Subsea and Diving Equipment certifications and classification – What you need and why.

Working in harsh environments requires clear safety regulations and equipment specifications. In the offshore industry, subsea and diving equipment and processes are certified and classed to ensure that they conform to these regulations. But what does it mean to be certified, classed or non-classed? Here we discuss each process and the differences when it comes to specific subsea and diving equipment such as diving systems, pressure vessels and man riding equipment, among others.

What does it mean to be Certified?

An item of equipment, a product or a number of items that are designed, constructed and tested in accordance with 3rd party engineering rules. Normally the IACS member is the 3rd party to verify the process in order to obtain subsea and diving equipment certification.

For our applications, the relevant engineering rules must be offshore marine-based and the conditions of service must be relevant to the equipment.

What is a subsea and diving equipment certificate?

A subsea and diving equipment certificate is issued by a 3rd Party or other to show conformance of the equipment to the completion of the above process. Subsea and diving certification can be issued by IACS members involved in the process above or the manufacturer can issue self-certification.

Some manufacturers will also have a process approval in place. In other words, the process is 3rd party approved but not every product is 3rd party inspected.

Examples of products and processes that require offshore equipment certification:

- Pressure Vessel Human Occupancy – Always has a 3rd party certification.
- Portable Gas Container – Always 3rd party Certification.
- Rigging Equipment – Manufacturers Certification (Process only certified by 3rd party).
- Fittings – Manufacturers Certification (Process only certified by 3rd party).
- Man Rider Winches – Manufacturers Certification / or 3rd party.

The relevant engineering rules for offshore equipment certification are based on years of experience and industry knowledge used to create and update the rules.

How to obtain subsea and diving equipment certification

An approval process is followed to ensure that marine products follow design compliance.

This includes, but is not limited to

- The equipment is designed to meet the rule requirements including documented calculations and documented reviews of these calculations.
- An approval process is followed to ensure design compliance.
- The equipment is constructed using material that is tested to comply with the requirements of the design. Tensile strength, Material hardness, Oxygen Cleanliness, etc.
- The equipment is constructed using methods that are defined in the rules as acceptable.
- The equipment is tested to ensure that the physical requirements of the product meet the environmental criteria set out in the rules and initial design.
- Product certification can be issued by IACS member involved in the above process or:
- the manufacturer can issue self-certification. Some manufacturers will also have a process approval in place. ie. the process is 3rd party approved and not every product is 3rd party inspected.

What does it mean when my subsea and diving equipment is classed?

Once your equipment, products and processes have been inspected, some clients require your product assemblies to be classed and to remain in class.

This refers to the final checks conducted before offshore equipment certificates can be issued.

Classed – the final process of checking whether subsea and diving equipment is suitable to be commissioned as a functioning system.

Class Certificate – the final assembly of marine product certificates and commissioning results.

Classing is comprised of a verification process, a commissioning process and continuous survey process.

What is Subsea and Diving Equipment Verification?

Verification is a quality step that confirms that all design issues are closed to ensure all material validation items are confirmed to the design and that all manufacturing processes are completed and correct.

Verification is only passed when testing results match the required output of the product.

What is commissioning?

To witness the assembly of products.

Commissioning is required to confirm that all subsea and diving equipment is certified to work together as per the requirements of the nominated rules or operating process (Client defined).

Following the offshore certification process, test results are recorded and your certificates are issued.

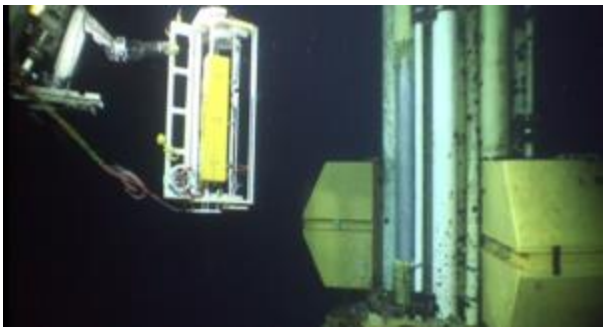
Why should my certified subsea and diving equipment be surveyed?

Interval monitoring of the product assembly is conducted for compliance with the rules and relevant codes. This ensures that your subsea and diving equipment is well maintained for safety purposes. For this same reason, it is important to conduct regular **maintenance and inspection** upon your vessels.

What does it mean when subsea and diving equipment is non-classed?

There are many scenarios to be highlighted where marine equipment and processes are certified by not classed or even not certified. Here are some examples of equipment and processes that require and may not require classing. If you are unsure about your specific requirements, **reach out to our experts who can assist.**

Non-classed can be any one of the following scenarios



- A diving system where all equipment is fully certified to IACS rules for diving systems including IACS 3rd party involvement but has not been through the final stage of verification and commissioning. [Equipment will be identical in look and performance to classed equipment]
- A diving system where all equipment is fully compliant to IACS rules for diving systems but has no IACS 3rd party involvement, it has not been through the final stage of verification and commissioning. [Equipment will be identical in look and performance to classed equipment]
- A diving system where all equipment is fully certified to a suitable marine standard with equivalence to the diving environment and has qualified engineering 3rd party involvement. [Equipment can look different but performance could be better or worse than classed equipment]
- A diving system where the Chamber and LARS are certified by IACS; including 3rd party involvement. All other equipment of the diving system is compliant and audited to industry best practise guidelines. [Typically manufacturers self-certification only]

So as you can see in the above, telling the difference is often near impossible.

Scenarios and Differences between classed and non-classed: Container structures

Use of containers must suit the environment whether classed or non-classed.

The use of DNVGL 2.7.1 is not just for offshore lifting but rather to protect the diving equipment and personnel from the environment.

Saturation for example and other codes, including deckhouse structure, require equivalent protection to the ship to ensure compliance.

Our focus should be on what code is suitable for offshore diving operations rather than if it is classed or not.

Scenarios and Differences between classed and non-classed: Man riding

Use of man riding winches must suit the diving application and environment whether classed or non-classed.

The use of the correct offshore marine lifting codes should be defined for your industry, this ensures only man riders certified to adequate offshore codes are used for diving.

Scenarios and Differences between classed and non-classed marine equipment: Electrical Installation and Equipment

Electrical designs and installations must be relevant to the marine industry.

Only suitable codes should be used. System electrical redundancy must reference industry best practise and FMEA results.

Electrical designs should be reviewed and approved by suitable 3rd parties to ensure compliance with the selected code.

Scenarios and Differences between classed and non-classed marine equipment: Piping Installation

Piping and instrumentation is a very specialist function.

IACS rules are the primary source of relevant industry best practise. Most systems compliant to industry guidelines or IACS would be equivalent.

(ie. very little difference between Classed and non-classed if completed against industry guidelines.

Scenarios and Differences between classed and non-classed marine equipment: Pressure Vessel

Pressure vessels for human occupancy are a well-regulated product group. The industry conforms to this whether Classed or Non Classed.

Most systems compliant to industry guidelines or IACS would be equivalent.

(ie. very little difference between Classed and Unclassed if complete against industry-accepted codes.)

Internal fit-out and material selection would require clear guidance.

Scenarios and Differences between classed and non-classed marine equipment: Launch and Recovery

Launch and Recovery Systems are an industry anomaly because there is a large range of what is considered acceptable codes and standards.

To close the gap, a clear confirmation of what the industry accepts as the correct marine rules or engineering code is needed, for example, sizing of wire ropes must include offshore dynamic factors.

What are the risks of non-standardization and use of non-classed marine equipment?

- An industry that has not defined what are the acceptable rules or engineering codes that manufacturers should use to build equipment to.
- An industry that does not learn and adapt from lessons learnt – applying change to the relevant rules or engineering codes.
- Manufacturers that do not design, construct and test to acceptable industry codes.
- Operators that do not maintain and safely operate the equipment.
- Operators that use the equipment outside of the equipment design parameters.