POLI.DESIGN
FOUNDED BY POLITECNICO DI MILANO

LOVERS ROCK 68

IOANA VALENTINA

MYD
YACHT DESIGN

CONCEPT

Brief

Lovers Rock concept started from the racing typology of the IMOCA 60. The client wanted a racing boat with great performance but at the same time with enough confort and conditions to host friends and family when the boat is not racing. The key words that express best the concept are Performance, Art, Experience, Functionality. The preliminary idea was an “UFO” Imoca style boat brought down to a functional family vessel.

The indecision between collapse and control, brutality and refinement, grace and ugliness”

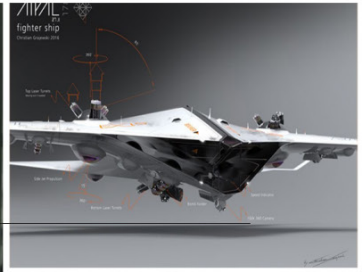
CONCEPT

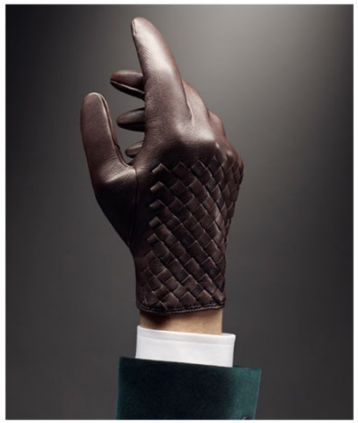
"I think it's very important to have a feedback loop, where you're constantly thinking about what you've done and how you could be doing it better."

JOHN REEVES , 49 years





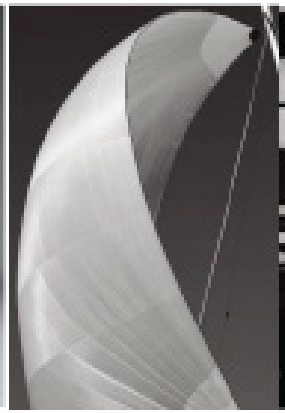


LUXURY - ELEGANCE - TECHNOLOGY - ADVENTURE - GALACTIC

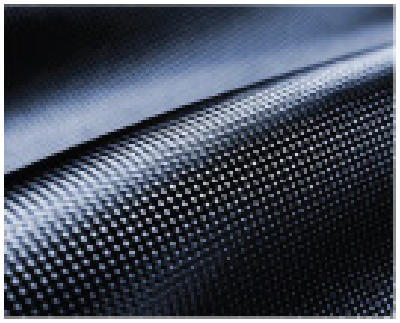
CLIENT WISHES

OPEN SPACE

TECHNOLOGICALY ADVANCED

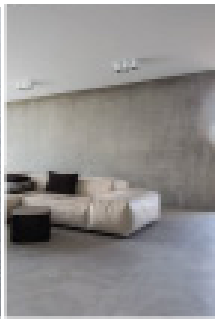


FUTURISTIC



STAND OUT

FUNKY

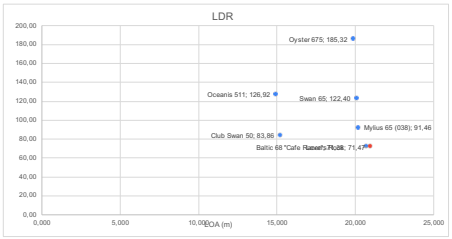


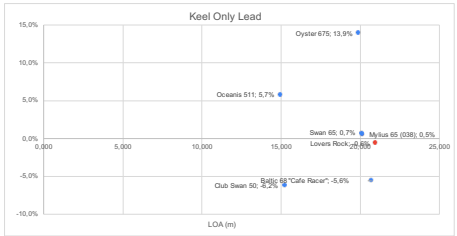
STATE OF THE ART

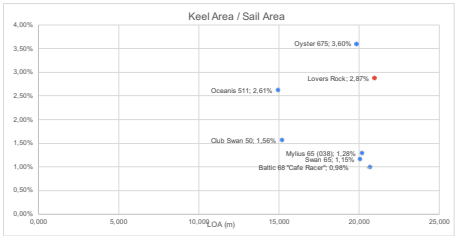
MARKET ANALYSIS

NAME OF THE BOAT	SAIL NUMBER	LAUNCH DATE	BOAT'S PREVIOUS NAME(S)	SHIPYARD	LENGTH	BEAM	DRAUGHT	WEIGHT (Tonnes)	DAGGERBOARDS	MAST HEIGHT (Metres)	KEEL FIN	SAIL AREA (UPWIND) M2	SAIL AREA (DOWNWIND) M2
NO WAY BACK	NED 160	01.08.2015	VENTO DI SARDEGNA	PERSICO MARINE	18,28	5,8	4,5	7,5	2 (FOILS)	29	IMOCA one-design	320	570
SMA	1859	01.01.2011	MACIF	CDK - MER AGITEE	18,28	5,7	4,5	7,7	nc	29	Forged Steel	340	570
HUGO BOSS	GBR 99	01.09.2015		GREEN MARINE	18,28 m	NC	4,5	7,5	2 (FOILS)	29	NC	340	570
ST MICHEL - VIRBAC	FRA06	12.09.2015		MULTIPLAST VANNES	18,28 m		4,5			29			
EDMOND DE ROTHSCHILD	FRA 16	07.08.2015		MULTIPLAST VANNES	18,28 m	5.70	4,5	7,6	2 (FOILS)	29	NC	290	490
BANQUE POPULAIRE	FRA 18	09.06.2015		CDK TECHNOLOGIES	18,28 m	5,8	4,5	7,6	2 (FOILS)	29	Steel	300	600
SAFRAN	FRA 25	05.03.2015		CDK TECHNOLOGIES	18,28 m	5,8	4,5	NC	2 (FOILS)	29	Steel	300	550
MAITRE COQ	FRA 19	20.09.2010	FONCIA BANQUE POPULAIRE	CDK JMV GREEN MARINE	18,28 m	5,9	4,5	7,8	2 (FOILS)	29	NC	300	660
BASTIDE OTIO	FRA 30	06.05.2010	VIRBAC PAPREC 3 HUGO BOSS	COOKSON BOATS	18,28 m	5,7	4,5	7,8	2	29	Steel	300	590
PRB	FRA 85	11.03.2010		LARROS CDK REFRASCHINI	18,28 m	5,5	4,5	NC	2	29	Mechanically welded steel	300	600
LE SOUFFLE DU NORD POUR LE PROJET IMAGINE	FRA 60	01.01.2007	GROUPE BEL	INDIANA YACHTING	18,28 m	5,5	4,5	7,7	NC	29	Carbon	340	570
QUEGUINER - LEUCÉMIE ESPOIR	FRA 29	01.08.2007	SAFRAN	LARROS	18,28 m	5,7	4,5	8	2	29	Singlepiece steel	300	650
CORUM L'EPARGNE		05.05.2020		Mer Agitée & CDK Technologies	18,28 m	5,7	4,5	7,9	2 (FOILS)	29	Steel	260	530
11th Hour Racing 1			HUGO BOSS	Green Marine	18,28 m	5,7	4,5		2 (FOILS)	29	Steel	340 m2	570 m2
Bureau Valee 3				Black Pepper Yachts	18,28 m				2 (FOILS)	29		270 m2	535 m2
Charal												320 m2	600 m2
Linkedout												320m2	430m2
Initiatives-Cœur												280 m2	600 m2
APIVIA		08.05.2019		CDK Technologies	18,28 m	5,85	4,5	8	2 (FOILS)	29		350	560

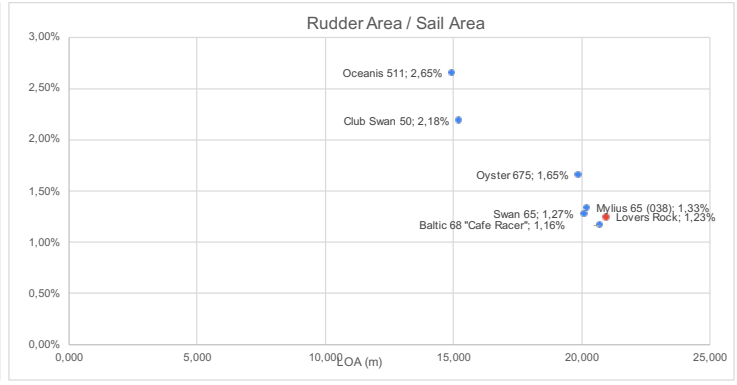
Yacht	HULL DATA	LOA metric	Lwl	Tc	Draught	Displacement	L / T	L/D R	RIG DATA	Mainsail Area	Jib Area	Upwind Sail Area	SA/D	X_CE Δ	Y_CEΔ	Mean Chord	Keel Draught	Planar Area	LCA @ 0	VCA @ 0	X_CLR	Y_CLR
		m	m	m	m	t	-	-		m^2	m^2	m^2		m	m	m	m	m	m	m	m	m
Lovers Rock		21,000	19,851	0,696	2,20	20,046	30,2	71,47		146,35	110,66	257,01	35,4	-9,413	12,361	4,093	1,504	3,172	-9,279	-1,845	-9,279	-1,845
Baltic 68 "Cafe Racer"		20,730	20,730	0,626	4,00	22,800	33,1	71,38		152	113,47	265,47	33,6	-10,75	11,58	1,114	3,374	3,09	-9,598	-2,043	-9,598	-2,043
Mylius 65 (038)		20,200	18,062	0,585	3,40	19,323	34,5	91,46		146	112,00	258,00	36,4	-9,63	12,71	1,428	2,815	3,43	-9,738	-1,727	-9,738	-1,727
Club Swan 50		15,240	14,000	0,403	3,46	8,250	37,8	83,86		90,15	66,98	157,13	39,1	-7,82	9,66	1,042	3,054	3,425	-6,8711	-2,177	-6,871	-2,177
Swan 65		20,110	18,380	0,808	3,50	27,250	24,9	122,40		122,68	115,49	238,17	26,7	-9,31	11,72	1,3295	2,692	3,03	-9,451	1,861	-9,451	1,861
Oyster 675		19,890	18,310	0,833	2,95	40,787	23,9	185,32		89,463	71,77	161,23	13,8	-7,05	9,682	2,582	2,117	2,667	-9,812	-1,633	-9,812	-1,633
Oceanis 511		14,980	14,520	0,650	2,36	13,930	23,0	126,92		45,0	46,0	91,00	16,0	-6,29	8,996	1,2	1,710	2,4106	-7,146	-1,535	-7,146	-1,535

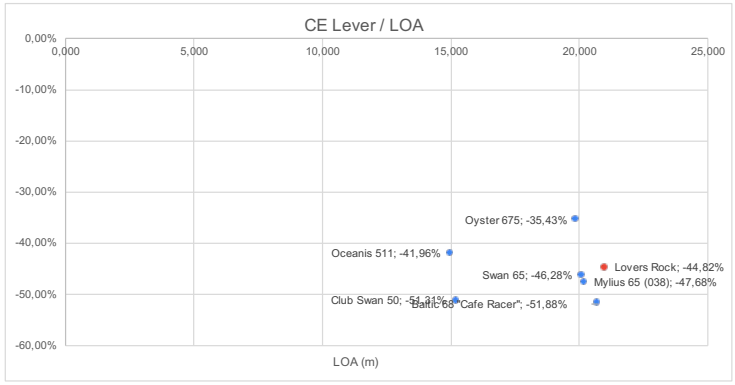


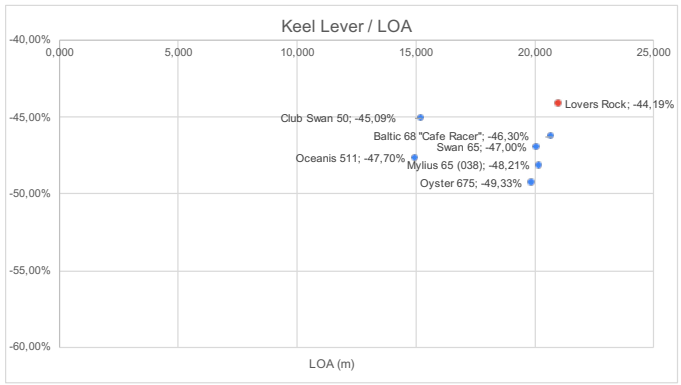




Y_CLR BALANCE	LEAD Keel Only	LEAD/LOA Keel Only	Keel Area / Sail Area	Rudder Area / Sail Area	CE Lever / LOA	Keel Lever/LOA	Rudder Lever/LOA
m	m	%	%	%	%	%	%
-0,349	-0,134	-0,6%	2,87%	1,23%	-44,82%	-44,19%	-95,41%
-0,461	-1,156	-5,6%	0,98%	1,16%	-51,88%	-46,30%	-98,23%
-0,335	0,106	0,5%	1,28%	1,33%	-47,68%	-48,21%	-9,01%
-0,304	-0,948	-6,2%	1,56%	2,18%	-51,31%	-45,09%	-97,65%
0,619	0,145	0,7%	1,15%	1,27%	-46,28%	-47,00%	-92,20%
-0,691	2,764	13,9%	3,60%	1,65%	-35,43%	-49,33%	-92,26%
0,754	0,861	5,7%	2,61%	2,65%	-41,96%	-47,70%	-92,97%







Corum L'Epargne - reference boat

HULL HYDROSTATICS

DISPLACEMENT : 20046

WL Lenght : 19.851

Prismatic Coefficient : 0.583

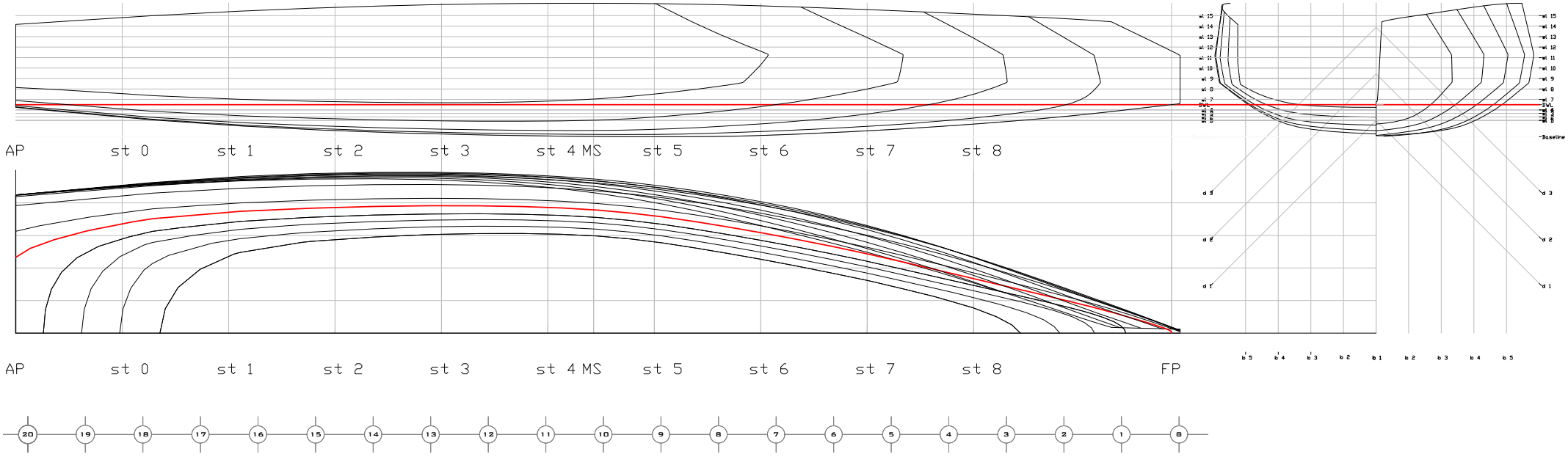
Block. coefficient 0.408

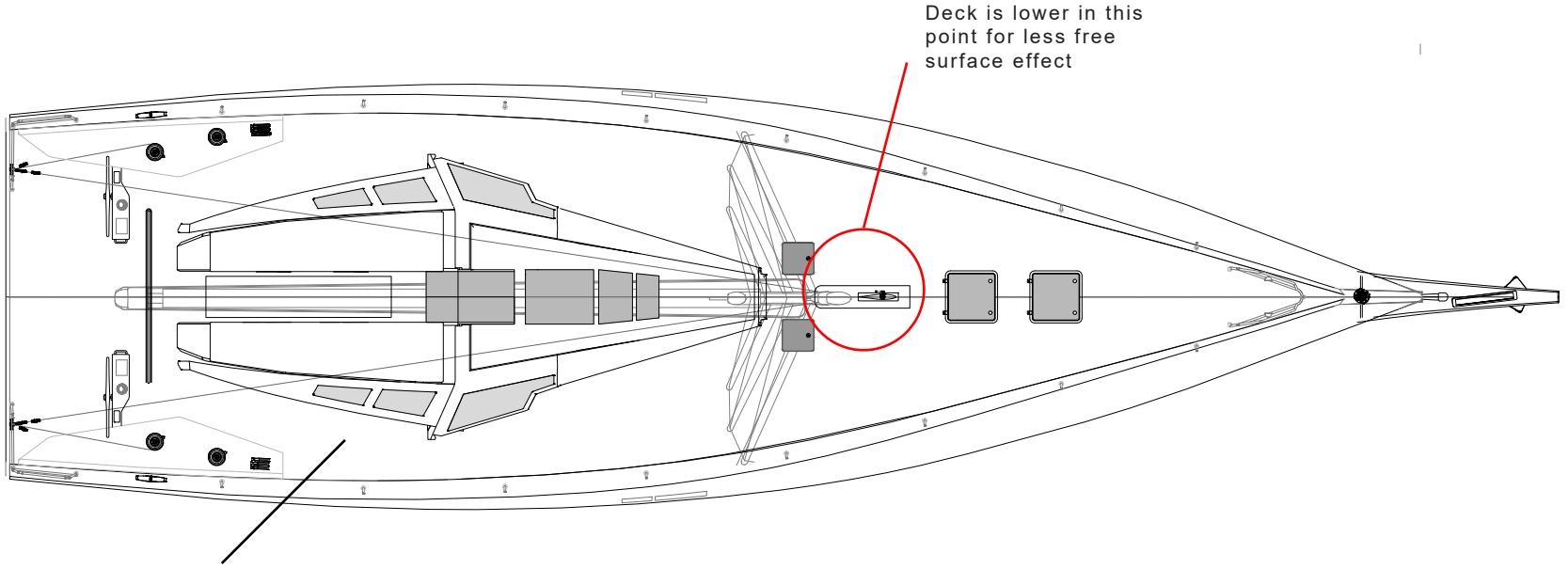
LCB 0.043
(from 0 point)

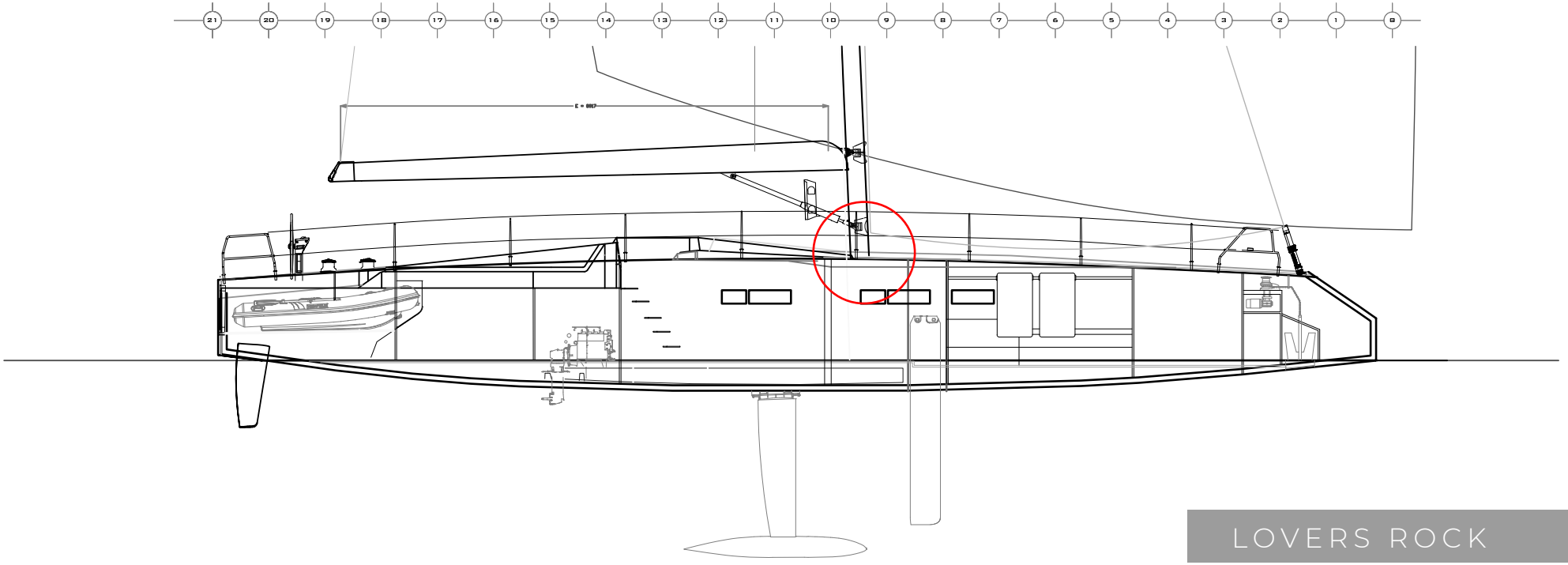
Waterplane area coef. 0.747

	Measurement	Value	Units
1	Displacement	20046	kg
2	Volume (displaced)	19.557	m^3
3	Draft Amidships	0.552	m
4	Immersed depth	0.551	m
5	WL Length	19.851	m
6	Beam max extents on WL	4.380	m
7	Wetted Area	68.030	m^2
8	Max sect. area	1.689	m^2
9	Waterpl. Area	64.956	m^2
10	Prismatic coeff. (Cp)	0.583	
11	Block coeff. (Cb)	0.408	
12	Max Sect. area coeff. (Cm)	0.728	
13	Waterpl. area coeff. (Cwp)	0.747	
14	LCB length	8.843	from zero pt. (+ve fwd)
15	LCF length	8.335	from zero pt. (+ve fwd)
16	LCB %	44.546	from zero pt. (+ve fwd)
17	LCF %	41.989	from zero pt. (+ve fwd)
18	KB	0.362	m
19	KG fluid	0.552	m
20	BMt	4.028	m
21	BML	76.915	m
22	GMt corrected	3.839	m
23	GML	76.726	m
24	KMt	4.391	m
25	KML	77.277	m
26	Immersion (TPc)	0.666	tonne/cm
27	MTc	0.775	tonne.m
28	RM at 1deg = GMt.Disp.sin(1)	1343.100	kg.m
29	Length:Beam ratio	4.532	

LINES PLAN




Deck is lower in this point for less free surface effect
INCLINED RAMP


21
20
19
18
17
16
15
14
13
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11
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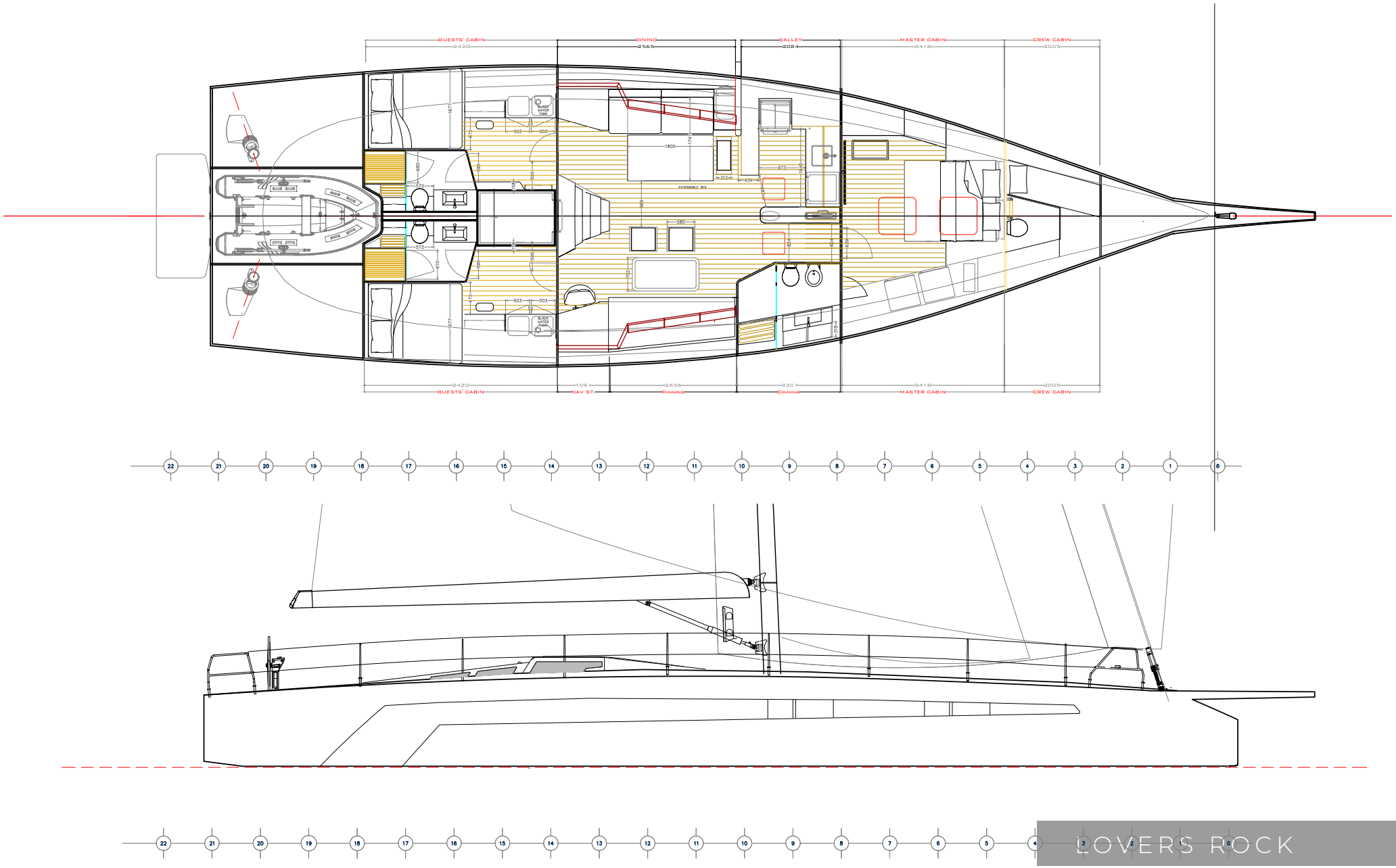
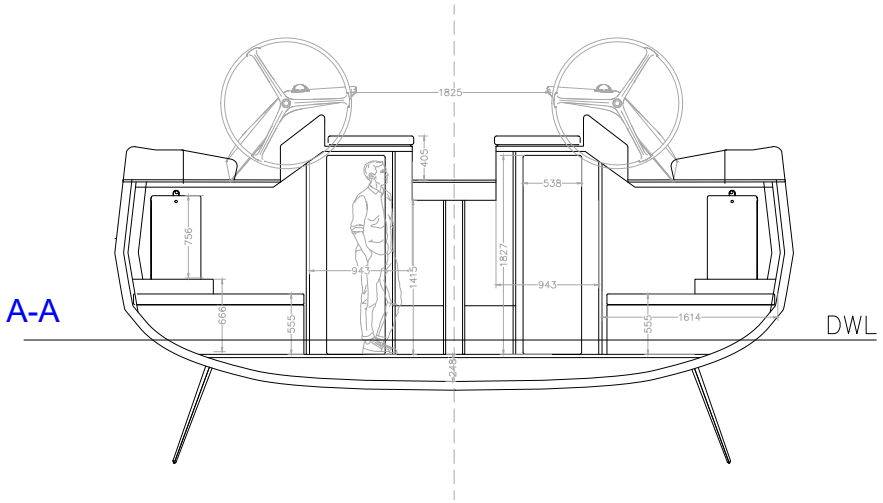
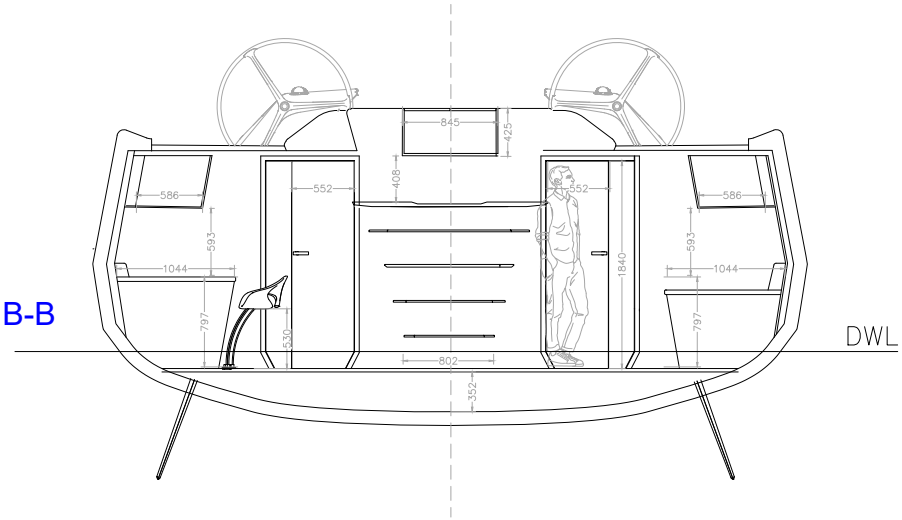
9
8
7
6
5
4
3
2
1
0

GENRAL ARANGMENT



SECTIONS


A-A
DWL
1825
405
538
756
943
1827
1415
666
555
1614
248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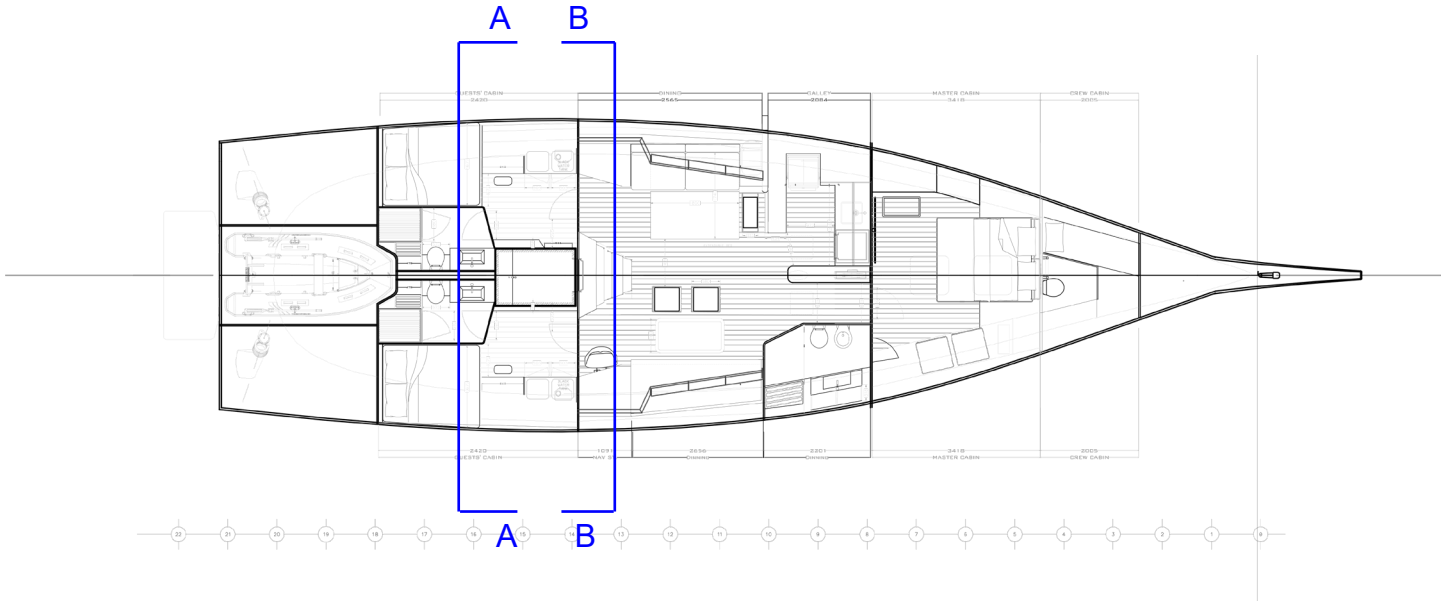
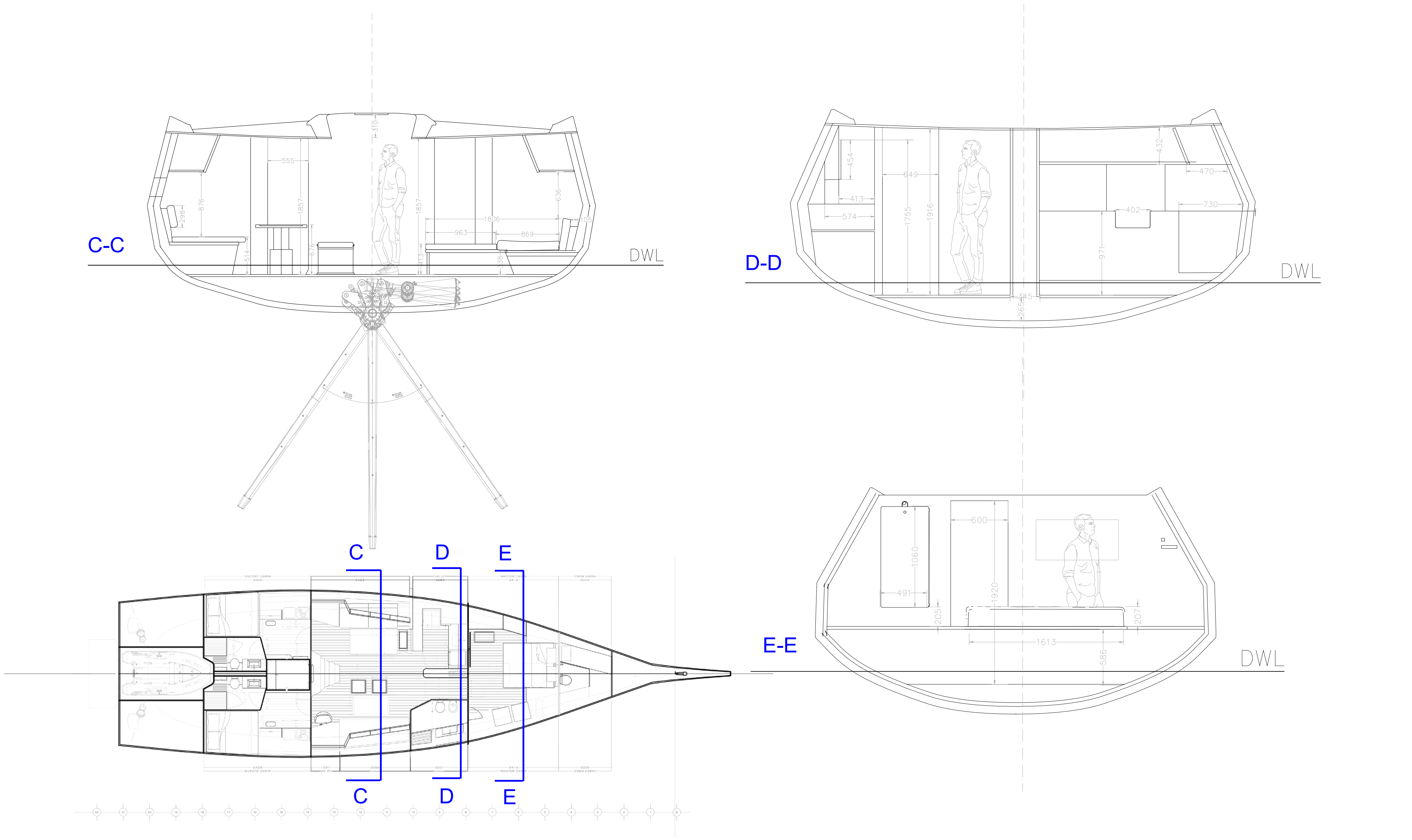
586
552
408
593
1044
1840
797
530
802
352


A
B
A
B


C-C
DWL
D-D
DWL
E-E
DWL
C
D
E
C
D
E
555
1857
876
298
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676
1857
413
1806
963
869
636
105
38
454
649
413
574
1755
1916
432
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971
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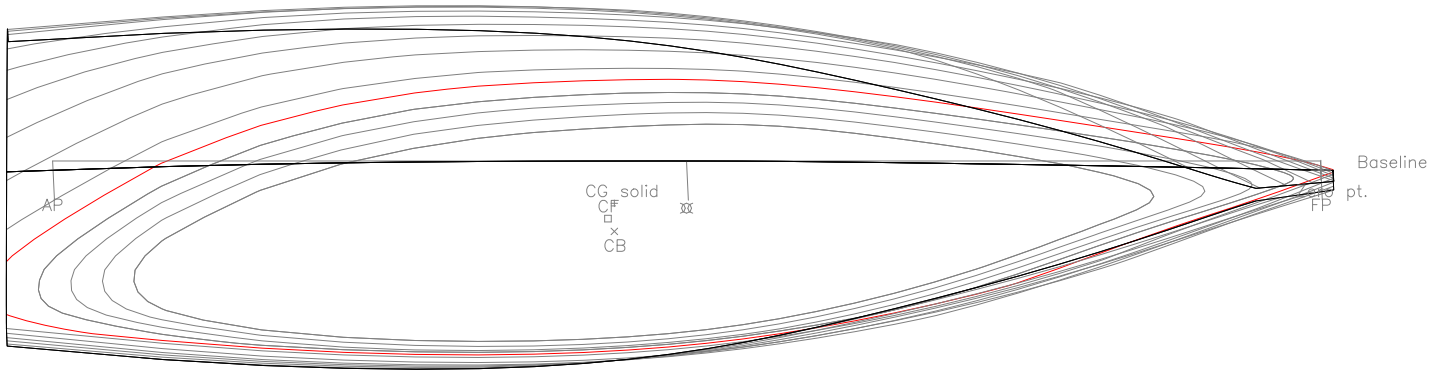
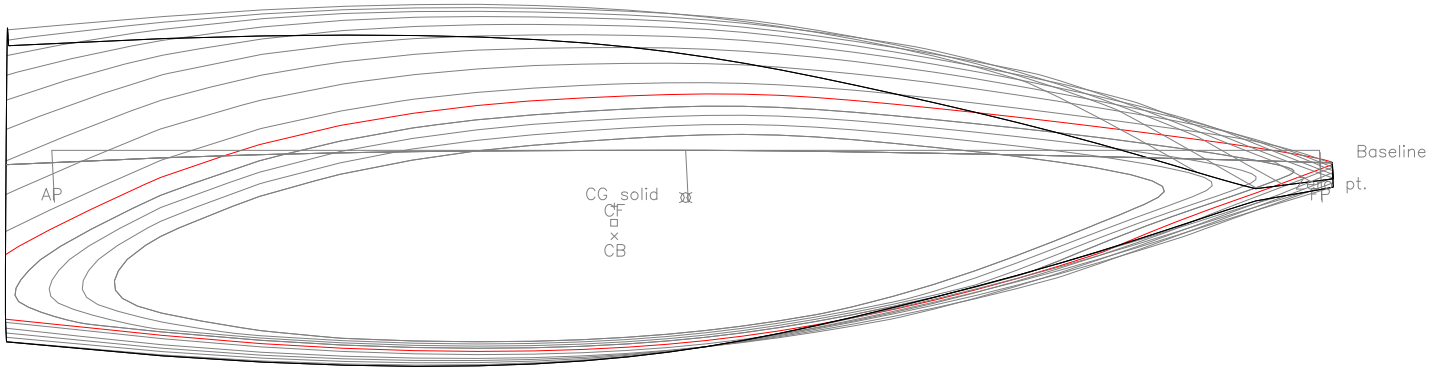
265
600
1060
491
205
1920
207
1613
586

Heeled WL

HEELED WL 15

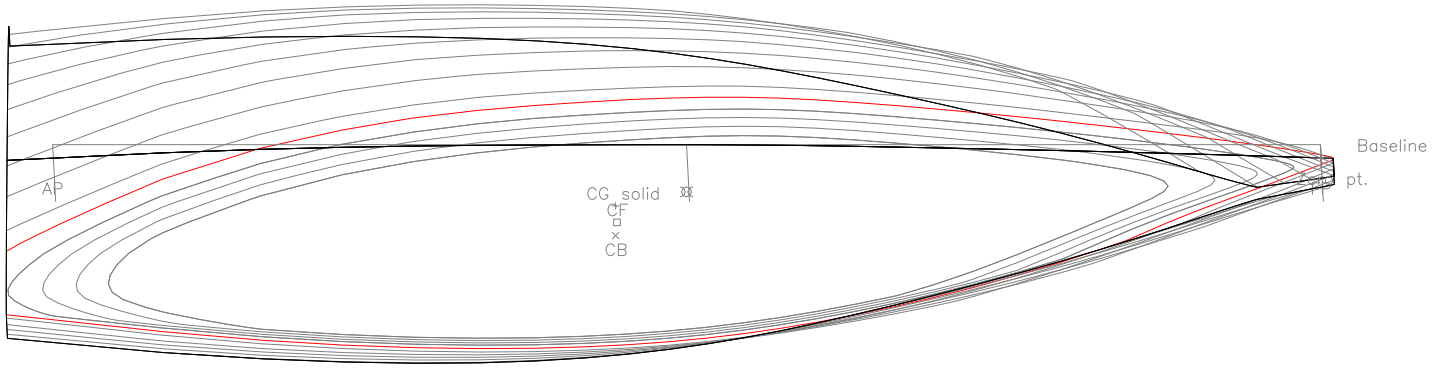


HEELED WL 20

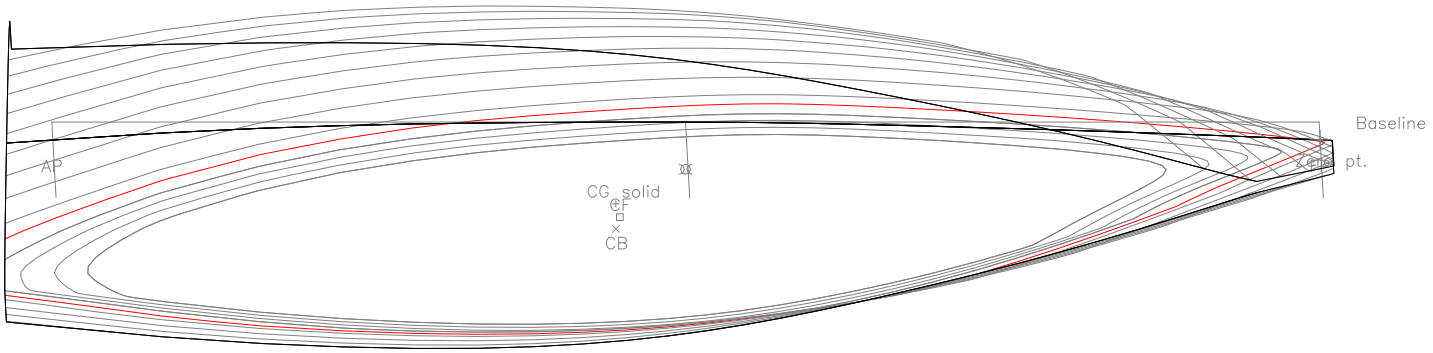


Heeled WL

HEELED WL 22



HEELED WL 30



WEIGHT LIST

LOVERS ROCK - PRELIMINARY WEIGHT ESTIMATE

		70 lifting keel (3,00- 4,40 mt)	
Composite		5690	kg
Rudder blade & stock		95	kg
Lead bulb		6400	kg
Keel fin & head		1400	kg
Keel box		180	kg
Keel movement		70	kg
Canard blade		0	kg
Canard box		0	kg
Interiors		1200	kg
Hydraulics PTO		0	kg
Hydraulics other		240	kg
Systems , deck hardware , rigging, appliances		4730	kg
Lightship Displacement		20005	kg

	P [kg]	XG [mm]	YG [mm]	ZG [mm]
Composite	4538	#REF!	#REF!	#REF!
Keel and Ruder	6327	-9456	0	-2900
Falegnameria	2400	-9,82	120	740
Rigging	1077	-9617	0	11078
Systems	6365	-11503	-31	815

Hull	2275	TOTAL COMPOSITO	4538
Deck	720		
Structures	623		
Bulkheads	920		
Bulb	9400		
Timone	216		
Furniture	160		
Engine	1000		
TOTALE	20005		

EMPTY CRAFT CONDITION MASS	20005			
Standard equipments	0	-9500	0	1000
Margin	0	-11000	0	1000
LIGHT CRAFT CONDITION MASS	20005			
desired Crew Limit at 75 kg each	1200	-13398	0	2100
provisions + personal effects	210	-10500	0	1000
drinking water	1127	-10833	0	-92
fuel	824	-11781	0	-92
lubricating and hydraulic oil	50	-12850	-175	790
black water	24	-12190	-2505	1150
grey water	10	-10245	-66	-350
any other fluids carried aboard	175	-11200	0	-90
stores, spare gear and cargo (if any)	233	-9500	0	350
optional equipment and fittings not included in basic outfit	300	-9500	0	350
inflatable liferaft(s) in excess of essential safety equipment	76	-14950	0	1100
other small boats carried aboard	0	-17250	0	500
margin for future additions	456	-9500	0	500
Maximum load mL	4685			
MAXIMUM LOAD CONDITION MASS	24690			
mass to be removed for loaded arrival condition	2248,95	-9500	0	500
LOADED ARRIVAL CONDITION MASS mLA	22441,05			
minimum number of crew	22593	-13398	0	2100
non-consumable stores and equipment normally aboard	800	-10500	0	500
Load to be included in minimum operating condition mL	23393			
MASS IN THE MINIMUM OPERATING CONDITION	43398			
DISPLACEMENT HALF LOAD	22347,5	0	0	0
90% Full members Crew	1080	-13487	2100	2000
DISPLACEMENT HALF LOAD + CREW (crew @ max beam/amidship)	23427,5	0	0	0

STABILITY

Loadcase - Lightship - tanks 0

Damage Case - Intact
Free to Trim
Specific gravity = 1.025; (Density = 1025 kg/m^3)
Fluid analysis method: Use corrected VCG

Item Name	Quantity	Unit Mass kg	Total Mass kg	Unit Volume m^3		Total Volume m^3	
Long. Arm m	Trans. Arm m	Vert. Arm m	Total FSM kg.m	FSM Type			
Composite	1	4538.0	4538.0	0.000	0.000	0.000	0.000 User Specified
Keel and Ruder	1	6327.0	6327.0	12.456	0.000	-2.900	0.000 User Specified
Falegnameria	1	2400.0	2400.0	12.000	0.120	0.740	0.000 User Specified
Rigging 1	1077.0	1077.0	5.000	0.000	11.078	0.000	User Specified
Systems	1	6365.0	6365.0	11.503	-0.031	0.815	0.000 User Specified
Total Loadcase			20707.0	0.000	0.000	8.993	0.004 0.026 0.000
FS correction							0.000
VCG fluid							0.026

Lightship
TRIM : 0,04

Loadcase - Maximum load condition

Damage Case - Intact
Free to Trim
Specific gravity = 1.025; (Density = 1025 kg/m^3)
Fluid analysis method: Use corrected VCG

Item Name	Quantity	Unit Mass kg	Total Mass kg	Unit Volume m^3		Total Volume m^3		Long. Arm m
Trans. Arm m	Vert. Arm m	Total FSM kg.m	FSM Type					
Lightship	1	20005.0	20005.0	18.280	0.000	0.000	0.000	User Specified
crew	1	1200.0	1200.0	0.000	0.000	0.000	0.000	User Specified
provisions + personal effects	1	210.0	210.0	-10.000		0.000	1.000	0.000 User Specified
drinking water	1	1000.0	1000.0	-3.000	0.000	-0.092	0.000	User Specified
fuel	1	800.0	800.0	-3.000	0.000	-0.092	0.000	User Specified
Black water	1	24.0	24.0	-11.000		0.000	1.150	0.000 User Specified
Grey water	1	10.0	10.0	-4.000	0.000	-0.350	0.000	User Specified
Other fluids carried on board	1	175.0	175.0	-11.200		0.000	-0.090	0.000 User Specified
Stores, spear gear and cargo	1	233.0	233.0	-4.500	0.000	0.350	0.000	User Specified
Optional equipment and fittings	1	300.0	300.0		1.000	0.000	0.350	0.000 User Specified
Inflatable liferaft	1	76.0	76.0	0.500	0.000	1.100	0.000	User Specified
Total Loadcase			24033.0	0.000	0.000	14.780	0.000	0.013 0.000
FS correction						0.000		
VCG fluid						0.013		

Fully loaded
TRIM : 0,20

Large Angle STABILITY

42	**ISO 12217-2:**	**6.4 STIX**				**Pass**	
43		delta	0	See ISO 122			
44		AS, sail area ISO 8666	72.000	m^2			
45		height of centroid of AS	9.180	m			
46		LH, Stability calculated	20.000	m			
47		BH, Stability calculated	5.542	m			
48		LWL, Stability calculated	19.501	m			
49		BWL, Stability calculated	4.385	m			
50		height of immersed profile area centro	-0.207	m			
51		**STIX value shall be greater than (>)**	**32.0**	**See ISO 122**	**84.9**	**Pass**	+165.31
52		*Intermediate values*					

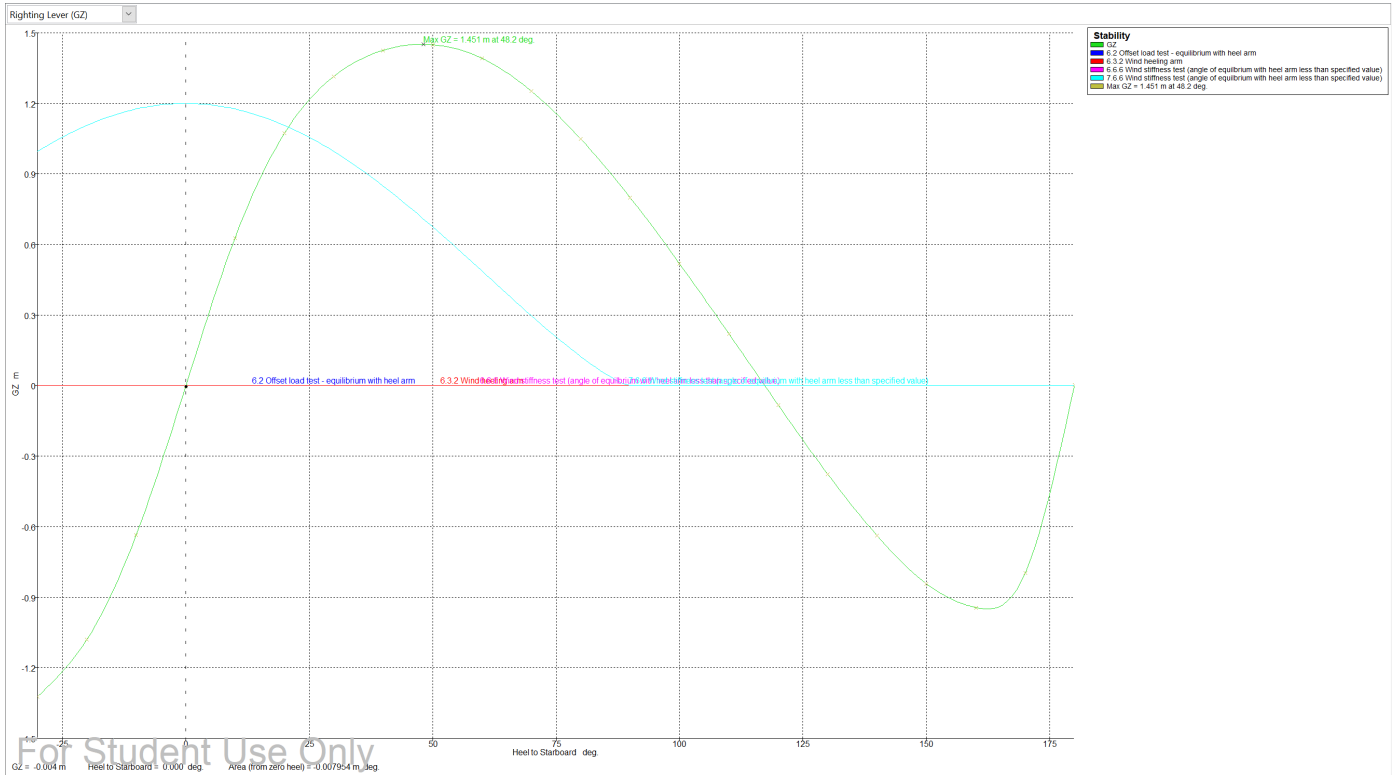
BEYOND **ISO 12217** CATEGORY

Pass ISO requeirments

Lightship - tanks 0 - Intact		
1	Draft Amidships	0.565
2	Displacement kg	20707
3	Heel deg	0.1
4	Draft at FP m	0.587
5	Draft at AP m	0.543
6	Draft at LCF m	0.562
7	Trim (+ve by ster	-0.044
8	WL Length m	19.99
9	Beam max exten	4.404
10	Wetted Area m^	68.68
11	Waterpl. Area m	65.49
12	Prismatic coeff. (	0.581
13	Block coeff. (Cb)	0.405
14	Max Sect. area c	0.728
15	Waterpl. area co	0.744
16	LCB from zero p	8.993
17	LCF from zero pt	8.405
18	KB m	0.369
19	KG fluid m	0.578
20	BMt m	3.960
21	BML m	75.56
22	GMt corrected m	3.750
23	GML m	75.35
24	KMt m	4.328
25	KML m	75.93
26	Immersion (TPc)	0.671
27	MTc tonne.m	0.786
28	RM at 1deg = G	1355.
29	Max deck inclina	0.142
30	Trim angle (+ve	-0.126

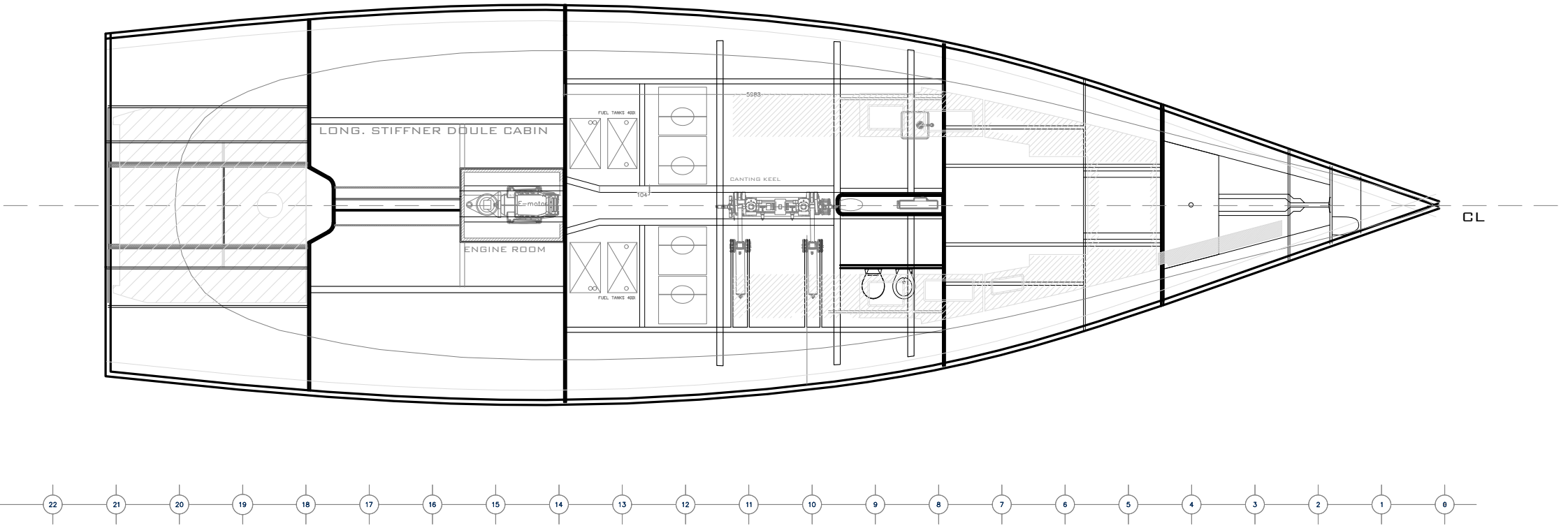
TRIM : 0,04

MAX GZ : 1,4 m at 48 degrees



STRUCTURE

CARBON FIRBE SANDWICH



SCANTLINGS

Boat data

DATA		
L_H [m]		
L_{WL} [m]	20	
B_H [m]	5,9	
m_{LDC} [kg]	20180	
V_{MAX} [kn]	13,4	
k_{DC}	1	A(1,0) - B(0,8) - C(0,6) - D(0,4)
n_{pr}	3	sailboat +3
k_{LS}	2,44	
h_b	1,69	
D_b	2,52	
k_S	0,7	
k_{LS}	0,05	

Values of k_{LS}		
if $m_{LDC} > 5\ L_{WL}^3$	FALSE	classe A - B
GZ_{MAX-60}	3,50	from stability calc
$k_{LS} = (10 * GZ_{MAX-60} * L_{WL}^{0,5} / m_{LDC}^{0,33})^{0,5}$	2,44	

Design Pressures

Bottom design pressure	[kN/m2]
$P_{BS} = P_{BBASE} * k_{DC} * k_L * k_{AR}$	
$P_{BBASE} = (2 * m_{LDC}^{0,33} + 18) * k_{LS}$	172,30
$P_{BMIN} = 0,35 * m_{LDC}^{0,33} + 1,4 * L_{WL} * k_{DC}$	37,22

Side design pressure	
$P_{SS} = [P_{DBASE} + k_Z * (P_{BBASE} - P_{DBASE})] * k_{AR} * k_L * k_{DC}$	
$P_{SMIN} = 1,4 * L_{WL} * k_{DC}$	28,0

Deck design pressure	
$P_{DS} = P_{DBASE} * k_{DC} * k_{AR} * k_L$	
$P_{DBASE} = 0,50 * m_{LDC}^{0,33} + 12$	25,2
$P_{DMIN} = 5$	5

Deckhouse design pressure	
$P_{HS} = P_{DBASE} * k_{DC} * k_{AR} * k_{SUP}$	

Watertight bulkhead pressure		
$P_{WB} = 7 * h_b$		
-> P_{WB}	11,8	[KN/m²]

Integral tank bulkhead pressure		
$P_{TB} = 10 * h_b$		
-> P_{TB}	16,9	[KN/m²]

Structural plywood bulkheads			
$t_b = 7 * D_b$	17,6	[mm]	db hight of the bulkhead

Structural sandwich bulkheads			
t_{skin}	2,8	[mm]	
t_{core}	20	[mm]	
$t_s * t_c >= (t_b^3 / 6) * (25 / \sigma_c)$	6,19	[mm *mm]	TRUE
$t_s * t_c >= (t_b^3 / 12) * (4000 / E)$	43,15	[mm *mm]	TRUE
->	26	[mm]	

Min design core shear [N / mm²]			
L_H [m]	<10	10 to 15	15 to 24
td (shear)	0,25	0,25 +0,03 * (LWL - 10) 0,55	0,4

Reinforced areas: see Fig 14.11	Sanwich outer/inner thickn. , % of single
Bottom	50% / 40%
Keel bolt area	Not allowed
Stem & Chine	50% / 40%

l < 330*L_H (mm) = 6738
l (real) = 2500

	panels	POSITION x [m]	POSITION x/L_{WL}	DIMENSIONS l [mm]	b [mm]	c [mm]	l/b	A_D [m^2]	k_a	$k_{AR(calc)}$	k_{AR}	$k_{L(calc)}$	k_L	k_c	$k_{DC(calc)}$	k_{DC}	k_1	k_2	k_3	k4	k5	k6	PRESSURE $P_{BS(calc)}$ [kN/m^2]	P_{BS} [kN/m^2]		SINGLESKIN t [mm]	STIFF - FRAMES
BOTTOM	AFT	3,94	0,20	2638	1160	217	2,27	3,060	1,15	0,364	0,400	0,66	0,66	0,50	0,43	CHECK	0,017	0,50	0,028				45,82	45,8		6,1	
	MID	8,23	0,41	2132	1160	217	1,84	2,473	1,15	0,388	0,400	0,84	0,84	0,50	0,42	0,42		0,49	0,027	1	0,7	0,9	58,12	58,1		6,8	
	FORE	13,78	0,69	2176	902	346	2,41	1,963	1,23	0,444	0,500	1,07	1,00	0,50	0,43	CHECK		0,50	0,028				86,15	86,1		6,5	
	stiffners			lu [mm]	s [mm]	cu [mm]			ksa	kcs																	SM [cm3] AW [cm2]
	MID			2200	800	0			5	1														86,1			132,7 29,4
	LAT			2130	1538	0			5	1														86,1			239,2 54,7
	frames																										SM [cm3] AW [cm2]
	AFT	3,87	0,19	1241	1787	181			5	0,76														45,8			38,3 19,7
	MID	12,01	0,60	1210	1845	49			5	1,00														58,1			62,5 25,2

	panels	x [m]	x/L_{WL}	l [mm]	b [mm]	c [mm]	l/b	A_D [m^2]	k_a	$k_{AR(calc)}$	k_{AR}	$k_{L(calc)}$	k_L	k_c	$k_{DC(calc)}$	k_{DC}	k_1	k_2	k_3	$P_{BS(calc)}$ [kN/m^2]	P_{BS} [kN/m^2]	P_{BS} * 1,8 CK	t [mm]	
KEEL	MID	10,9	0,43	2132	1172	0	1,82	2,499	1,15	0,386	0,386	0,86	0,86	1,00	0,42	0,42	0,017	0,49	0,027	57,10	57,1	102,8	13,5	
	stiffners			lu [mm]	s [mm]	cu [mm]			ksa	kcs														SM [cm3] AW [cm2]
	MID			2132	1082	0			5	1											57,1	102,8		201,1 46,0

	panels	x [m]	x/L_{WL}	l [mm]	b [mm]	c [mm]	l/b	A_D [m^2]	k_a	$k_{AR(calc)}$	k_{AR}	$k_{L(calc)}$	k_L	k_c	z [m]	h [m]	k_z	k_2	k_3	k4	k5	k6	$P_{BS(calc)}$ [kN/m^2]	P_{BS} [kN/m^2]		t [mm]	
SIDES	AFT	1,35	0,07	2515	904	0	2,78	2,043	1,23	0,439	0,439	0,56	0,56	1,00	1,74	1,31	0,25	0,50	0,028				15,04	28,0		7,4	
	MID	8,34	0,42	3282	1223	0	2,68	3,739	1,13	0,337	0,400	0,85	0,85	1,00	2,03	1,38	0,32	0,50	0,028	0,9	0,7	0,9	24,51	28,0		10,0	
	FORE	13,9	0,70	2775	1129	0	2,46	2,541	0,67	0,250	0,500	1,08	1,00	1,00	2,06	1,16	0,44	0,50	0,028				44,72	44,7		11,7	

	deck	x [m]	x/L_{WL}	l [mm]	b [mm]	c [mm]	l/b	A_D [m^2]	k_a	$k_{AR(calc)}$	k_{AR}	$k_{L(calc)}$	k_L	k_c	$k_{DC(calc)}$	k_{DC}	k_1	k_2	k_3	k4	k5	k6	$P_{BS(calc)}$ [kN/m^2]	P_{BS} [kN/m^2]		t [mm]	
DECK	AFT	1,65	0,08	2650	2539	0	1,04	6,728	0,74	0,250	0,250	0,57	0,57	1,00	0,32	0,32		0,3	0,02				3,58	5,00		7,1	
	MID	11,79	0,59	2888	2111	0	1,37	6,097	0,87	0,250	0,250	0,99	0,99	1,00	0,37	0,37	0,017	0,4	0,02	0,7	0,7	0,9	6,24	6,24		7,5	
	FORE	18,54	0,93	2775	1572	0	1,77	2,541	0,67	0,250	0,250	1,27	1,00	1,00	0,42	0,42		0,5	0,03				6,29	6,29		6,0	
	stiffners			lu [mm]	s [mm]	cu [mm]			ksa	kcs																	SM [cm3] AW [cm2]
	AFT	1,35	0,07	2539	1925	0			5	1														5,0			24,7 4,7
	FORE	17,98	0,90	2775	1722	0			5	1														6,3			33,2 5,8

SANDWICH CALCULATION					INPUT					VERIFY					
mo/1 [cm3/cm]	Smi/1 [cm3/cm]	i/1 [cm4/cm]	wos [kg/m2]	wis [kg/m2]	nr. Layer o	nr. Layer i	to [mm]	ti [mm]	tco [mm]	Smo/1 [cm3/cm]	Smi/1 [cm3/cm]	i/1 [cm4/cm]	se > 1 OK		
0,061	0,120	0,029			2	4	1,38	2,76	20	0,276	0,552	0,449	4,50	4,60	15,50
0,076	0,149	0,036	1,35	0,95	3	5	2,07	3,45	20	0,414	0,691	0,671	5,44	4,63	18,80
0,070	0,137	0,026			2	4	1,38	2,76	20	0,276	0,552	0,449	3,96	4,04	17,53

MINIMUM REQUI

mo/1 [cm3/cm]	Smi/1 [cm3/cm]	i/1 [cm4/cm]	wos [kg/m2]	wis [kg/m2]	nr. Layer o	nr. Layer i	to [mm]	ti [mm]	tco [mm]	Smo/1 [cm3/cm]	Smi/1 [cm3/cm]	i/1 [cm4/cm]	se > 1 OK		
0,091	0,178	0,005			1	2	0,69	1,38	20	0,138	0,276	0,204	1,52	1,55	44,23
0,167	0,326	0,011	1,35	0,95	2	3	1,38	2,07	20	0,276	0,414	0,391	1,66	1,27	34,29
0,227	0,444	0,014			2	4	1,38	2,76	20	0,276	0,552	0,449	1,22	1,24	31,30

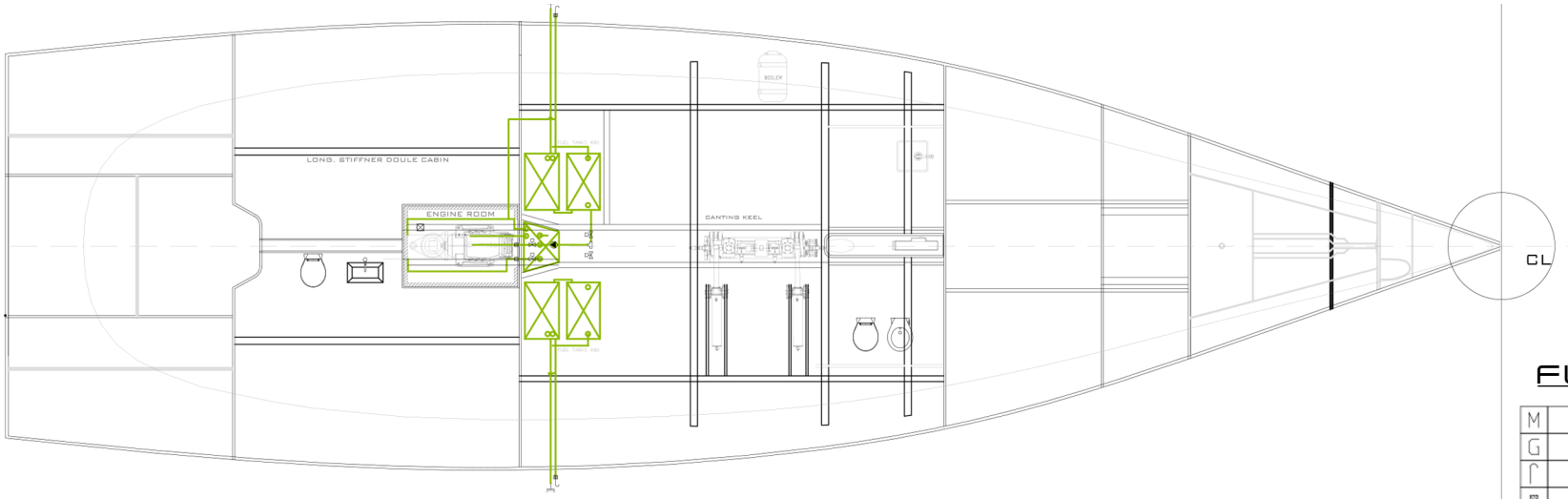
mo/1 [cm3/cm]	Smi/1 [cm3/cm]	i/1 [cm4/cm]	wos [kg/m2]	wis [kg/m2]	nr. Layer o	nr. Layer i	to [mm]	ti [mm]	tco [mm]	Smo/1 [cm3/cm]	Smi/1 [cm3/cm]	i/1 [cm4/cm]	se > 1 OK		
0,084	0,164	0,143			1	2	0,69	1,38	20	0,138	0,276	0,204	1,65	1,68	1,42
0,095	0,186	0,152	1,35	0,95	1	2	0,69	1,38	20	0,138	0,276	0,204	1,46	1,49	1,34
0,060	0,117	0,076			1	1	0,69	0,69	20	0,138	0,138	0,148	2,30	1,18	1,95

Method: **ISO 12215** - Material: Carbon Fiber

"Aeronautics and *competitive sailing* both share the use of carbon fibre, which is renowned for its lightness and robustness"

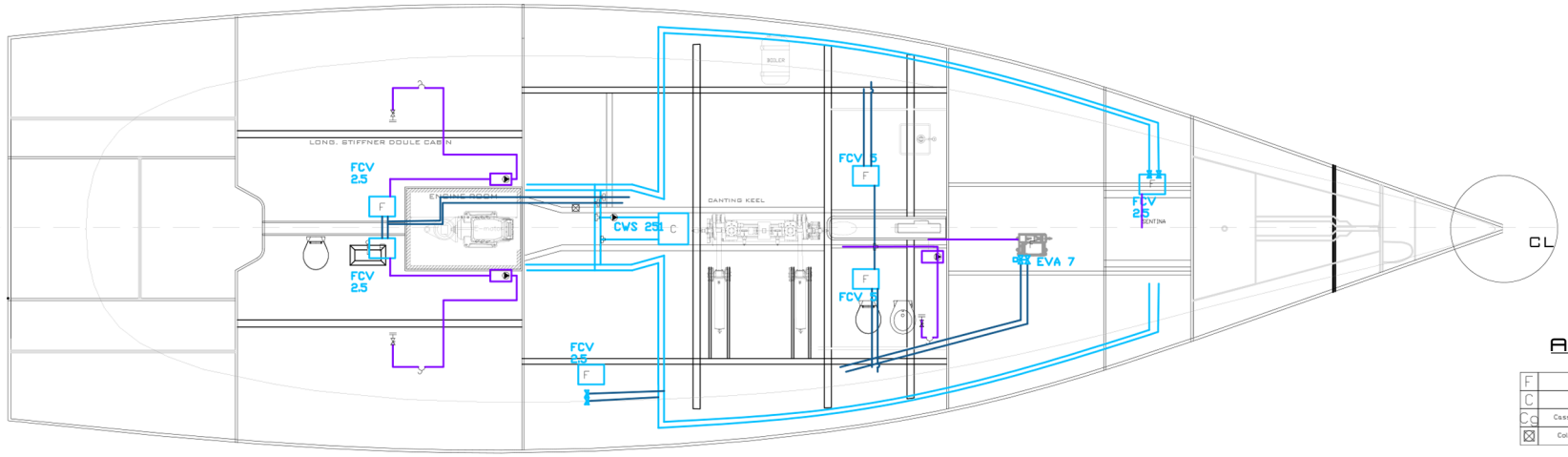
LIGHTER - STRONGER - STIFFER

SYSTEMS



FUEL SYSTEM

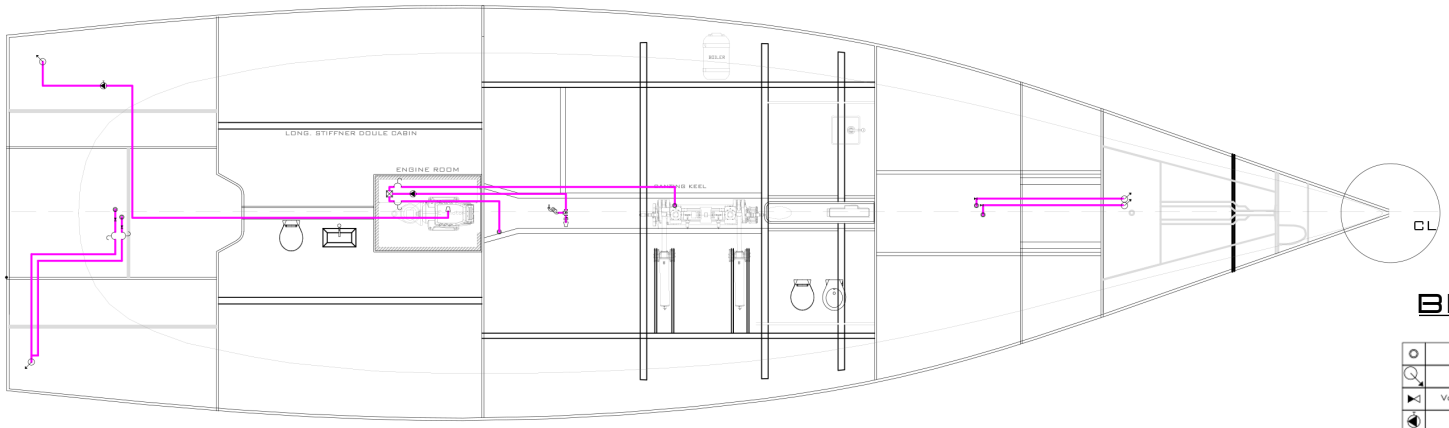
M	Motore		Elettrovalvola
G	Generatore		Valvola 3 Vie
	Sfiato		Sbarco/Imbarco
	Filtro		Interruttore di Flusso
	Riduttore di Press.		



AC and GREY WATER

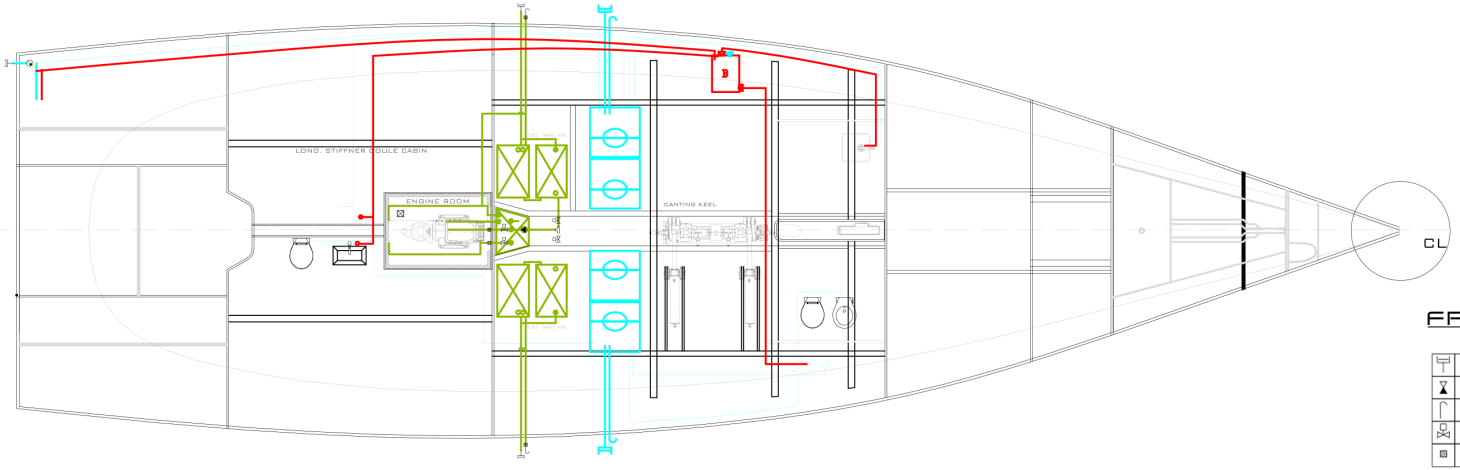
F	Fancoil		Elettrovalvola doppia		Dissreatore
C	Chiller		Scarico a mare		
Cg	Cassa Acque Grigie		Pompa		Manifold
	Colonna di Scarico		Valvola		

SYSTEMS



BILGE SYSTEM

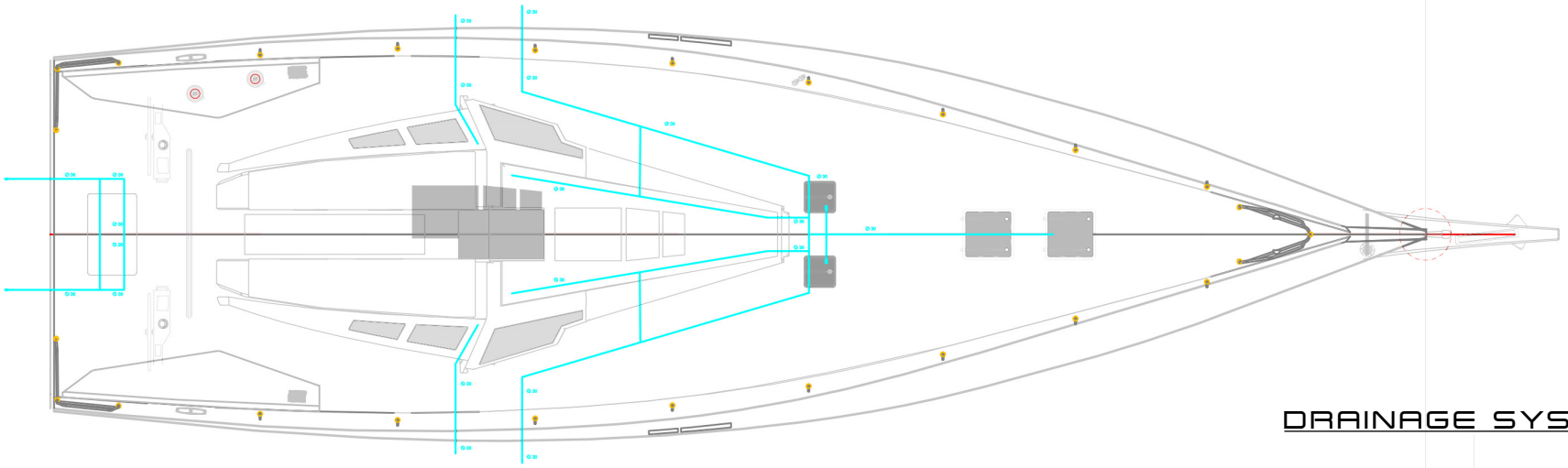
	Pompa di Sentina		Succhiarola		Anti Sifone
	Scarico a mare		Galleggiante		
	Valvola di non Ritorno		Valvola		
	Pompa a mano		Valvola 3 vie		
	Pompa		Colonna di Scarico		



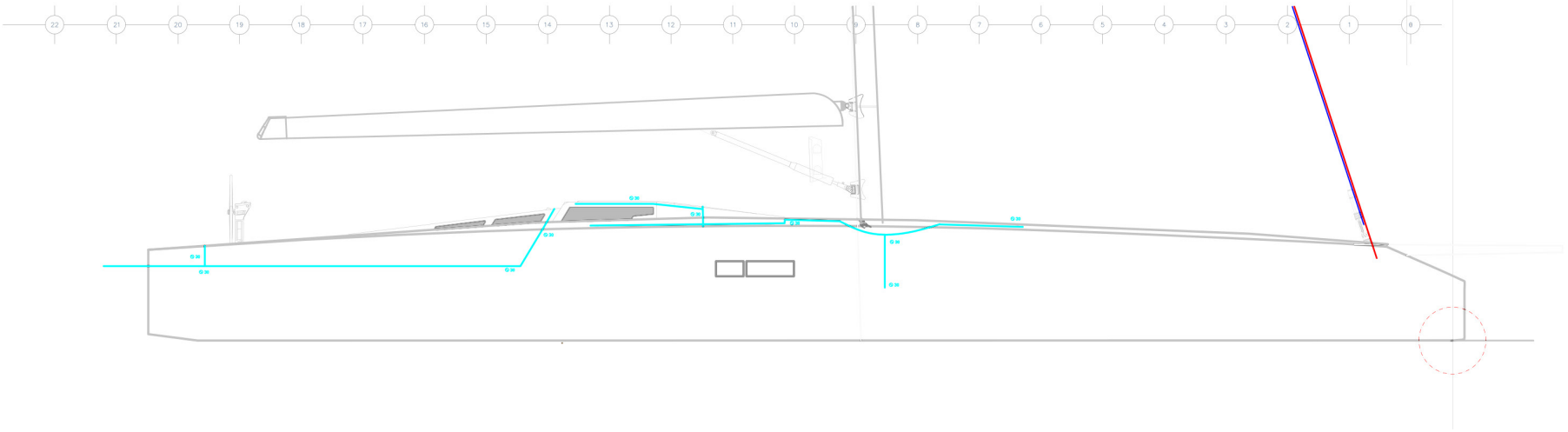
FRESH WATER SYSTEM

	Imbarco / Sbarco		Presa a mare
	Valvola di non ritorno		Riduttore di Press.
	Sfiato		Pompa
	Elettrovalvola		Valvola
	Filtro		Valvola 3 vie

SYSTEMS



DRAINAGE SYSTEM



SAIL PLAN

MAIN DIMENSIONS

LOA	21.000	M
LWL	19.851	M
B MAX	5542	M
DRAUGHT	2.294	M
DISPLACEMENT (LIGHT)	20046	KG
BALLAST	8.450	KG

SAIL DIMENSION & AREA

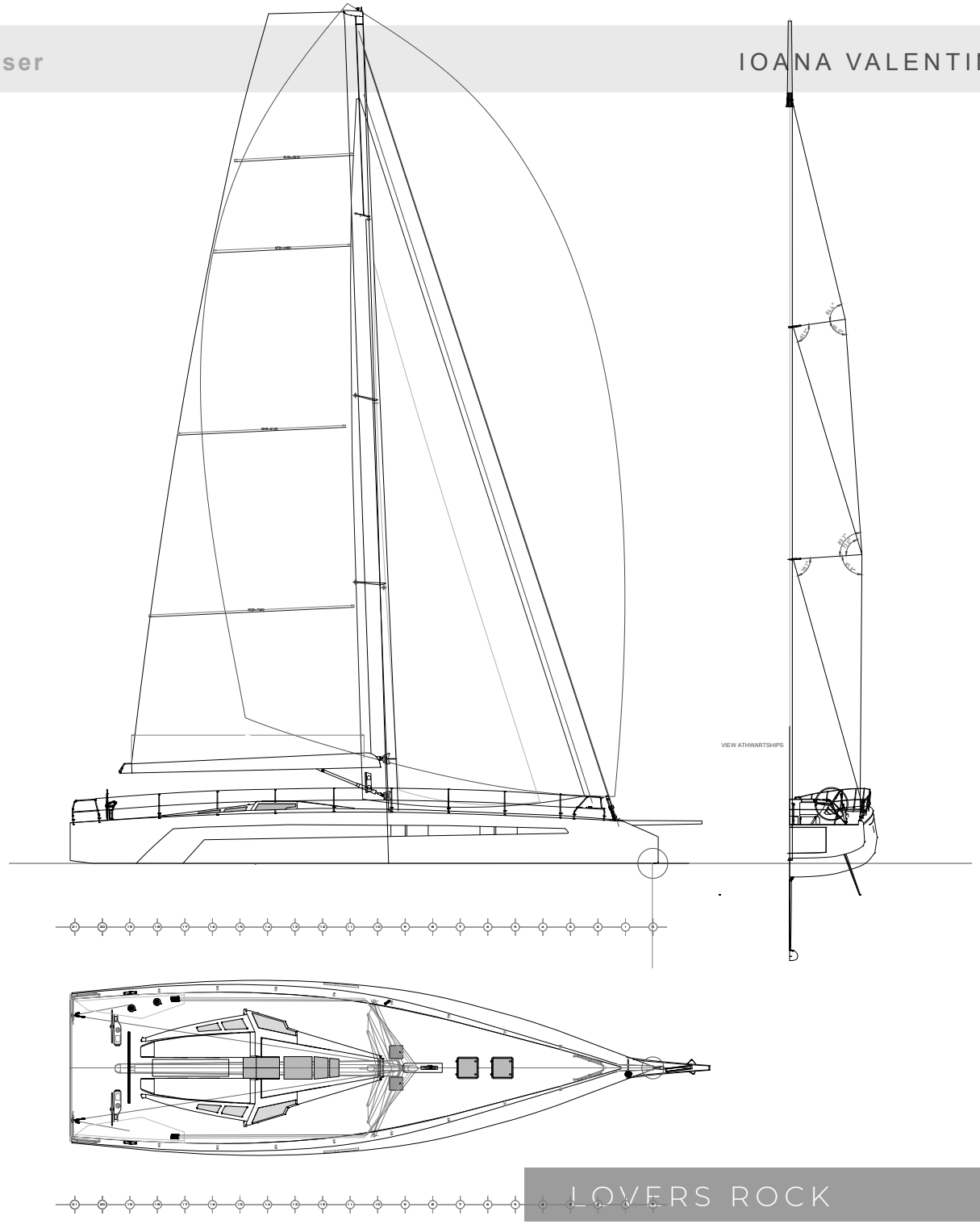
P	26.640	M
E	9.450	M
BAS	2.115	M
IG	26.560	M
J	7.482	M
SFJ	0.530	M
LPG	7.709	M
ISP	29.020	M
TPS	10.040	M

MAIN SAIL AREA	145	MQ
JIB SAIL AREA	110	MQ
CODE-0 AREA	285	MQ
ASYMM SAIL AREA	410	MQ

SAIL AREA UPWIND	256	MQ
SAIL AREA DOWNWIND	555	MQ
LEAD DISTANCE	4%	PAPERINI METHOD

RM DATA

DSP HALF LOAD	25.750	KG
RM@1° HALF LOAD	979	KGM
DSP HALF LOAD + CREW	26.900	KG
RM@20° HALF LOAD + CREW	21.789	KGM
RM@48° (MAX) HALF LOAD + CREW	36.450	KGM

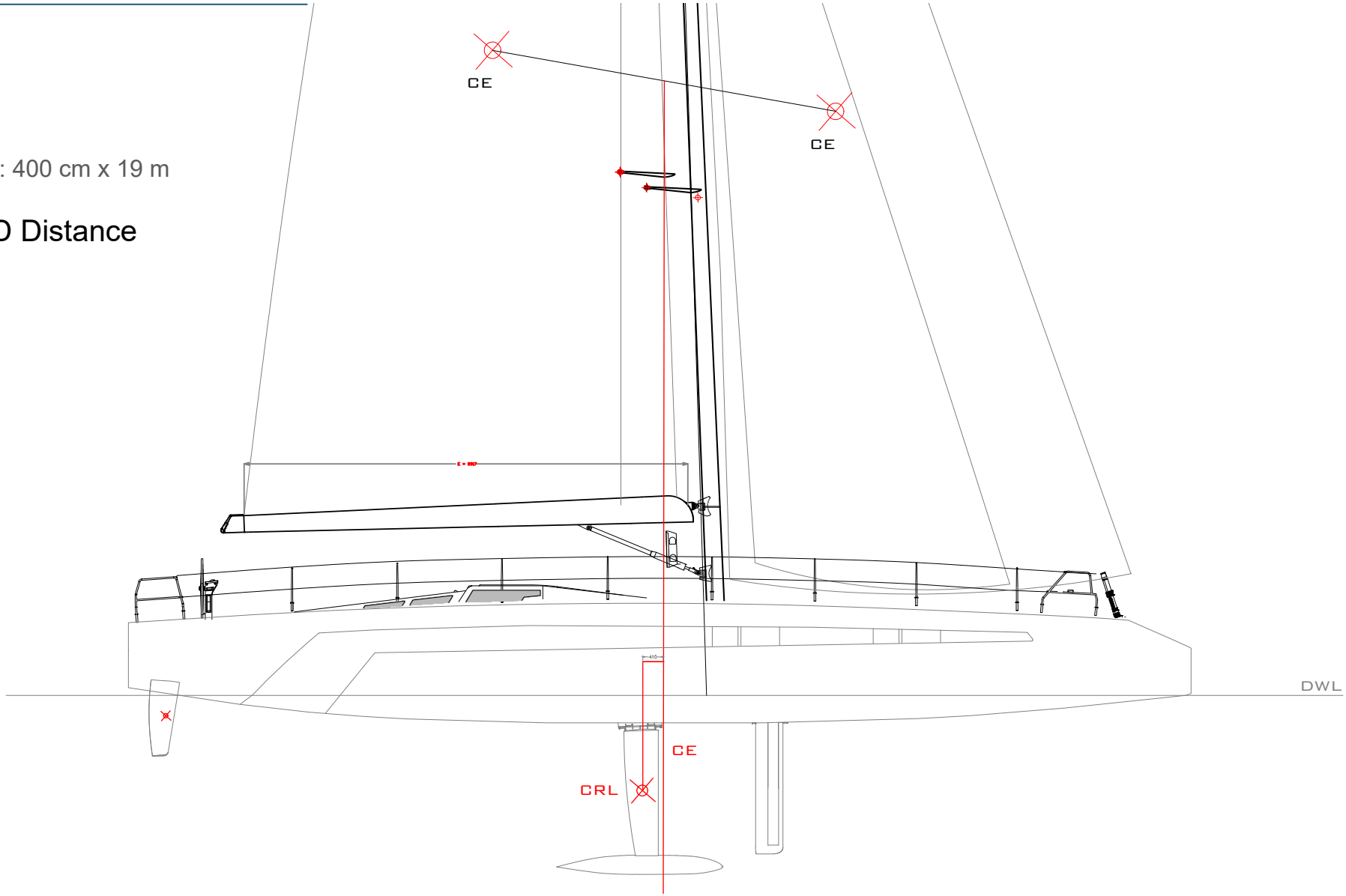


LEAD Distance

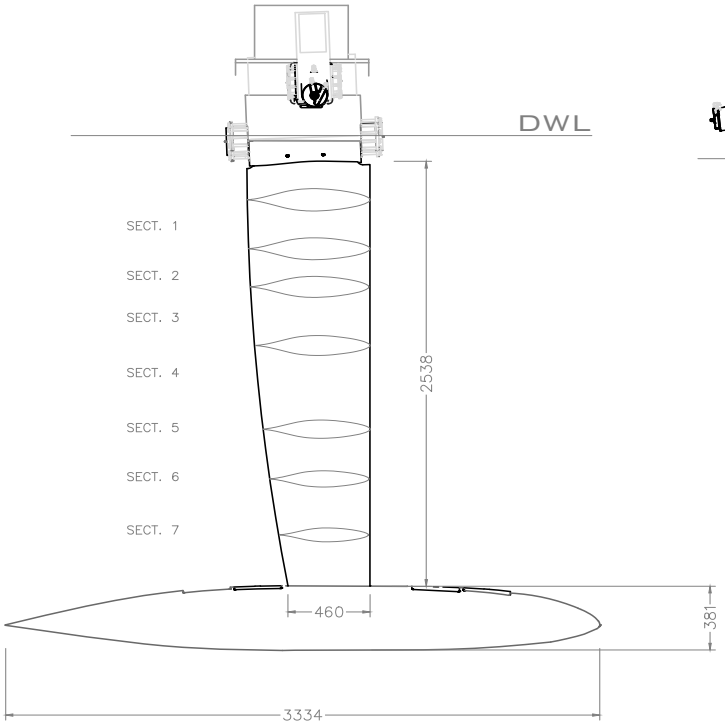
CE - CLR

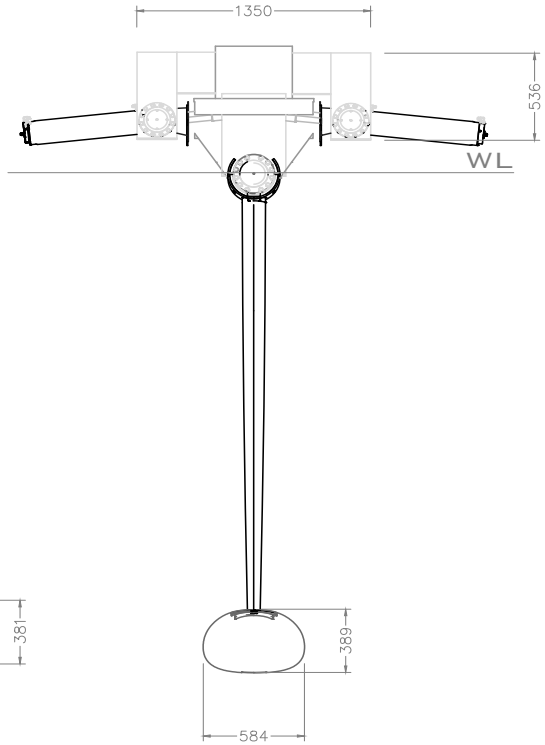
PAPERINI : 400 cm x 19 m

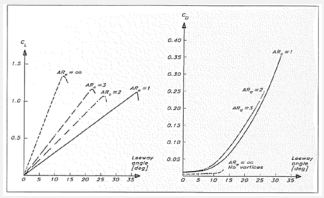
2% LEAD Distance



KEEL and RUDDER





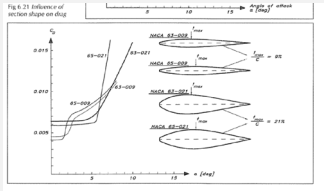


SECTION NACA: 0015

Area 1 ruder : 1,96
AR: 2,4

Ruder stock
Carbon fibre composite

High - Aspect ratio



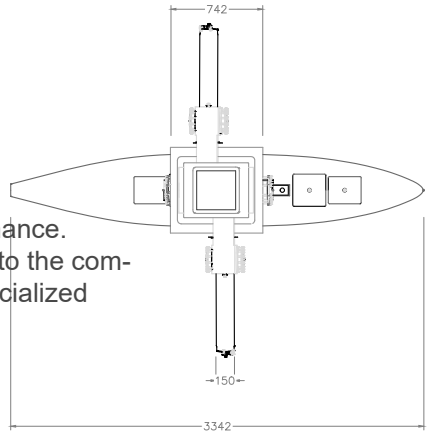
Section shape and DRAG

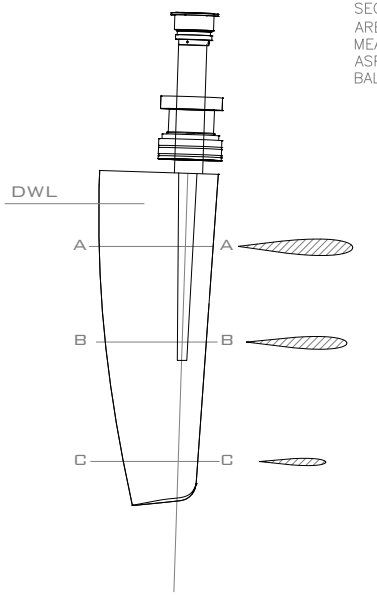
CANTING KEEL and BULB

NACA Section 65 – 012

Why canting keel?

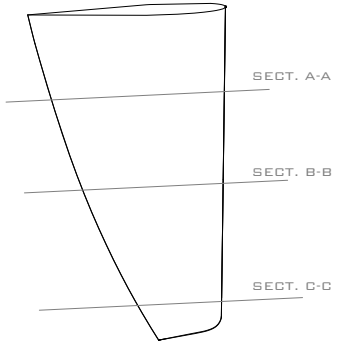
Inspired by the Imoca 60 , Cariboni had a history of supplying racing yachts with canting keels.
This type of keel is the most unique when it comes to performance.
The main challenging posed by this keel is maintenance due to the complex design of the canting keel. It is usually only found in specialized racing boats.



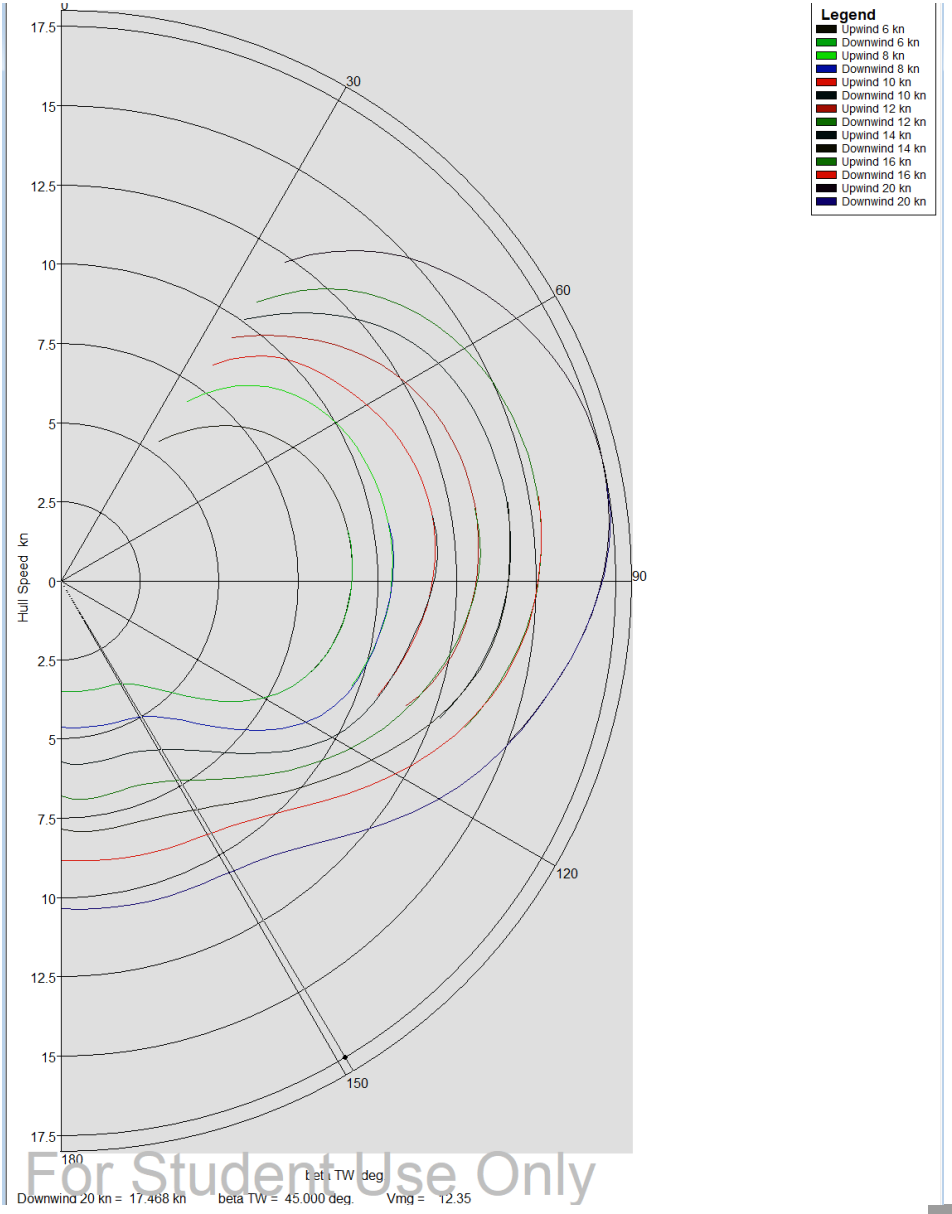


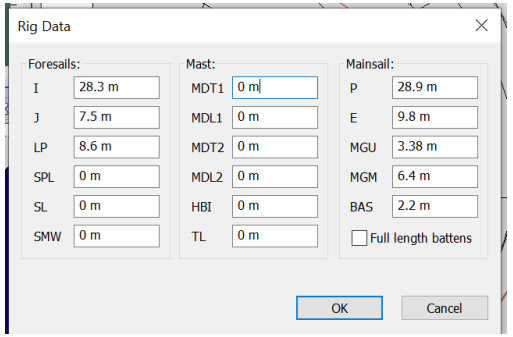
SECTION NACA: 0015
AREA (1 RUDDER): 1,96 m
MEAN CHORD: 1,23 m
ASPECT RATIO: 2.4
BALANCE: 12%

RUDDER STOCK
MATERIAL: CARBON FIBER COMPOSITE



VPP

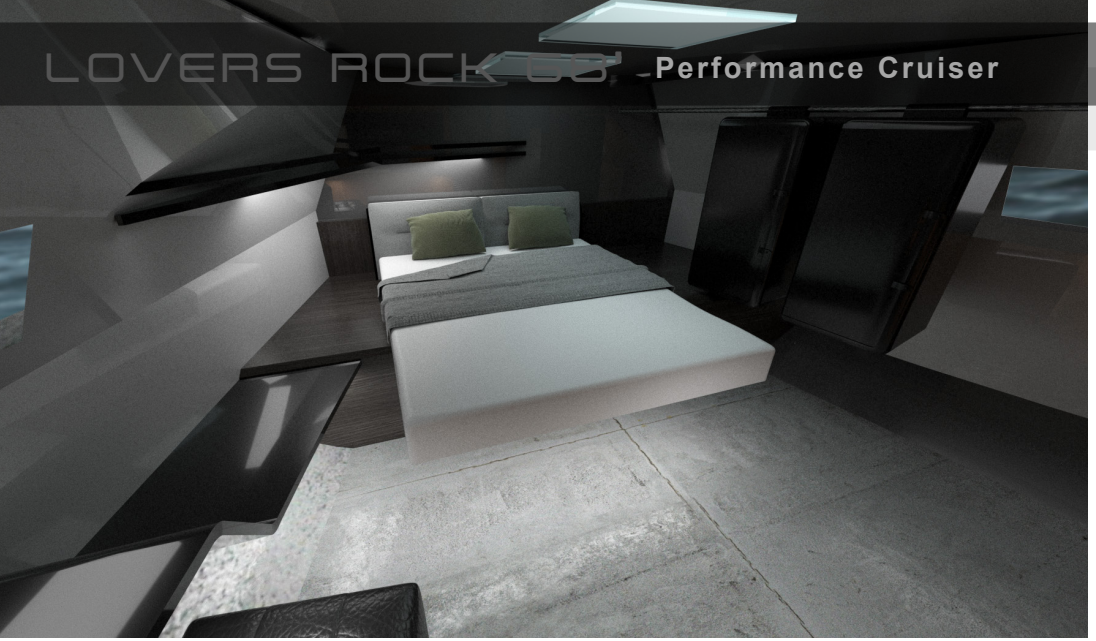




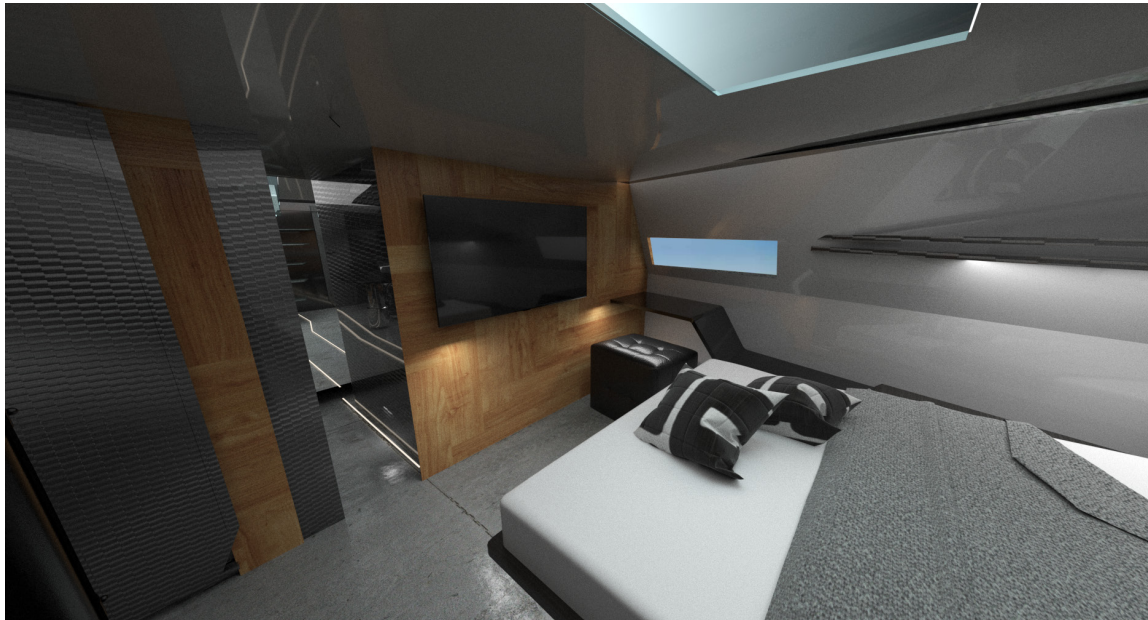
INTERIORS

Interior Moodboard

WARM FUNCTIONAL NO LUXURY ACCENT COLORS OPEN SPACIOUS



MASTER CABIN




SALON

EXTERIOR

LOVERS ROCK 68

IOANA VALENTINA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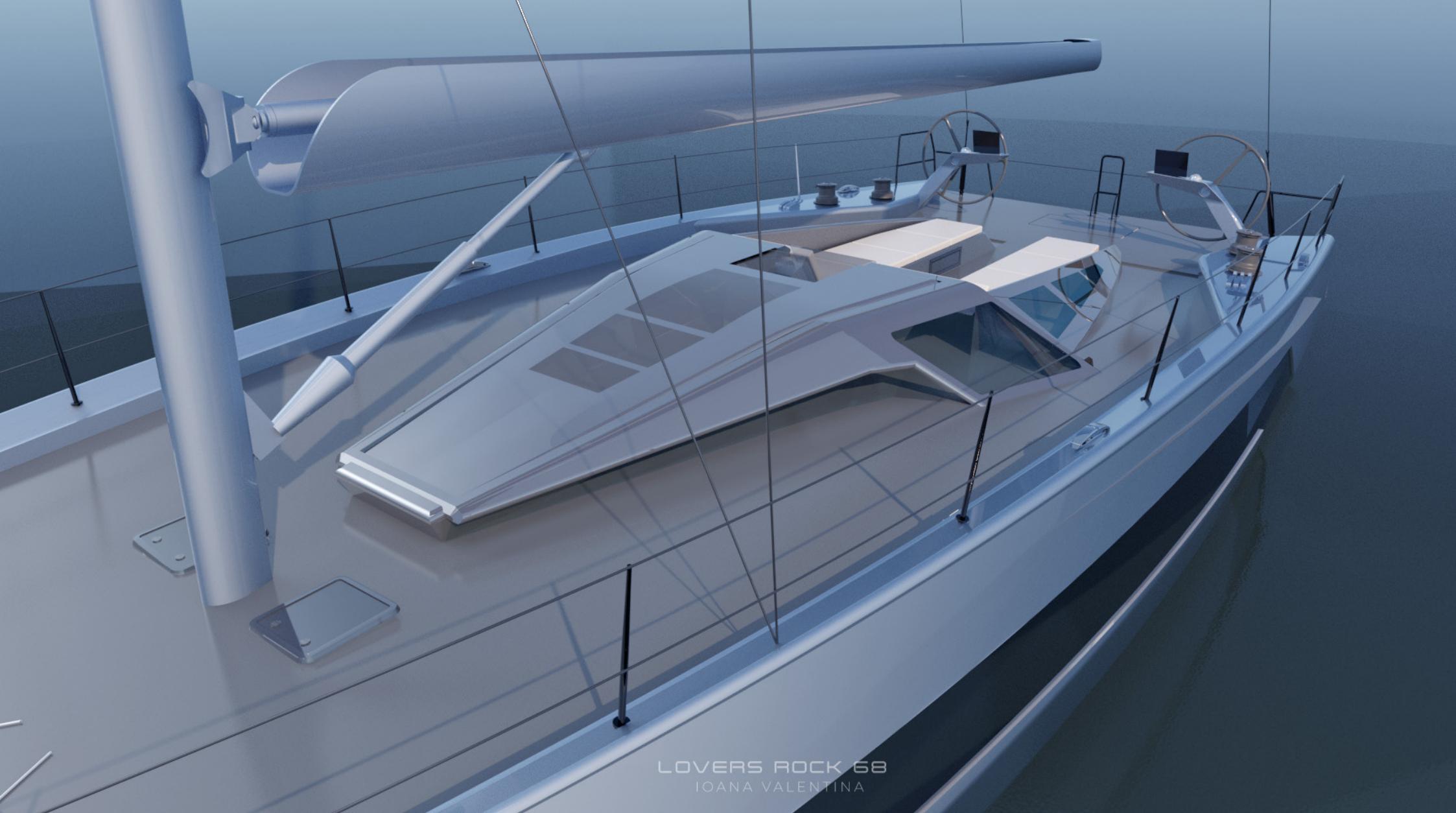
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