

Paramarine Tutorial 3

In this tutorial we will generate the tanks. Subsequently we will transform everything into building blocks, and then generate the accommodation and the process facility. In the end the auditing process will be described.

Generate the tanks

1. Insert - concept setup – building_block – name cargo tanks
2. Right click on cargo tanks – insert – building_block object – name “pt cargo tank 1”
3. Under cargo tanks double click on attributes and select from the drop down menu use_sub_blocks_ignore_this
4. Expand the “pt cargo tank 1”/attributes – right click on characteristics – insert – char_tankge object
5. Expand char_tankage – double click on consumable_fluid and link it to the diesel oil which is under the folder consumables
6. Double click weight_classification and select the appropriate from the list that appears. In case you don’t use the Early Stage Design, you have to create a concept placeholder, name it classifications and then insert – concept setup – classification
7. Do the same thing for space_classification
8. Right click on char_tankage – insert – char_tankage_condition – name it “light”
9. Expand right click on condition and link it to the light condition that exists for ESD
10. Set fullness to 5%
11. Do the same for deep condition – 95%
12. Expand initial_geometry – select cuboid
13. Set the x_extent to the distance between 2 bulkheads, y_extent half the beam and z_extent equal to the depth
14. Now the datum point of the tank is in the center of the body, but it is more convenient if it is at the inner bottom corner of the tank
15. Move it by going to initial_geometry – offset – and set the x_offset to x_extent/2, y_offset to Beam/4, and z_offset to depth/2
16. Now go to the datum point and select as x the location of one of the bulkheads
17. Go to solid – right click – operations – intersect – and choose as object the inner hull. This action trims the tank to be only in the inner hull part.
18. To create another port tank, just copy and paste under the cargo tanks building block the “pt cargo tank 1”. Change the x at the datum point by linking it with another bulkhead
19. To create a starboard tank copy paste and then go to offset and put a (-) in the y coordinate

Transform all the geometry into building blocks

1. Insert – concept setup – building_block – name it hull – expand hull – expand attributes – right click on solid – operations – copy of – select as object the hull solid created earlier
2. Add a char weight under the characteristics and select permanent weight. Give it the value that you calculated.

Generate the accommodation

1. Insert a building block and follow the same procedure as the tank generation. We will create an accommodation that has the same beam as the ship. Change the offset and datum point accordingly to place the superstructure at the desired position.
2. Under the characteristics add a char_weight. Click on permanent weight and give a value for it. Choose the right classification.
3. Follow the same procedure to create the process facility

Auditing

Three main objects are used for the auditing of the Design Building Block Hierarchy; the block summary, block definition and design audit. Each has different roles:

The block summary object must be pointed at the top level building block. This object summarises most (but not all) numerical characteristics of the hierarchy. The key numerical characteristics not summarised by the block summary are the supply of consumables provided by tanks, the supply of area or volume provided by building blocks with the char space characteristic and the supply of user defined characteristics (only the demands are summarised).

The block definition is pointed at the block summary and contains a placeholder allowing the definition of whole ship numerical values using the same set of characteristic objects that can be inserted in building blocks. This allows the definition of whole ship weight margins, for example.

The design audit is pointed at the block definition and allows the design to be audited for a wide range of numerical characteristics. The results are displayed as a list in the tree pane. This can be opened as a table by double-clicking. The level of detail shown in the table and hierarchy used for display (Design Building Block Hierarchy or weight group, for example) can all be controlled by the user.

In addition to the auditing object, the design infringements object can be used to assess the design against its requirements, as implemented as numerical demands in the hierarchy. It is different from the auditing tools in that it does not provide any information on the numerical properties of the design unless they concern a failure to meet a numerical requirement.

The 5 pointers in the design infringements object connect it to the block definition, clash detection, interblock relationships, stability analysis and electrical generator analysis objects. If the building blocks fail to meet the numerical requirements defined in the hierarchy or these objects (such as the area under the GZ curve in a stability analysis), then placeholders are created under ‘design_infringements’ indicating the nature of the failure.

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