

MARBLEHEAD VINTAGE

ESTEREL 50/800

By ClaudioD

## Some thoughts

Among various designs I did, the missing one that I liked very much, was the 12 Meters International.

Once I visited the US Vintage Model Group site, I told that one day I will make one.

I followed a discussion about the Dawn at the RC Group Forum.

I did participate at the discussion and finally after an initial development with the "SunSet", I decided to develop my own model in the Series "Esterel design" and arrived to the "Esterel-VM".

Several aspects taken into account:

- The model shall be fast and consequently not very heavy
- Drag effects to be low as possible
- Deck line should be out of the water as much as possible during tilting
- The hull draft increased at 230mm compared with the "Dawn-50/800"
- Following VM Rules, the veneer wood and diagonal straps are adopted

In the following pages are depicted my preliminary choices:

Page 3 - Overall view

Page 4 - Preliminary Weight Budget and Esterel-VM Shadows

Page 5 - Sail Plan for 800 inches<sup>2</sup> or 51.61m<sup>2</sup>

Page 6 - Hull Surface calculation without Keel & Ballast

Page 7 - Keel and Hull setting for diagonal strapping

Page 8 - Diagonal strapping principle, 2 or 3 layers still to be confirmed

Page 9 - Ballast and Keel frames

Page 10- COA-Curve of Area with Displacement, LCB and Prismatic Coefficient

Page 11 - Hull design tumblehome and Topside evolution effect

Page 12- Preliminary Static Righting Moment for 10 knots of wind

Page 13 - Pears wood veneer color

I would like to use the Pears wood veneer of 0.6mm that I have in stock since several years.

Actually the Weight Budget is dependant from the keel/ballast frames weight.

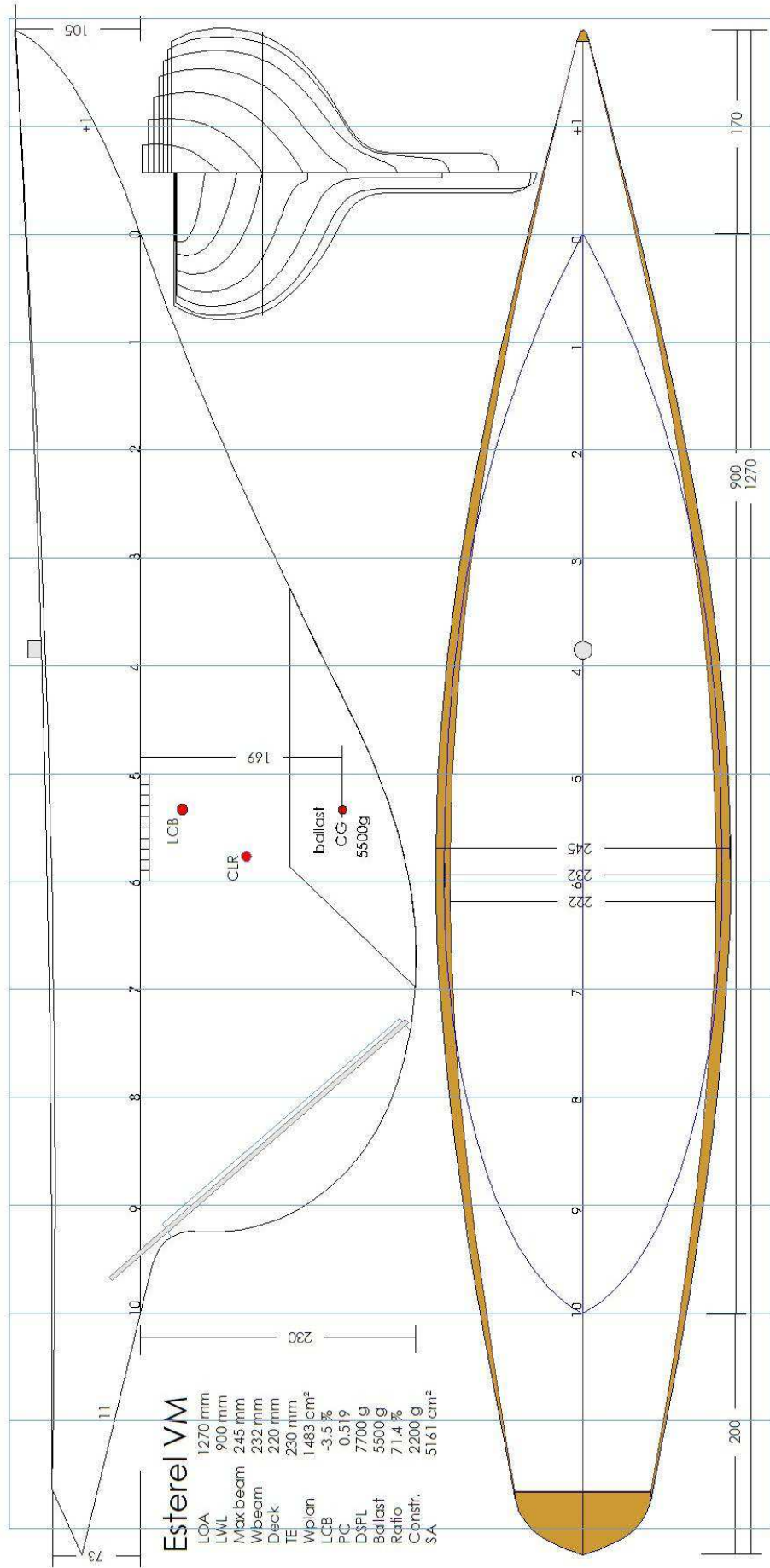
I do consider using 10mm plywood epoxy bonded.

Not excluded some hollow cutout to gain some weight.

Remain the choice for the adhesive in order to spare some bonding weight.

PU adhesive for his characteristics is actually the preferred candidate.

Not excluded to reduce the displacement acting on the Hull width.



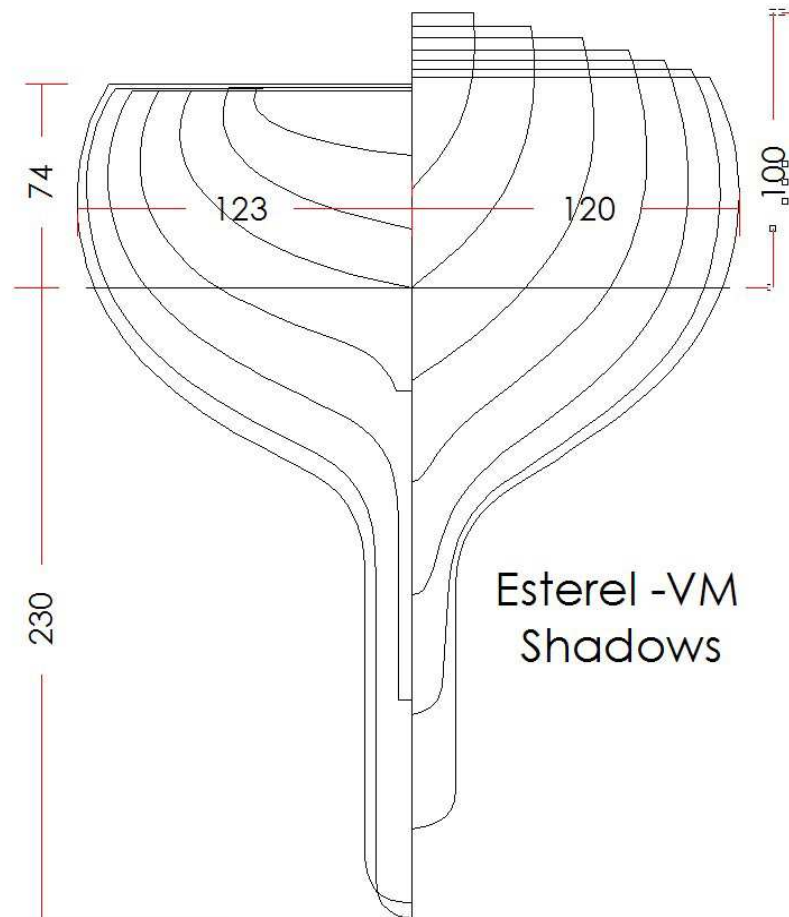
## Preliminary Budget for Esterel VM with Veneer Pear wood

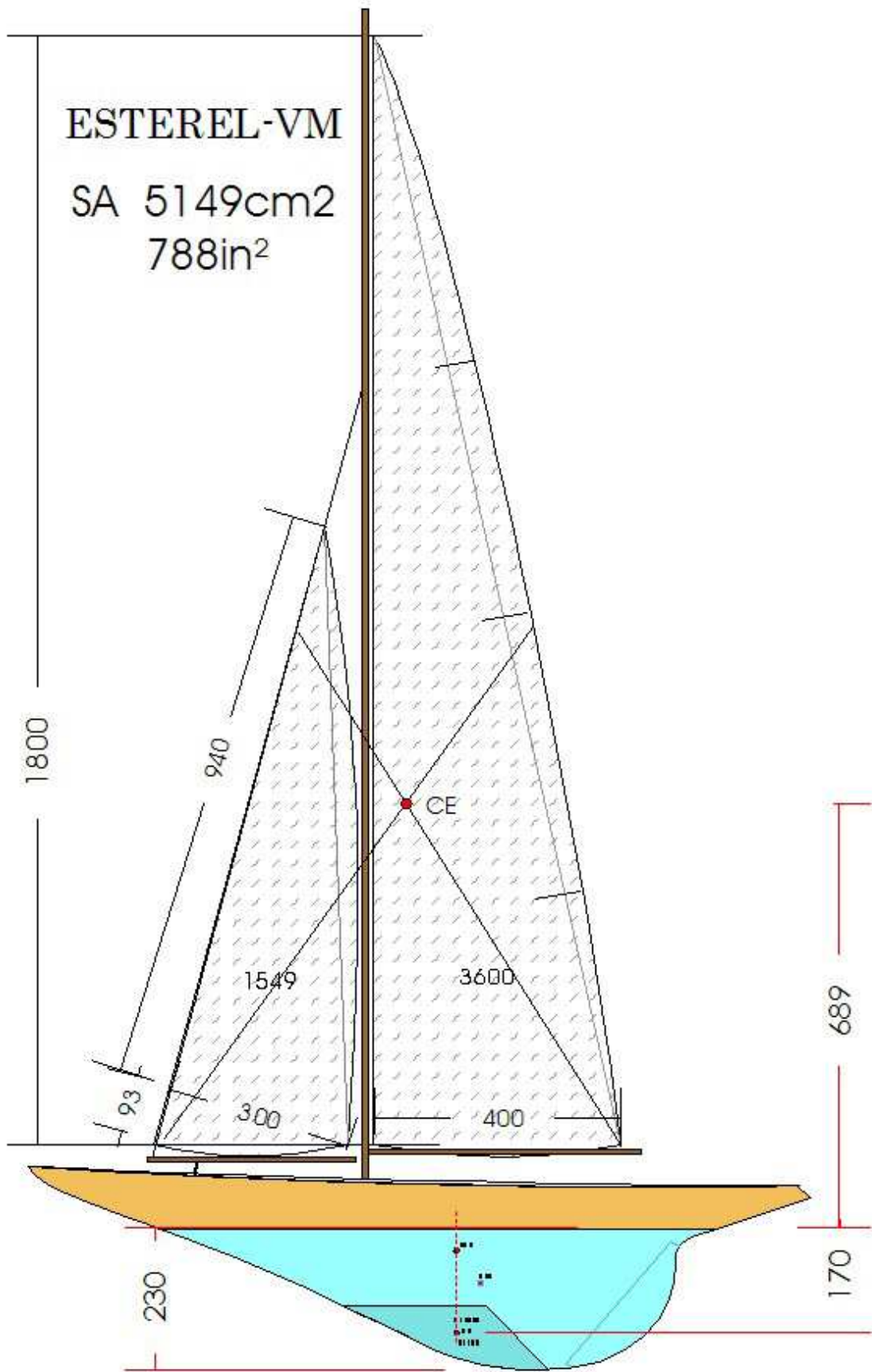
Hull	895 g	veneer + glass-epoxy + keel-Sh + base cp
Keel	270 g	pine wood for Fin+ballast
Deck	200 g	wood stripes + glass-Epoxy reinf.

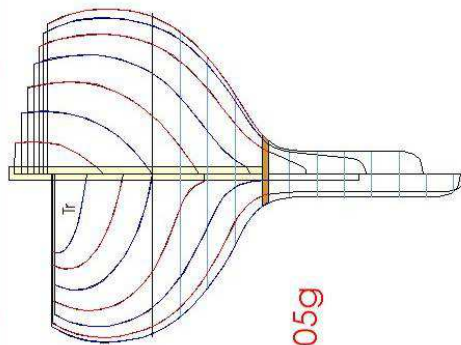
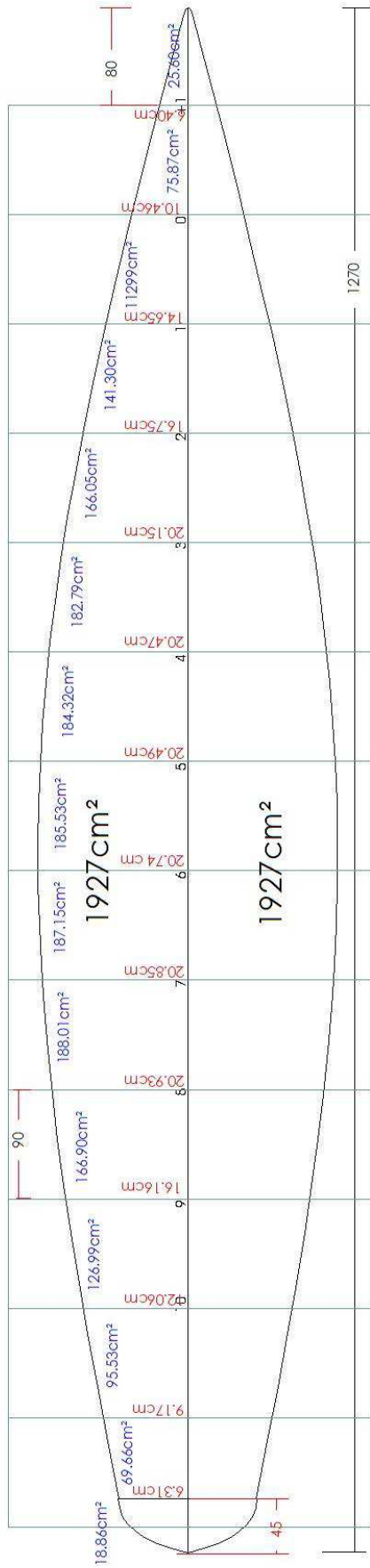
*Hull sub tot.* 1365 g

Electronics	250 g
Rig	350 g
Suppports	100 g
Hardware	100 g
Constr.	2165g

Rounded to	2200 g	Construction skill !
Ballast	5500 g	
Total	7700 g	17 lbs
Ratio	71.4 %	







- s6 20.74 cm
- s7 20.85 cm
- s8 20.93 cm
- s9 16.16 cm
- s10 12.06 cm
- s11 9.17 cm
- Tr 6.31 cm

Hull Construction ~505g  
without keel

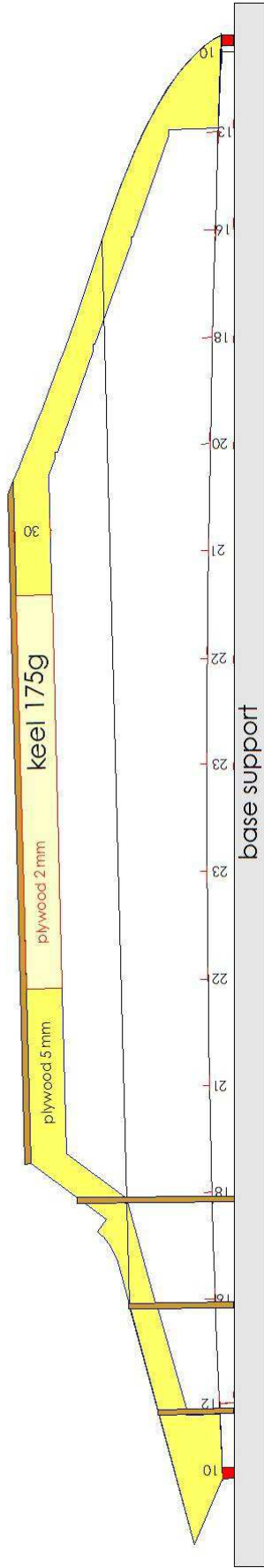
- s5 20.49 cm
- s4 20.47 cm
- s3 20.15 cm
- s2 16.75 cm
- s1 14.65 cm
- s0 10.46 cm
- +1 6.40 cm

Hull Surface without Keel  
1927 x 2 = 3854cm²

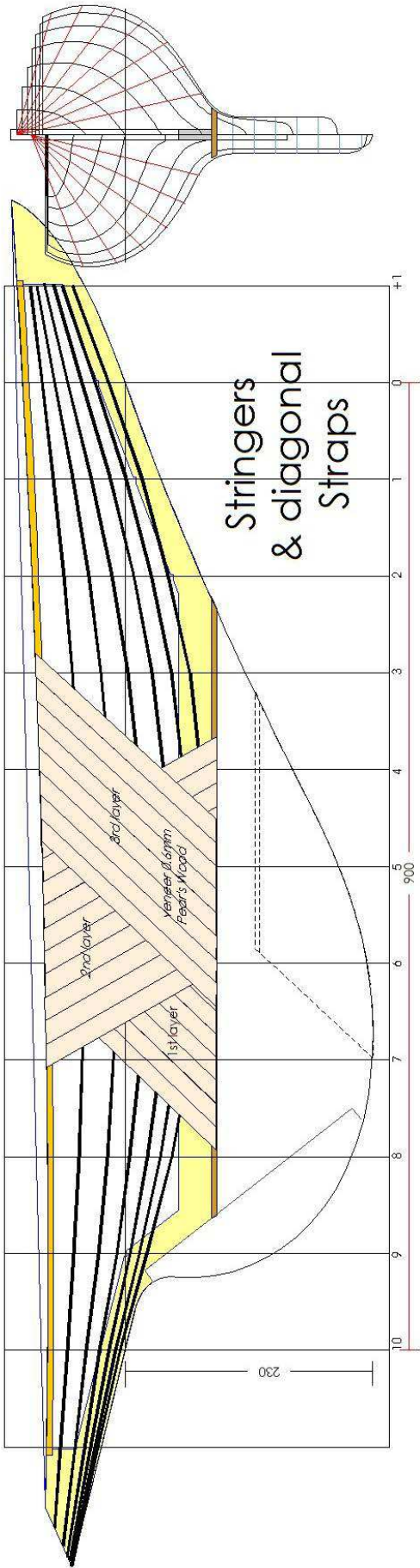
veneer pear wood 3.10g/dm²  
38.54dm² x 3.10 = 119.47g one layer  
119.47 x 3 layers = 358.41 g

adhesive PU 180g/m² = 1.8g/dm²  
38.54dm² x 1.8g = 69.37g

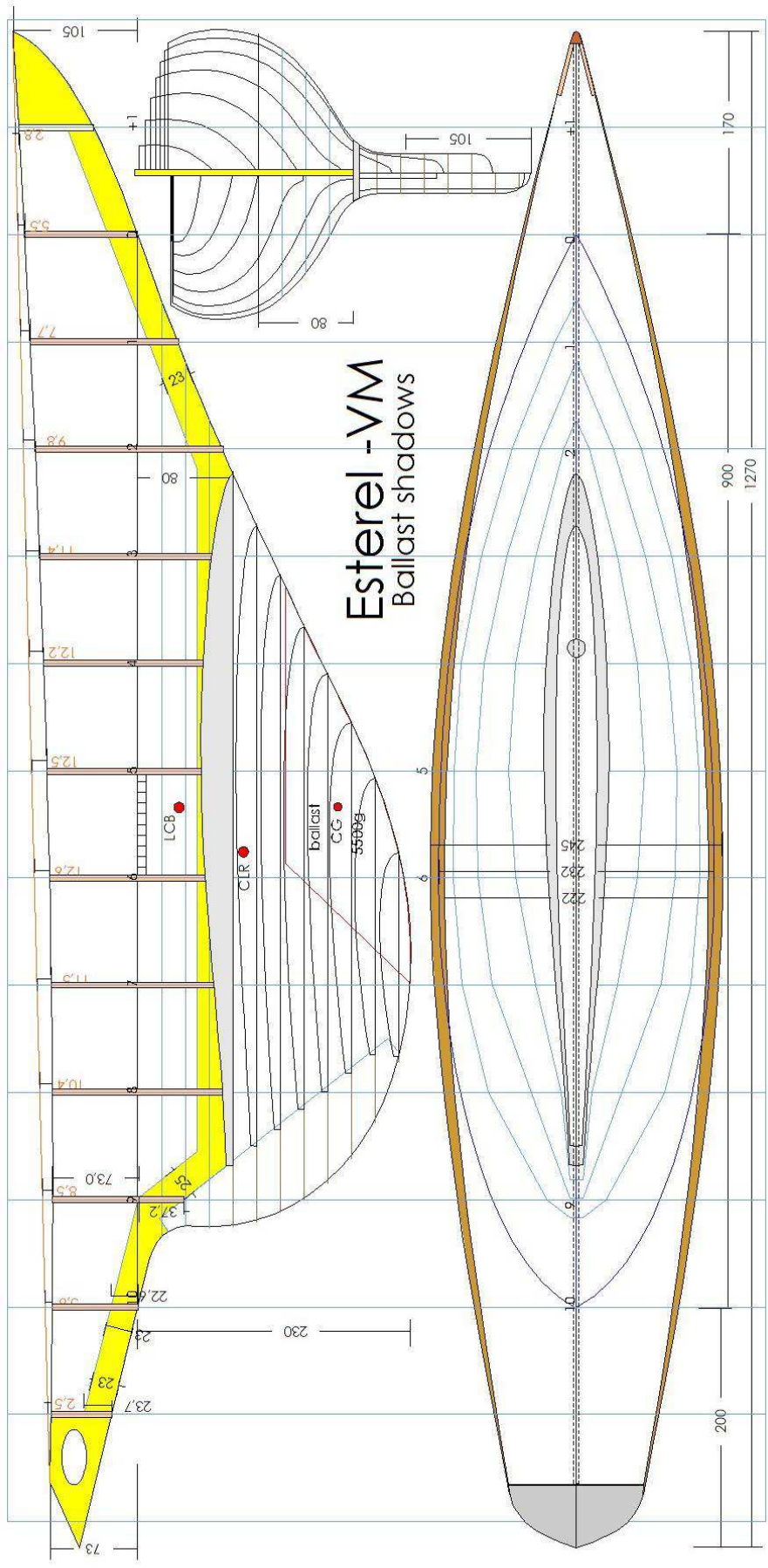
expected Hull weight : 358.41g + 69.37g + (0.5x2 x 2 x 38.54) = ~505g  
without keel

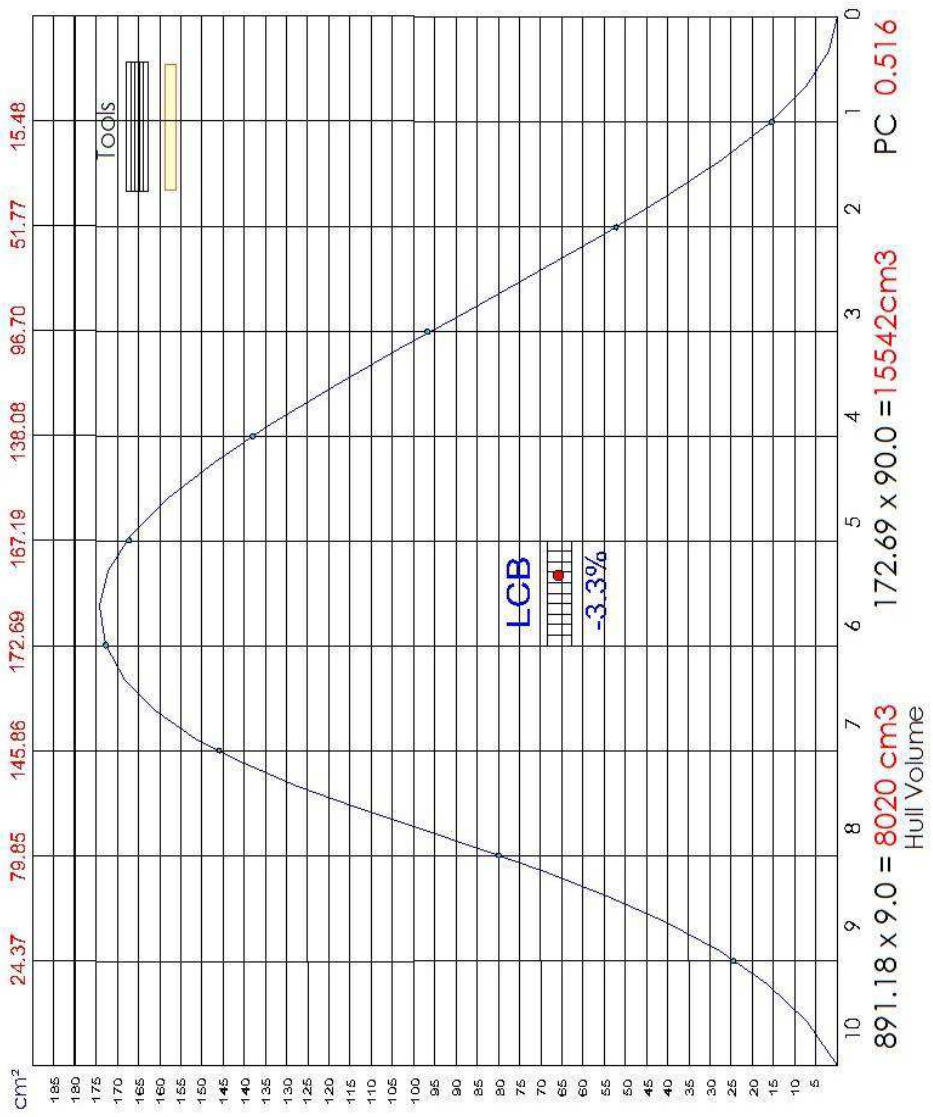


Esterel-VM Mounting Set-Up

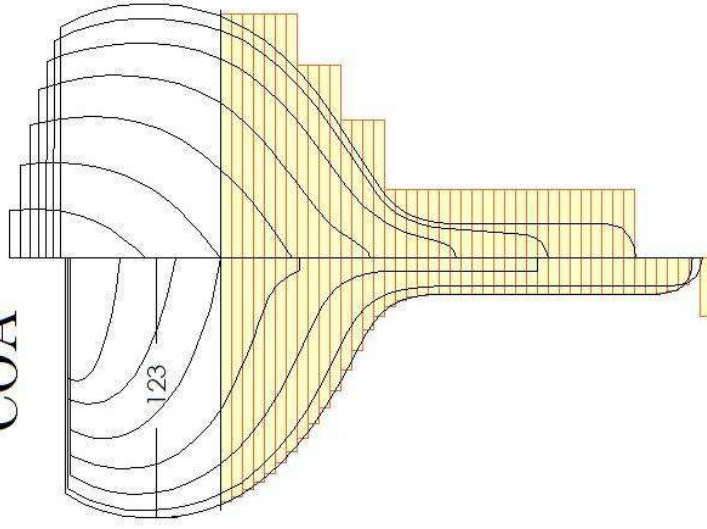




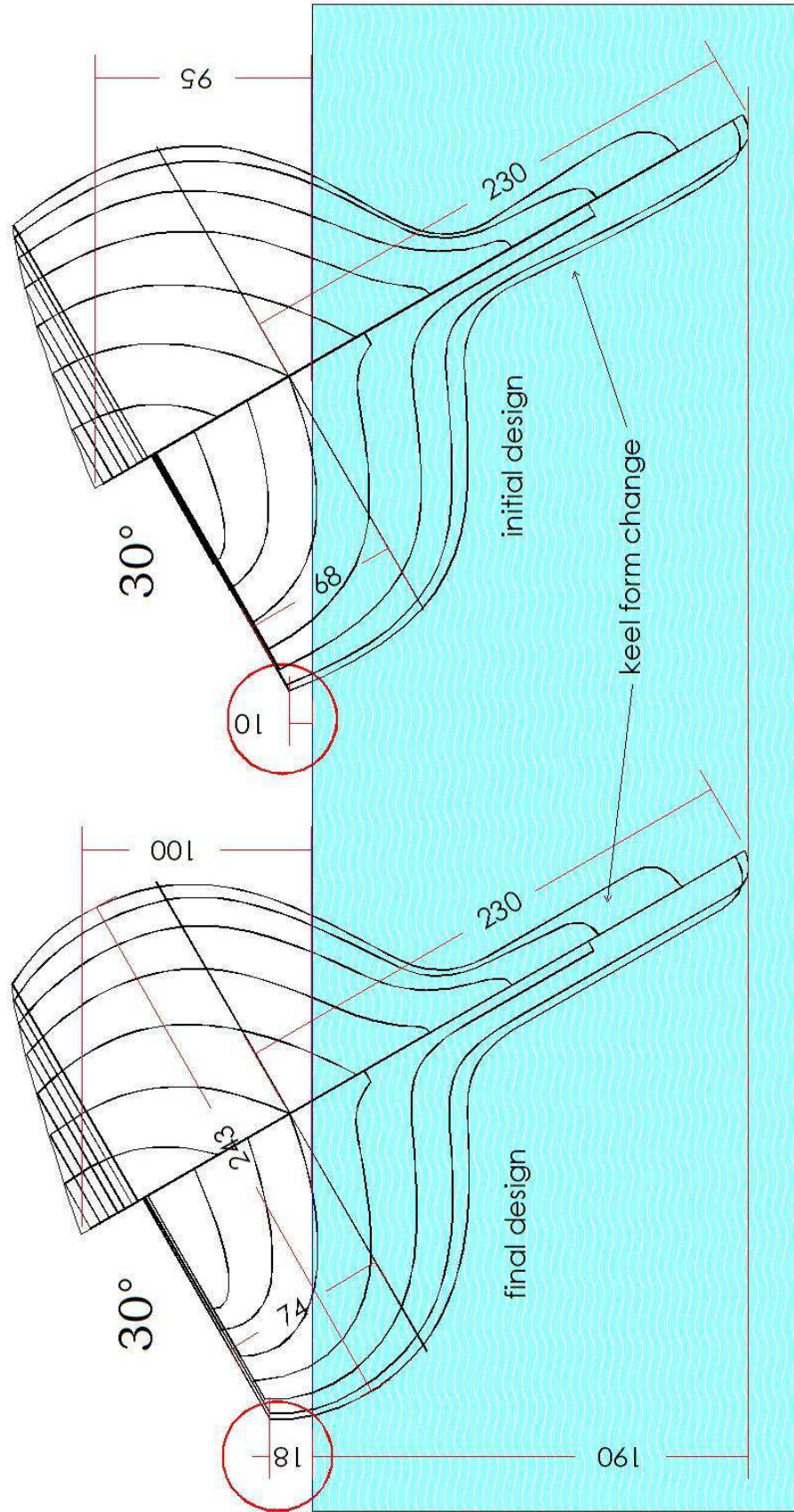




# ESTEREL-VM COA



# tumblehome & topside evolution



## Static Righting Moment

Bernoulli formula

$$W \times I \sin 45^\circ = 1/2 \times 1.293 \times C \times SA \times V^2 \times L \times \cos 45^\circ$$

Wind speed

10kt (5.14ms)

SA 5149  
788in<sup>2</sup>

$$W \times 0.172 \times 0.7 = 0.120 \times W$$

$$0.5 \times 1.293 \times 1.4 \times 0.515 \times 26.41 \times 0.689 \times 0.7 = 5.94$$

$$W = 5.94 / 0.120 = 49.5N / 9.81 = 5.04 \text{ kg Ballast required for 10kt}$$

W = Ballast

I = distance LCB - CG Bulb in mt.

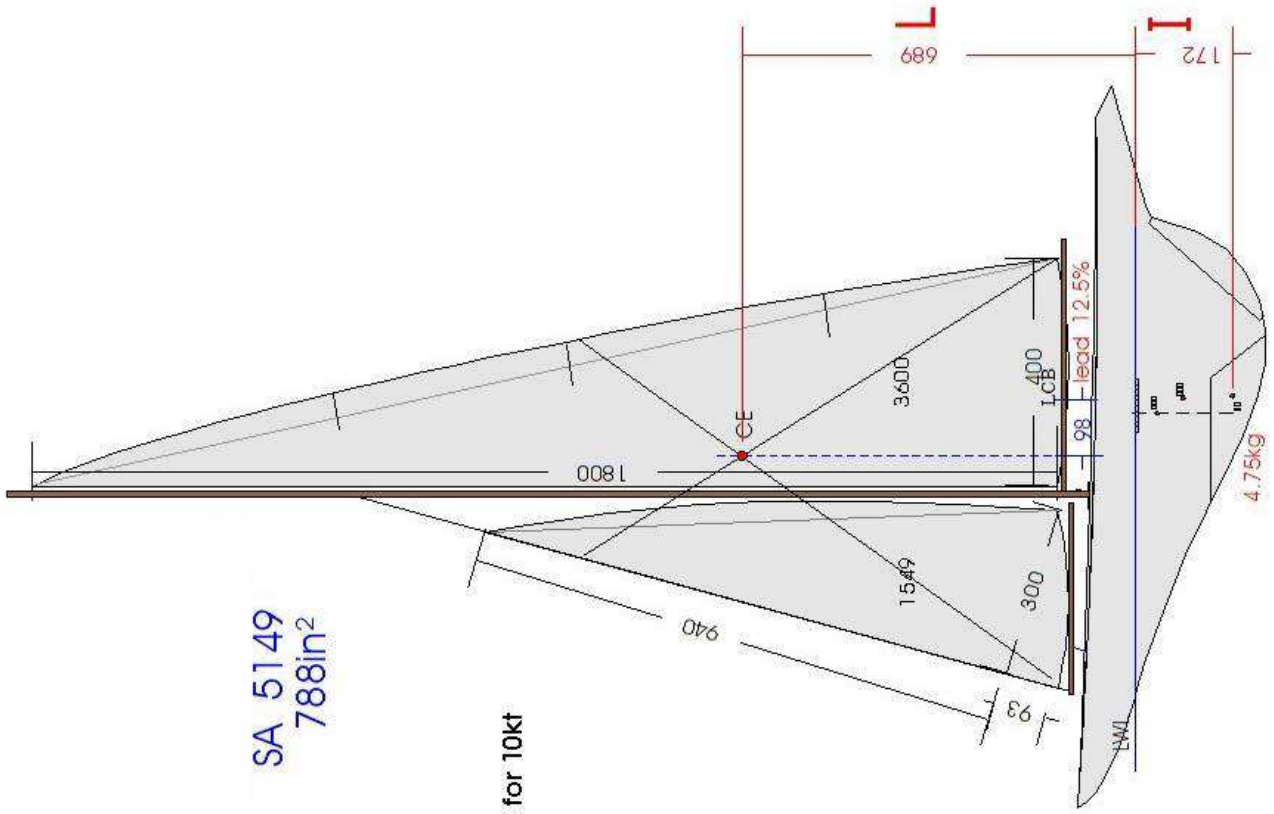
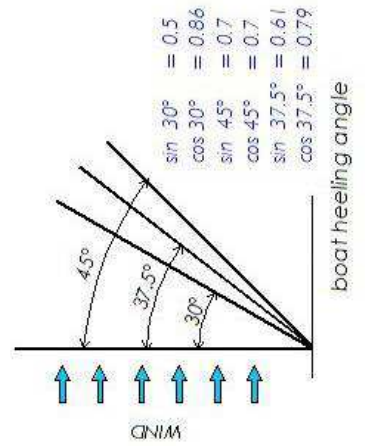
L = distance CE - LCB in mt

1.293 = Air density (kg/m<sup>3</sup>)

V<sup>2</sup> = Speed in m/s<sup>2</sup>

SA = Sail Area in m<sup>2</sup> (800in<sup>2</sup> = 0.516m<sup>2</sup>)

C = Lift Coefficient = 0.9 running / 1.4 close hauled



PEAR (crown cut)

