

Transom Expansion

A practical application of Copy Snakes

by Reinhard Siegel

For ease of construction many boats feature a transom which is a portion of a straight circular cylinder. The model *cyl_transom_expansion.ms2* shows how to construct the expanded shape of the transom within MultiSurf.

The Translation Surface [transom_0](#) is the basis surface of the cylindrical transom. Its generator is the Arc [c1](#), guiding curve is the Line [l1](#). The control points of both curves are defined in the 3-point Frame [F1](#), so that one can tilt and move the transom without changing its shape.

The hull and deck are intersected by the surface [transom_0](#) in the Intersection Snakes [n1](#) and [n3](#), which in turn are projected onto [transom_0](#) as Projected Snakes [n2](#) and [n4](#).

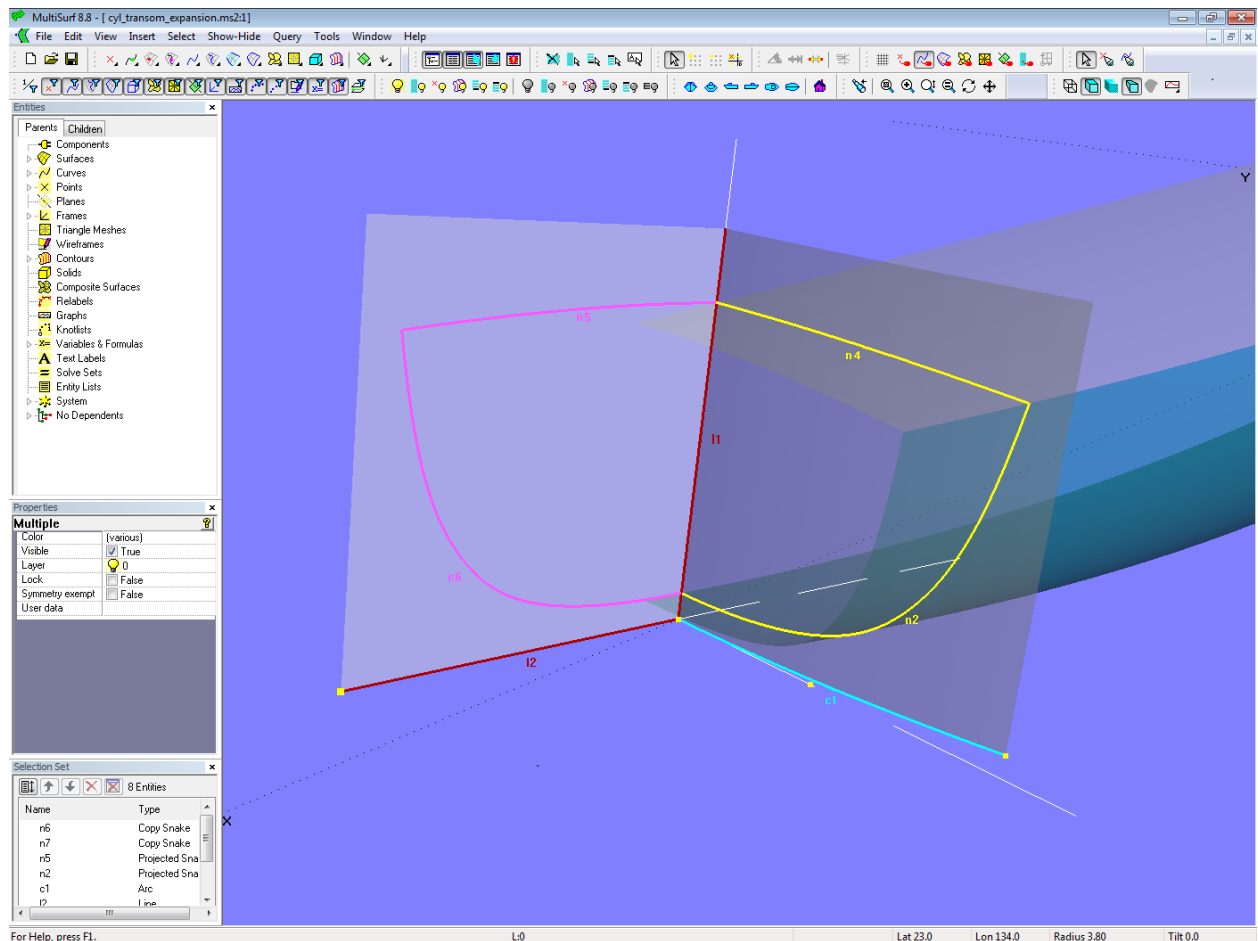
The expansion of the transom basis surface is the Translation Surface [s0](#), whose generator is the Line [l2](#) (end point is Point [pt3](#)), the guiding curve is again Line [l1](#). The length of Line [l2](#) must be equal to the length of the Arc [c1](#). Since [s0](#) is in the XZ plane of the Frame [F1](#), the Z-coordinate of Point [pt3](#) (end point of Line [l2](#)) simply corresponds to the length of [c1](#). This length is displayed in Tools/ Mass Properties.

When the arc is changed, for example to increase the camber of the transom, the position of [pt3](#) must be adjusted manually.

To avoid this, the simple Formula [f1](#):

[f1](#) = [ARCLEN](#) ([c1](#), 0, 1)

which calculates the length of Arc [c1](#) is used for the Z-coordinate of [pt3](#). In this way it is guaranteed. that [s0](#) always is just as long as Arc [c1](#).



Model cyl_transom_expansion.ms2

In order to get the developed shape of the transom on **s0**, the two Projected Snakes **n2** and **n4** are copied onto **s0** as Copy Snake entities.

In this way you get without a specialized program the true outline of the circular cylinder transom.

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