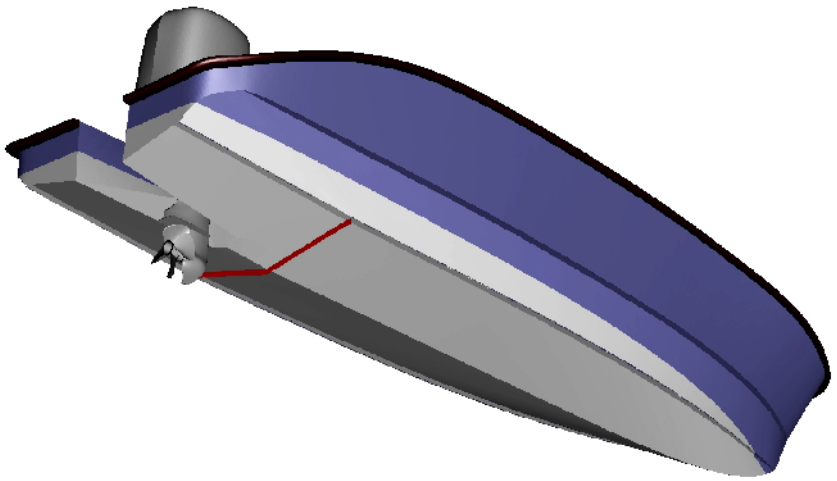
Ecodream, an optimized motor boat

To every boat builder and boat designer appears the dream of the ultimate boat sooner or later. It's all about optimization at all times. Although I have for many years been fascinated by the vision of the ultimate motor boat. The aim was to provide a boat with high efficiency and smooth operation over a wide speed range

One of these projects was the boat with a low deadrise and double chines to get good seakeeping and to be effective over a wide speed range. Another project was a boat with midship interceptor to halve the energy requirements. A third project was to create a hull shape that would be more effective than the traditional Pettersson boat.

Based on the positive results from these and other projects were a vision born for an optimal boat for a very wide speed range. The boat would have an extremely low power requirements and go soft in seaway.

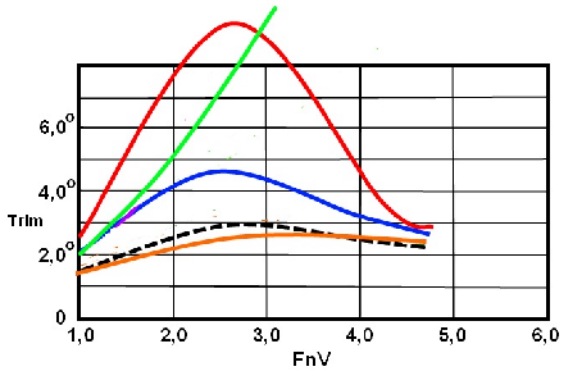


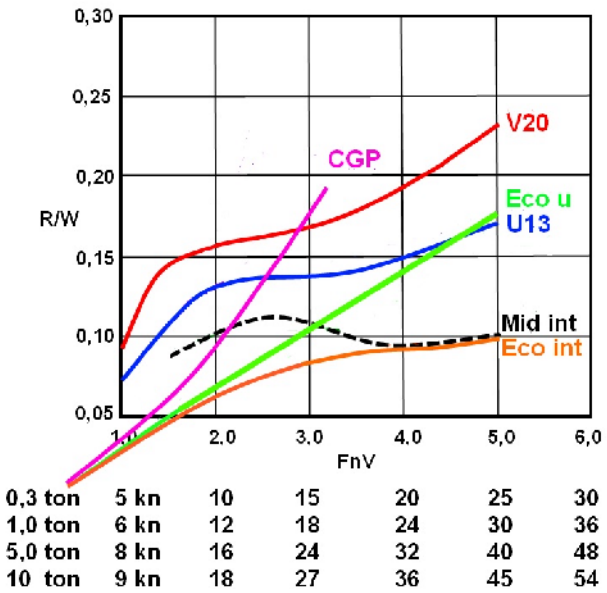
The sketch is based on a boat with dimensions 7.5 x 2.0 meters and a maximum total weight around 1.3 tonnes. Of course, the technology can be used in all sizes of boats.

In the lowest speed range around seven knots, the boat is optimized as a deplacement boat with a long waterline, a small transom, minimal wetted surface and optimized center of gravity. This results in small wave making drag and very low trim angle. In order to run with seven knots are about four horsepowers required at 65% efficiency.

In the middle speed range will the aft placed interceptor come to work. The surface aft stays completely dry. The boat is thereby a planing boat with optimized dimensions for efficiency and soft ride. Thanks to the advantageous proportions the trim angle do not change appreciably, as in an ordinary deep V-hull. At twenty knots about twentythree horsepowers are required.

In the highest speed range the adjustable interceptor works so that power requirement is reduced by one-third of what an equivalent normal boat would need. At thirtyfive knots are fifty plus horsepowers required. A corresponding normal boat with a deep V-bottom would need about double that.





0,3 ton	5 kn	10	15	20	25	30
1,0 ton	6 kn	12	18	24	30	36
5,0 ton	8 kn	16	24	32	40	48
10 ton	9 kn	18	27	36	45	54

Examples of comparable boats

V20

3,6 x 1,5	0,3 ton
5,6 x 2,0	1,0 ton
9,6 x 3,3	5,0 ton
12,0 x 4,0	10,0 ton

Eco u	Eco int	CGP
4,3 x 1.3		0,3 ton
6,8 x 1,9		1,0 ton
11,8 x 3,1		5,0 ton
14,8 x 3,8		10,0 ton

The above diagram shows the resistance in relation to the boat's total weight, R / W. Also shown is the trim angle at different speeds. Below the graph is seen respectively speeds depending on the boat's total weight. The values of **V20** and **U13** are from a previous report, as well as the values of the boat with **mid**ship **int**erceptor. The Eco-boat values **without** and **with int**erceptor are measured values from conducted model tests. In addition to this is also seen the measured values for the corresponding round-bottomed displacement **CG P**ettersson-boats.

Overall, we can create a boat that can be fitted with a smaller engine than what is normal and thus the total weight is further slightly lower than that required in an ordinary boat. Note that the boat in this study from the outset is about twenty-five percent more efficient than a boat with a deep V-bottom, such as **V20**. This has been reported in detail in a previous study, which is available on the website.

Currently have a 1.2 meter model been tested in a first round to be compared with past experience. Later in the summer of 2012, a 5.5-meter prototype will be built to test how the different components can work together for optimal results. The tests will also provide guidance for calculating the properties of boats of all sizes.

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