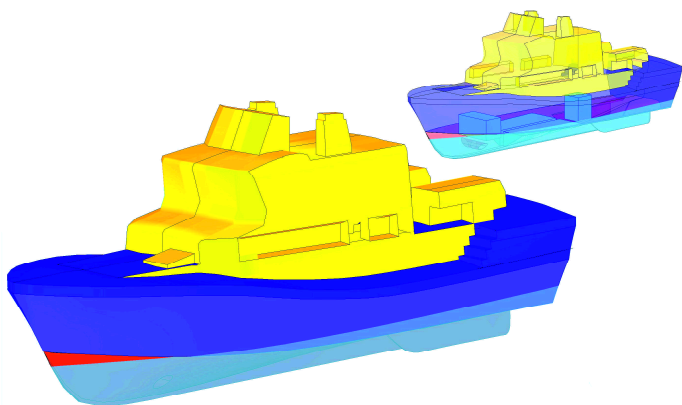


MAXSURF NEWS
Integrated Naval Architecture & Ship Construction Software

Maxsurf Version 9.5 Released

Formation Design Systems is pleased to announce the release of Maxsurf v9.5. This upgrade is part of our continuing research and development program to deliver the state of the art in naval architecture software. If you are a member of our subscription program, you will automatically be receiving your upgrade CD. Should you wish to join the subscription program, please see the details listed on the back page of this newsletter.



Hydromax 9.5 includes rendering of tanks and compartments through a transparent hull
 Lifeboat model courtesy of RNLI.

Hydromax - Advanced Stability Criteria

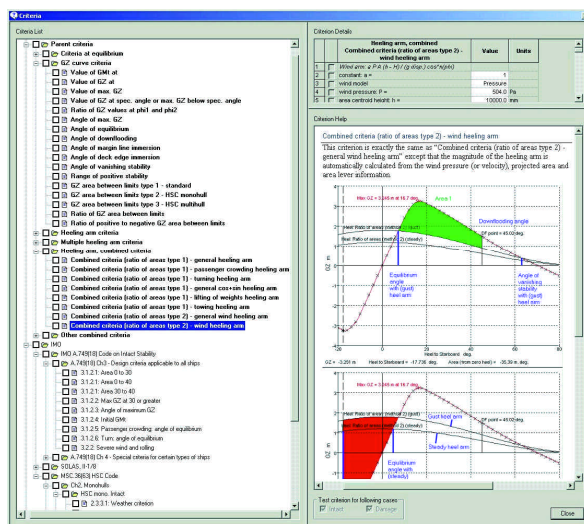
Some time ago we identified a need for stability software that was able to compute and assess vessels against a diverse range of stability criteria. However, it was also considered essential that the system have an easy to use and intuitive user interface. Since mid-2001 Formation's developers have been working on this problem. Eight months and twenty-five thousand lines of code later, the development team have delivered a comprehensive and completely customisable approach to all kinds of stability criteria. The new capabilities feature a single dialog to control all the stability criteria. This makes it quick and easy to set which criteria should be tested and to change the parameters of the individual criteria.

Users can create their own custom sets of criteria by selecting from a wide range of standard criteria types. In the new criteria results table, more intermediate data regarding the calculations

is available. Criteria may be identified as intact or damage criteria (or both). This ensures that the correct criteria are evaluated and displayed during normal and batch analysis.

Criteria results are automatically tabulated after a large angle stability or equilibrium analysis. Criteria may also be changed and checked without having to re-run the analysis.

Users may select either a verbose or compact format for output. The verbose format gives details of all the values calculated during the evaluation of each criterion; the compact format simply states whether the criterion was passed or failed. Help information relating to the use and parameters of each criterion is displayed in the dialog. The whole dialog may be resized and a vertical and horizontal slider can be used to resize the main dialog controls.



Stability Criteria can be easily customised using the new dialog

A wide range of parent criteria are provided allowing users to build up new sets of criteria from the parent forms. A wide range of standard criteria checks are also predefined including IMO, SOLAS, HSC, STIX, MARPOL, USL and US Navy. This new approach to criteria provides an exceptionally flexible yet easy to use system for ensuring compliance.

Maxsurf

Bonding with tangent continuity

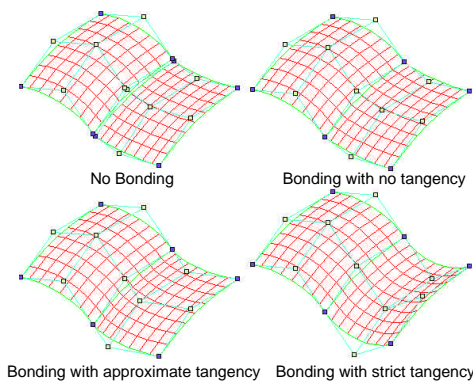
While Maxsurf is now a very complete surface modeller, we continue to add modelling features which help make it easier to create hull surfaces of very high quality and fairness. With this in mind we have now added additional options for bonding together two surface edges. The new options make it easier to bond together surfaces while maintaining overall fairness across the surface edge. This is particularly useful in situations where it is necessary to create a number of surfaces in an area of the hull, but no discontinuities are desired. Maxsurf now has three options to bond together two edges

No Tangency

Approximate Tangency

Strict Tangency

No Tangency is equivalent to the existing method of bonding, which ensures that each control point along the bonded edge maintains the same location as the corresponding point on the other surface. Approximate Tangency ensures that the two control points in the same row or column perpendicular to the edge remain in a straight line. This is the same effect you can achieve by using the Align to Vector command and it helps ensure that the surfaces share a common tangent direction



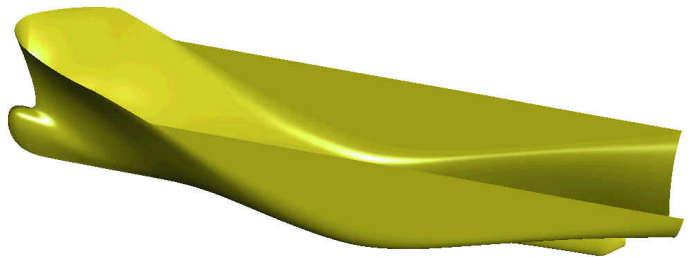
across the edge. In some cases, particularly when there is significant twist in the surface, this is not sufficient to guarantee tangency and the third bonding option must be used. This option, Strict Tangency, ensures both that each row or column running across the surface edge is kept in alignment with the corresponding row or column on the other surface, and also that the next control point on each side of the edge is kept at an equal distance from the edge. This guarantees tangent continuity in all cases.

When points on either side of the edge are moved, the points on the opposite side of the bonded edge will automatically move in the opposite direction to maintain continuity. If a

point on the edge is moved, then both adjoining points will be moved in the same direction and by the same amount.

Selection of Light Sources in Rendering

Maxsurf now has the option to use up to four different light sources in the rendered view. These can be turned on and off by clicking in the visibility toolbar and the position and type of each light can be specified by the user. Options are included for Ambient, Diffuse and Specular lights which will then determine what kind of reflection will be seen on the surface. If only ambient light values are specified, the object



Container ship rendered with specular highlights

will be lit evenly from all directions and it will not appear to change in brightness as it is rotated. This is analogous to the sort of light seen on an overcast day. Diffuse light is directional but is made up of parallel rays. The effect on an object illuminated with a diffuse light is that it changes in brightness as it is rotated due to the change in the incident angle of the surface

Perhaps of most interest is the specular light. This comes from a specific point such as a light bulb. When an object is lit with specular lights, definite highlights will be seen moving across the surface as it is rotated. This provides a highly effective way to check surface fairness as the model is rotated. In practice, the ideal combination seems to be a small amount of ambient light, and roughly equal contributions from the diffuse and specular lights.

Non-Uniform Knot Vectors

Maxsurf is now able to read NURB surfaces from IGES files even if the surfaces have been created in another program, using a non-uniform knot vector. A non-uniform knot vector is sometimes used to create a knuckle or tangent discontinuity in the middle of a surface.

Workshop

This release of Workshop includes enhanced options for specifying the precision and forming information used for plate development. You can now specify the precision of the

mesh which is used to develop a plate. You can choose between having Workshop pick a plate precision for you automatically or specifying your own precision. This is particularly useful for very long, thin plates where additional precision may be required in the longitudinal direction. Additional options have also been added for the display of rolling line information on the developed plate. This includes options for specifying whether curvature or radius information is presented and how many indicators are drawn on the plate.

All products in the Maxsurf range now use OpenGL rendering for 3D displays and the rendering of Workshop models has been significantly improved with this release. Decks are now rendered, frames with multiple openings are rendered correctly and colour and lighting has been improved.

Seakeeper

Seakeeper now allows multiple speeds, headings and spectra to be specified and solved in a single analysis run. This makes it easier to investigate seakeeping characteristics for a range of operating conditions.

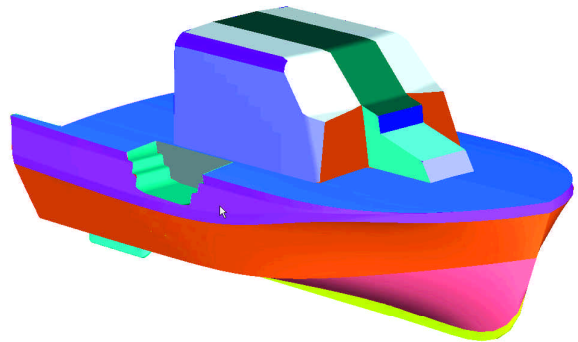
User Profile - RNLI

Not many naval architects have to design vessels that must operate at full design speed and capacity, and be completely self righting and structurally sound, under even the most extreme weather conditions. Add to this a requirement to design a complete fleet of such boats to be launched around the varied coastline of the United Kingdom and you have the formidable design challenge faced by the technical group at RNLI – the Royal National Lifeboat Institution.

RNLI is something of a household name in the UK. Based in Poole on the south coast of England and founded in 1824, it provides 224 lifeboat stations around the coast of the UK and Ireland. The organisation is responsible for search and rescue requirements up to 80 kilometres offshore. It typically performs an amazing 6,000 or more launches of its boats each year and since inception, has saved over 135,500 lives.

RNLI is a registered charity funded entirely by private donations and legacies, with a fleet of boats crewed principally by volunteers. However behind this volunteer team is a very

professional group of over 300 full time staff managing an annual budget of 80 million pounds. The technical group at RNLI comprises around 75 people responsible for designing, constructing, modifying and maintaining the fleet. The group of naval architects and engineers in the technical section has used a range of design tools over the years, but has recently begun using Maxsurf to build a complete set of 3D models of their existing boats.



An RNLI lifeboat modelled using Maxsurf

These models are being used to review the stability of the existing vessels before and after refit and modification. The current fleet consists of a wide range of vessels ranging from hovercrafts and 40 knot RIBs to the 17m Severn class. A considerable capital expenditure program is under way to add newer, faster vessels and it is here too that Maxsurf and Hydromax are being used extensively to model design alternatives and investigate stability.

Because of the extreme nature of the conditions under which the lifeboats must operate, they are not designed to any particular class, but rather engineered from first principles to ensure self righting under any conditions. Since extremely accurate calculations are required, the design team has invested considerable time in creating very precise Maxsurf models which utilise trimming extensively to accurately model all voids and cutouts in the superstructure.

The use of Maxsurf and Hydromax is just a part of the RNLI's overall research and development program which includes prediction of structural loadings using mathematical simulations, design and development of a crew seat for extreme conditions, and analysis of the hydrodynamics of inflatable craft.

More information on the RNLI can be found at www.rnli.org.uk.

Tips & Tricks

Deck wetness, slamming and propeller emergence

Seakeeper provides a range of options for calculating the motions of a vessel in a range of sea states. However once these motions are established, you will usually want to look at particular phenomena such as the likelihood of events like slamming, propeller emergence and deck wetness.

Included in the installation of Seakeeper is an Excel spreadsheet which helps you calculate these probabilities. In a standard installation, the spreadsheet can be found at
C:\Program Files\Maxsurf\Utilities\Seakeeper\Seakeeping Event Incidence.xls

The spreadsheet allows you to paste in analysis results from Seakeeper and then compute the probability of occurrence of these events. The spreadsheet allows you to customise the predefined variables and experiment with different assumptions.

Aligning Control Points

The modified control point properties dialog introduced in Maxsurf version 9.0, allows you to easily align a group of control points to the same coordinate. First, select the control points in question then choose Control Point Properties from the Control Points menu. In the dialog, any coordinate values which are the same for all points will be displayed. Values which are different will show a blank field in the dialog. If you then enter a coordinate in any of the fields and click OK, only the entered coordinates will be modified leaving the remaining coordinates unchanged. This is particularly useful for aligning a group of control points to the same height, to the same offset or to the same longitudinal location, without affecting their other coordinates.

Subscription

Maxsurf users are supplied with updates to programs free of charge for one year after the date of purchase. After this period our subscription program will keep you up to date with the latest software versions.

A single annual subscription fee ensures that you receive updates to all programs on CD as soon as each new version is released. It also entitles you to unlimited technical support via phone, fax or email. Subscription fees are approximately 10% of the current retail price of the software.

Release Notes

With each new release of our software, we issue a release note which describes the difference between that version and the preceding version. It's important to review this note before installing and using the new version to ensure that you are aware of any changes. The release note is provided in printed form and is also available in Adobe Acrobat PDF format on the installers page on the CD.

Current Software Versions

The following is a list of programs currently offered by Formation Design Systems. Please contact your local distributor for pricing information.

Maxsurf Pro	Windows 9.5	Macintosh 7.2
Maxsurf Plus	Windows 9.5	Macintosh 7.2
Maxsurf /T	Windows 9.5	Macintosh 7.2
Maxsurf Academic	Windows 9.5	Macintosh 7.2
Hydromax Pro	Windows 9.5	Macintosh 7.2
Hydromax /S	Windows 9.5	Macintosh 7.2
Workshop	Windows 9.5	Macintosh 2.2
Workshop /P	Windows 9.5	Macintosh 2.2
Prefit	Windows 9.5	Macintosh 7.2
Span	Windows 9.5	Macintosh 7.2
Hydrolink	Windows 9.5	Macintosh 7.2
Hullspeed	Windows 9.5	Macintosh 2.2
Seakeeper	Windows 9.5	Not Available

Multiframe 4D	Windows 8.5	Macintosh 5.2
Multiframe 3D	Windows 8.5	Macintosh 5.2
Multiframe 2D	Windows 8.5	Macintosh 5.2
Section Maker	Windows 8.5	Macintosh 5.2
Steel Designer	Windows 8.5	Not Available

Neoform	Windows 4.5	Macintosh 2.2
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For more information of any of the products above, please contact us for a brochure, or see our web site at www.formsys.com.

Contact

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