Orca3D Support: Frequently Asked Questions

- **General Questions**
  - **What are the requirements to run Orca3D?**
    - Orca3D is a plug-in for Rhino. You must have Rhino installed prior to installing Orca3D. If you do not, please download Rhino from the Rhino web site and install it before installing Orca3D. Specific requirements:
      - Rhino Version 4, SR 3 or higher
      - Hardware: See Rhino hardware requirements
      - Operating Systems tested: Windows XP, Vista
      - Operating Systems not tested: Windows 2000, 64-bit XP
      - Operating Systems ***not supported***: Windows ME, 98, 95, NT
      - Mac: The Intel Mac with Bootcamp or Parallels ***has not*** been tested
      - Mac: VMware Fusion 2 ***is not supported***
      - Microsoft .NET (the Orca3D installation will install it if it is not already on your computer)
      - Valid license key (without this, Orca3D will operate as a 15-day fully functional evaluation copy)
  - **Why is Rhino required?**
    - Orca3D is written as a plug-in to Rhino, to complement Rhino's already exceptional modeling capabilities. This gives the user the best of both worlds; a powerful, easy-to-use, and well-known CAD system, enhanced with marine-specific functions.
  - **Where can I get help with questions or problems?**
    - There are a number of resources for assistance; please see our Support page for details. If you cannot find an answer to your question there, please send an email to support@orca3d.com.
- **Licensing Questions**
  - **My trial period has ended. How do I get a license?**
    - The trial period is a 15-day, fully-functional evaluation license. If you feel that you need more time to evaluate the software before purchasing, please contact us. If you're ready to purchase, please visit our Order page.
  - **Why won't some of the Orca3D functions work on my computer?**
    - Orca3D is licensed by module; you will not be able to run a function that belongs to a module that you have not purchased. If you would like to purchase another module, please visit our Order page.
  - **I want to move my copy of Orca3D to another computer. How do I transfer the license?**
    - Refer to the section entitled "To Move a License from Computer to Computer" in the Licensing Help file, available from the Orca3D menu.
  - **My computer has crashed, was lost/stolen, or I no longer have access to it. How do I transfer the license to a new computer?**
    - Contact us with details of the situation, and we will enable your license for another activation.

- **Can Orca3D use the Rhino workgroup license manager called "The Zoo" for floating network licensing?**
    - Currently, the Rhino licensing mechanism is not exposed to third party plug-in developers in the Rhino SDK. Therefore, Orca3D has its own software licensing scheme that is completely separate from Rhino's. You can use Orca3D on a computer that is using The Zoo for its Rhino license. However, you must have the Orca3D license on that computer as well. We are currently working on a floating network license solution for Orca3D and expect it to be released in the near term.

- **Hull Design and Fairing**
    - **When I edit control points, why don't the sections update?**
        - The sections will not update unless you use Orca3D's custom control points. Turning the standard Rhino control points on and editing will change the shape of the surface, but you'll need to update the sections manually, using the Orca3D Sections command.
    - **In the Hull Assistant, why do some input values create crazy shapes?**
        - The equations that are used to generate the 3D hull shapes degenerate with certain conditions, such as various values being set to 0.
- **Hydrostatics and Stability**
    - **I get an error when I run hydrostatics using Weight (rather than Model Sinkage), although it runs fine when the Model Sinkage is specified.**
        - This issue has to do with the initial waterplane height for the free-float iteration. When you specify a weight (and/or cg) for the hydrostatics, the solution becomes iterative in which the solver must balance hydrostatic forces. The iteration has to start somewhere and by default we choose the mid-height of the bounding box of the selected surfaces. Without appendages (e.g. a keel) this is usually a reasonable guess, but with appendages it can cause the solver to fail. You can override the initial plane height by checking the box "Override initial plane height for free float iteration" and entering a value that is reasonably close to the resultant waterline.
    - **I get an error when I try to run hydrostatics. Why can't I get results?**
        - This usually results from Orca3D not being able to find an equilibrium. Often the cause is a surface edge becoming submerged, such as the deck edge when the vessel heels. If this is the case, add a deck (or other surface) to your model to seal it. If you do not expect an open edge to become submerged, you should check your VCG to be sure that it is correct.
    - **Why is the displacement value too low?**
        - Possible reasons for this include:
            - If you have modeled only half of the hull, but not checked the "Mirror About the Centerplane" box, your values will be half of what they should be.
            - Orca3D computes most of the hydrostatic data from a surface mesh, not with the traditional approach of integrating stations. The user has control over the density of this mesh, just as you do with Rhino's display or analysis mesh. If the mesh is too coarse, your values will be low. If they are too high, it will slow down the computations without adding appreciable accuracy. The settings may be adjusted using the

OrcaProperties command. You should experiment with different settings, and see their effect on your results. As you increase the density of the mesh, you will reach a point of diminishing returns.

- Surfaces in Rhino have the concept of an "inside" and an "outside." The outside should be the side in contact with the water; if not, the volume of that surface will be computed to be negative. If your model consists of multiple surfaces (not joined), and some of them have the outside direction incorrect, they will deduct from the total. There are two ways to visualize the outside direction of a surface; first, you can select the *Direction* command from Rhino's **Analyze** menu. Arrows will be drawn in the outward direction, and so should point into the water (note that for surfaces such as bow thruster tunnels, this means that the arrows will be pointing into the interior of the cylinder). If you find a surface whose direction is incorrect, use the *Flip* option in the *Direction* command to flip it to the correct direction. If you have many surfaces, this can become tedious; a more effective way to quickly see the directions of the surfaces is to use Rhino's Backface Settings. Select the Perspective viewport, and change to a shaded rendering. Right-click on the viewport title (Perspective), and select **Display Options** from the menu. Go to Rhino Options/Appearance/Advanced Settings/Shaded, and select Shaded. For the Backface Settings option, select "Single Color for all backfaces," and then select a color that stands out in your model. Now, as you rotate the model, you can quickly visualize the backface (inside) of each of your surfaces. You can now use the Flip command to flip the direction of any surfaces that are incorrect.

- **Why is the displacement value negative?**
  - Surfaces in Rhino have the concept of an "inside" and an "outside." The outside should be the side in contact with the water; if not, the volume of that surface will be computed to be negative. If your model consists of multiple surfaces (not joined), and some of them have the outside direction incorrect, they will deduct from the total. There are two ways to visualize the outside direction of a surface; first, you can select the *Direction* command from Rhino's **Analyze** menu. Arrows will be drawn in the outward direction, and so should point into the water (note that for surfaces such as bow thruster tunnels, this means that the arrows will be pointing into the interior of the cylinder). If you find a surface whose direction is incorrect, use the *Flip* option in the *Direction* command to flip it to the correct direction. If you have many surfaces, this can become tedious; a more effective way to quickly see the directions of the surfaces is to use Rhino's Backface Settings. Select the Perspective viewport, and change to a shaded rendering. Right-click on the viewport title (Perspective), and select **Display Options** from the menu. Go to Rhino Options/Appearance/Advanced Settings/Shaded, and select Shaded. For the Backface Settings option, select "Single Color for all backfaces," and then select a color that stands out in your model. Now, as you rotate the model, you can quickly visualize the backface (inside) of each of your surfaces. You can now use the Flip command to flip the direction of any surfaces that are incorrect.
- **Why aren't the Cp (prismatic coefficient) and Cx (maximum section coefficient) reported?**

    - Although Orca3D uses a mesh to compute most of the hydrostatics, certain quantities can only be computed from stations. These include the prismatic and maximum section coefficients, and of course the sectional area curve. Orca3D uses the stations that are defined in the **OrcaSection** command to compute these quantities. In order to get accurate values, you should be careful to use a reasonable number and distribution of stations. The ends of the hull, and any areas of distinct section change should be captured in order to get an accurate sectional area curve, and you should have stations near the station of maximum sectional area in order to get an accurate Cp and Cx (note that you don't need to find it exactly; Orca3D will interpolate, using a quadratic function over three stations, to find the maximum).
- **Why is there a spike in the sectional area curve?**
    - If you have two surfaces joined in a station plane that coincides exactly with one of the station locations that you have defined, Orca3D will compute stations on both surfaces, so the sectional area there will be double what it should be. One case where this can happen is with a hull that has a planar, vertical transom, and the transom surface is modeled. Simply move the station location slightly forward or aft, so it doesn't coincide with the joint between the two surfaces.
    - Incorrect sectional area data can also result from including non-wetted surfaces in your selection when you compute hydrostatics. For example, if you have modeled interior surfaces, and include them in the calculations, Orca3D will include their areas in the sectional area curve (as well as their volumes, so your displacement, and all of the other hydrostatics values will be incorrect).
    - If you have a loose absolute tolerance setting, equal to or greater than your section spacing, Orca3D will not be able to distinguish successive stations from one another, resulting in incorrect values.
    - Check to be sure that you have correctly specified whether to "Mirror About the Centerplane" when setting up your hydrostatics calculation. If you have modeled the entire hull (port and starboard halves), *and* you check the "Mirror About the Centerplane" box, your sectional area values (and displacement) will be double the correct values.