

4.1.1 Identifying applicable rules and regulations

Practical guidance – maritime

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Guidance on identifying applicable rules and regulations for unmanned marine robots for inspection and maintenance

In recent years, autonomous marine systems have garnered attention, as major stakeholders in the maritime sector have invested heavily in its development and have begun to review the adequacy of current laws to regulate their use [1]. This entry will outline the relevant regulations that apply to the use of unmanned marine robots.

The International Maritime Organisation ('IMO') has recently assessed the applicability of existing IMO instruments to Maritime Autonomous Service Ships ('MASS'). Through this regulatory scoping exercise, the IMO highlighted various areas of improvement, stressing that the current regulatory frameworks do, on various fronts, not yet fit with autonomous marine systems, and are therefore not yet adequately equipped to regulate them [2].

The main EU legislative framework that would be applicable to unmanned marine robots in general, is the Machinery Directive [3]. According to this Directive, machinery is defined as:

- an assembly, fitted with or intended to be fitted with a drive system other than directly applied human or animal effort, consisting of linked parts or components, at least one of which moves, and which are joined together for a specific application
- an assembly referred to in the first indent, missing only the components to connect it on site or to sources of energy and motion
- an assembly referred to in the first and second indents, ready to be installed and able to function as it stands only if mounted on a means of transport, or installed in a building or a structure
- assemblies of machinery referred to in the first, second and third indents or partly completed machinery referred to in point (g) which, in order to achieve the same end, are arranged and controlled so that they function as an integral whole
- an assembly of linked parts or components, at least one of which moves and which are joined together, intended for lifting loads and whose only power source is directly applied human effort [4].

As it stands, it is generally agreed that robots used for industrial purposes are considered machinery and therefore fall under the purview of the Machinery Directive [5]. This is despite the fact that the word 'robot' does not appear in the law [6]. However, the Machinery Directive does explicitly exclude various forms of transportation that may impact its applicability to some variants of submersibles. The most pertinent exclusions that may be applicable here are 'means of transport by air, on water and on rail networks' and 'seagoing vessels and mobile offshore units' [7].

The first exclusion applies to systems that are designed to transport goods or people [8]. As a result, whether an underwater drone is regulated by the Machinery Directive depends on the particular drone design. If a drone is designed with seating for people, even if it can move around autonomously, it may not be considered machinery. The designation could be the same if the drone transports goods. A harder distinction would be for a drone that has multiple purposes. For example, a submersible could be used to inspect underwater pipes emanating from an oil platform but also to transport essential goods to the platform. Would it be considered a transportation system? This is something that has not yet been clarified, and still needs to be addressed in future guidance.

The second exclusion applies to submersibles that are that are seagoing. As submersibles that are used today mostly operate in the seas as opposed to the internal waters of states, they are not subject to the regulations of the Machinery Directive. This does lead to the potential problem that two identical robots, one operating in the high seas and one operating in a state's internal waters, would be subject to two different regimes. But what if a submersible that is meant for use in the seas operates in internal waters temporarily? Would it be violating the Machinery Directive? Though not directly applicable, Directive 2016/1629 [9] may be instructive. These rules do not apply to seagoing vessels that operate temporarily in inland waters, provided that certain documentation, such as a certificate showing conformity to the International Convention for the Safety of Life at Sea 1973 ('SOLAS') or a certificate from the flag state evidencing its safety, is present. The standards only apply to, for example, vessels 20 metres or longer, passenger vessels, and floating equipment, so whether submersibles are subject to Directive 2016/1629 very much depends on whether or not the particular submersible has these characteristics [10].

With the exception of seagoing vessels, the machinery on submersibles, even on submersibles not under the purview of the Machinery Directive, must still abide by the regulations [11]. Such machinery includes 'loader cranes, tail-lifts, vehicle or trailer-mounted compressors, vehicle-mounted compaction systems, vehicle mounted concrete mixers, skip loaders, powered winches, tipper bodies and vehicle or trailer-mounted mobile elevating work platforms' [12]. However, the machinery installed on seagoing vessels and offshore units does not fall within the scope of the Machinery Directive because it is subject to the Conventions of the IMO rather than EU law [13]. In particular, SOLAS contains many provisions that regulate this machinery, which are particularly focussed on setting minimum safety standards for it [14].

Summary of applicable guidance

- The Machinery Directive is generally applicable to unmanned marine robots.
- The Machinery Directive contains two important exclusions relevant to unmanned marine robots, which constitute systems that are designed to transport goods or people and submersibles that are seagoing. That said, there may be situations in relation to these exclusions in which there is uncertainty as to whether the Machinery Directive is applicable.
- With the exception of seagoing vessels, the machinery on submersibles, even on submersibles not under the purview of the Machinery Directive, must still abide by the regulations. Machinery on seagoing vessels falls under the scope of SOLAS.

References

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- [9] European Parliament and Council Directive 2016/1629 of 14 September 2016 laying down technical requirements for inland waterway vessels, amending Directive 2009/100/EC and repealing Directive 2006/87/EC [2016] OJ L252/118.
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