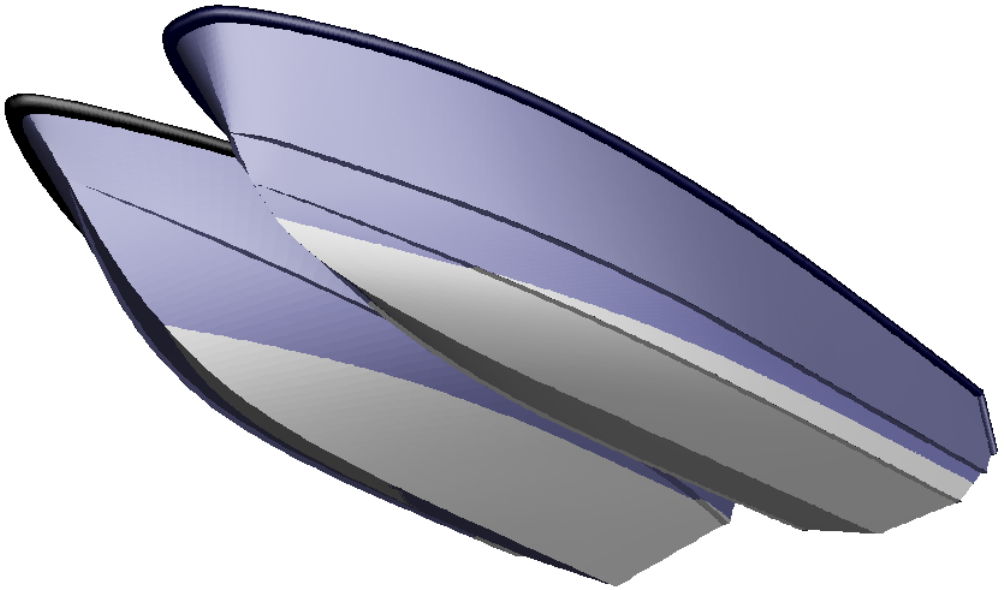
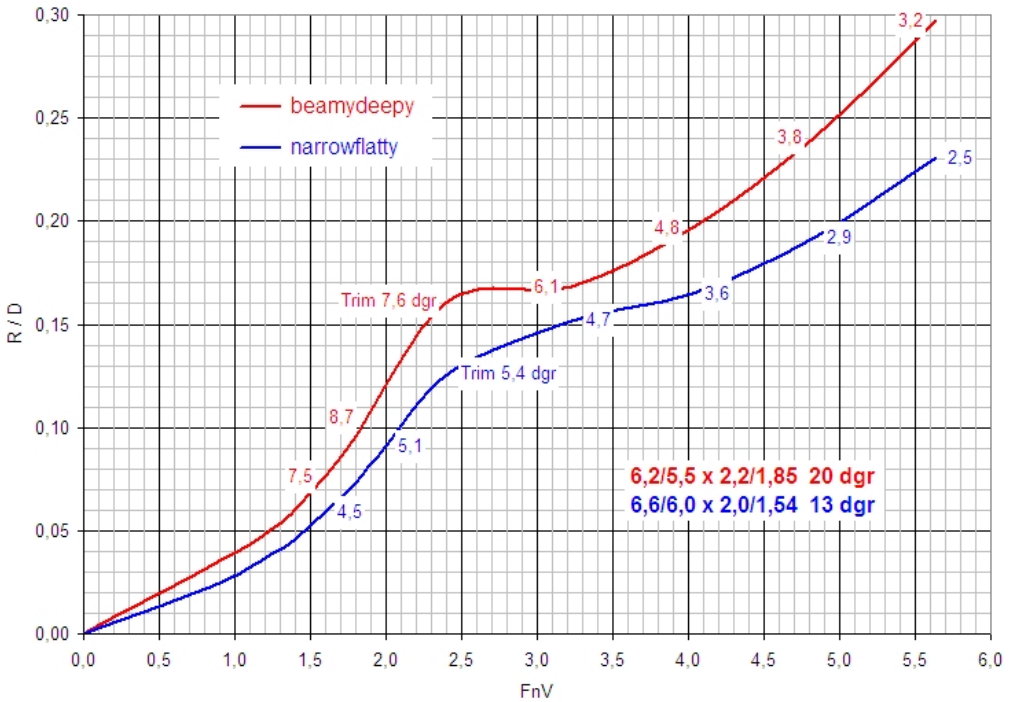


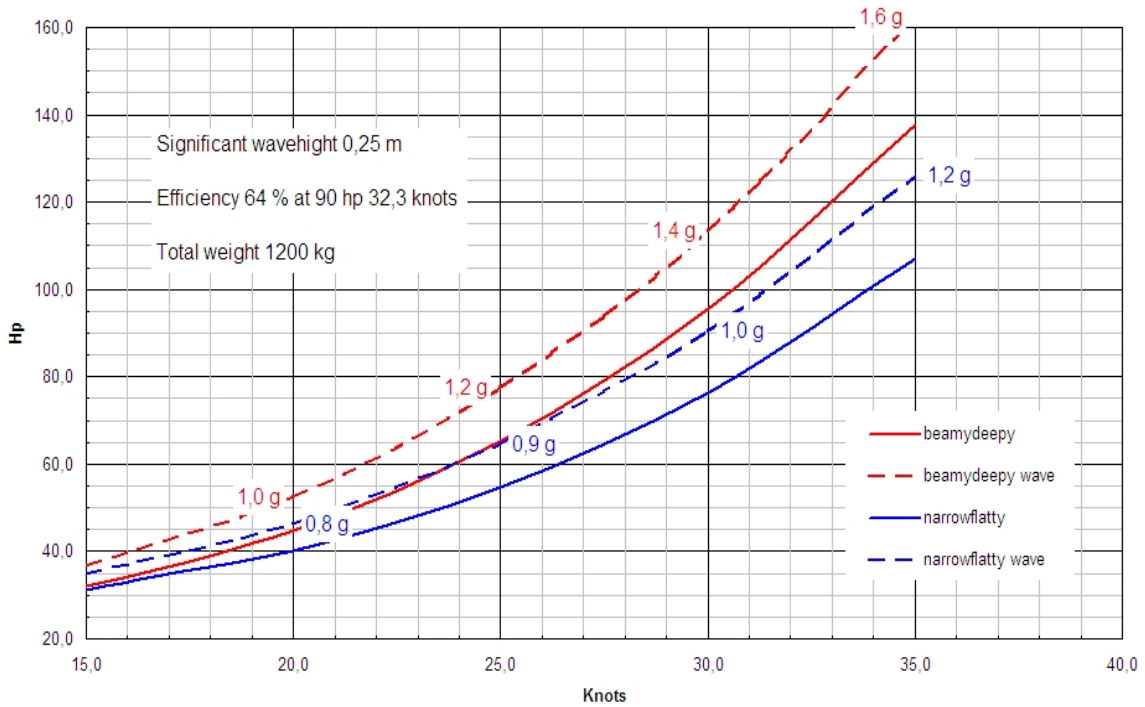
Slim and shallow or beamy and deep V-bottom

An efficient alternative to the deep V-bottom

The purpose of this study will show that it is possible to create a boat with better economy and improved seakeeping abilities than what is common today. In this comparison, two boats of the same weight, interior volume and speed in the same sea conditions are studied. The different is in bottom deadrise, width and length. To get an equivalent volume and stability, the long boat has dual chines.



The graph above shows the resistance of both boats in dimensionless figures. Resistance and speed are reported in relation to the boat's weight. Here we can see that the deep V-bottom has a very high resistance over the whole speed range. It has also highlighted the planing hump at FnV 2.5. The slim and shallow boat has a small trim angle over the whole speed range, while a deep V-bottom goes very deep aft before it comes over the planing hump.



The graph above shows, the need for power at different speeds. The Hp effect has been calibrated to the actual measured values. The dashed curves correspond to what is needed when the boats goes in waves with significant height of 0.25 m. It also shows the calculated average values of how hard the boat dig in waves. The calculations are based on several different methods; the results are consistent in these cases.

Normally considered is that we can handle 1.0 g in four to eight hours and 1.5 g in one or two hours. Paying guests should not be exposed to more than 0.6g.

If we only accept 1.0 g, then the slim and shallow boat can go for thirty knots while the beamy boat with deep V-bottom must slow down to only twenty knots to have the same comfort.

The rationale for choosing a deep V-bottom is said to be that it goes softer in seaway. This study shows with all clarity that a slim and shallow boat with optimized bottom is more efficient in all situations than the frequent used deep V-bottom. It requires, however, that the boat must be calculated very carefully so that all input values are attuned so that the result will be full harmony.

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Jürgen Sass

08 541 324 00

www.sassdesign.net