



NAUTICUS MACHINERY

RELEASE NOTE

MARCH 2008 RELEASE

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1 Introduction

1.1 Purpose

The purpose of this document is to inform the users about new features in the Nauticus Machinery 2008 release and bug fixes to the April 2004 and September 2006 releases.

The March 2008 release of Nauticus Machinery contains a number of new features in addition to bug fixes to previous versions of the Nauticus Machinery calculation tools.

2 New features

2.1 General

This section describes the most important features in Brix Explorer for Nauticus Machinery, which is a client-server based multi-user workflow system. Installing Nauticus Machinery March 2008 means that you will have a new “framework” on top of the existing calculations tools, enabling efficient organization and sharing of calculations through a network.

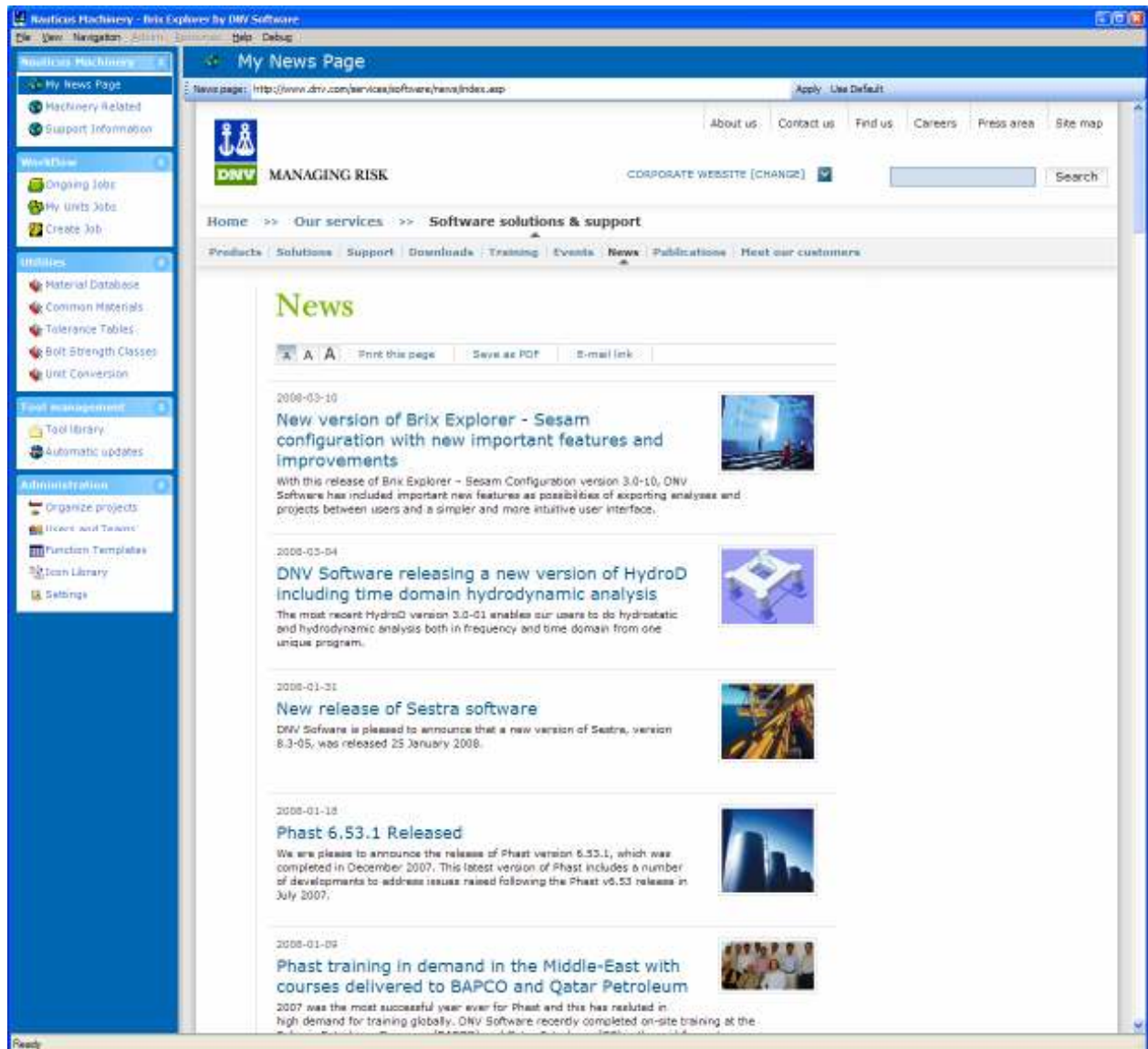
2.2 Brix Explorer for Nauticus Machinery – A workflow oriented calculation framework

Brix Explorer for Nauticus Machinery is a “workflow management” system where you easily can organize and share your calculations over a company network.

The solution consists of a server- and a client part. The **server part** is based on Microsoft SQL Server 2005. You may connect to an existing SQL server infrastructure in your company or you can install the Microsoft SQL Server 2005 Express Edition locally on your computer. You will need a server-licence in order to connect to a remote SQL Server and share calculations and information with colleagues. If you do not have a server-licence you may only connect to a local database on your own computer.

The **client part** consists of DNV Software Brix Framework and the Brix Explorer which host a number of “tools” (user interface controls).

When you start Nauticus Machinery 2008 you will see the Brix Explorer which contains a menu on the left side of the window.



A short description of each menu element is given below.

My news page

Default setting is DNV Software's News page. You can easily change this to your company's home page.

Machinery related

Link to Nauticus Machinery pages on the DNV Software web.

Support information

Link to support information for all DNV Software products.

Ongoing jobs

Calculations are organized into "jobs". One job can contain a collection of calculations, drawings, sketches and attachments for one specific project (typically a vessel). Several persons can open the same job simultaneously. One person is responsible for a job, but several persons can add information (e.g. calculations) to it. A job can be assigned from one person to another. Depending on your company's infrastructure, you may store the jobs on a centralized server. Example: For internal users in DNV

Maritime we have set up a database server in Oslo, but approval engineers from Shanghai (China), Busan (Korea) and Høvik (Oslo) share information on the same server.

Create job

You have access to two different “job templates” in this task; the “non-project related” and “project related” templates. The first template gives you straight on access to the calculation tools. In this template all the calculations are organized in one common “project folder”. The second job template let you organize the calculations into a function/component breakdown structure for your project. The function breakdown structure can be defined as templates which you can reuse.

Material database

Link to the SAI Global Metals Infobase database for metals grades and properties; suppliers and metallurgical standards. It includes over 70,000 metal grades giving the chemical composition, mechanical and physical properties, form and heat treatment details. Your company need to obtain a separate login from SAI GLOBAL Internet databases in case you need access to it.

Common materials

This tool is disabled in the current release, but will be available later this year. You will be able to define your own materials and the database will be integrated with e.g. Nauticus Shaft Fatigue so that you easily can obtain strength properties (yield, tensile etc.) for your most used materials.

Tolerance tables

This tool is disabled in the current release, but will be available later this year. It will be used in connection with e.g. the Nauticus Shrink fit tool which is currently under development.

Bolt strength classes

This tool is disabled in the current release, but will be available later this year.

Unit conversion

A utility tool for conversion of units. This is a new version of a tool which is available in the April 2004 release of Nauticus Machinery.

Tool library

In this tool you can easily upload and maintain a collection of in-house analysis tools, typically spreadsheets. Only “Tool-administrators” are allowed to upload tools here. Once a tool is uploaded, you can later take “check out” and apply changes to the tool. The Tool Library will keep control on the revision history and you can easily “roll back” to previous versions of the tools. The tools available in the Tool Library can be integrated in “jobs”. The tools in the Tool Library are available to all users of the Nauticus Machinery solution (in your company’s network).

Automatic updates

This tool is disabled in the current release, but will be available later this year. The tool is based on Microsoft Background Intelligent Transfer Service (BITS) and will automatically update your calculation tools whenever bug-fixes and enhancements are published by DNV Software.

Organize projects

This is the place where you define all your projects (typically vessels). A project is related to a “job”.

Users and teams

This tool is used to define users and teams (departments or sections) in your company. There are special roles connected to a user. A “tool administrator” is able to upload tools to the Tool Library and to take control over any calculation. An “organization administrator” is able to add or delete persons or teams to the system and to assign “tool administrator” rights to persons. The first person who enters the database will automatically be assigned with “tool administrator” and “organization administrator” rights.

Function templates

This tool is used to define “function breakdown templates”. Typically you can define a “VLCC template” or a “Container vessel template” which you can reuse in several jobs.

Icon library

Upload icons which can be attached to function templates, functions inside jobs and components.

Settings

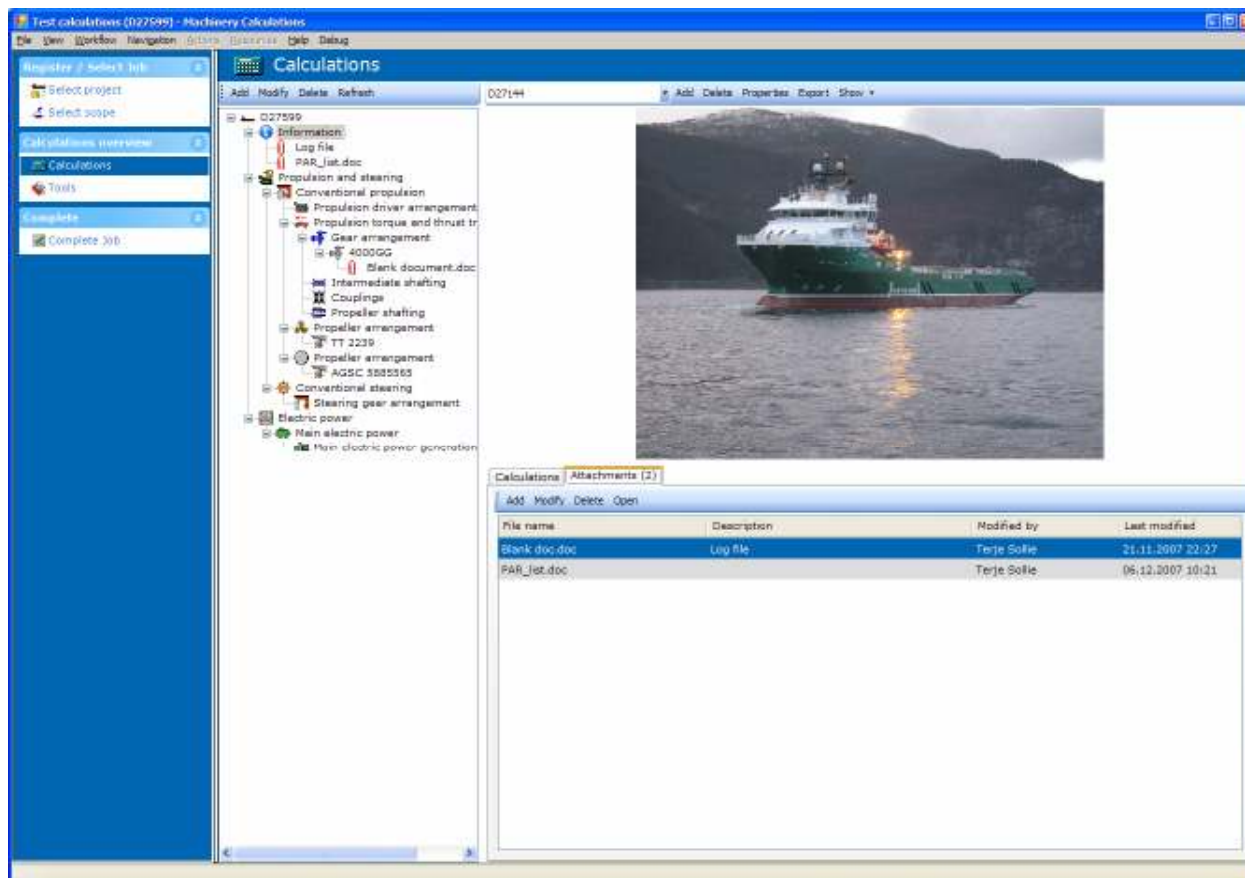
Various settings can be defined here. Example:

- Path for check out of Tool Library tools
- Component categories used inside jobs
- Maximum attachment size that can be uploaded to database

2.3 The “project related” job template

In this job template all the calculations are organized in a functional breakdown of the vessel structure. You can add Nauticus-calculations, in-house calculation and attachments (drawings, documents etc.) to the job. Once you have added an object to the job it will be available to all other users in the system. When a calculation is opened, a “locker” will be set in the database, so that other users only can open (but not save) the calculations. When a calculation is 100% completed you may set a “permanent locker” on it, so that other users will have read-only access to it.

A typical “project related job” is shown below.



2.4 The “non-project related” job template

This job template can be used for draft-calculations or similar. The calculations can be organized in a single folder, not necessarily a project. The job template can be useful if you e.g. want to investigate some particular mathematical problems or do to do a parameter study consisting of several “non-project” related calculations.

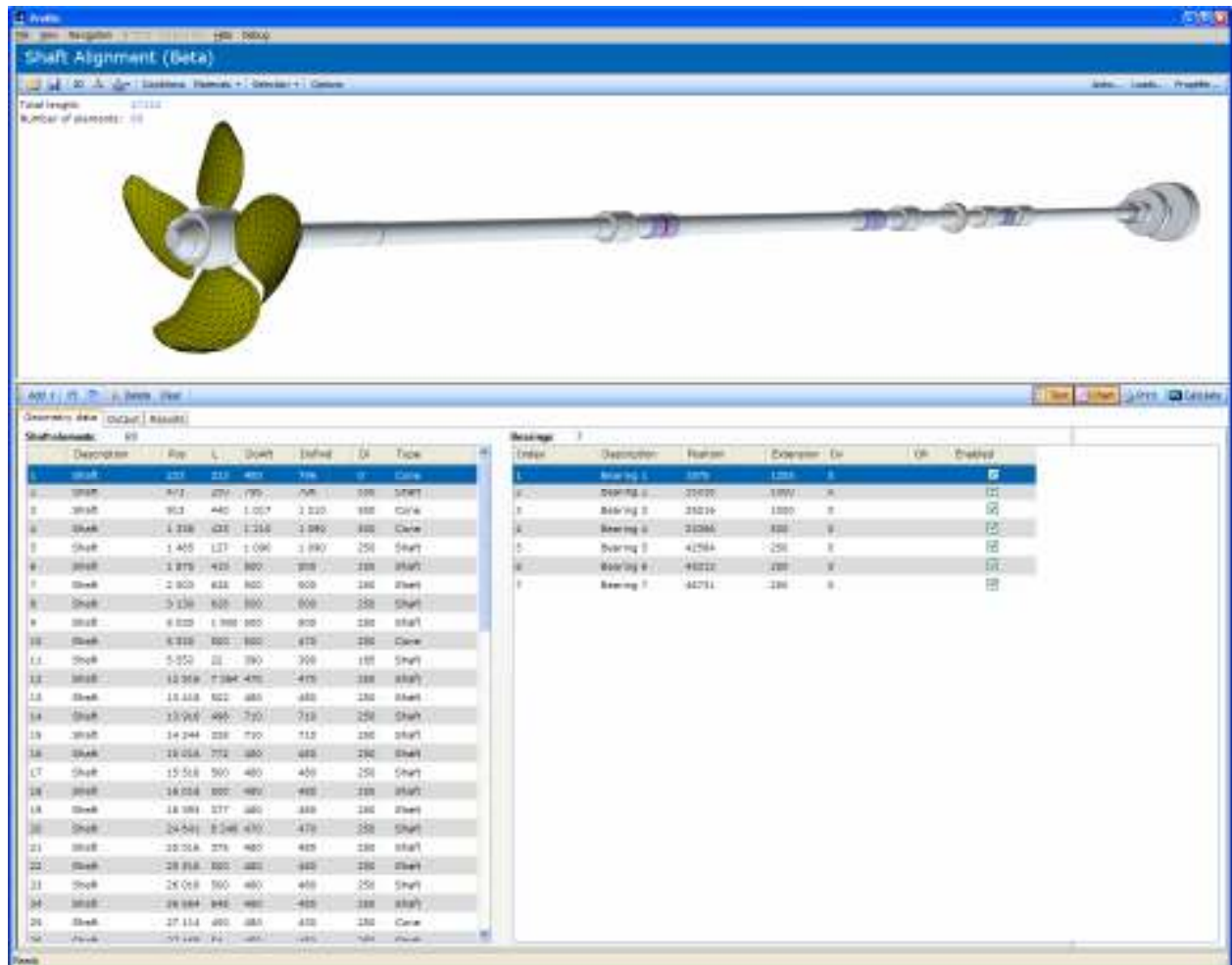
2.5 New version of Nauticus Shaft Alignment 2008 (beta)

The Nauticus Shaft Alignment tool has been completely re-designed and a new user interface and equation solver has been implemented. There are many new features in the new tool, but you will still be able to run the old version for a period in 2008 to compare results and functionality. The Nauticus Shaft Alignment 2008 will be available in a beta test-phase for a period of time and we encourage all users to provide us with feedback after testing the beta-version.

The most important features in the new version are:

- 3D-based shaft modeller based on Microsoft DirectX technology
- More robust and sophisticated modelling techniques compared to the old version
- Unlimited number of operating conditions
- Choose between single- and multi-point bearing support models
- Single- and double slope bearings
- New and flexible charting utilities
- New report generator which can export to PDF, Word and Excel
- Full undo/redo functionality
- Shaft section “wizard”
- Bearing collection “wizard”
- Disable and enable bearings (during calculation)
- Disable and enable operating conditions in calculations
- Operating condition dependent reaction point position in bearings
- Variable (longitudinal) stiffness in bearings
- Results for bearing part loads in e.g. stern tube bearing

So far whirling and axial vibration features have been disabled in the new version. Some more info can be found in chapter 4 (future plans).



2.6 New version of Nauticus Gear Faceload

The Nauticus Gear Faceload tool has been re-designed and “ported” into the .NET environment.

3 Bug fixes and enhancements for existing tools

This section contains a summary of bug fixes and enhancements for the calculation tools released in April 2004 (Nauticus Shaft Alignment, Gear Rating, Gear Faceload, Shaft Fatigue) and September 2006 (Nauticus Torsional Vibration).

3.1 Nauticus Shaft Alignment

Nauticus Shaft Alignment has been subjected to a number of enhancements and bug fixes.

The current version number is version 5.5.

Enhancements:

- SR #14619: Missing "state of horizontal plane" text result
- SR #14740: Too high 3rd mode whirling frequency on models with new SKF-coupling
- SR #14741: Open the folder path in the import dialog for paste-operation
- SR #14742: Export multiple files in one batch
- SR #14758: Disable material settings for spacer ring
- SR #14835: Plot allowable engine flange loads for condition 1 to 4

Bug fixes:

- SR #10548: Entrained water not taken into account in whirling calculations
- SR #14744: Unable to change new SKF properties.
- SR #15795: Unable to update engine bearing tilt and angle

3.2 Nauticus Torsional Vibration

Nauticus Torsional Vibration version has been subjected to a number of enhancements and bug fixes.

The current version number is version 3.2.

Enhancements:

- SR #13424: Inertia calculator, set lump inertia to zero
- SR #13425: Data validation should include diameter check on shaft elements
- SR #13562: Calculation 2-stroke V-engines
- SR #13568: Change label in shaft wizard
- SR #13611: User should be able to bypass calculation progress dialog
- SR #13739: Natural frequency check when multiple update is used
- SR #14583: Data validation on viscous dampers

Bug fixes:

- SR #13402: Incorrect rpm ratio for when gear in front of engine ("front-gear")
- SR #13426: Error message when saving model from acceptance criteria task
- SR #13427: Should be able to clear/delete acceptance criteria

- SR #13501: No property dialog when double clicking on engine model (Korean OS only)
SR #13565: Not able to import acceptance criteria for stress limitation
SR #13609: Plot types for acceptance criteria are not saved
SR #13622: Not possible to plot acceptance limit for viscous dampers
SR #13669: Mode shapes for branched system not corrected for rpm ratio
SR #13723: Incorrect speed ratio for geared system with free clutch mass
SR #14582: Unable to set firing interval for 7-cylinder two-stroke engines
SR #14988: RPM ratio not set correctly for some models with two meshes
SR #15855: Error message when accessing the calculation task ("UpdateComponentList")

3.3 Nauticus Crankshaft Fatigue

Nauticus Crankshaft Fatigue has not been updated as we are awaiting a revision of the DNV and IACS rules/requirements in 2008.

The current version number is version 5.5.

3.4 Nauticus Shaft Fatigue

Nauticus Shaft Fatigue has not been updated with respect to the February 2007 revision of Classification Note 41.4.

The current version number is version 5.5.

3.5 Nauticus Gear Rating

Nauticus Gear Rating has been updated with latest revision of Form 71.10a (data sheet)

The current version number is version 5.5.

Enhancements:

Silk #15334: Missing parameters in datasheet, see details below

When using "induction hardened" material specify values for hardness, the "flank hardness", "tooth root hardness midface" and "minimum core hardness" is not printed on the datasheet.

When using "quenched and tempered", the "minimum core hardness" is not printed in the datasheet.

When using "gas nitrided -approved grad", the "depth to 400 HV" should be printed in the data sheet.

4 Future development plans

4.1 Nauticus Shaft Alignment and finite element solver

In spring 2008 we will start the work to link Nauticus Shaft Alignment to our in-house Sestra finite element solver.

More information on: <http://www.dnv.com/services/software/products/sesam/SesamFPSO/sestrafloat.asp>

Both the current solver and the SESTRASolver will be available in the future version of Nauticus Shaft Alignment.

Sestra is DNV Software's own structural analysis program. It meets the demands of the offshore and maritime industries with a range of analysis capabilities: static analysis, super element analysis, free vibration analysis and forced dynamic analysis in frequency and time domain.

4.2 Nauticus Gear Rating

Nauticus Gear Rating will be re-designed with a new user interface autumn 2008.

4.3 Nauticus Shaft Fatigue

Nauticus Shaft Fatigue will be re-designed and linked to the Nauticus Torsional Vibration tool autumn 2008.