



WÄRTSILÄ SERVICES BUSINESS WHITE PAPER

MANAGING MAINTENANCE OPERATIONS IN THE OFFSHORE INDUSTRY

The global offshore industry operates under an umbrella of regulatory requirements that are focused on operational safety and environmental protection. Keeping up and complying with these while ensuring uninterrupted operation of increasingly complex systems can be a challenge for the offshore operator.

With a broad range of services for the offshore industry, Wärtsilä is able to offer full lifecycle solutions for optimizing operations and maximising reliability, as well as support in navigating the changing offshore safety regulations.

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THE CURRENT SITUATION WITH REGULATIONS

The offshore industry is governed by a dense web of regulations regarding safety, the environment etc. These are enforced by different regulatory bodies around the world. It is important for operators to ensure compliance with these regulations, especially when operating internationally.

Winds of change

Recently, there has been growing pressure to revise the regulations and their enforcement principles. If we look at the actual operational data, the number of incidents or accidents resulting in oil spills that have happened within the offshore industry over the last 20 years, is very small. However, the Macondo incident* in 2010 in the US Gulf of Mexico reminded everyone, through worldwide media coverage, of the consequences when things do go wrong.

As a result, environmental awareness is today higher than ever, and this is causing increasing pressure also on the offshore industry and its practices. The strive for environmental protection is driving the development of regulatory and legislative requirements for offshore operations around the globe.

Best Available and Safest Technology (BAST)

The rule for Best Available and Safest Technology (BAST) was first published by the Mineral Mining Service in the Federal Register in the USA in April 1988. The purpose of the rule is to determine what measures are to be regarded as sufficient to protect health, safety, property, and the environment.

Current discussions regarding changes to the BAST rule in the USA and its implementation are centred around the question of who has the authority to determine what is to be regarded as BAST in a given situation.

The currently enforced BAST rule requires the use of BAST only “whenever practical” for “all exploration, development and production operations”, leaving it up to the operators’ discretion to determine what is practical in a given situation. Under the new proposed rule, however, BSEE (Bureau of Safety and Environmental Enforcement) could specify, what is economically feasible BAST, and operators would have to oblige. This is seen to put especially smaller operators in an unfair position.

The second phase of the rule for the development, implementation and maintenance of safety and environmental management systems (SEMS), first published in 2010, is also currently in process in the USA. This will be causing changes mainly to the training and qualification requirements for offshore crews.

The offshore industry will face more stringent environmental and operational safety regulations.

The discussions are bound to be heated, but whatever the outcomes will eventually be, one thing is certain: the offshore industry will face more stringent environmental and operational safety regulations. It is important to manage operations to respond to these regulations in a professional way.

* On April 20, 2010, an explosion and subsequent fire on the Deepwater Horizon drilling rig, situated in the Macondo Prospect oil field about 40 miles (60 km) southeast of the Louisiana coast in the Gulf of Mexico, caused a massive offshore oil spill resulting in the largest environmental disaster in U.S. history.

THE CHALLENGE FOR OFFSHORE OPERATORS

An offshore vessel or an oil rig is a complex system, with thousands of maintenance tasks to be completed and documented. Making sure that all units operate reliably and verifiably comply with all the relevant regulations, while also making a profit, can be a daunting task for an operator with a fleet of vessels operating around the world.

Maintenance regulation management can be difficult without some form of external support.

Due to the rapid pace of change and the local nature of legislation, maintenance regulation management for an offshore operator can be difficult without some form of external support. It is especially challenging for companies operating internationally, and thus needing to simultaneously observe the policies of several different countries.

The other side of the story is, of course, that the offshore industry operates in extremely challenging conditions, where all interruptions quickly result in extremely high costs. This makes reliability absolutely crucial. There is no room for surprises in the form of unexpected failures and unscheduled downtime.

It makes sense to rely on a partner who can truly understand regulatory activities relating to maintenance both globally and locally.

This is where an experienced and capable partner can be a great help. Worrying about things like maintenance, documentation and compliance may not be the core business of the offshore operator. It therefore makes sense to rely on a partner who can truly understand regulatory activities relating to maintenance both globally and locally, who keeps up to date about changing and increasingly stringent regulations, and who can assist in the process by supplying information.



LIFECYCLE SERVICES AS THE SOLUTION

Equipment is in optimal working order at all times, and complies with the relevant regulations and classifications.

Lifecycle solutions offered by service providers have proven to be an effective way for offshore operators to focus their resources on their core business. These solutions can cover everything from basic support with spare parts, field service and technical support to a variety of comprehensive, customised long-term service and asset management agreements, including performance guarantees.

A long-term agreement with a specialised partner can free the offshore operator from worrying about technical management, or even carrying out the entire maintenance programme, by transferring the responsibility for these to the partner. Such an agreement ensures that equipment is in optimal working order at all times, and complies with the relevant regulations and classifications.

OEM spare parts and field service, the foundation for safe operation

A key part in ensuring safe and reliable operations is that all maintenance work is done by skilled and experienced professionals according to classification societies' requirements. All field service personnel should have the expertise and capabilities needed to carry out the work in demanding offshore conditions. Also, to avoid unnecessary and expensive downtime, a field service network with a global reach and sufficiently equipped workshops in relevant locations should be in place.

OEM parts should always be used to ensure the continuing safety and reliability of the operation. Original parts improve performance and reliability, minimise downtime, and reduce operating costs. On-going research and development by the OEM manufacturer means that, even with older equipment, original spare parts will comply with the latest specifications and prolong the installation's lifecycle.

Operational safety

The move to modern advanced-technology-driven concepts has increased reliance on the increasingly complex electrical systems that control the machinery on offshore vessels. Underestimating the critical nature of these systems could pose a severe risk to the operation of the vessel in the event of a component or circuit failure.

It is therefore essential to have the necessary electrical and automation safety systems, including fire and gas detection and fire suppression as well as emergency shutdown solutions in place. However, it is the knowledge and skills of the crew that ultimately are the keys to correct decisions and form the basis for safe operations. Ensuring that the people taking care of operations are skilled and trained for safe operations according to regulatory requirements should be a priority.

ENSURING YOUR LIFECYCLE OPERATIONS

To ensure safe and reliable operation and keep interruptions to a minimum, Wärtsilä employs a concept called dynamic maintenance planning (DMP)TM. Maintenance is not always necessarily done according to the original maintenance schedule, but instead a documented maintenance plan based on the actual condition of the equipment is implemented. As a result, the timing for an overhaul might even be extended and/or combined with other equipment into a single maintenance window in some cases.

Maintenance can be based on the actual condition of the equipment.

A key element of dynamic maintenance planning is Wärtsilä's sophisticated monitoring system: Condition Based Maintenance (CBM) for engines with inspections and propulsion condition monitoring system (PCMS) for propulsion equipment. Constant monitoring means that maintenance can be based on the actual condition of the equipment.

Constant monitoring can also reveal trends for several variables, enabling preventive maintenance before equipment failures take place. This improves the reliability of an installation, and can help prevent interruptions – and consequentially escalating costs – caused by unscheduled maintenance.

Service agreement types for offshore

Wärtsilä's service agreements offer improved reliability and availability as well as maximised lifetime for the installation along with reduced operational costs in a safe, reliable and environmentally-sound way. Our agreements for offshore installations focus on optimising lifecycle performance and predicting maintenance needs. The agreements are always customised to suit the exact requirements of each particular customer, and ensure that documentation and all work is done according to classification society requirements.

Optimized maintenance

Technical management agreement

- Increased availability
- Dynamic maintenance planning for improved predictability and optimised operations
- Reduced maintenance costs (10-20%) and fewer unplanned stops
- Documentation and class approval

Certainty of operations

Maintenance agreement

- Maximised uptime through proper maintenance and coordinated schedules
- Long term cost predictability and shared goals
- Online condition monitoring and technical support where and when needed
- Global and local coordination through network companies with workshops and skilled service experts
- Dedicated technical expertise and support
- OEM spare parts and consumables anytime
- Documentation and class approval

Ensuring your lifecycle operations

Wärtsilä is an experienced operator, with a proven track record in operation and maintenance services since the 1990's. Globally, more than 18,500 MW of generating capacity in both marine and land based installations – a total of more than 470 installations – is covered by Wärtsilä's service agreements.

Wärtsilä offers four types of standardized agreements ranging from supply agreements to technical management, as well as maintenance agreements and complete asset management. However, all agreements are customised to fulfill each customer's specific needs.

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Want to know more?

Please contact us:

- www.wartsila.com/services

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