

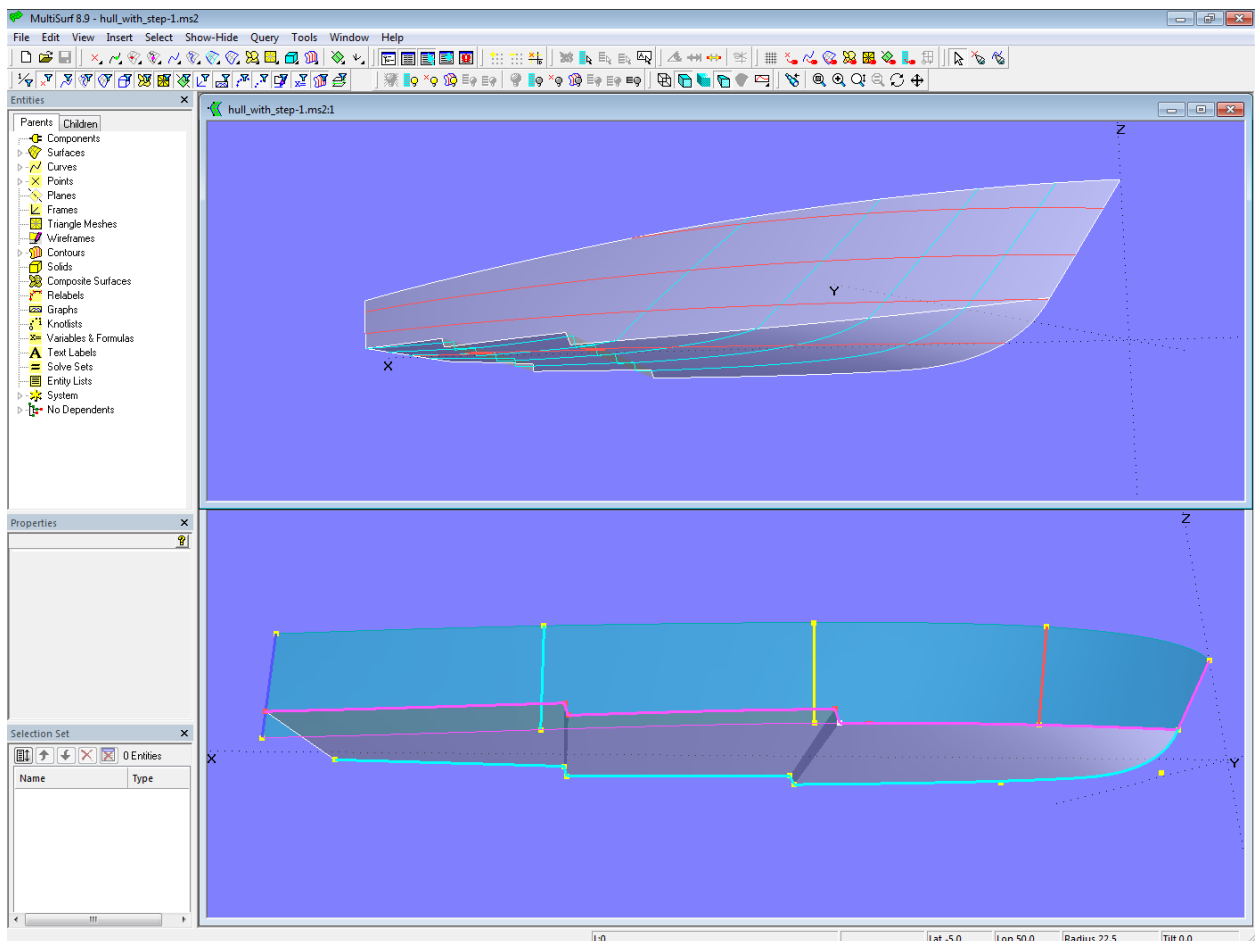
# Hull with Step

by Reinhard Siegel

## Model hull\_with\_step-1.ms2

Fast powerboats can feature one or more steps in the bottom of the hull. Model *hull\_with\_step-1.ms2* shows an example. The C-spline Lofted Surface *topside\_0* is the basis of the hull topside. The PolySnake *n3* combines the forward portion of the chine (SubSnake *n2*) with the stepped aft part (B-spline Snake *n0*). The unwanted parts of the basis surface are cut off by the SubSurface *topside*, supported by the Edge Snake *n4* (upper edge of *topside\_0*) and PolySnake *n3*.

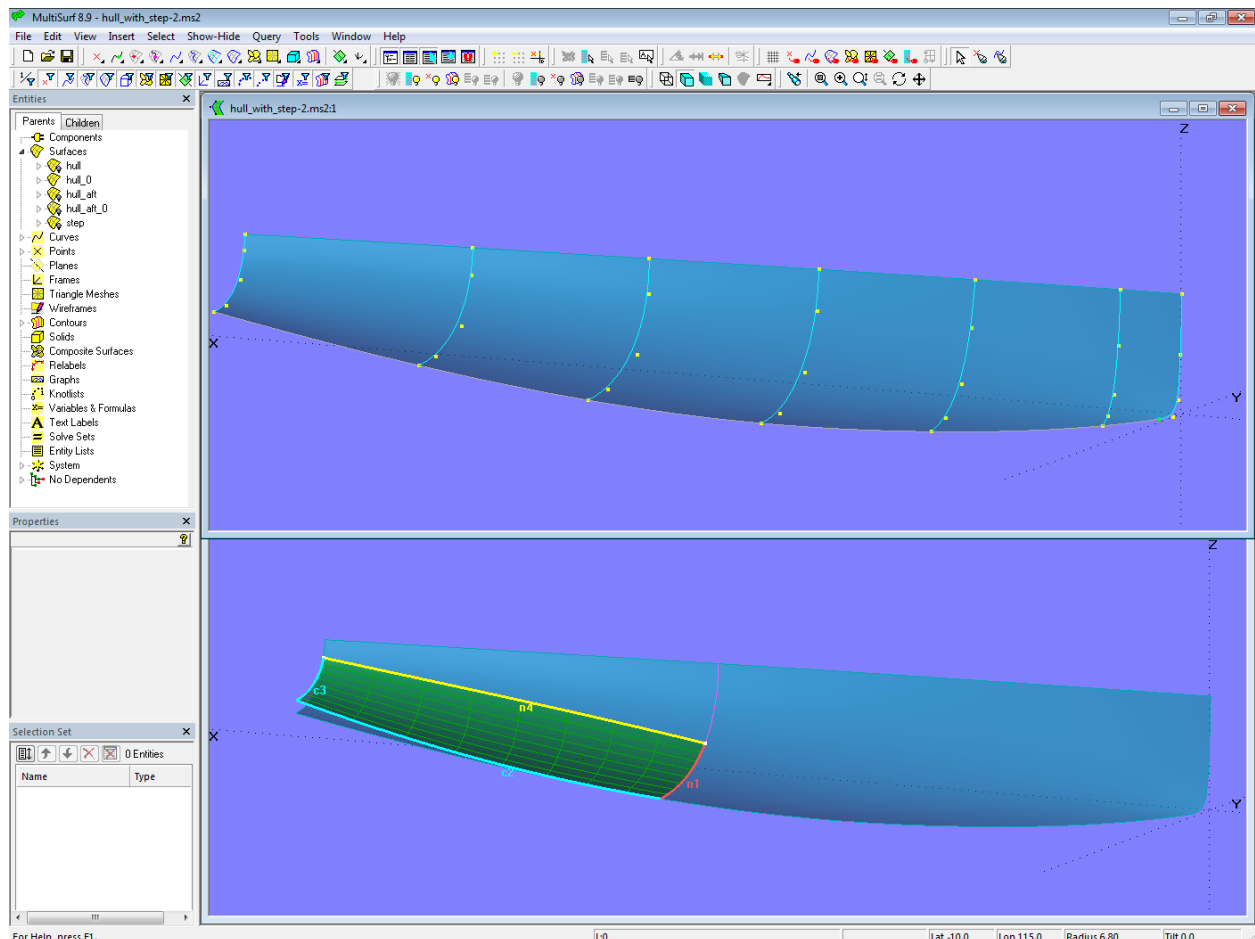
Bottom surface is the Ruled Surface *bottom*, simply spanned between PolySnake *n3* (on *topside\_0*) and the PolyCurve *c0*, which is a combination of the forward part of the keel (B-Spline Curve *keel0*, degree = 2) and its aft part, the B-spline Curve *keel1* (degree = 1).



Model *hull\_with\_step-1.ms2* – powerboat hull with 2 steps

## Model hull\_with\_step-2.ms2

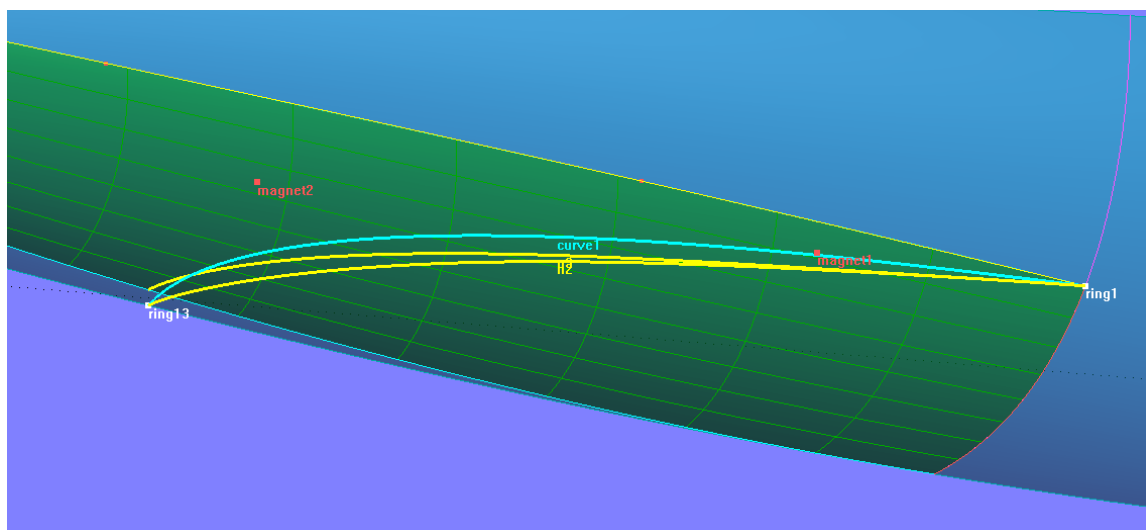
In model *hull\_with\_step-2.ms2* an example of a sailboat hull with a step is shown.



Model hull\_with\_step-2.ms2 – sailboat hull with step

Basis surface of the hull is a standard C-spline Lofted Surface (**hull\_0**), supported by 7 B-spline mcs. The raised portion aft is the Tangent Boundary Surface **hull\_aft\_0**, defined by B-spline Curves **c2** (steeper raising fairbody), the transom edge **c3**, the Projected Snake **n4** (projection of the C-spline Curve **c1** onto **hull\_0**) and the SubSnake **n1**, which is part of the transverse Intersection Snake **n0**, defining the start of the new shape aft.

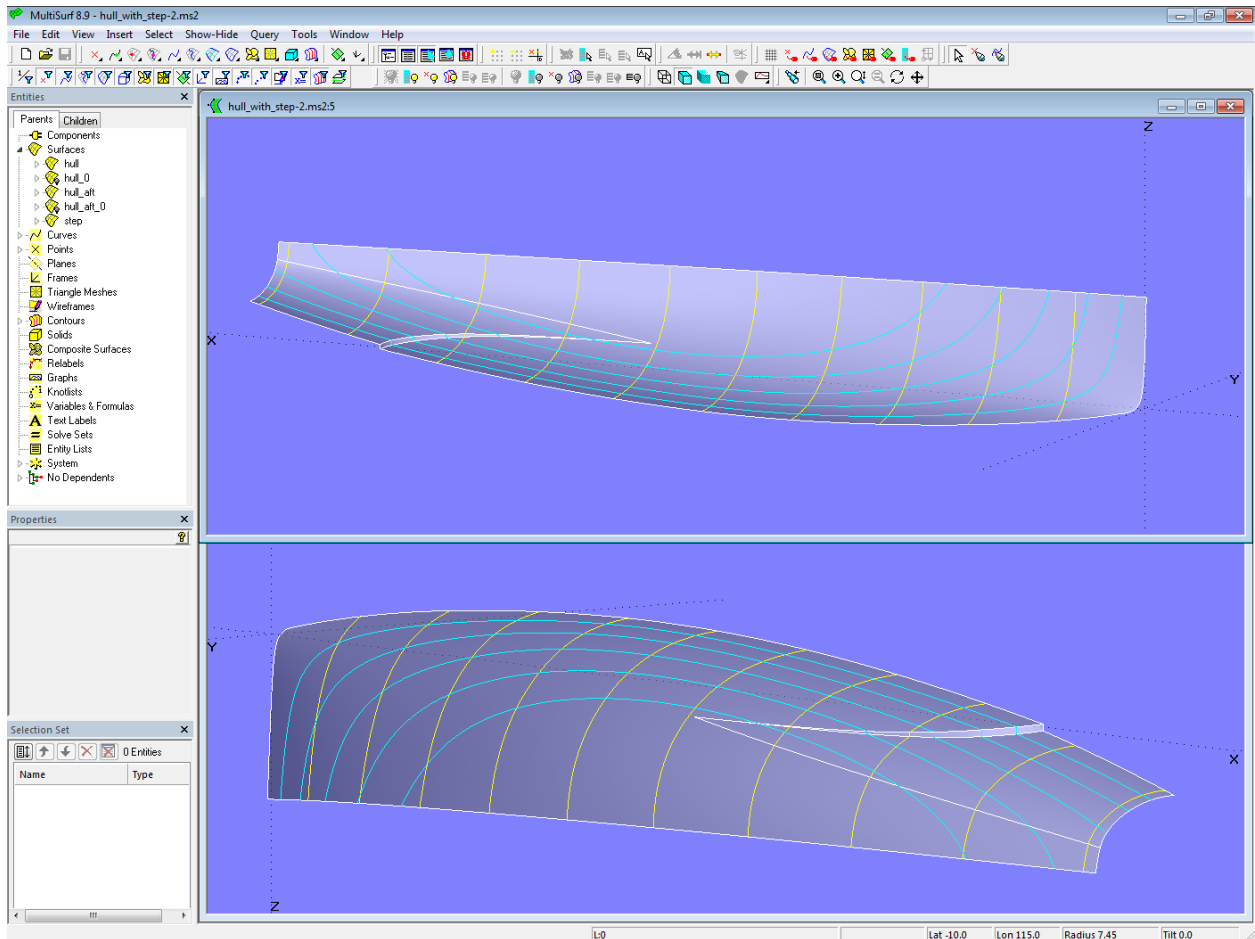
The Tangent Boundary Surface **hull\_aft\_0** has set edge continuity to “Slope” along snake **n4** and snake **n1** in order to make it tangent to the basis surface along these edges.



Model hull\_with\_step-2.ms2 – sailboat hull with step

The step is shaped by the B-spline Curve [curve1](#), which is then projected vertically onto the basis hull surface (Projection Snake [n2](#)) and onto the Tangent Boundary Surface (Projected Snake [n3](#)). The Ruled Surface [step](#) is spanned between these two snakes.

The final parts of the hull and the raised aft bottom of the sailboat hull are created by the Trimmed Surfaces [hull](#) and [hull\\_aft](#).



Model [hull\\_with\\_step-2.ms2](#) – sailboat hull with step