind. “In Wärtsilä, these technology companies see an ideal partner that has a global footprint, global relationships with its customers’ operative power plants, and is ready to deliver the latest evolution of their technology whenever it is ready for market. It’s an attractive proposition.”

“This is a natural evolution of our Smart Power Generation concept.”

THE FULL PACKAGE

Wärtsilä’s solar solutions are offered with full EPC (engineering, procurement and construction) delivery, which incorporates project management, civil work, site management and supervision, engineering, materials and the equipment itself, plus integration of the complete system. As with all of the company’s energy and marine deliveries, subject to a long-term contract, Wärtsilä’s extensive service network is ready to take good care of the entire installation throughout its life cycle.

This all-encompassing approach puts the company in a wholly unique situation, says Cavada. “The main value

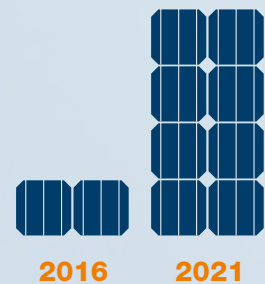
we offer relative to the competition is that we take care of everything, wherever it is required. This differs from what other suppliers do. They need to buy the panels, they need to install them, buy the services – we do it all, including the integration. This is turnkey, and while you may find small attempts at EPC in some countries, globally speaking, we’re unique in this respect.”

“We have capabilities, for instance, in Nigeria, in Senegal, in Jordan...” he continues. “There we have the power plants we operate, we have people on the ground with a high level of expertise, and we have an active supply chain. Today, there’s no complete offering better than this one.”

Wärtsilä’s entry into the solar energy market stands as an evolutionary landmark – a tangible step forward for the Smart Power Generation concept and perhaps one of many more to come. Keen to put the credit where it belongs, Cavada ascribes the development of this new solar offering to entrepreneurial drive within the company. “All things considered, this could only emerge from within a working environment like Wärtsilä,” he concludes. ■

Estimated global market growth

According to Bloomberg (2015), the market for solar solutions will grow by four times by 2021.



Talking transformations

In July, Wärtsilä enhanced its digital offering by acquiring Eniram, just as the company was on the cusp of launching a transformative new solution named SkyLight. Jan Wilhelmsson, Eniram's VP, Commercial Shipping, explains the concepts underpinning the company's bold moves.

WHAT IS SKYLIGHT IN A NUTSHELL?

Jan Wilhelmsson: I used to give a presentation called 'It's nice to do what we've always done in this industry', pointing out an interesting anomaly in the way our technically advanced modern vessels work. Roughly 100 years ago, the radio was invented, which changed shipping in such a way that vessels could actually radio back home on a daily basis and communicate where they were. You took the sun's height in the middle of the day to establish your position. And once you had that, you would calculate your distance from your previous noon report, establish how much fuel remains on board, and send this data back to the office.

This was a game changer in its day, and the same methodology has been in place ever since. Most vessels that now go on charter send a short email (even this is relatively new – it wasn't so long ago that telex was the norm) communicating how many miles they have travelled, how much fuel they have on board, where they're heading, and to report on the local weather. This is used as the basis of measuring their fuel consumption, and that accumulated data is then used to assess the vessel's fuel performance.

If you think of it, it's a little insane that if you buy a car today, it's constantly reporting back to the engineering centre and its engineers. Whereas today, a large tanker or bulk carrier, in most cases, still relies on that century-old noon reporting system as the foundation for how they are commercially operated.

What we are doing with SkyLight is determining the vessel's fuel consumption curve. When you undertake noon reporting, you use the average weather conditions during that 24-hour period. Now, you don't need to be a meteorologist

to realise that weather can change quite a bit over a whole day and night, so such averages are hardly precise. By moving to four times a day, you have much better granularity. With SkyLight, we take five-minute location readings, and then automatically enrich that data with the current weather conditions. No one could manually report every five minutes, because, as an officer on board, you would be doing nothing else. SkyLight automates this function and makes it a part of a vessel's normal operations, with all the huge advantages it confers now being simply taken for granted.

HOW WILL THE SYSTEM BENEFIT WÄRTSILÄ'S MARINE CUSTOMERS?

Jan Wilhelmsson: SkyLight actually addresses the way shipping is being conducted as a business. With SkyLight, ship operators can cost-effectively monitor their fleet and compare the performance of each vessel in detail. Our software keeps records of the ships' performance, enabling more prompt reporting, planning and cost optimisation. Fundamentally, we're allowing ship operators to manage their business more effectively.

Critical to this is the accuracy of the data we extract from the vessel. For various reasons, the precision of our readings is streets ahead of that of any competing offering at this price point (which, in any case, would often have to consist of two or more separate solutions from different providers).

The next advantage is our modelling. We know for a fact that a very large portion of ship speed logs contain major errors. With SkyLight we realised that rather than trying to correct these systems, we could just create these values

“It’s easy to point out that you can accomplish much more with a strong balancer behind you.”

using the correction-model system we had developed for our previous products, which we now refer to as “artificial sensing”. So, instead of actually measuring the speed by physically having an expensive installation on board that is integrated with the speed log and the navigation system, we use modelling to calculate it. Because we have the vessel’s movements, and we have all the weather data, the sea state and the tidal current, we know the difference between speed and distance through water, and the distance and speed over ground. And thus we can calculate the water track without resorting to the log.

All of these factors combined lead to far greater accuracy than has been seen elsewhere in the industry without major installations. And there is a very simple correlation between the accuracy of our data, and our customer’s ability to optimise their operations based upon it.

HOW DOES SKYLIGHT REPRESENT AN INNOVATION IN TERMS OF THE BUSINESS MODEL?

Jan Wilhelmsson: We are shifting from selling installations to offering analytics and optimisation sold fully as a monthly service. The industry formerly consisted of ship owners who owned and operated their vessels, whereas today, the vast majority of vessels are not owned and technically managed by the same entity that commercially operates them. So, what we’re doing here is adjusting to the market rather than attempting to change it.

This necessitates considering all the value chains separately. Ship management is now separate from commercial operations, for example. This has happened across a

number of industries, but since it has now occurred to such a large extent in shipping, we need to rethink our role as a market service provider, rather than a product vendor. Of course, this is not news at Wärtsilä. In that sense, Eniram’s way of thinking fits quite nicely into the bigger picture.

WHAT DOES ENIRAM AS AN EXISTING ORGANISATION BRING TO WÄRTSILÄ?

Jan Wilhelmsson: Eniram is a company of digital natives. The founders are all highly educated in mathematics, statistics and IT-related fields. Add a few of us complementing this with shipping backgrounds (in fact, I’m one of the few people in the company who can’t code), and we are now able to support the industry’s move to digitalisation with tangible value propositions. So it’s very much an IT and tech-oriented company which has, over the years, also accumulated a great deal of knowledge about shipping.

The core value of the company is in its know-how and the solutions it has developed. Speaking from my own point of view, what I’m seeing now is an opportunity to get those solutions to the market much faster, thanks to the direct customer access that Wärtsilä can provide.

Secondly, we have a further opportunity in the enriched potential for development, which up to the moment of the acquisition was self-financed. This was a great way to do things but it also had some limitations. Now we have a parent company with a great deal more resources. We are yet to determine the ways that these might be employed, and in one sense of course, SkyLight as it currently exists is just the first step. But it’s easy to point out that you can accomplish much more being part of a strong global organisation. ■

After Paris

– towards a low-emission future

In November 2016, the Paris Climate Agreement was ratified – a landmark decision in the global journey towards a sustainable future. The agreement sets out a global action plan to limit the global temperature rise to well below 2°C above pre-industrial levels, and to pursue a tougher target of 1.5°C.

The agreement is a global commitment to reduce emissions and to adapt to the impacts of climate change. Countries are required to contribute by implementing their own nationally determined climate actions. The Paris agreement also sends a powerful signal to the capital markets to support the development of a low emissions economy through their investment decisions.

Wärtsilä welcomes the agreement and considers it a remarkable achievement to have a truly global framework for

the reduction of greenhouse gas emissions. We are well positioned to provide sustainable solutions for the energy and marine sectors, and can support countries in reaching their emission reduction goals.

Wärtsilä's Smart Power Generation concept is entirely geared towards the integration of renewable energy sources, and is therefore an ideal platform on which to base the next generation of power supply systems. Wärtsilä has received several recent contracts, which increase the share of renewables within the energy mix, while decreasing emissions. These include Smart Power Generation plants in the USA, Honduras, Argentina, Germany, Jordan, Bangladesh, Mauritius, and Indonesia, as well as a biogas plant in Norway.

**SUSTAINABILITY
ASSURED 2016**



**CHP PLANTS TO
ACCOUNT FOR**

25%

**OF GERMANY'S
ELECTRICITY
PRODUCTION
BY 2025**

MAINZ-WIESBADEN, GERMANY

100 MW combined heat and power (CHP) plant

- + The plant consists of ten Wärtsilä 34SG engines running on natural gas, which can be started and stopped without limitations within just two minutes, thereby granting the flexibility to operate successfully when there is no solar or wind power available.
- + As part of its climate action plan, Germany has committed to increasing the share of electricity produced by CHP power plants to 25% of the total electricity production by 2025.
- + To meet this target, the renewed CHP Act favours flexible and environmentally-friendly CHP plants that can operate in the balancing markets, while generating heat for the community.
- + Upon completion of the plant, the Mainz-Wiesbaden area will be undergoing a transition from a traditional power and heat generation system to a modern, agile, low-carbon system utilising green energy assets to the full.



Saving fuel

DURING DAYLIGHT HOURS

JORDAN

46 MW solar PV addition to a 250 MW Smart Power Generation plant

- + In 2017, a 46 MW solar PV park is planned for construction adjacent to an existing engine power plant.
- + The idea of the hybrid solution is to let the solar PV unit produce electricity in the daytime, which will reduce the use of the engines. This will cut the carbon footprint of the power plant substantially.



CAPACITY OF

25 TONS

OF LIQUID BIOGAS PER DAY

SKOGN, NORWAY

largest biogas plant in the Nordics

- + A new Wärtsilä plant will be installed at the paper mill in Skogn, Norway. The plant will convert the cleaned biogas from fishery waste and residual paper mill slurry into liquid fuel for buses.
- + The plant's environmental benefits are enhanced by the fact that sulphur oxide (SO_x) and particle emissions are virtually eliminated, while any released CO₂ has zero environmental impact since it is part of the existing circulatory CO₂.
- + Oslo currently has 200 buses and 100 waste collection trucks running on bio-based CNG. By 2020 the city expects to have 1,200 buses using the renewable fuel, as well as some 2,000 taxis and ferries operating in the local fjord.



SHARE OF FUEL PRODUCED FROM RENEWABLE SOURCES

10%

BY 2020

SOUTHERN GERMANY

biohybrid production plant

- + The plant will include Wärtsilä's unique liquefaction system, specially designed to clean and liquefy both biogas and pipeline gas streams.
- + The ability to clean both biogas and pipeline gas is new to the market and is ground-breaking in terms of flexibility and energy storage.
- + Both gas cleaning and liquefaction are cost-and energy-efficient, making profitable projects possible even for smaller gas streams. This is especially important within the European Union, where the target is to have 10% of fuel produced from renewable sources by 2020.

Strengthening an ethical culture: three learnings

In recent years, companies have been discovering the limits of traditional methods of communicating their ethical guidelines. While assets like a code of conduct are important steps towards defining the behaviour that an organisation encourages and prohibits, the topic of ethics is a much deeper one than can be encapsulated with these alone.

In response to these challenges, Wärtsilä has been developing an ethical culture programme to help personnel delineate what is acceptable in a variety of complex situations. This is no easy journey, but key learnings are already emerging, as Marko Vainikka, Director, Corporate Relations and Sustainability, explains.

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- + Driving Operational Excellence
- + Possible Futures
- + Sustainable Development Goals
- + New motion in ballast water
- + Enter the Winnobooster

TALK IT THROUGH

To develop precisely what we mean by ethical culture, we have begun a programme of workshops to discuss the topic with different internal stakeholders. The idea of these discussions is to create a common understanding and to strengthen the values and principles of the code of conduct that have already been established.

It's not a question of creating something new. Rather, the concept is to discover – through rigorous exploration and brainstorming – what these principles really mean for us in practice. To make them more concrete.

We began this process in 2016 with our top management, who have already demonstrated a substantial commitment in time and energy to the programme. As we move forward, larger groups of personnel will be involved until everyone in the organisation has to some extent taken part.

One discovery is that creating ethical culture requires face-to-face discussions. This is clearly the most effective and impactful way to handle the topic, touching on its many ramifications for the way we behave, both in business and in our daily working lives. On-going conversation highlights the fact that we all are responsible for shaping our collective culture on a constant basis, every single day.

“We hope our efforts will gradually become more visible, making ethical implications more present in our thinking.”

KEEP THE CONVERSATION ALIVE

The question of how to achieve this continuous on-going discussion then arises. It's important that this is not executed in an overly artificial way, though there are of course procedural obligations, and we have taken steps to strengthen these.

For example, we have established a practice in which every member of the staff is required to sign a letter indicating that they have read the Code of Conduct and undertake to comply with its contents in their work.

We have also been including the code more strongly in development discussions. In my opinion, this is a highly suitable forum in which to determine whether our people fully understand the code's contents, and where they can address any issues they have with it, or seek to clarify their understanding.

Our broader efforts to encourage this discussion begin with management. It's a gradual process, with results that are difficult to quantify, but as a benchmark we can consider a similar journey we have already taken with the subject of safety. This was flagged as a vital topic for us some time ago, as well as an area where improvements could be made through better communication.

“As we move forward, larger groups of personnel will be involved until everyone in the organisation has to some extent taken part.”

Fast-forward to the present, and after much work around the theme we are making more and more progress with safety year-by-year, and it's a subject our management brings up in communications quite naturally – and without any external prompting.

So we know it can be done, and this is what we hope to achieve also with these admittedly more complex ethical questions. This would certainly make knowledge of potential ethical considerations a more constant companion in our work.

STRENGTHENING CULTURE TAKES TIME

And perhaps the most important thing to remember about all this work is that fostering a strong culture in respect of any topic is a huge task, and very much a long-term project.

To appreciate this, just consider what is perhaps the most frequent question raised in sessions around this issue: “What is our company culture?” Even if you can provide some kind of an answer off the top of your head, does it genuinely reflect a common understanding? Would you expect one of your colleagues to give the same reply?

With our ethical culture programme, which is itself evolving, we're simply aiming to raise the question of ethics within Wärtsilä's collective consciousness. This isn't something you can ever consider “done”, and certainly it can't be imposed upon our personnel without their own commitment and understanding.

But with time, we hope our efforts will gradually become more visible, making ethical implications more present in our thinking, and ultimately helping good ethical decision-making to become second nature. ■

Financials 2016

Wärtsilä's performance in 2016 was in line with the expectations set out in the company's revised guidance. This was largely thanks to a fourth quarter with good delivery execution, growth in Services' revenues, and an improved project mix. Cash flow developed well, primarily due to a strong focus on working capital management.

Service market activity was solid, with a healthy demand for power plant maintenance services compensating for challenges in certain marine markets. In the equipment businesses, Wärtsilä faced headwinds related to slow trade growth, low oil and gas prices, as well as the financial constraints faced by many marine customers. Activity in the energy markets, on the other hand, improved. Growth in electricity demand in the emerging markets and energy policy changes globally supported customer interest in Wärtsilä's solutions. The combined effect of these end-market trends resulted in stable order intake development.

During the year, Wärtsilä continued to develop its business by expanding its offering of products and solutions through research and development activities, partnerships, and acquisitions.

NET SALES TOTALLED EUR

4,801

MILLION

COMPARABLE OPERATING RESULT AMOUNTED TO EUR

583

MILLION

WHICH REPRESENTS

12.1%

OF NET SALES

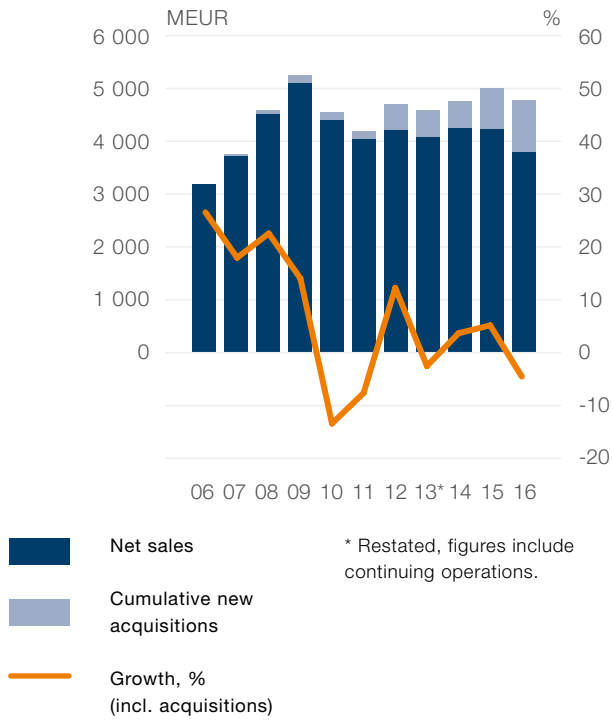
KEY FIGURES

MEUR	2016	10-12/2016	7-9/2016	4-6/2016	1-3/2016	2015	2014
Net sales	4 801	1 559	1 079	1 196	967	5 029	4 779
Energy Solutions	943	414	177	220	132	1 126	1 138
Marine Solutions	1 667	509	390	433	335	1 720	1 702
Services	2 190	636	512	542	500	2 184	1 939
Depreciation, amortisation and impairment	-138	-34	-31	-42	-31	-124	-115
Comparable operating result ¹	583	253	123	122	84	612	569
Comparable operating result ¹ , %	12.1	16.3	11.4	10.2	8.7	12.2	11.9
Profit before taxes	479	226	115	58	80	553	494
Earnings per share, EUR	1.79	0.87	0.43	0.19	0.30	2.25	1.76
Order intake	4 927	1 324	1 139	1 194	1 271	4 932	5 084

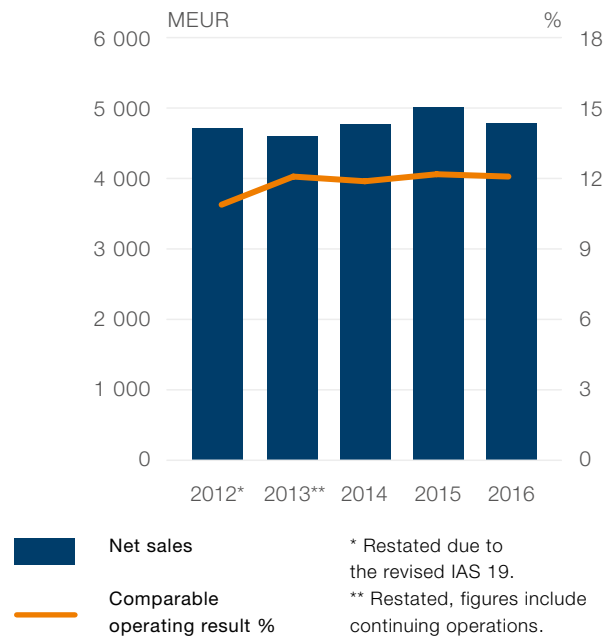
MEUR	2016	31.12.2016	30.9.2016	30.6.2016	31.3.2016	2015	2014
Balance sheet total	5 391	5 391	5 326	5 444	5 657	5 589	5 280
Interest-bearing liabilities, gross	629	629	735	881	1 088	724	666
Cash and cash equivalents	472	472	345	357	428	334	571
ROI, continuing operations, %	17.1	17.1	16.6	17.5	20.5	21.0	20.3
Gearing	0.07	0.07	0.18	0.25	0.32	0.17	0.05
Order book, end of period	4 696	4 696	5 024	5 083	5 103	4 882	4 530
Year-end market capitalisation	8 418	-	-	-	-	8 314	7 315
Personnel, number at end of period	18 011	18 011	18 337	18 428	18 427	18 856	17 717

¹ Figures exclude items affecting comparability.

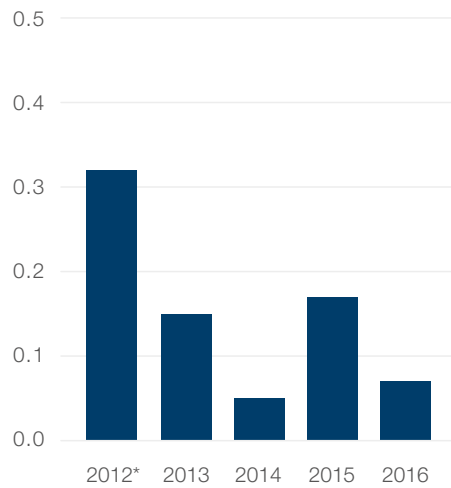
GROWTH OVER THE CYCLE



PROFITABILITY

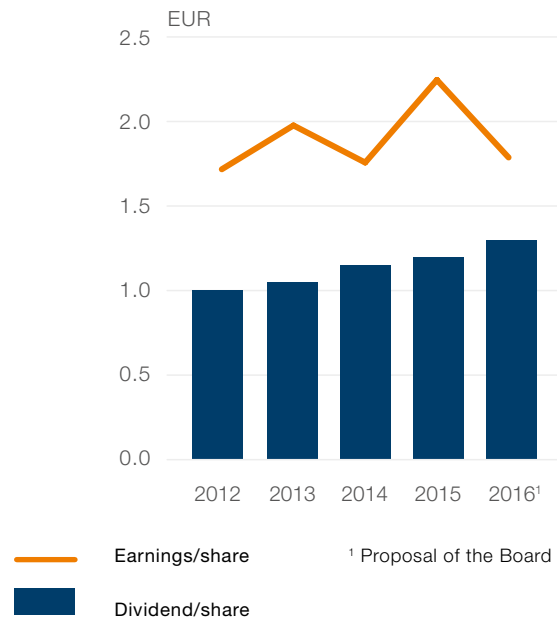


GEARING



* Restated due to the revised IAS 19.

EARNINGS/SHARE, DIVIDEND/SHARE



Consolidated statement of income

MEUR	2016	2015
Continuing operations		
Net sales	4 801	5 029
Change in inventories of finished goods & work in progress	-134	-77
Work performed by the Group and capitalised	2	6
Other operating income	55	51
Material and services	-2 353	-2 603
Employee benefit expenses	-1 159	-1 159
Depreciation, amortisation and impairment	-138	-124
Other operating expenses	-556	-553
Share of result of associates and joint ventures	14	17
Operating result	532	587
as a percentage of net sales	11.1	11.7
Financial income	19	11
Financial expenses	-72	-45
Profit before taxes	479	553
Income taxes	-123	-124
Profit for the financial period from the continuing operations	357	429
Profit/loss for the financial period from the discontinued operations		22
Net profit for the financial period	357	451
Attributable to:		
equity holders of the parent company	352	444
non-controlling interests	4	7
	357	451
Earnings per share attributable to equity holders of the parent company (basic and diluted):		
Earnings per share (EPS), basic and diluted, EUR	1.79	2.14
Earnings per share, discontinued operations, EUR		0.11
Earnings per share (EPS), basic and diluted, EUR	1.79	2.25

Consolidated statement of comprehensive income

MEUR	2016	2015
Net profit for the financial period	357	451
Other comprehensive income, net of taxes:		
Items that will not be reclassified to the statement of income		
Remeasurements of defined benefit liabilities	-12	7
Tax on items that will not be reclassified to the statement of income	3	-2
Total items that will not be reclassified to the statement of income	-9	5
Items that may be reclassified subsequently to the statement of income		
Exchange rate differences on translating foreign operations		
for equity holders of the parent company	-52	20
for non-controlling interests	-1	2
Associates and joint ventures, share of other comprehensive income	1	3
Cash flow hedges		
measured at fair value	-16	-23
transferred to the statement of income	58	21
Tax on items that may be reclassified to the statement of income		
Cash flow hedges		
measured at fair value	4	4
transferred to the statement of income	-14	-5
Total items that may be reclassified to the statement of income	-21	21
Other comprehensive income for the financial period, net of taxes	-30	26
Total comprehensive income for the financial period	327	477
Total comprehensive income attributable to:		
equity holders of the parent company	323	468
non-controlling interests	3	9
	327	477

Consolidated statement of financial position

ASSETS

MEUR	31.12.2016	31.12.2015
Non-current assets		
Goodwill	1 112	1 103
Intangible assets	322	361
Property, plant and equipment	394	418
Investment properties	12	13
Investments in associates and joint ventures	84	89
Available-for-sale financial assets	15	15
Interest-bearing investments	6	17
Deferred tax assets	141	157
Trade receivables	13	14
Other receivables	18	28
Total non-current assets	2 116	2 215
Current assets		
Inventories	1 042	1 200
Trade receivables	1 220	1 394
Current tax receivables	46	51
Other receivables	494	396
Cash and cash equivalents	472	334
Total current assets	3 275	3 374
Total assets	5 391	5 589

EQUITY AND LIABILITIES

MEUR	31.12.2016	31.12.2015
Equity		
Share capital	336	336
Share premium	61	61
Translation differences	-57	-6
Fair value reserve	-39	-70
Remeasurements of defined benefit liabilities	-45	-36
Retained earnings	2 032	1 916
Total equity attributable to equity holders of the parent company	2 288	2 201
Non-controlling interests	34	41
Total equity	2 321	2 242
Liabilities		
Non-current liabilities		
Interest-bearing debt	520	492
Deferred tax liabilities	93	102
Pension obligations	168	161
Provisions	44	46
Advances received	58	77
Other liabilities	1	2
Total non-current liabilities	884	880
Current liabilities		
Interest-bearing debt	108	232
Provisions	206	223
Advances received	458	487
Trade payables	502	510
Current tax liabilities	78	82
Other liabilities	833	933
Total current liabilities	2 186	2 467
Total liabilities	3 070	3 347
Total equity and liabilities	5 391	5 589

Consolidated statement of cash flows

MEUR	2016	2015
Cash flow from operating activities:		
Net profit for the financial period	357	451
Adjustments for:		
Depreciation, amortisation and impairment	138	124
Financial income and expenses	53	34
Gains and losses on sale of intangible assets and property, plant and equipment and other changes	-6	-27
Share of result of associates and joint ventures	-14	-17
Income taxes	123	124
Cash flow before changes in working capital	650	688
Changes in working capital:		
Receivables, non-interest-bearing, increase (-) / decrease (+)	89	-193
Inventories, increase (-) / decrease (+)	162	79
Liabilities, non-interest-bearing, increase (+) / decrease (-)	-167	-229
Changes in working capital	84	-343
Cash flow from operating activities before financial items and taxes	734	346
Financial items and taxes:		
Interest and other financial income	36	45
Interest and other financial expenses	-31	-29
Income taxes paid	-127	-108
Financial items and paid taxes	-121	-91
Cash flow from operating activities	613	255
Cash flow from investing activities:		
Acquisitions	-81	-258
Investments in associates and joint ventures	-9	-9
Investments in property, plant and equipment and intangible assets	-55	-79
Proceeds from sale of property, plant and equipment and intangible assets	18	13
Proceeds from sale of available-for-sale financial assets	1	1
Disposal of discontinued operations, net of cash		44
Cash flow from investing activities	-126	-288
Cash flow after investing activities	487	-33
Cash flow from financing activities:		
Proceeds from non-current debt	131	50
Repayments and other changes in non-current debt	-91	-112
Loan receivables, increase (-) / decrease (+)	-4	-16
Current loans, increase (+) / decrease (-)	-125	110
Dividends paid	-250	-242
Cash flow from financing activities	-339	-210
Change in cash and cash equivalents, increase (+) / decrease (-)	148	-243
Cash and cash equivalents at the beginning of the financial period	334	571
Exchange rate changes	-9	5
Cash and cash equivalents at the end of the financial period	472	334

Why invest in Wärtsilä

Our strengths are our technological leadership, our integrated services and solutions offering, our close and long-standing customer relationships, and our unparalleled global presence.

SUPPORTING OUR CUSTOMERS WITH LIFECYCLE SOLUTIONS

Our Services business, representing nearly 50% of Wärtsilä's total net sales, offsets the cyclical nature of our end-markets, while supporting our aim for faster than market profitable growth over the long term.

The growth of our installed equipment base and increasing technological complexity supports the demand for our services, while digitalisation provides further opportunities to develop our value-adding offering and customer loyalty. We also seek growth beyond our installed base by expanding our business model to cover new market areas and multiple brands.

A LEADER IN ADVANCED TECHNOLOGY FOR THE MARINE AND ENERGY MARKETS

The demand for our services and solutions is driven by megatrends, such as global transportation needs, the growing demand for energy, and increasing environmental awareness. As a frontrunner in our field, we are well positioned to respond to the need for innovative, energy efficient, and environmentally advanced solutions. Our presence in two different end markets with a global spread, together with our wide portfolio of products and solutions, offsets cyclical developments and reduces market risk exposure. Continuously investing in research and development is vital for ensuring the competitiveness of our product portfolio, and for securing a leading position in sustainable innovation.

A CAPITAL-LIGHT BUSINESS MODEL FOCUSED ON INCREASING EFFICIENCY

Our business model is focused on lifecycle services of high-tech equipment. Wärtsilä's facilities comprise asset-light assembly lines, with shared production and R&D. This creates flexibility in aligning our operations to market conditions, and synergies in our innovation processes, thereby supporting stability in earnings over the cycle and enhancing our future competitiveness.

Achieving operational excellence by focusing on continuous process improvement throughout the organisation, and driving the benefits of a business line based organisation with decentralised accountability are key enablers for reaching our long-term targets.

INVESTING IN TECHNOLOGICAL LEADERSHIP AND PROVIDING SHAREHOLDER RETURNS

Our financial position enables us to develop our business by expanding our offering of services and solutions through research and development activities and acquisitions. It also enables us to offer solid dividends to our shareholders.

Q&A

WHAT IS YOUR OUTLOOK FOR WÄRTSILÄ'S END MARKETS GOING INTO 2017?

The demand in our service markets is expected to be solid, and we continue to see growth opportunities in selected regions and segments. Our sizeable installed base and opportunities in new market areas, as well as the interest our customers express in long-term service agreements, support our long-term ambitions for the Services business.

Demand in the energy markets is expected to be solid. Our systematic market development efforts have positively impacted our position in the energy market. Therefore, we consider ourselves well positioned to capture opportunities related to the growth in electricity demand in the emerging markets, the global shift towards renewable energy sources, and the need for distributed, flexible power production.

We expect the marine markets to remain soft. Although the outlook for the cruise and ferry segment is positive, the merchant, gas carrier, and offshore segments continue to suffer from overcapacity, slow trade growth, and customer financial constraints. Our exposure to all the main marine segments and the breadth of our offering continues to position us relatively well in a challenging market.

WHY IS DIGITALISATION IMPORTANT FOR WÄRTSILÄ?

We have a clear appetite for development within the field of digitalisation. Not only does this provide enhanced value to our customers in the form of new, data-analytics driven solutions, it also enables us to develop our internal processes through, for instance, the increased use of robotics in our manufacturing, and mathematic modelling in our testing processes. During the year, we strengthened our digital foundation with the appointment of a Chief Digital Officer to the Board of Management, as well as with the acquisition of Eniram. We are also currently in the process of finalising a new digital organisation, with the aim of accelerating Wärtsilä's digital transformation.

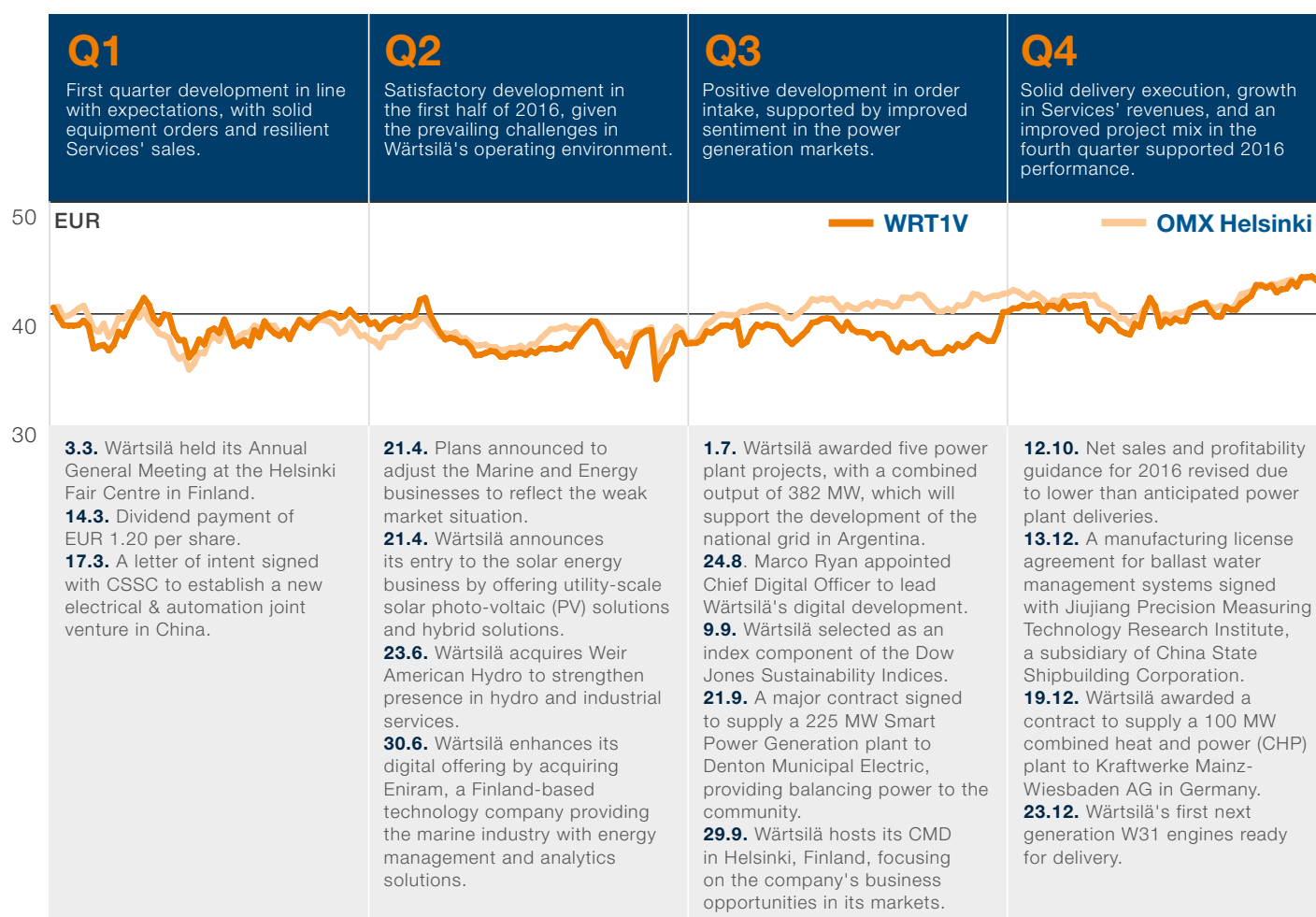
HOW FAR ARE YOU IN TERMS OF ROLLING OUT OPERATIONAL EXCELLENCE?

Operational Excellence is one of the building blocks for reaching our 14% profitability target and its aim is to achieve gradual, continuous improvement. Although not fully rolled out, we have already seen certain benefits in terms of, for example, improved inventory management and optimised production flow.

IS THERE SCOPE FOR ACQUISITIONS GOING FORWARD?

At the end of 2016, our net debt was EUR 150 million and our gearing was 0.07. Our ambition is to find good investment opportunities for our owners and we have a number of potential acquisitions on our target list. We look for asset light companies with a high service content and strong technological capabilities.

Wärtsilä's share price development in 2016



Highlights 2016

Entering the solar market

Launched in April 2016, Wärtsilä hybrid solutions – power plants comprising solar PV plants and internal combustion engines – help to reduce the overall carbon footprint while improving operational costs and reliability.



Changes in the management team

In August, Marco Ryan was appointed Chief Digital Officer, a new position to the Board of Management. Marco's role is to help accelerate Wärtsilä's digital transformation by defining, developing and executing the company's digital strategy, organisational blue print, and related digital governance.

Digitalisation

Wärtsilä's digital transformation provides enhanced value to our customers, and enables us to develop our internal processes through, for instance, the increased use of robotics and automation in our manufacturing and testing processes. The acquisition of Eniram in 2016 was an important step in strengthening Wärtsilä's offering in the fields of data analytics, modelling, and performance optimisation.

Regulatory developments

During 2016, the International Maritime Organization decided upon several environmental topics affecting the marine industry, including the ratification of the Ballast Water Convention and the implementation date for the global cap on the sulphur content of marine fuel. With its wide range of environmental solutions, Wärtsilä is well placed to help its customers with each of these developments.



Research & Development

Investing in technological leadership is vital for ensuring the competitiveness of Wärtsilä's product portfolio, and for securing a leading position in sustainable innovation. In 2016, R&D investments amounted to EUR 131 million or 2.7% of net sales.

New pathways – Wärtsilä Corporation Annual Report 2016

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