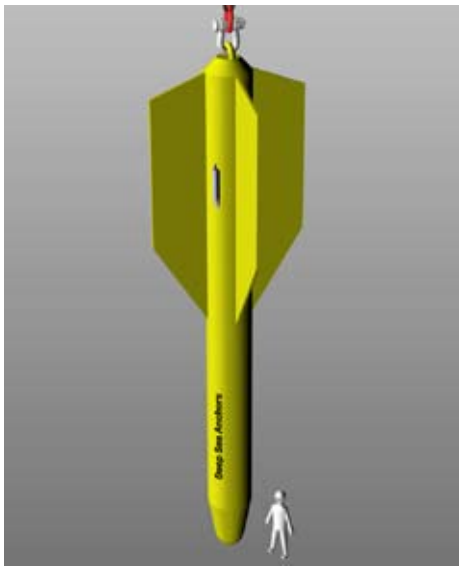
Deep Penetrating Anchor

Innovative anchor solutions

What we do

Deep Sea Anchors provides anchor solutions for mooring of offshore floating structures in soft seabed sediments. These anchors penetrate to well below mudline into stiff clay sediments.

Our solutions include: Geotechnical analysis, the Deep Penetrating Anchor (DPA) and a complete mooring line including shackles, chains, fiber ropes and buoys.



Characteristics

Cost effective solution
- Cost competitive.

Simplified installation
- Installation derived through free fall – no external energy sources required.
- Quick installation: Up to 35% reduction of installation time compared to suction anchors.
- Precise horizontal positioning – no drag embedment or proof loading.
- Greater weather window compared to suction anchors.

Great Capacity and Flexibility
- Large holding capacity.
- Can be loaded in any direction – no orientation requirements.
- Applicable for taut leg mooring systems.
- No restriction regarding water depth.
- Simple pile analysis procedures may be applied. E.G the API RP2A

Marked
- Permanent structures, such as FPSO, SPAR's, risers buoys and offshore wind power plants.
- New type II for mooring of mobile drill rigs are under development.
- Applicable in all areas where soft seabed conditions are found.

References

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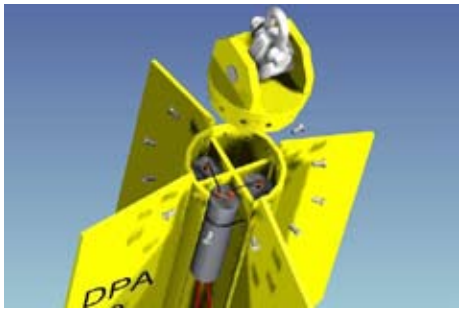
Project:	Trondheimsfjorden
Scale:	1:3
Weight:	2.75 Te
Dimensions:	L = 4.4m, W = 1.3m
When:	2003/2006
Partners:	REINERTSEN BOA Off.
Client:	Statoil

Mission: Test drop methods, confirm penetration & pullout capacities.

Conclusion: Pullout capacities based on API RP2 gave conservative results.



Project:	Troll A2
Scale:	1:3
Weight:	2.75 Te
Dimensions:	L = 4.4m, W = 1.3m
When:	2008/2009
Client:	StatoilHydro

Mission: Qualify the Deep Penetrating Anchor concept asa viable alternative to present day solutions.

Conclusion: All aspects of the concept have gone through rigorous testing with success.

Project:	Gjøa
Scale:	1:1
Weight:	75 Te
Dimensions:	L = 13m, W = 4m
When:	2009
Client:	Gjøa Licensing Group

Mission: Qualify the Deep Penetrating Anchor concept as a viable alternative to present day solutions.

Conclusion: All aspects of the concept have gone through rigorous testing with success.

Who we are

Deep Sea Anchors is a technology developer and provider of innovative anchor solutions for floating structures, owned by GeoProbing Technology and NLI.

GeoProbing Technology performs research and development within marine geotechnique and geophysics.

NLI is an industrial company supplying engineering and fabrication services, technology products and process solutions to oil & gas, renewable as well as land based industry. NLI has approximately 800 highly qualified employees and a revenue for 2009 of 1,5 billion NOK.

History

The development of Deep Penetrating Anchor started in 1996. Since then, national and international patents have been awarded and extensive theoretical analyses and model scale tests (1:25) performed, leading up to the first and second 1:3 prototype tests and finally to the full-scale test in 2009.

StatoilHydro has been a partner since 1998 and contributed with both funding through the LOOP program as well as giving technical advice. The Norwegian Research Council has also supported the Gjøa tests through the DEMO2000 program. Two full-scale anchors were successfully installed in August 2009 and the Deep Penetrating Anchor is expected to be qualified by class society in the last quarter of 2009.