

Buoyancy



Lankhorst Buoyancy

There is often a need in the offshore industry to make use of buoyancy modules to provide uplift to subsea risers, pipelines, cables, umbilicals and other structures.

Lankhorst's Buoyancy Modules utilize field proven technology and experience to provide superior technical solutions.

Lankhorst is experienced in and able to produce various types of buoyancy to suit your needs, including:

- Distributed Buoyancy
- Modular Installation Buoyancy
- Buckling Mitigation Buoyancy
- Mooring Buoyancy
- Rope Floats
- Subsurface Floats

Leader in Offshore Engineering Solutions

Buoyancy Technology

Lankhorst uses rotomoulded polyethylene hollow shells that are filled with a blend of syntactic foam and macrospheres to provide the required uplift. Using macrosphere technology within the syntactic foam reduces the density of the foam, thus maximizing the uplift. This enables the design and production of buoyancy modules to suit any water depth.



Buckling Mitigation Buoyancy

Pipelines can be subjected to high bending moments and large forces during operation as they shift from their original positions on the seabed. Buckling Mitigation Buoyancy can be added to sections of the riser in order to influence where this shifting (or buckling) occurs.



Buoyancy Solutions

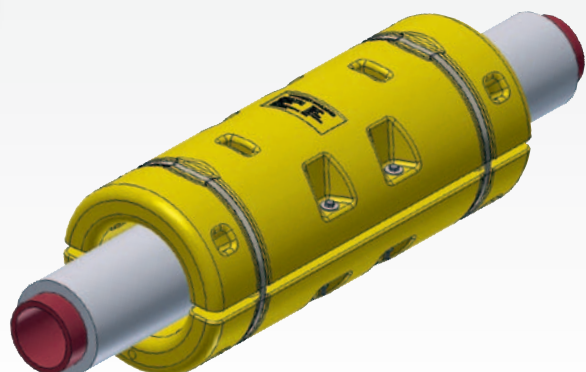
Distributed Buoyancy

Distributed Buoyancy Modules are made up of two buoyancy half shells fitted around an internal clamp used to secure the position of the buoyancy module on the riser. It is used between a vessel, for instance an FPSO, and the subsea structures to hold a riser in the desired configuration.

Modules can be secured with either a rigid or a rubber clamp system, or a combination of both to accommodate a wide range of pipe diameters and pipe shrinkage due to hydrostatic pressure.

Installation Buoyancy

Modular Installation Buoyancy is used to provide weight adjustments of subsea equipment during installation. The interlocking modular design allows for adjustment of the uplift requirements. The individual elements are fixated around a steel support structure designed for the individual load case requirements.



Buoyancy

Mooring Buoyancy

Floating platforms that are moored to the seabed often require large, heavy duty mooring lines that have buoyancy modules installed just above the seabed to prevent abrasion of the lower part of the polyester lines and chains ensuring their operational lifetime.

Modular Mooring Buoyancy can either be assembled around a steel shackle interface piece which is mounted in line with the mooring line, or be attached above the lower part of the mooring line.



Rope Floats

In partnership with Lankhorst Ropes, buoyant modules are assembled around the rope and then sheathed inside the rope jacket to provide a floating rope solution. These solutions can be used in a number of offshore and on-shore pull-in situations.

Subsurface Floats

Subsurface Float Modules can be manufactured in a range of sizes suitable for various working depths and uplift requirements. They are produced with a central hole where the fixation method can be inserted during installation.

What else do we offer?

Lankhorst places importance in delivering a great customer service that matches the quality expected of their products. Every order is followed by a dedicated Project Manager, who remains the sole point of contact throughout order execution and ensures that products are designed, engineered, tested, produced and shipped to the expectations and requirements of the client and their specifications.

Buoyancy modules are routinely tested as part of qualification and verification of the design for uplift, water absorption, Instrumented Buoyancy Loss, Hydrostatic Compression & Strength and Bulk Modulus.

Lankhorst recognizes the importance of a thorough quality system and is therefore certified under ISO 9001, ISO 14001 and OSHAS 18001 by DNV-GL.



Maintenance and availability of equipment, testing techniques and systems, quality training and education and certification are only a few of the vital aspects Lankhorst's quality managers focus on.

References

Examples of recent projects are:

- Technip West Delta Buoyancy Installation Buoyancy
- Statoil Subsea 7 Aasta Hansteen Buckling Mitigation Buoyancy
- ENI Norge Goliat Mooring Line Buoyancy
- Petrobras Technip Iracema Sul Distributed Buoyancy

And many others. A full reference list is available upon request.



Lankhorst Mouldings Offshore

Lankhorst Mouldings Offshore has a proven track record in providing the offshore industry with innovative polymer-based, technical solutions that stand the test of time. Lankhorst Mouldings has for over 35 years been producing products using our unique thick-walled plastic moulding technology. We can supply high-performance innovatively engineered products to

meet the demands of the offshore industry. Lankhorst Mouldings products utilize field proven technology and experience to provide superior technical solutions.

The company's technical solutions are designed not only to meet the customers' requirements, but are also foreseen to be used again and again.

