



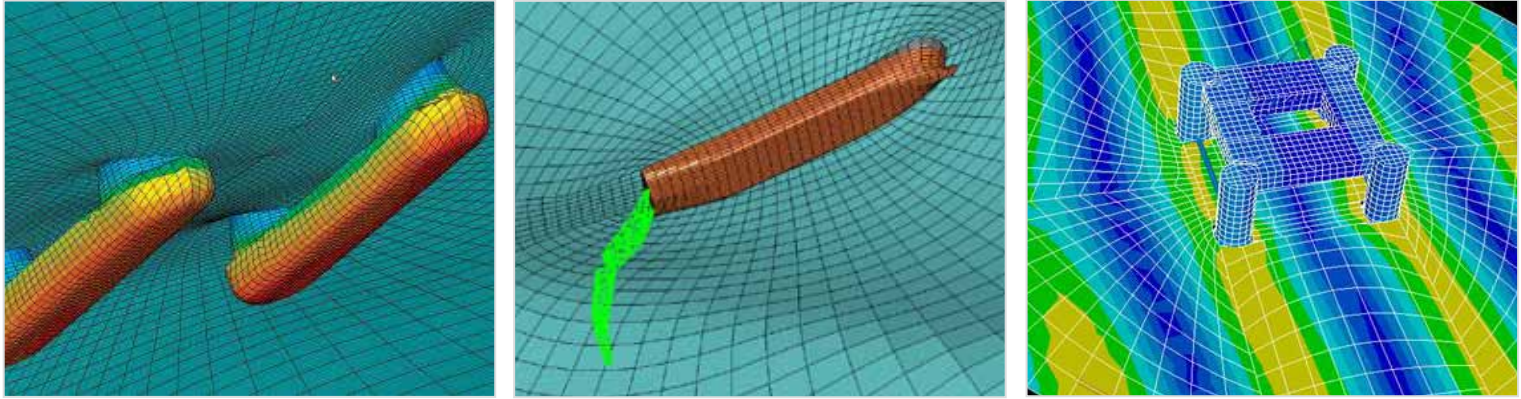
Sesam HydroD

Wave loads and motion responses on ships and offshore structures

DNV Software

Precise wave load predictions

Wave load and sea-keeping analysis of ships and offshore structures



HydroD is the premier choice for hydrodynamic and stability analyses of ships and offshore structures. It has gained status as the market leader due to renowned efficiency and accuracy, based on decades of experience in the industry. DNV Software has developed HydroD to help naval architects and engineers become more productive, while simultaneously delivering even higher quality analyses.

HydroD - a market leader

DNV Software has offered this type of software to the market for more than 40 years, so users can rely on proven solutions. We are constantly developing and improving the software according to customer need. Both DNV and external customers have specific analysis projects that demand further development to the highest standards. New functionality and timesaving features based on user feedback are included in each new release.

HydroD integrates the processes, with modelling, analysis and results processing all performed in the same graphical user environment, saving time, resources and training. It is renowned for its method of transfer of loads to strength assessment. Together with other Sesam programs it is easy to include hydrodynamic results in structural analyses in order, for example, to perform fatigue analysis as well as an ultimate load analysis.

Improved productivity and quality

HydroD improves the naval architect's productivity as well as the quality of the design. The user interface has been developed in close dialogue with the market. HydroD combines concept mod-

elling techniques with the capabilities for conducting stability or hydrodynamic analysis. HydroD gives flexibility in performing design analyses and gives users advanced analysis options for fine-tuning the design.

The benefits of using HydroD are numerous. Some main points that provide savings and efficiency are:

- The user interface is Windows-based and intuitive, allowing new users to learn the program quickly and efficiently from online user documentation and tutorials
- A timesaving Wizard guides the user through all required settings for doing the selected analysis. All data are checked for consistency, preventing unnecessary analysis time
- Compartment data may be changed easily to form several loading conditions in stability and hydrodynamic analyses
- A journaling system makes it easy to share data with others and use existing data when starting new projects or making design variation
- It is fully integrated with finite element analysis

More efficient concept modelling

Concept modelling has proven to be a cost saver when performing sea-keeping analysis, evaluating a vessel's performance and comparing various designs.

HydroD saves significant man-hours compared with previous data entry methods. HydroD facilitates easy and efficient graphic modelling and verification of data. For example, it is not necessary to know and specify all the details of the model – it is sufficient to graphically select an object in order to modify it.

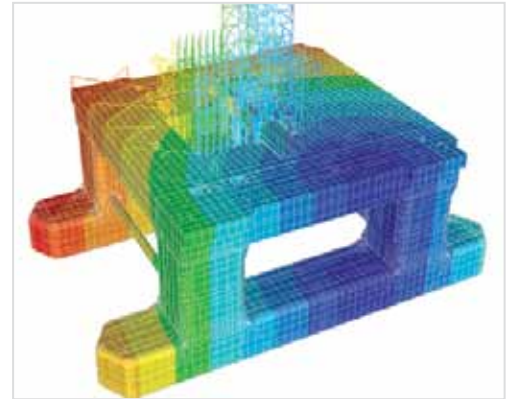
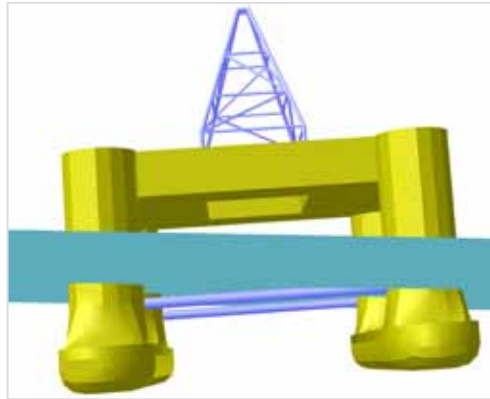
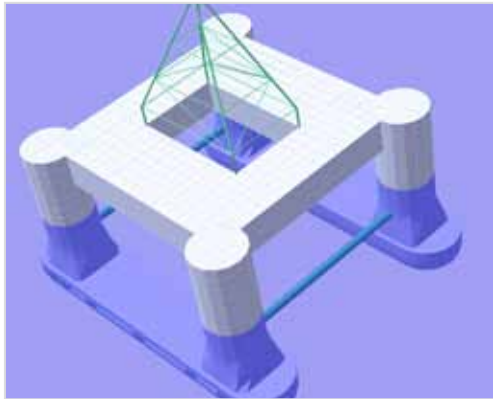
Hydrodynamic models can be created within HydroD or by importing them from GeniE. If GeniE is used, the same model

“Keppel chose Sesam software for its user-friendliness and technical reliability as well as good customer support.”

Anis Hussain, General Manager, Keppel DTG, Singapore

Safety at sea

Documenting hydrostability of offshore floaters



can be the basis for hydrodynamic as well as structural analysis. It is also possible to import models and result files from other systems (typically offset tables and 2D DXF).

Comprehensive package

HydroD is used for ballasting, hydrostatic and hydrodynamic analyses of large fixed and floating structures. Typically these may be gravity-based platforms, barges, ships, semi-submersibles, tension leg platforms, floating production storage units or spar buoys.

HydroD is unique in its ability to offer a complete package including hydrostatic analysis, frequency domain analysis and time domain analysis, all based on one common model. Users use this as the basis for all analyses and for all different loading conditions. Updates to the common model give automatically updated input in all analyses. A strong benefit of the Sesam system is the ability to make a sub-model and analyse it independently of the global model.

- Full range of analyses

HydroD is exceptional in its offering of both stability analysis, frequency domain analysis and time domain analysis. For analysis in frequency domain at zero speed HydroD uses Wadam. For time domain analysis or frequency domain analysis with a steady forward motion HydroD uses Wasim.

The hydrodynamic results are used to determine short and long-term statistics, a design wave or can be automatically used in a structural analysis.

- Advanced non-linear analysis

There is a growing need for more advanced hydrodynamic analysis of offshore structures. A non-linear analysis with a well-selected input will always give better results than a linear analysis. To sup-

port this, DNV Software has enhanced its computational engine to include such nonlinearities. A new functionality from 2010 enables analysis of a combined structure, such as a plate and frame structure, both static and in motion – and for both intact and damaged conditions. This new feature makes HydroD the premier software for analysis of floating structures such as stingers.

- Multibody analysis

For multi-body analysis in frequency domain it is possible to run up to 15 different bodies, including full hydrodynamic interaction between the bodies. We have made such analysis even more powerful by allowing the user to specify an additional coupled damping and restoring matrix for the bodies.

- Equilibrium, hydrostatic and sea-keeping

HydroD provides optimal functionality to compute the key decision results for longitudinal strength and stability data for ships and floaters. The stability computations may be run for both intact and damaged conditions including flooded compartments and wind heeling moments. HydroD also offers hydrostatic analysis and stability code checks of floating structures according to offshore rules in addition to sea-keeping analysis.

- Post-processing

Statistical post-processing is done to find typical result attributes like global response data (e.g. RAOs) and detailed results for selected panels/points. This may also be used directly as input to a mooring or coupled motion analysis (DeepC). General post-processing may be done to visualise and animate motions and responses such as pressures and diffracted waves.

Oslo
Det Norske Veritas AS
DNV Software
NO-1322 Høvik
Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11

e-mail: dnv.software@dnv.com
web: www.dnvsoftware.com

DNV Software regional offices:

Beijing
7/F, East Tower Prosper Centre,
Chaoyang District
No. 5 Guang Hua Road
Beijing 100020
P.R. China
Tel: +86 10 6562 7792
Fax: +86 10 656276666

Busan
7th Floor, Kolong Bldg, 36-7
Namcheon 1 Dong, Suyong Gu,
Busan
613-815
Republic of Korea
Tel:+82-51-610-7792
Fax:+82-51-611-7154

Dubai
Bur Juman Office Tower,
14th Floor, Trade Center Road,
Dubai,
United Arab Emirates
Tel: +971 4 352 6626 Ext 308
Fax: +971 4 352 3717

Houston
1400 Ravello Drive,
Katy
Houston, Texas 77449
USA
Tel: +1 281 396 1700
Fax: +1 281 396 1880

London
Palace House
3 Cathedral Street
London SE1 9DE
United Kingdom
Tel: +44 (0)20 7716 6525
Fax: +44 (0)20 7716 6738

Mumbai
Emgeen Chambers
10, C.S.T. Road
Vidyanagari, Kalina
Santacruz (East).
Mumbai 400098
India
Tel: +91 22 26676667
Fax: +91 22 266 56102

Rio de Janeiro
Rua Sete de Setembro
111/12 Floor
20050006 Rio de Janeiro
Brazil
Tel: +55 21 3722 7232
Fax: +55 21 3722 7572

Shanghai
House No. 36
1591 Hong Qiao Road
Shanghai 200336
P.R. China
Tel: +86 21 3208 4518
Fax: +86 21 6219 5107

Singapore
DNV Technology Centre
10 Science Park Drive
Singapore 118224
Singapore
Tel: +65 6508 3284
Fax: +65 6779 7949

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