



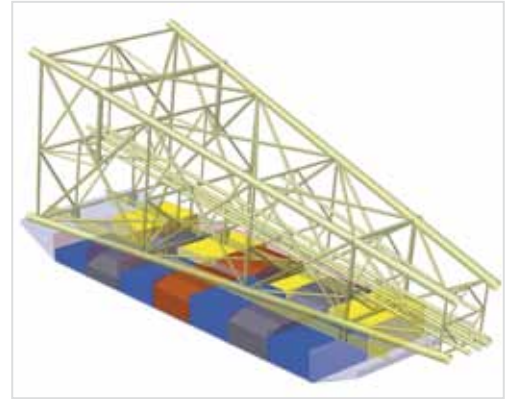
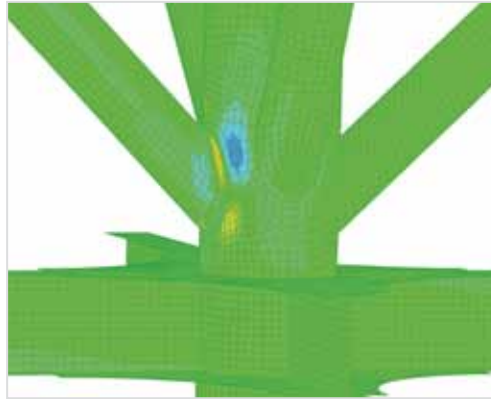
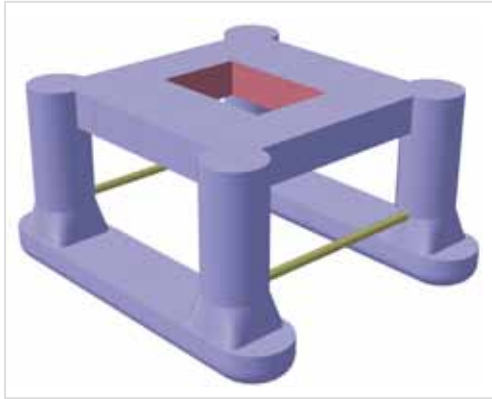
Sesam GeniE

Engineering for the future

DNV Software

Ultimate engineering efficiency

Unique concept modelling provides speed and flexibility in design and reanalysis



GeniE is a tool for engineering and strength analysis of ships and offshore structures. Modelling, analysis and results processing are performed in the same graphical user environment. GeniE is unique in its ability to handle frequent and significant changes in the design process quickly and efficiently.

Fixed and floating

GeniE is used for engineering analyses of both fixed and floating structures. This saves time and resources, as it eliminates the need for additional training and expertise. Typical examples are tankers, bulkers, container ships, FPSOs, semi-submersibles, TLPs, jackets, jack-ups, topsides, modules, flare towers, bridges, helidecks, underwater installations, cranes and crane pedestals. For seabed supported structures (jackets and jack-ups) the hydrodynamic and soil properties are an integral part of the analysis models.

Concept modelling gives flexibility

GeniE improves both the engineer's productivity and the quality of the design when using concept modelling techniques, which provide unmatched speed and flexibility in design and reanalysis. The powerful geometric kernel of the concept model automatically maintains connections between structural parts and loads. This allows the user to easily modify the structure. When defining the environment, GeniE automatically knows which loads and accelerations to apply. The structure of GeniE allows users to alter rules to automatically account for engineering decisions, such as rules for gap in tubular joints.

Improved productivity and quality

One of the many timesaving features of GeniE is the ability to design both simple and advanced structures. The same model can be used when growing the complexity of the model. It handles design changes extremely efficiently, as the concept model is independent of the analysis model. From the same concept model, analysis models are created for hydrostatic, hydrodynamic and structural analyses.

Structure modelling

Modelling in 3D graphics makes the engineer more productive and eases the understanding by other disciplines, such as quality verification. GeniE allows for mixed models of beams and plates, easy generation of shell models, and has powerful features for segmented beam modelling.

Wizards for generation of jackets and topsides simplify the design process. At the same time, the full power of scripting language is always available. This allows for rapid re-use and modification of previous models. GeniE offers import and export to various CAD/CAE systems.

Masses, loads and equipment

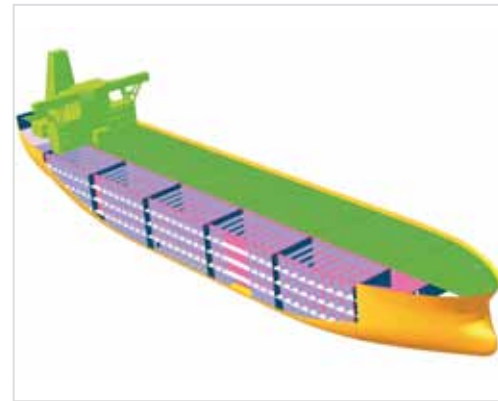
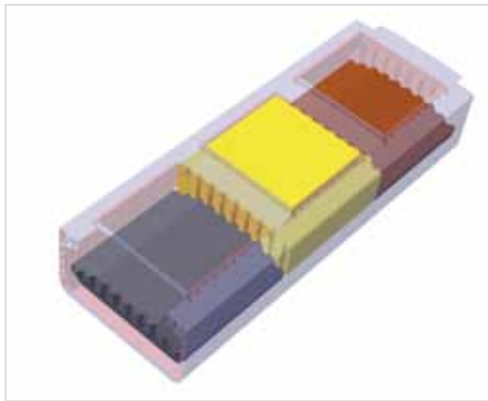
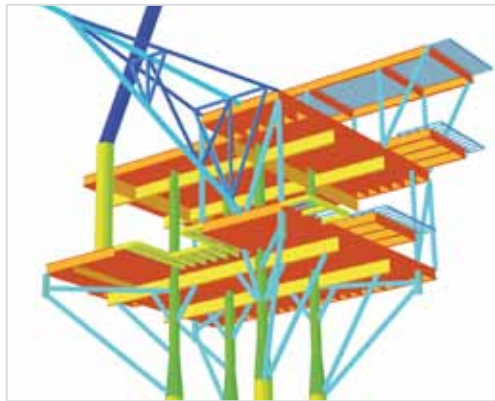
All loads are applied independently of the analysis model, as the load mapping is done automatically. This means that the loads and the mesh density can be altered independently, which gives engineers flexibility during the design process. Many processes are automated, such as calculation of loads and mass from structure, equipment or weight lists and recalculation when moving equipment or changing the supporting structure.

“We use Sesam as the basis for all structural reanalysis models.”

Simen Moxnes, Leading Advisor Structural Analysis, Marine Structures and Risers, Statoil

Ship and offshore structures

Grow the same concept model from early to detailed design



Structural analysis and SRS

GeniE automatically creates the analysis model using program defaults or user settings. The analysis itself is performed using a very efficient and robust solver, enabling the use of standard hardware for large problems. It is possible to make multiple analyses using different structure loads or boundary conditions.

A Structural Reanalysis System (SRS) is necessary for safe and efficient platform operation. The main purposes of SRS are emergency preparedness, to adapt to changes in external conditions that may not be optimal for the original design (i.e. seabed subsidence), modification projects and lifetime extension. GeniE is ideal for a reanalysis system, since the as-built model can easily be used to reassess modifications. The workflow allows changes without requiring users to manually establish connections.

Results processing and redesign

By integrating the evaluation and documentation of results with modelling in the same user interface, GeniE speeds up the iterative engineering process. The results, including displacements, stresses or beam moment diagrams, may be presented for the complete model or for selected concepts or sets.

The ability to modify structure, properties and loads makes redesign virtually automatic. In addition, for code checking of beams, results are instantaneous when altering for example section properties or buckling lengths.

GeniE supports code checking of beams according to API (WSD, LRFD), AISC, NORSOK, ISO, EUROCODE3 and DS. It also supports code check of plates according to CSR (Common Structural Rules), PULS and DNV Rules.

Fatigue analysis of beams and shells and earthquake analysis of beams are possible, as are code checking and fatigue analysis of plates. GeniE also offers beam deflection reporting and code checking against AISC beam classifications.

Reporting

GeniE offers integrated analysis, rule-based capacity checking (including redesign) and results processing. It is easy to make customised reports supporting MS Excel or MS Word, including 3D images.

SnackPack boosts performance

GeniE SnackPack, offered as an add-on to GeniE, brings cutting edge functionality with numerous utilities and special functions only available with GeniE. Timesaving features include the ability to change the variables in a parametric model and automatically generate alternative models, which can alone easily save a full day of design work.

Interaction with DNV Rules

GeniE interacts with Nauticus Hull, using the 2D information as a starting point for generating midship sections for cargo hold analysis. The loads, boundary conditions and corrosion addition from Nauticus Hull are automatically re-used in GeniE.

Packaging of GeniE

GeniE is configured to meet the needs from a one person company to large organisations. The level of functionality can be selected to cover specific assignments.

“Keppel chose Sesam software for its user-friendliness and technical reliability as well as cost-effectiveness.”

Paul Liang, Section Manager, Engineering Division Keppel O&M, Singapore

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