



Release document

NAUTICUS™ Hull

Proven ship design solutions, made for the future

Version: 21.3, September 2026

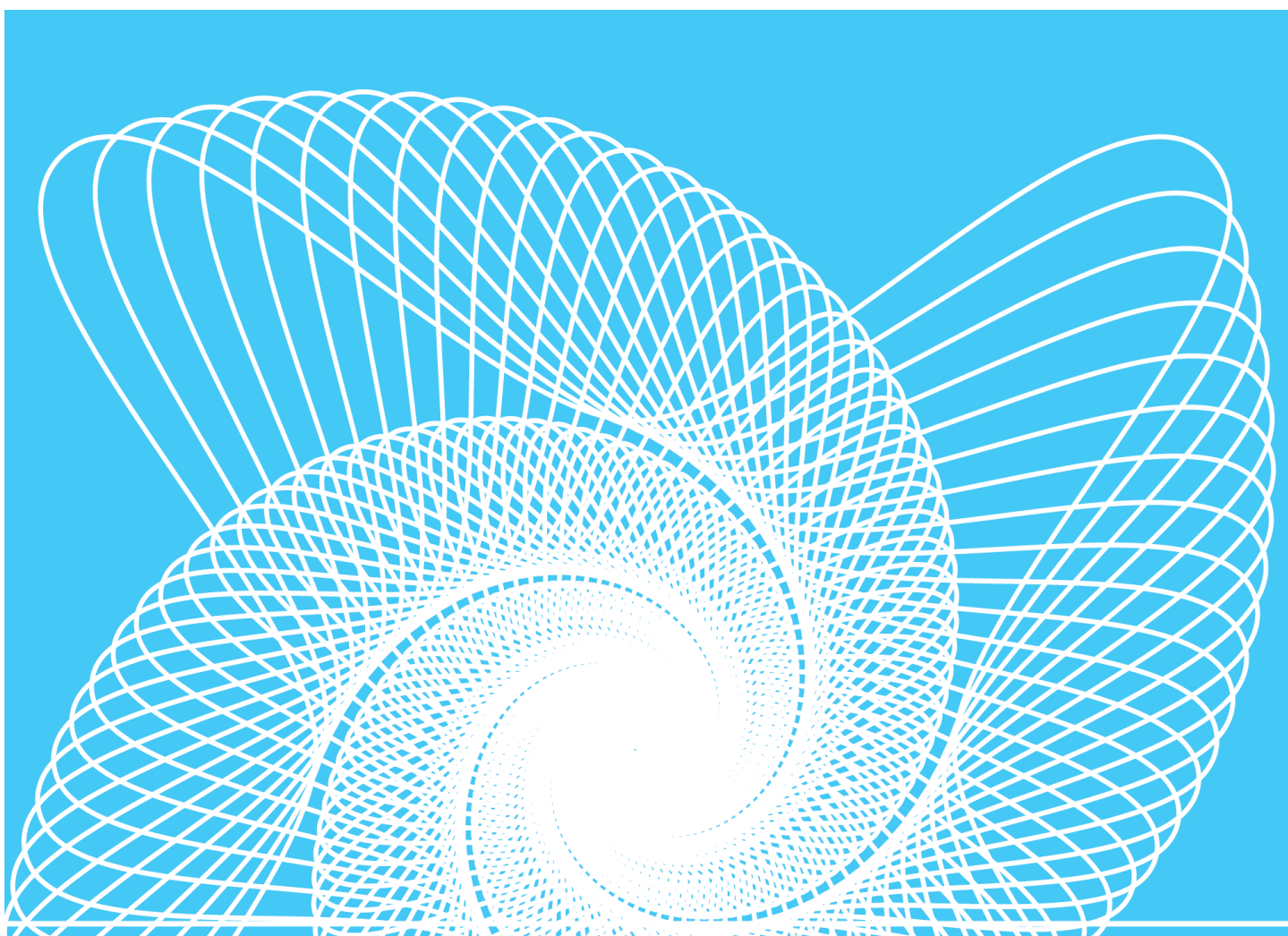


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1 INTRODUCTION

1.1 Purpose of this document

The purpose of this document is to inform users about system requirements, new programs and functionalities, enhancements and bug fixes that have been implemented in Nauticus Hull since the previous release.

Details about the implementations in all programs are not fully covered in this document, and for more information, the user should consult the program documentations being a part of the installation.

It is recommended that the user contact DNV support or the local approval engineers for details about rule implementations in the program and for information about how to use the program for specific ship types.

For information on how to install the program, please refer to: [Nauticus Hull Knowledge Centre - My DNV Software](#).

1.2 Rule sets covered

DNV Rules for classification: Ships (RU-SHIP)

All editions up to and including July 2025 entering into force January 2026.

DNV-CG-0128, Buckling, December 2023 edition is included in DNV Rule edition July 2023 and later editions.

DNV-CG-0129, Fatigue assessment of ship structures, January 2025 edition is included in DNV Rule edition July 2024.

DNV Rules for classification: High speed and light craft (RU-HSLC)

July 2019 Edition.

DNV Rules for classification: Naval vessels (RU-NAV)

July 2023 Edition.

DNV Rules for classification: Offshore Units

Support for prescriptive and FE calculations according to DNVGL-OS-C102 Structural design of offshore ship-shaped and cylindrical units up to and including July 2021, entering into force 1st January 2022.

IACS CSR BC & OT – January 2024 and earlier editions

Enter into force on 1st July 2024.

2 HIGHLIGHTS OF NEW RELEASE

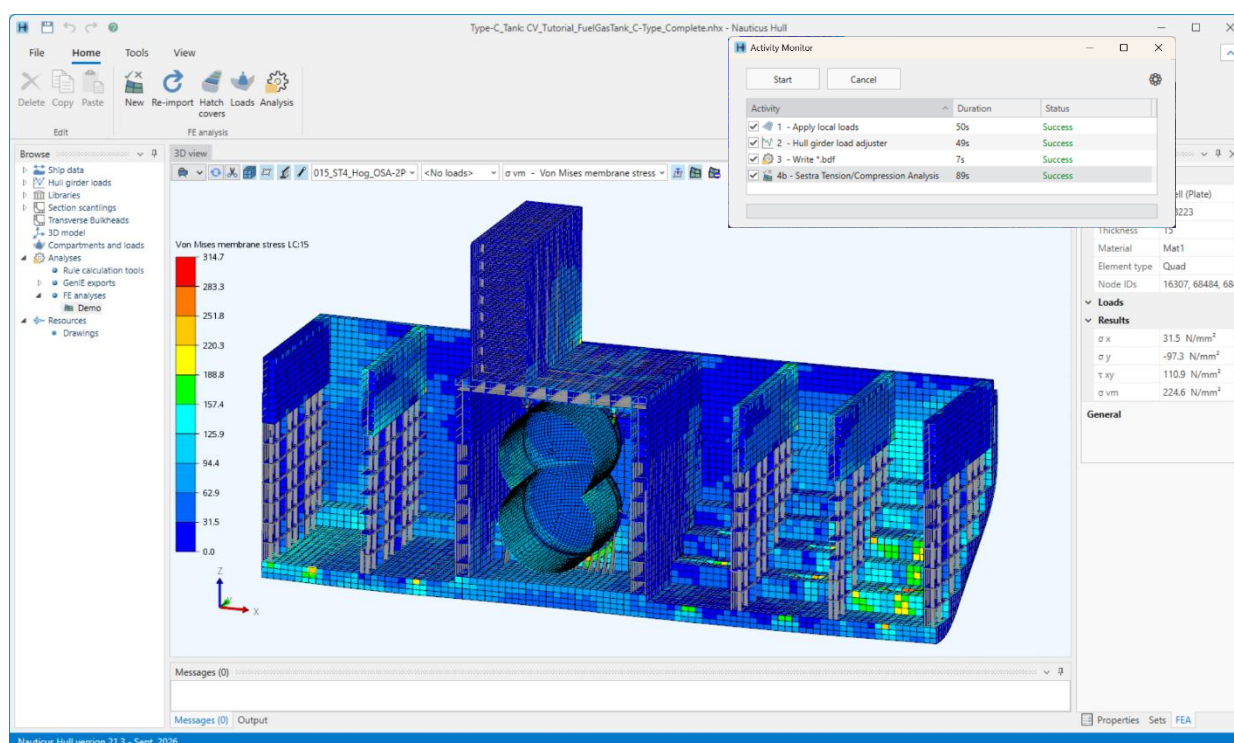
The following main features have been introduced in this version:

2.1 Nauticus Hull can be used for applying Rule loads to cargo hold FE model

With this release we introduce support for **applying loads to cargo hold FE models**, and to run analysis. The intention is to also add FE Rule checks (buckling check and yielding) in later releases. With this release, you may import a cargo hold finite element model without loads and use our FE load templates for automatic load application. The model can be either on Sesam's FEM file format or Bulk Data File (bdf) format.

The following analysis steps are supported:

1. Apply local loads to the finite element model. Currently only DNV Rules and the following load types are supported:
 - a. Sea pressures and green sea deck pressures
 - b. Liquid compartment pressures
 - c. Nodal point loads from container loading in holds, on deck and on hatch covers
2. Adjust the hull girder loads according to Rule-defined adjustment methods, using the Hull Girder Adjuster (HGLA) tool
3. If the original file was on *.bdf, then a new *.bdf will be written that includes all loads from 1. and 2. This file can then be opened in another *.bdf based tool for further analysis.
4. Run SESTRA analysis and display analysis results (stresses and displacements)



2.2 New license system

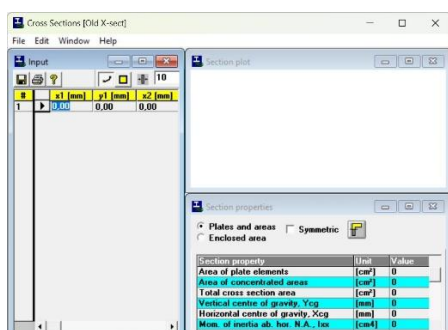
We are now transitioning Nauticus Hull to a new licensing platform.

The new licence system is based on a **license key** that needs to be **activated** in a **license activation tool**. This license key will not change upon renewal and therefore no manual work is needed upon renewal.

For more info about how to adopt the new licensing system, please refer to: [Nauticus Hull Knowledge Centre - My DNV Software](#).

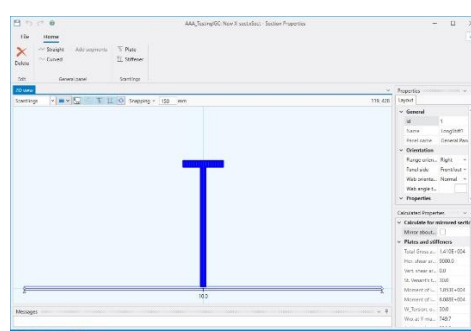
Nauticus Hull Classic (latest version 18.15 January 2018) will not be continued on the new license system. The following Nauticus Hull Classic tools will no longer be available, and are replaced by:

Old General cross-section tool

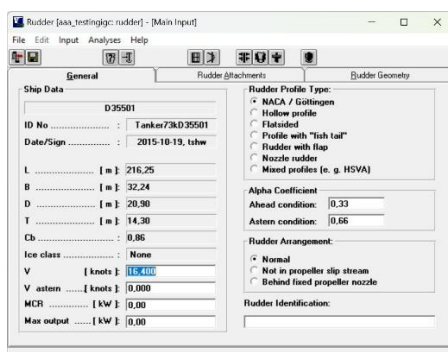


replaced by

New General cross-section app

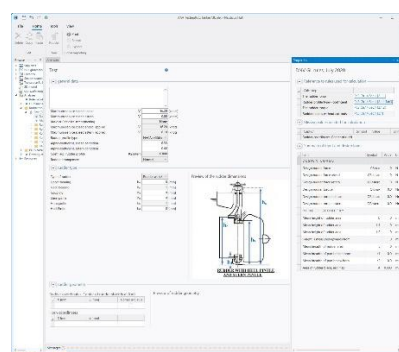


Old Rudder tool

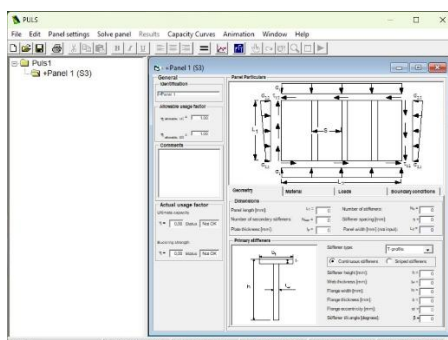


replaced by

New Rudder tool

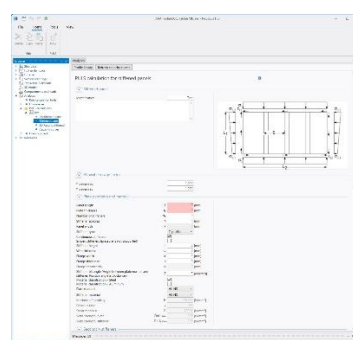


Old PULS tool



replaced by

New PULS tool



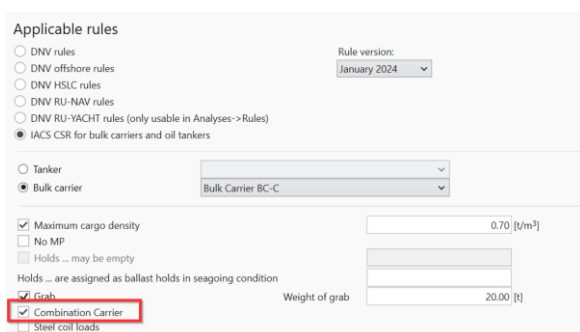
2.3 Ore Carriers and Combination Carriers

With this release some additional calculation possibilities for **CSR Combination Carrier** and **DNV Ore Carrier**, with additional Class Notation **BCLIQ** (DNV Rules Pt.6 Ch.5 Sec.18), are introduced. These calculations are available for prescriptive and FEA.

2.3.1 Prescriptive

2.3.1.1 CSR Combination Carrier

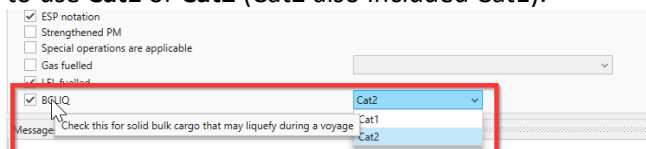
For **CSR Bulk Carrier** there is a new check box under Applicable rules:



Under **Compartment and loads** you will get 2 additional standard prescriptive loading conditions. “Full load” and “Partial load” (like the loading conditions of a tanker). For these loading conditions “Oil cargo” is the default load type.

2.3.1.2 DNV Class Notation BCLIQ category 1, 2 and 2-R

For **DNV Bulk Carrier** there is a new check box under Applicable rule. In case **BCLIQ** is selected it is possible to use **Cat1** or **Cat2** (Cat2 also included Cat1):



Under **Compartment and loads** you will then get several additional standard prescriptive loading conditions.

2.3.2 FEA

2.3.2.1 CSR Combination Carrier

When **Combination Carrier** is enabled under Applicable rules, in the definition of the **Design loading combinations**, it is now possible to define individual load cases with **Load type** “Oil cargo”.

For **fatigue loads** Nauticus Hull provides a special function to also create all necessary fatigue loading conditions: “Create standard Tank loads”

2.3.2.2 DNV Class Notation BCLIQ category 1, 2 and 2-R

When **BCLIQ** is enabled under Applicable rules, in the definition of the “Design loading combinations”, it is now possible to define load cases with **BCLIQ Cat1**, **Cat2** and **Cat2R**.

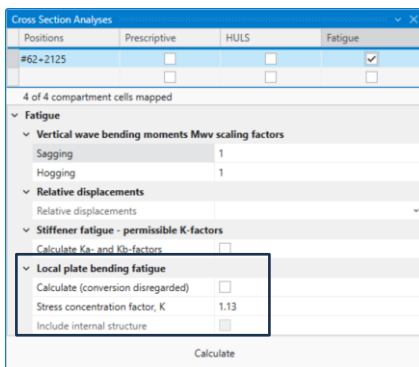
2.4 Local plate bending fatigue in Section Scantlings for DNV Rules

The local plate bending fatigue strength assessment according to DNV-CG-0129 Sec. 5 [8] is now available when running Section Scantlings according to DNV Rules. This option can be activated from the **Cross Section Analysis wizard**. This additional fatigue check is by default switched off, as it is in general not required by DNV Rules.

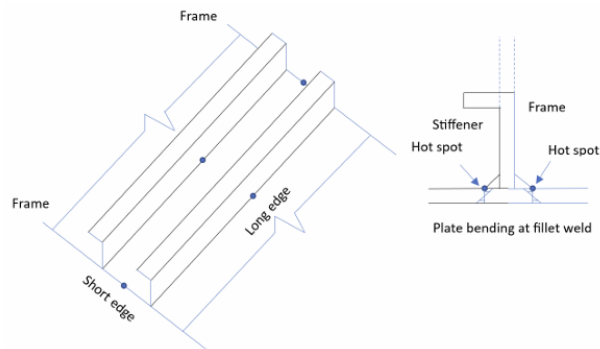
The following is included:

- All 4 hot spots for each EPP (2 short edges and 2 long edges)
- Default stress concentration factor that may be overwritten
- Option to include internal structures (in addition to outer shell)

Cross Section Analysis Wizard

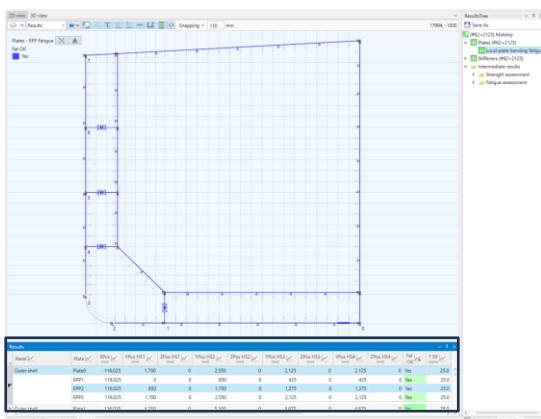


All 4 hot spots covered



Fatigue damage results for all 4 hot spots are available in the **Results grid** and in the **Report**.

Results grid with plate fatigue results



Report showing plate fatigue results

6.1. Local plate bending fatigue

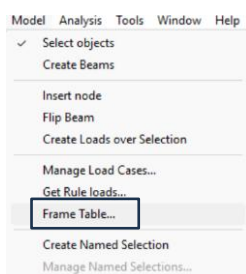
Plate	T DF T C 25 [years]	T F Min [years]	T F HS1 T F HS3 [years]	T F HS2 T F HS4 [years]	SCF K	YPos HS1 YPos HS3 [mm]	ZPos HS1 ZPos HS3 [mm]	YPos HS2 YPos HS4 [mm]	ZPos HS2 ZPos HS4 [mm]	OK?
Frame #62+2125 (116025 mm from A.P.)										
Outer shell at #62+2125										
Plate0	25.0	199.9	0.0	0.0	1.13	1700	0	2550	0	Yes
	5.0		0.0	199.9		2125	0	2125	0	
Plate1	25.0	188.3	0.0	0.0	1.13	4250	0	5100	0	Yes
	5.0		0.0	188.3		4675	0	4675	0	
Plate2	25.0	174.0	0.0	0.0	1.13	7650	0	8500	0	Yes
	5.0		0.0	174.0		8075	0	8075	0	
Plate3	25.0	164.2	0.0	0.0	1.13	10200	0	11050	0	Yes
	5.0		0.0	164.2		10625	0	10625	0	
Plate4	25.0	152.3	0.0	0.0	1.13	13600	0	14450	0	Yes
	5.0		0.0	152.3		14025	0	14025	0	
Plate5	25.0	149.4	0.0	0.0	1.13	14450	0	15300	0	Yes
	5.0		0.0	149.4		14875	0	14875	0	
Plate6	25.0	176.1	0.0	0.0	1.13	18400	0	19200	0	Yes
	5.0		0.0	176.1		18900	0	18900	0	
Plate8	25.0	186.6	0.0	0.0	1.13	21500	2250	21500	3000	Yes
	5.0		0.0	186.6		21500	2625	21500	2625	
Plate9	25.0	75.6	0.0	0.0	1.13	21500	6850	21500	7700	Yes
	5.0		0.0	75.6		21500	7275	21500	7275	
Plate10	25.0	59.1	59.1	0.0	1.13	21500	8550	21500	9400	Yes
	5.0		0.0	0.0		21500	8975	21500	8975	
Plate11	25.0	56.4	56.4	0.0	1.13	21500	11650	21500	12800	Yes
	5.0		0.0	0.0		21500	12375	21500	12375	
Plate12	25.0	81.3	81.3	0.0	1.13	21500	12800	21500	13650	Yes
	5.0		0.0	0.0		21500	13225	21500	13225	
Plate13	25.0	1001.0	1001.0	0.0	1.13	21500	15350	21500	16200	Yes
	5.0		0.0	0.0		21500	15775	21500	15775	
Plate14	25.0	385.6	0.0	0.0	1.13	21500	20450	21500	21000	Yes
	5.0		0.0	385.6		21500	20725	21500	20725	

2.5 3D-Beam

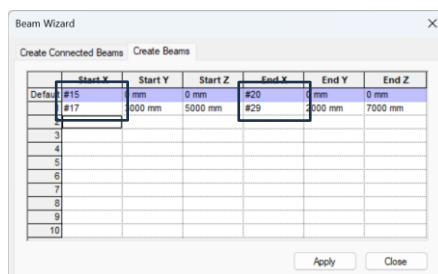
2.5.1 Import frame table and use frame positions for x-positions

You may now import the **Frame table** from Nauticus Hull. When using the **Beam Wizard** for creating beams, references to Frame table can be given for x-positions.

Import Frame table



Frame table x-positions

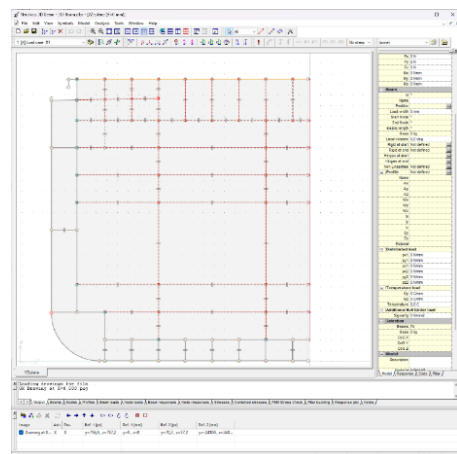


2.5.2 Hide selected beams Beam wizard

On the **Display tool bar**, like showing selected beams, we now have the option to **hide** selected beams.



2.5.3 Background drawing with snapping when creating beams



A background drawing can be imported and used as a guidance when creating beams.

The drawing can be established by either of these two methods:

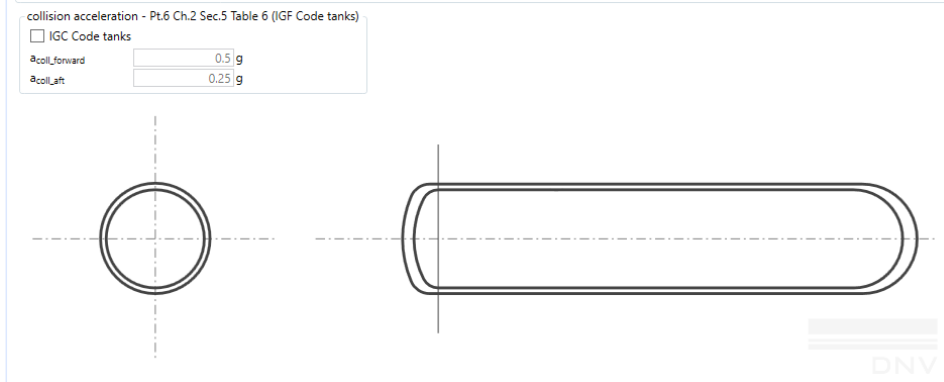
- Import an image file (.jpg, .png, .bmp); or
- Screen clipping of an image

The background drawing will now allow for snapping when creating beams.

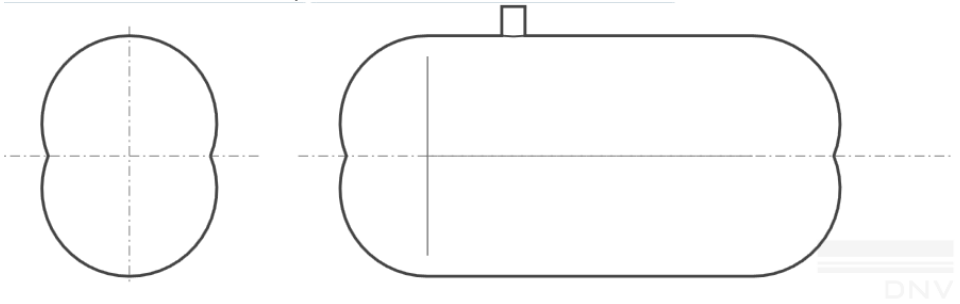
2.6 Type C tank calculation tool: added support for different designs

In this release, calculation scope has been further extended, now supporting:

- Designs with two different ends



- Calculations for vertically stacked bi-lobe



2.7 OCX: Schema version 3.2 supported

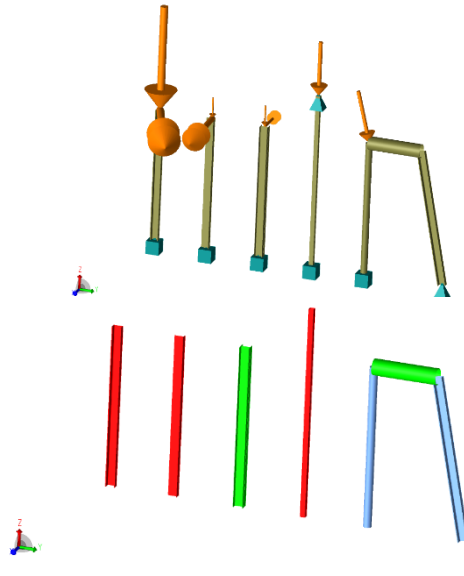
This version of Nauticus Hull supports the latest official **OCX version 3.2.0** published in July 2026. The OCX version 3.2.0 is mainly focused on improving consistency and fixing schema bugs.

The most notable schema changes are:

- Improved support for the import of parametric surfaces (cylinders, cones, spheres).
- Mounting rules for stiffener improving potential misalignment.
- Added metadata relevant to classification (renewal thickness, voluntary thickness addition, cargo density, minimum ballast draught).
- Material grades aligned with IACS Unified Requirements S6.

2.8 Pillar buckling according to CG-0128 [5] in GeniE

When using GeniE V9.3 or later, in combination with this Nauticus Hull version, you may check pillars for buckling according to DNV-CG-0128 [5].



Properties									
Object Properties		Edit Member Data		Redesign					
Testing2.run(1).member(Bm-)		Options		Phase	Position	Status	UffTot	Formula	GeomCheck
Testing2.run(1).member(Bm-4)		Loads		0.0	0.00	Failed(uf)	4.95	DNV-CG-0128 Sec.3 [5.2.2], Axial Compression Buckling	Geom OK
				0.0	0.25	Failed(uf)	4.95	DNV-CG-0128 Sec.3 [5.2.2], Axial Compression Buckling	Geom OK
				0.0	0.50	Failed(uf)	4.95	DNV-CG-0128 Sec.3 [5.2.2], Axial Compression Buckling	Geom OK
				0.0	0.75	Failed(uf)	4.95	DNV-CG-0128 Sec.3 [5.2.2], Axial Compression Buckling	Geom OK
				0.0	1.00	Failed(uf)	4.95	DNV-CG-0128 Sec.3 [5.2.2], Axial Compression Buckling	Geom OK
									SubCheck
									Run
									Testing2.run(1)
									Testing2.run(1)
									Testing2.run(1)
									Testing2.run(1)

3 ENHANCEMENTS, MODIFICATIONS AND CORRECTIONS

3.1 Enhancements and other modifications

Area	Case #	Description	ID
3D Model		When using the wizard for Surface in YZ-plate, the default bending effectiveness and shear effectiveness is now more physically correct (0% instead of 100%).	441052
3D Model		A Notes tab is now added under for 3D model, like Section Scantlings and Transverse Bulkheads.	724551
3D Model		This release of Nauticus Hull supports the latest official version 3.2 of the OCX schema. 3D models exported to this version and earlier official versions of the OCX schema can be imported to Nauticus Hull.	719053
3D Model		Nauticus Hull uses a new triangulation (tessellation) algorithm, improving the visual display of complex geometry parts, in particular the outer shell. The new algorithm improves the granularity of the mesh in complex geometry areas.	725105
3D-Beam		User can now, when importing a background drawing, select objects to create bundles. In 3D-Beam a wizard is introduced that can use these bundles to automatically create beams.	724832
3D-Beam		Frame table can now be exported from Nauticus Hull to 3D-Beam.	753338
3D-Beam		A new toolbar button to hide the selected parts is introduced.	757351
3D-Beam		Holding down SHIFT key while creating beams interactively will now propose either horizontal, vertical or 45deg angle orientation.	757352
Analysis Tools		Rudder Tool's Rule references are now updated to latest official DNV Rule edition (July 2024).	744031
Analysis Tools		In the General Cross Section tool, calculated results are now also updated when pressing Undo/Redo.	783306
Analysis Tools		In PULS a warning message was given if pressure was too high, but no maximum value was provided. Now the maximum value for calculation's the validity range is given.	620947
Analysis Tools		Type C tank calculation tool: Added support for different designs: Support for designs with two different ends has been added. Calculations for vertically stacked bi-lobe tanks have been implemented.	718704
Analysis Tools		In the Rule Calculator, fatigue accelerations for CSR BC&OT are now included, like DNV Rules.	729498
Analysis Tools		In the Rule Calculator's Pressure tab and Plate and Stiffeners tab, DNV bow impact Rule requirements for Bow door according to Pt.3 Ch.12 Sec.5 [2.7.1 b)] is now implemented.	735265
Comp. and Loads		In Compartments and loads tool, the legacy DNV Rules Load types Hbulk and Empty hold are removed, as they are not applicable for current DNV Rules.	244379
FE		FE load template for automatic generation of load combinations according to CG-0135 Liquefied gas carriers with independent cylindrical tanks of type C, Sec.5 [3.3] Table 1 is now implemented.	92658
FE		The Local Model Load Applier (LMLA) tool now supports running more than one LMLA simultaneously.	779572
Rules		Nauticus Hull now supports Rule checks for Combination carriers (prescriptive and FE). When specified under Ship data, the additional liquid pressures due to oil cargo are checked.	745592

Rules		For DNV Rules, under Ship data's Service area restrictions, user can now specify maximum significant wave height, HS. Dynamic loads will then be scaled with a reduction factor, f_r , according to Pt.5 Ch.11 Sec.2 [4.1.2].	307559
Rules	190910	For Ore carriers, additional loads due to liquification of ore pressure according to the additional Class notation BCLIQ(Cat2) is now implemented (prescriptive and FE).	557779
Rules		For Ore carriers, additional loads due to liquification of ore pressure according to the additional Class notation BCLIQ(Cat1) is now implemented (prescriptive and FE).	783030
Rules		For vessels with Polar Class, the additional longitudinal strength requirements (Tension and Shear) as specified in Pt.6 Ch.6 Sec.7 Table 7 are now implemented.	570696
Rules		In Section Scantlings, prescriptive plate bending fatigue assessment for longitudinally stiffened plates are now implemented. Hot spots on short edge and long edge are covered, for outer shell plating and for inner structures.	582872
Section Scantlings		In the report, rule status plots for local requirements (plates, stiffeners, transverse stiffeners) are included in front of those tables. Implemented for all rule sets.	308052
Section Scantlings		For CSR BC&OT, if no results are provided in the Results tree for Connections of stiffeners to PSM, an empty results table was presented in the report. Now, this results table is removed from the report if no results are provided.	731463
Section Scantlings		Simplified auto detection of HT-steel zone extent for DNV rules. NH is searching for normal steel member that have bending effectiveness to calculate the deck and bottom zone extent. In case no normal steel exists or only normal steel is available NH sets values, so that the result table "HT steel extent" is OK (the table remains available so that the user can still view the other values in this case as well). It is still possible to overwrite the auto detect values with user specified values.	732012
Section Scantlings		In Section Scantlings and Transverse Bulkheads tool, all analyses (Prescriptive, Fatigue and HULS) and all Rule sets now supports entering 0 speed in Ship data. Analysis results will be provided with a warning message in the Messages window.	737897
Section Scantlings		In the report, 'Offshore plate fatigue' is renamed to 'Local plate bending fatigue', and 'Plate fatigue' is renamed to 'Fatigue of welded details in upper part of hull girder'.	745932
Section Scantlings		The wizard for vertically corrugated bulkhead was not available for DNV Offshore Rules and is now included.	726894
Workspace		The user can now from a command line argument open Nauticus Hull and make reference to a JavaScript that creates a new workspace, preparing for NH to be run in batch mode.	784124
Workspace		When using JavaScript command to import an OCX model, the user can now specify if Ship Data and Compartments, in addition to the structure model, are to be imported.	764244
Workspace		JavaScripting commands are now available for the following workspace operations: Create, Save, and Close.	93257

3.2 Corrections

Area	Case #	Description	ID
3D Model		This release of Nauticus Hull includes OCX import improvements that address previous issues, such as missing plates on the outer shell and double surfaces in some cases.	663092
3D Model		When exporting a 3D model cross section to Section Scantlings, stiffener flange orientation was not consistent with the 3D model. Corrected.	714038
3D Model		When importing an OCX model, stiffeners on curved outer shell had inconsistent orientation (some stiffeners pointing outwards). This issue in the hidden OCX import setting is now corrected.	727256
3D Model		Occasional crashes have been detected in NH's geometry module, when in parallel loops calling methods to Rhino3dm plugin (not thread safe). Corrected.	735132
3D Model		If copying a cross section originating from a 3D model to another workspace without a 3D model, user could not define end connections and shear connections. Corrected with a checkbox where the user can decide if a Section Scantlings cross section shall reuse 3D model connections or not.	754595
3D-Beam	295031	When importing Rule loads from Nauticus Hull to 3D-Beam, the minimum pressure due to distributed load according to Pt.3 Ch.4 Sec.6 [2.2] was not automatically transferred. Corrected.	765952
3D-Beam	00272306 00271513 00273670 00273854 00274519 00285721 00288517 00288713 00289600	Unicode was not supported. Depending on registry settings, 3D-Beam might not open. Corrected so Unicode is supported, and 3D-Beam will open.	718062
3D-Beam		For open cross sections in the profile library that differs from the cross sections shown in CG-0128 Sec.3 Table 10, a wrong warping coefficient was assigned ($C_{warp} = 0$). Now no buckling results will be provided for open cross sections taken from the profile library that will not map to the profiles in Table 10.	733026
3D-Beam		For U-profile the warping coefficient, C_{warp} , is now updated to be according to CG-0128 Sec.3 Table 10.	769019
Analysis Tools	282502	In Single Panel Buckling Tool (SPBT), when switching between DNV Rules and CSR BC&OT and vice versa, the Poisson correction was not automatically updated, although this checkbox was selected. User had to manually switch off/on to get the Poisson correction updated. Corrected so Poisson correction is always in sync with the checkbox, even after changing Rule set.	738022
Analysis Tools	285028	In the Excel spreadsheet for Fatigue evaluation of lifting appliances, the default value $f_{material}$ was 0.9 for welded details. Now corrected to default value 1.0, according to Rules.	744766

Analysis Tools	296244	In the General Cross Section tool, when having plate strakes spanning over more than 180 deg arc length, wrong results were provided. Corrected.	770061
Analysis Tools	298965	In Rule Calculator's tab for Single skin PSM, when calculating the gross offered shear area, total cross-sectional area was used. Now corrected and using the vertical shear area.	781390
Analysis Tools	303382	In the Excel spreadsheet for hold mass curves, when calculating the maximum permissible seagoing mass for two adjacent holds according to DNV Rules Pt.6 Ch.1 Sec.4 Table 31 (HC(B) and HC(C) ships not having No MP notation assigned), the curve was not correct if the two adjacent holds had different height. The formula in the program is now corrected according to Rules.	785471
Analysis Tools		In Rule Calculator's Plates and Stiffener tab, when calculating gross offered stiffener section modulus, the gross flange breadth should not deduct corrosion addition. Corrected.	127937
Analysis Tools		In PULS, the ultimate capacity curves for LEB/GEB for some panels were out of scale. Corrected.	624125
Analysis Tools		In the DNV_BeamBuckling Excel spreadsheet the inputs for bending moments about Y-and Z-axis were mixed up. Corrected.	729572
Analysis Tools		In the General Cross Section tool, for a simple model with one stiffener and an attached plate flange, the vertical shear area was not calculated. Corrected so vertical shear area is provided for a such a model.	730276
Analysis Tools		When using the Rudder tool in Dark Windows theme, the rudder stock bending moment plot was not visible. Corrected.	735177
Analysis Tools		In Excel spreadsheet DNV-RP-C201_StiffenedPlateBuckling, if specifying negative pressures, a warning message was provided but wrong results were given. Now fixed so positive and negative pressures give same results.	737913
Analysis Tools		In Excel spreadsheet for RP-C201 Buckling strength of plated structures, for the tab Girder Buckling, when calculating lateral pressure on girder side End2, the Girder moment from End1 (and not End2) was used in the computation. Corrected.	763907
Analysis Tools		In Rule Calculator's tab for Single skin PSM, user could select any profile type from the Profile library. Some unconventional profile types could not correctly calculate yielding requirements. Now corrected so available profile types are limited to 'Standard Profile' or 'Primary Supporting Member in ship hull'.	795987
Compartments and Loads	280380	For offshore vessels with tanks for liquified gas, the liquified gas compartment loads had to manually be defined under Compartments and loads' Load tab. Now corrected so these tank fillings are automatically defined when pressing Create standard.	114133
FE	279215	When copying Heavy unit loads information and paste into another load case, the accelerations were not the same. Corrected.	732791
FE	289648	When running Local Model Load Applier (LMLA) tool with a global model result file having duplicated sets, the tool terminated with an unclear error message. Now LMLA's log file will provide a warning message, and the run will be completed with correct analysis results.	757445

FE	292478	When exporting Equipment loads from Nauticus Hull to GeniE, if the CoG was not landing on a structure, the snapping tolerance was too liberal, resulting in that the heavy unit's CoG was unintentionally snapped to an existing object. Now the tolerance is increased so for a Heavy unit, that is not intended to snap to an existing object, will not be snapped.	764858
FE	294550	When running Hull Girder Load Adjuster (HGLA) tool from GeniE, for a specific model where parts of the model was an open cross section, the calculation continued without returning a proper error message in the HGLA logging file, like standard practice for other models with open cross sections. Corrected.	770528
FE	297220	When exporting Uniform Distributed Loads (UDL) from NH to GeniE, for HSA-2, the value of the vertical acceleration component, a_heave was 0.4 but should have been -0.4. Corrected.	774016
FE		Load template for gas fuel tank arrangements according to Pt.5 Ch.2 Sec.6 Table 4 was available and provided inconsistent load cases, even if Gas fuelled was not selected in Ship data. Corrected so this load template is only available when Gas fuelled is specified in Ship data.	750193
FE		In the list for FE load cases, if user specifies no adjustment for torsional moment, then no other adjustments are carried out by HGLA (vertical shear force, vertical bending moment, horizontal bending moment). Now corrected so other adjustments are carried out by HGLA according to what is specified.	762261
FE		When attempting to run Local Model Load Applier (LMLA) tool with higher order elements, the tool crashed with a cryptic message: Object reference not set to an instance of an object. Corrected and now providing a descriptive error message with element types that are not supported.	762277
FE		When using FE load template to automatically generate FE load cases for a VLCC with two oil-tight longitudinal bulkheads according to CSR BC&OT Pt.1 Ch.4 Sec.8 Table 2, some load patterns were wrong. Corrected.	771055
FE		In the FE load template for Container Ship gas fuel tank finite element analysis according to Pt.5 Ch.2 Sec.6 Table 4, load type Fuel gas was wrongly assigned to fuel oil tanks. Now corrected so fuel oil is assigned to fuel oil tanks.	781126
FE		In the FE load template for Container Ship gas fuel tank finite element analysis according to Pt.5 Ch.2 Sec.6 Table 4, the special load cases for membrane tanks were missing. Now included.	784790
FE		In the FE load template for Container Ship gas fuel tank finite element analysis according to Pt.5 Ch.2 Sec.6 Table 5, the reduction factor for BSP load cases, $f_{bcs} = 0.9$, was wrongly applied for fatigue strength assessments. Corrected.	786759
FE		The performance of Local Model Load Applier (LMLA) tool, become lower in the NH V20.31 July 2024 release (when introducing support for complex loads). A fix was done in NH V20.32, that is now further enhanced.	784845
FE		When running Hull Girder Load Adjuster (HGLA) tool from GeniE, for a specific model where horizontal container loads on transverse bulkhead were laying on an element edge and not on a node, these forces were not included by HGLA when calculating sum of local loads. Corrected.	787506

Hull Girder Loads		For Hull girder loads curves according HSLC Rules, in the Wave bending moment curves, the values are correct, but the Description was mixed up. Correct descriptions of the curves are now given.	747382
Rules		The tank testing pressure for chain lockers were not implemented in the Rule Calculator. Now corrected and provided in the Pressure tab and the Corrugated bulkhead tab.	258943
Rules		Transom's Load Calculation Point (LCP) for yielding is specified with foot note 2) in Pt.3 Ch.3 Sec.7 Table 2. This foot note was correctly implemented for Design load set SEA-1, but missing for Design load sets WB-1, WB-2 and TK-1. Corrected.	656827
Rules		For HSLC Rules, when running Section Scantlings, shear area requirements for stiffeners on wet deck were missing in the Results grids. Corrected.	750126
Rules		For Bulk carriers the default GM and kr values in flooded condition were not according to CSR BC&OT Pt.1 Ch.4 Sec.3 Table 2. Corrected.	780993
Rules		For independent prismatic tanks, when calculating liquid pressures according to Pt.3 Ch.4 Sec.6 [1.3.1], ullage factors in longitudinal and transverse direction were set to 1.0. Now corrected to be same as for cargo tanks.	784843
Rules	00276474	For stiffener buckling according to CG-0128 Sec.3 [3.3.4], the bending moment due to eccentricity of sniped stiffeners, M2, is now set to M2=0 when the sniped stiffener is in tension.	729199
Rules	00301615	For gas tankers, it is not necessary to use P_pv for the centerline longitudinal bulkhead (when there are independent tanks on both sides). This is now being taken into account.	781388
Section Scantlings	153303	In the property window for transverse stiffeners, if specifying Number of tripping brackets between adjacent vertical stiffeners ≥ 2 , the correction factor F_tran was not correctly updated. Corrected.	510687
Section Scantlings	284883	When mirroring a cross section and running analysis according to HSLC Rules, the bottom slamming pressure was doubled. Corrected so same bottom slamming pressure is provided for a mirrored cross section.	744587
Section Scantlings	289516	Polar Class requirements were wrongly applied to geometries with position code Weather deck. Corrected.	759503
Section Scantlings	297308	For a cross section modelled on both sides, where the outermost node on starboard side was less than 1.99 m, the analysis wrongly assumed the cross section to be symmetric. The tolerance for judging if symmetric is now improved and made relative to the cross-section's extent (and not a fixed value).	773512
Section Scantlings	298504	For transverse frames and longitudinal frames according to Baltic Ice Class requirements (Pt.6 Ch.6 Sec.3 [9.2] and [9.3]), the required gross shear area was in the report converted to a required gross web thickness (to be in line with other requirements). This might result in that the report stated not OK, but the correctly calculated results in the results grid was shown to be OK. The report is now corrected to show the gross offered shear area and the gross required shear area.	778466

Section Scantlings	299626	For DNV rules, when calculating required plate thickness due to plate buckling, the rounding off to upper next half mm was done on net scantlings (not including corrosion addition). Corrected so rounding to next upper half mm is done on gross scantlings (including corrosion addition).	780089
Section Scantlings	399754	When running analysis for a design with zero speed defined in Ship data, an unclear error message was given. Now, analysis will run and provide results, with a warning message in the Messages window.	351610
Section Scantlings		For a PMA flange with wrong position code (Side/Long. girder instead of Side/Girder flange), Section Scantlings crashed. Corrected.	791108
Section Scantlings		When running fatigue assessment on a cross section where only one stiffener was missing profile dimension (web thickness), no fatigue results were provided for the other stiffeners. Now corrected so fatigue assessment results will be provided for stiffeners with proper dimensions, and no results will be provided for stiffener(s) missing profile dimensions. Warning message will be provided for these stiffeners in the Messages window.	92189
Section Scantlings		In the Run dialog, when running analysis for more than one longitudinal position, the input options for Stiffener fatigue - permissible K-factors, and Fatigue of welded details in the upper part of hull girder were missing. Now included.	533508
Section Scantlings		When colour plotting for plate/stiffener in 3D view, the selection of each property value was not working as intended. Corrected.	716202
Section Scantlings		After generating a report, then selecting another node in the browser, and then back to the original Section Scantlings cross section, the Colour plots couldn't be refreshed. Corrected.	731462
Section Scantlings		For sniped transverse stiffeners according to DNV Rules, the yielding requirements were using shear force distribution factor and bending moment distribution factor as for stiffeners with fixed ends. No corrected and using distribution factors as for simply supported ends.	734145
Section Scantlings		Section Scantlings' Iterate element feature providing error message for vessels with Polar class specified in Ship data. Corrected so Iterate element now also checks Polar class requirements.	744571
Section Scantlings		When copying a cross section, the newly created cross section was in some cases missing several plates. Corrected.	773103
Section Scantlings		When changing the boundary conditions for a vertically corrugated bulkhead in the property grid, the moment factors were not updated according to Rules. Corrected.	773108
Transverse Bulkhead	281746	When copying a Transverse Bulkhead, both models for some scantlings shared same scriptable names and they therefore did not become independent of each other. Now corrected so the copy will be fully independent of the original.	735803
Transverse Bulkhead		When a transverse horizontal stiffener was terminated at a longitudinal stiffener not perpendicular to curved outer shell, the generation of Elementary Plate Panel (EPP) failed. Corrected.	769528
Workspace	304343	Cross sections could sometime be lost when saving workspace at the same time as a cross section is loading from file or the loading for some reason had failed. Corrected.	786965

4 TECHNICAL NOTES

4.1 Hardware requirements

Minimum Memory	Recommended Memory	Minimum free Storage	Minimum Screen resolution
16 GB	32 GB or more	8 GB	1280 x1024

4.2 Operating system requirement

- Windows 10 or Windows 11 with latest updates

4.3 Software requirements

- Excel and Word from Microsoft Office 2010 with SP2 or newer.
- Microsoft .NET Framework 4.8. (Included in Windows 10 and 11)
- Microsoft .NET 10.0 (available in NH Prescriptive package and NH FEA package)



5 OTHER PRODUCT INFORMATION

5.1 Programs and versions

The following programs are available in this release:

Program Versions

Nauticus Hull v21.3
Application version manager
GeniE64
License manager
Sesam converters 64
Sesam manager
Sestra64
Submod

Version number of Sesam component in the FEA package can be found in file *PackageContents.xml* located together with the installation.

5.2 Usage of open source/free distributable libraries

Library	Purpose	Public licence	Source
IxMilia/Iges	Read/Write IGES files	Apache License 2.0	GitHub
HDF5	Read/Write HDF5 files	https://support.hdfgroup.org/ftp/HDF5/releases/COPYING	https://portal.hdfgroup.org
Live Geometry	2D viewer	Microsoft Public License (Ms-PL)	https://archive.codeplex.com/?p=livegeometry
AvalonEdit	Text editor	MIT	https://github.com/icsharpcode/AvalonEdit
AutoFac	IoC container	MIT	https://github.com/autofac/Autofac
Log4Net	Message log	Apache License 2.0	https://logging.apache.org/log4net/
MathNet.Numerics	LMLA	MIT	NuGet Gallery MathNet.Numerics 5.0.0

5.3 Software Support

Email: Software.Support@dnv.com

Web: [Nauticus Hull Knowledge Centre - My DNV Software](#)

- download of
 - new or old releases
 - release documents
 - installation guides
 - user manuals
- registration and follow-up of support request
- Knowledge base / FAQ's



About DNV

DNV is a global quality assurance and risk management company. Driven by our purpose of safeguarding life, property and the environment, we enable our customers to advance the safety and sustainability of their business. Operating in more than 100 countries, our professionals are dedicated to helping customers in the maritime, oil & gas, power and renewables and other industries to make the world safer, smarter and greener.