

WÄRTSILÄ

Electrical & Automation Services

ENERGY
ENVIRONMENT
ECONOMY

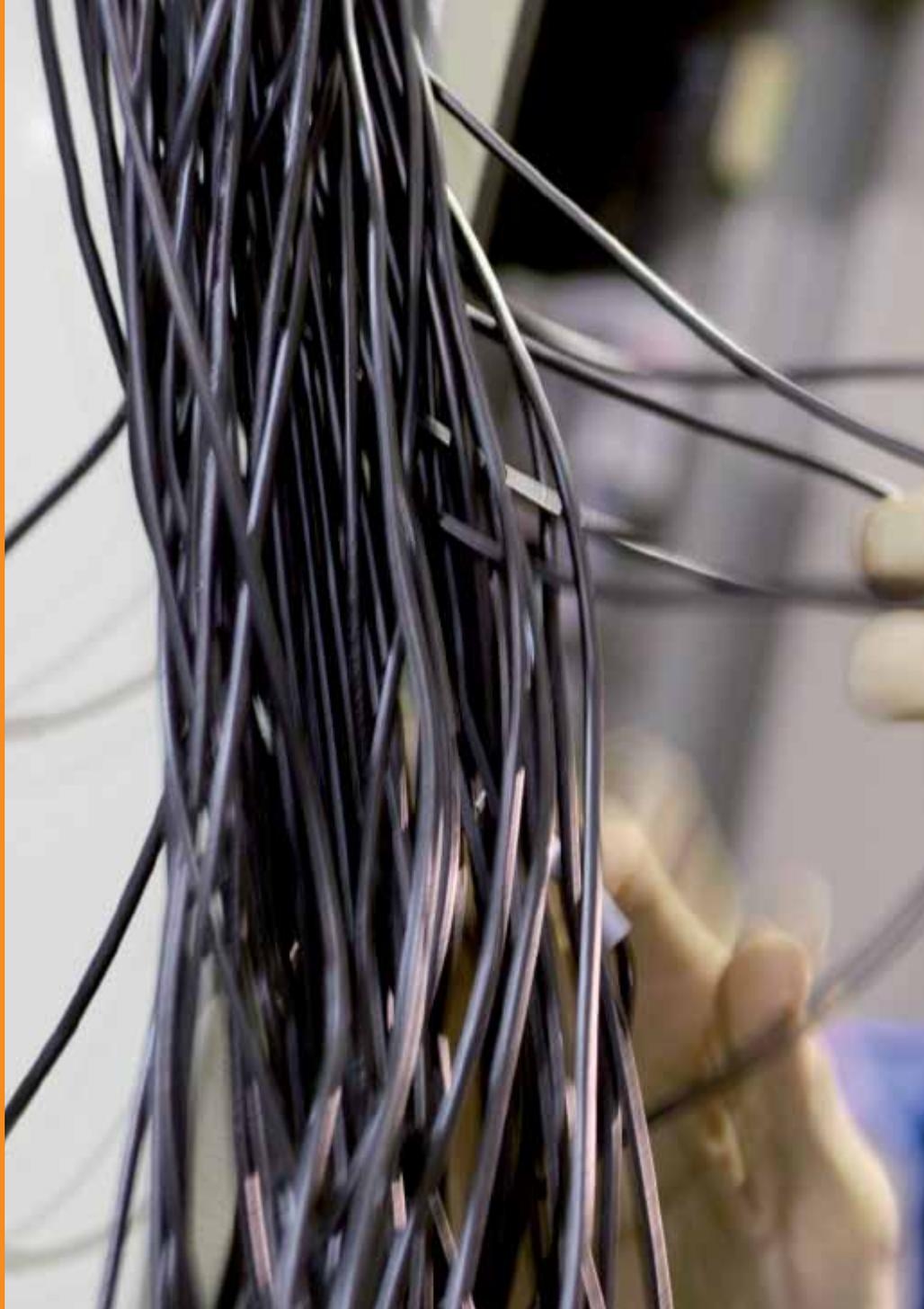


OPTIMIZING YOUR OPERATIONS AND PREVENTING THE UNEXPECTED IS OUR SHARED PASSION – WE SERVE YOU WHENEVER, WHEREVER.

Every electrical and automation system in your installation exists for one purpose only: to keep your installation running smoothly. Reliability is essential. To keep your system functioning at its safest and most efficient, you need a partner you can rely on to make sure everything works, every time. We are that partner.

Wärtsilä Electrical & Automation Services offers upgrade and full modernisation solutions to improve the performance, extend the life, and minimize the obsolescence risk of your existing assets. Our E&A services also include routine servicing, maintenance and repairs of electrification and automation systems.

We serve you anywhere in the world through our extensive Wärtsilä service network, which is backed by centralised engineering and local support.



WÄRTSILÄ GLOBAL PRESENCE

We are never too far away from your power plant or sea trading routes:
160 Wärtsilä locations in 70 countries.



OBSOLESCENCE AND RISK MANAGEMENT

Today, the typical use of a reactive maintenance strategy for E&A systems inevitably carries the risk of severe disturbances in availability. Since the number of electronic components no longer being produced is increasing, and because many systems have a lifecycle of less than five years, E&A systems may be rendered inoperable once a critical component fails and no replacement is available. It is also becoming much harder to keep track of which systems are still supported, and to predict the remaining life-time of systems.



FULL TURNKEY MODERNIZATION AND CONVERSION PROJECTS

With an ageing plant, significant savings can be achieved by upgrading the installation to modern standards. An improved automation system has benefits far in excess of merely combating obsolescence. For example, in increased availability of the installation, faster detection of process malfunctions, increased product quality, and the capability to meet new operational requirements. In addition, a higher degree of automation may also allow more efficient use of resources through changes, such as centralized planning and operations. More significant alterations may also be necessary when the installation's mission profile is modified, or when the plant is relocated or totally converted to new use.

In all such cases, Wärtsilä can provide you with a full turnkey EPC (engineering, procurement and construction) solution for all your E&A needs. Through well-proven solutions, experienced project management and engineering, and a global supply and logistics network, we are able to support you wherever you are. Wärtsilä can provide turnkey solutions for everything from a small automation modernization project to a full rebuild, conversion or relocation undertaking. Plus, with our capabilities in other areas of engineering, we can also supply the engine, propulsion, and design capabilities needed to ensure a speedy and successful project.

Wärtsilä can help you manage these risks with a customized programme adapted to your needs – supported through a multitude of services and good sources of information from the component suppliers. With our obsolescence management support, the risk for unexpected and severe component availability problems will be minimized, and the availability of your installation will be maximized.

Typically, a good obsolescence management programme starts with a system of regular audits, where all information on installed systems and components, as well as their condition, is collected and kept up-to-date. Wärtsilä's experience in maintaining obsolescence status data for a wide variety of typical industrial components, allows us to

help you plan orderly, preventive actions that overcome potential obsolescence challenges. At the same time, we ensure that the installation is safe and in a good working order.

We utilize various methods to reduce obsolescence risks, depending on the type of component and the situation. These include, for example:

- Partial or full modular upgrades and modernization solutions whereby the systems are upgraded to current design, and where the performance and usability can be upgraded to meet modern requirements
- The support of ageing systems through the refurbishment or repair of used components, or by customized redesign of the electronics to extend the life of the system.

- Maintaining a stock of obsolete components long after the manufacturing of the component has been discontinued, to ensure that spare parts remain available.

E & A SERVICES FOR MARINE INDUSTRY

As vessels have moved from classic diesel driven mechanical design to a modern diesel electric concept, there is increasing reliance on the electrical system controlling the vessel's machinery. Along with technical evolution, there have also been major changes in vessel safety requirements, greater attention to fuel costs, concerns regarding the availability of electrical skills, and a shorter lifecycle of electronic components.

Our aim is to improve the efficiency, reliability, safety and performance of the electrical power network, from generation to consumption.

We do this by providing technical support, on board inspection services, turnkey upgrades, and conversion and modernization solutions for all automation and power systems. We also have the experience and capability to carry out extensive upgrade and conversion projects on offshore construction vessels, tankers, gas carriers, and even cruise liners.



E & A SERVICES FOR THE ENERGY INDUSTRY

In daily operations, the demand for power can increase or decrease very quickly, requiring control systems capable of acting fast and automatically. Installations delivered as recently as 10 to 15 years ago, do not necessarily meet today's operational conditions, new grid codes, and may not have access to remote

monitoring or operation. As systems become old, component availability can be an issue should systems fail.

In other words, today's operational environment is more challenging, and to have a safe and reliable operation, up-to-date fully automatic control and automation systems that can, if required, be operated remotely, is essential.

Our offering includes full site audits, energy efficiency solutions, obsolescence management,

grid stability and support solutions, controls, and monitoring upgrades for all land-based power generation plants.



E&A SERVICES FOR THE GAS AND OIL STORAGE AND TRANSPORTATION INDUSTRY

Demand for natural gas, particularly in the form of Liquefied Natural Gas (LNG), continues to grow. This is impacting the need for additional terminals and increasing the support for older terminals.

For gas transportation, storage, and terminal activities, we supply our own tank monitoring solutions for improved safety. Having Whessoe product offerings in our portfolio, enables us to offer market leading instrumentation systems for LNG, LPG and oil terminals. We also can provide control system upgrades for those process and utility steam turbines typically found in oil refineries and chemical plants.



E & A SERVICES FOR THE OIL & GAS AND OFFSHORE INDUSTRY

As the global demand for oil and gas continues to increase, harsh environment drilling and exploration operations are evolving to meet this need. Deepwater and ultra deepwater rig utilization is very high, and the global FPSO fleet

continues to expand, but new construction alone will not keep up with demand. Meanwhile, the current infrastructure and assets supporting the market are ageing.

Our offering includes upgrade and turnkey modernization solutions that improve the performance and efficiency of your existing electrical plant. We can also extend its life during modernization or FPSO conversions. Our offering also includes routine electrical

and automation service and maintenance for production and drilling rigs.

We provide technical support, on board inspection services, and turnkey retrofits for both automation and power systems, as well as for top side process equipment. We also have the experience and capability to carry out extensive upgrade and conversion work on FPSO/FSO rigs and platforms.

SOLUTIONS WE OFFER

ALARM, CONTROL, AND MONITORING UPGRADES

- Integrated automation, propulsion control, engine control, process control, steam turbine and boiler control, instrumentation and machinery monitoring systems
- Pre-engineered retrofit systems for obsolete monitoring systems

POWER MANAGEMENT AND DISTRIBUTION UPGRADES AND EXTENSIONS

- Electrical integration solutions for all applications
- Control retrofits, power management, and switchboard extensions
- Medium voltage (up to 17 kV) and low voltage (up to 690 V) modular switchboards

FPSO CONVERSIONS

- Turnkey solutions for conversion projects – including design, project management, equipment supply, installation and commissioning

COMPLETE ELECTRICAL HEALTH CHECKS AND MAINTENANCE AGREEMENTS

- Structured electrical surveys, from basic visual inspections to full performance audits
- Routine maintenance, from injection testing of circuit breakers and relays, to technical management and operational support

TANK CONTROL SYSTEMS

- Level and temperature measurements, alarm systems, SCADA systems, site optimization software and data management systems for LNG, LPG and oil terminals and tankers based on Whessoe gauging and instrumentation and LNG Expert and Master knowledge as well as safety solutions for LPG valve controls.

GRID STABILITY AND SUPPORT SOLUTIONS

- Power control and protection expertise to help energy producers meet new grid codes and performance requirements
- Power plant extensions and relocations
- Design calculations, switchgear extensions, power management modifications and protection settings for extensions
- Turnkey project management for relocations

EMERGENCY RESPONSE SERVICES

- In case of a major incident, we can help you to quickly assess the damage and determine a remedial action plan
- Turnkey electrical repairs and replacements, including re-commissioning.

BRIDGE AND NAVIGATION HARMONIZATION AND UPGRADES

- Bridge controls, propulsion controls, navigation upgrades, and communication solutions

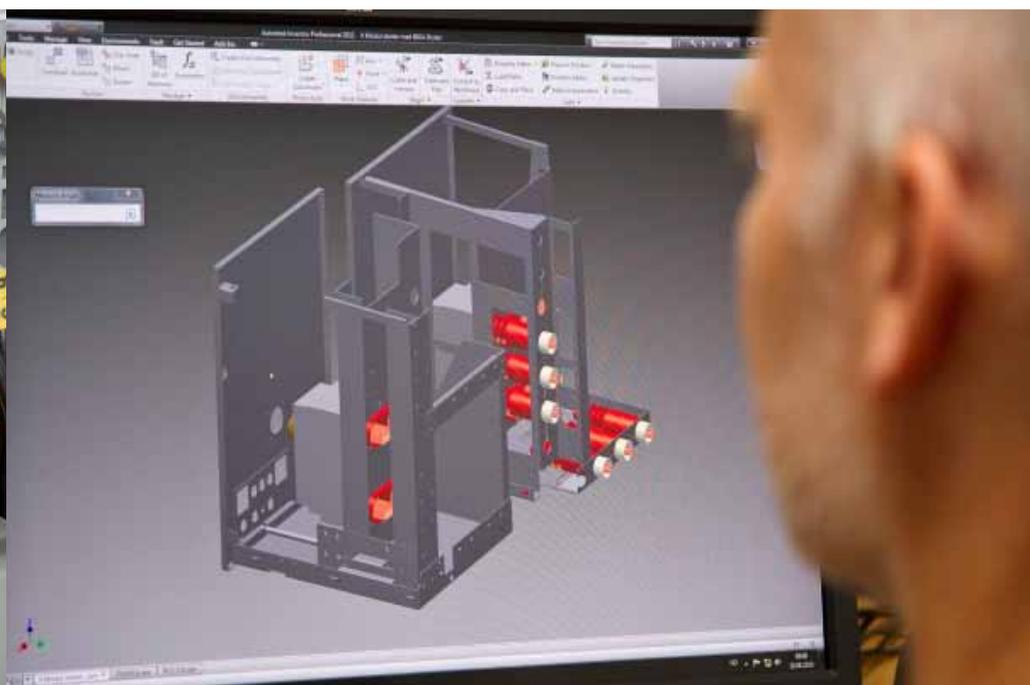
- Our products include dynamic positioning, bridge instrumentation, radar, thruster controls, and public address systems.

OBSOLESCENCE MANAGEMENT

- Solutions and support to tackle risks from obsolete electrical technology, including audits, tailored retrofits, repairs, replacements, and the modernization of safety critical systems.

EFFICIENCY IMPROVEMENTS

- Energy saving solutions using variable speed drives for pumps, fans and thruster motors
- Special applications, such as subsea flowline heating for oil and gas installations
- Power management optimization



WÄRTSILÄ SERVICES: IMPROVING LIFECYCLE EFFICIENCY

Key customers have recognized us as their preferred service supplier – ensuring the availability and cost-efficient operation of their installations.

They benefit from having their entire power system and a full range of services provided by one global supplier.

We provide full service throughout the product lifecycle for both marine and power plant customers, and we are constantly developing our network and services worldwide. We are continually broadening our range of services and adding valuable products and specialist services to our portfolio. In this way we also support equipment onboard your vessel or at your installation, either by becoming the OEM or by providing non-OEM services in key ports.

Our lifecycle efficiency solutions are provided within the following services:

- Engine Services
- Electrical & Automation Services
- Propulsion Services
- Boiler Services
- Service agreements
- Training Services
- Environmental Services
- Service projects

These services cover everything from basic support with parts, field service and technical support to service agreements and condition based maintenance; from installation and commissioning, performance optimization, including upgrades and conversions, to environmental solutions, technical information and online support.

The choice available to you extends from parts and maintenance services to a variety of comprehensive, customized long-term service agreements, including performance and operations & management agreements.

Our organization currently features over 11,000 dedicated services professionals in close to 70 countries.

Wärtsilä adds value to your business at every stage of the lifecycle of your installations. With us as your service partner, you receive consistently many measurable benefits such as availability, performance, productivity gains, and cost benefits. Above all, peace of mind in the knowledge that your installation is being serviced by the most experienced partner you could have – Wärtsilä.

VISIT US AT WWW.WARTSILA.COM



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

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