MichletInput

v9.32 Beta
User Manual

July 2014

Introduction

MichletInput v9.32 is a free Rhinoceros 64 bit plug-in module which automates the creation of Michlet v9.32 input files. Michlet is a free computer workbench offered by Cyberaid (http://www.cyberiad.net/michlet.htm) that can be used for investigations into some aspects of ship hydrodynamics. Michlet can be used for preliminary design work such as estimating the resistance, wave elevation patterns and bottom pressure signatures of monohulls, multihulls and submarines.

Getting Started

Run the MichletInput-Setup.exe file to install the plug-in. This will create a new sub-menu item in Rhino called "Export Michlet" located under Rhino's "File" drop-down menu item. Clicking the "Export Michlet" menu item will launch the dialog shown below.


Most of these input variables are self explanatory. You can get further details by reading the Michlet User's Manual. The green colored background behind the variables indicate

that they are valid numbers that should be acceptable for Michlet input. Invalid values will turn the background color to red and disable the file "Write" button.

Clicking the next tab labeled "Wave Domain" will display the following dialog.
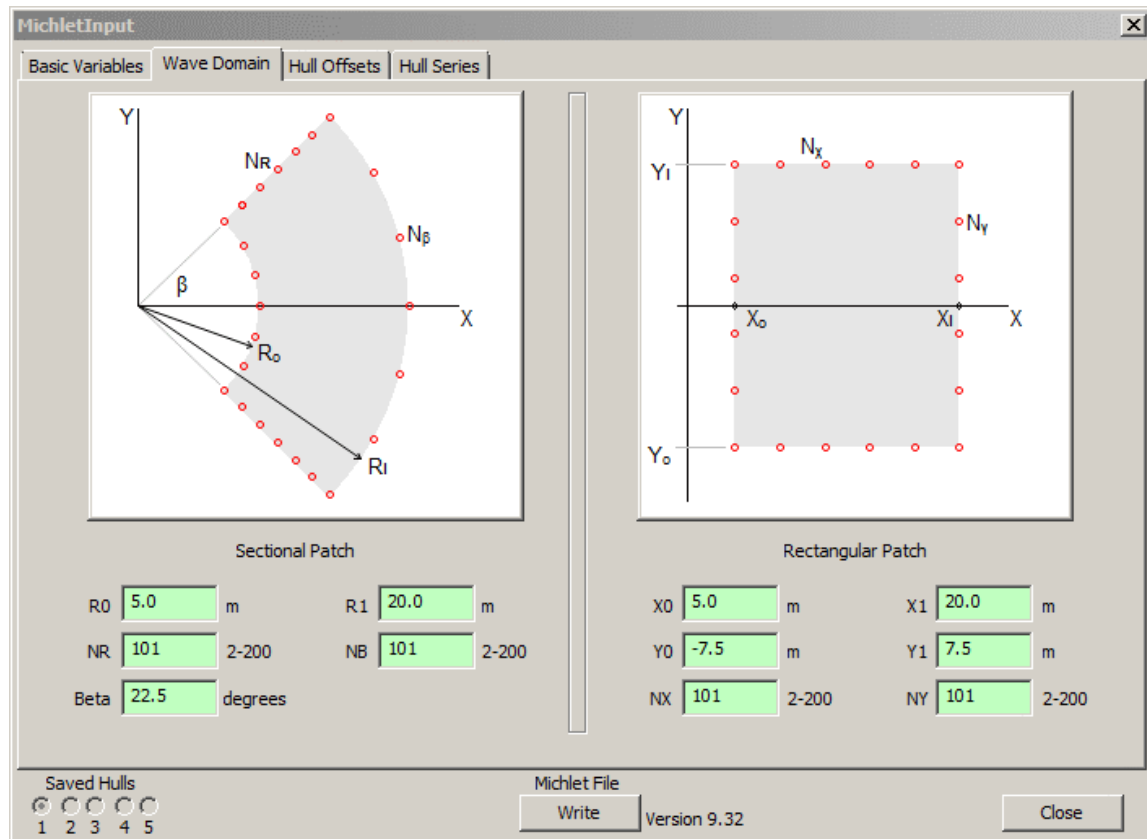
Again, these values should be self explanatory. Michlet allows the use of either a sectional domain patch or a rectangular patch. The variables control the size and density of the domains.

The next two tabbed items allow the user to specify the hull by creating offset points or specifying a hull series.
Clicking the "Hull Offsets" tab displays the dialog shown below.

The button labeled "Pick" will allow you to select your hull surface or polysurface directly from Rhino. If you are using half hulls, remember that Michlet requires the starboard side. For multihulls, it is assumed that all hulls will be positioned at their design intent locations. The Rhino length units must be in meters.

Caution: For multihulls it is important to use an accurate value for the lateral separation. Michlet requires the hull offsets be centered along the x-axis, then it translates the hull by the separation values to position the hulls. Since you will be selecting hulls from Rhino that are assumed to be already translated into position, MichletInput will subtract the value you specify for the lateral separation from the offset values before it writes the Michlet input file. If your specified lateral separation is not accurate, it will not only position your hull inaccurately but will also distort your hull. The reason for this is that not all offset points are calculated from the hull model but are hard coded instead. For example, all offsets at the first station at the bow are hard coded to zero per Michlet's requirement. Also, stations that don't have an intersection at some waterlines will also be hard coded to zero offset value. This means that MichletInput must initially set these values to the lateral offset value so that they will be zero after subtraction. Imagine that you have a hull that is drawn with a lateral offset of 3 meters but you specify a lateral separation if 10 meters; an error of 7 meters. After you calculate the offsets you will see that all the offsets points that result from intersections with the hull will be located

correctly on the hull but any hard coded points such as the bow offsets will be located with an offset of 10 meters. This is a distortion of 7 meters at the bow station!

Below the "Pick" button are the edit boxes for entering the start and end points for the stations and waterlines. Michlet requires that the offsets for the first bow station all be zero, so select the starting point for the first station accordingly. After you have selected a valid hull you can click the "Offsets" button to calculate the offsets. You also have the option to calculate the waterlines and whether to include a transom. MichletInput does not need to calculate the actual waterlines because it uses a horizontal plane at the waterline "z" locations to intersect with the stations to get the offset points. Seeing the waterlines can be good for a reference but will take a little longer to calculate for a large number of waterlines.
If you select the "Transom" check box option, then the actual offsets calculated at the last station will be used. Otherwise, all offsets at the last station will be set to zero.
After you have calculated the offsets, they along with the sections and waterlines, if requested, will be displayed in Rhino as a preview. If you want to add these items to your Rhino drawing, press the button labeled "To Rhino" to save them to whatever layer you desire.
Once you are satisfied with the offsets you may press the "Add Hull" button to save the hull to be used in the Michlet input file. Notice next to the "Add Hull" button are a series of radio buttons labeled "Hull Number" 1 through 5. For multihulls, you must select which hull number you are saving. For monohulls only the first button will be enabled, so no selection will be required. As you add hulls, they will be recorded and a running tally will be kept and indicated by the five radio buttons located in the bottom left corner of the dialog.

The last tabbed dialog allows the creation of hulls by specifying a hull series.

The top portion of this dialog is the same as the offsets dialog. The bottom portion of the dialog is where you input the required values for the selected series. You may select a series by using the radio buttons located on the right of the dialog. MichletInput will enable the correct number of input boxes based on your selected series. See the Michlet User's Manual for an explanation of the values.

Once you have saved the correct number of hulls and all the input values are valid, the "Write" button located at the bottom of the dialog will be enabled. This will write the Michlet input file. You can save the file with any name you like but in order to run it with Michlet, it must be labeled "in.mlt".

If you have any questions, comments or would like to report a bug, please send an email to support@pintlegudgeon.com.