

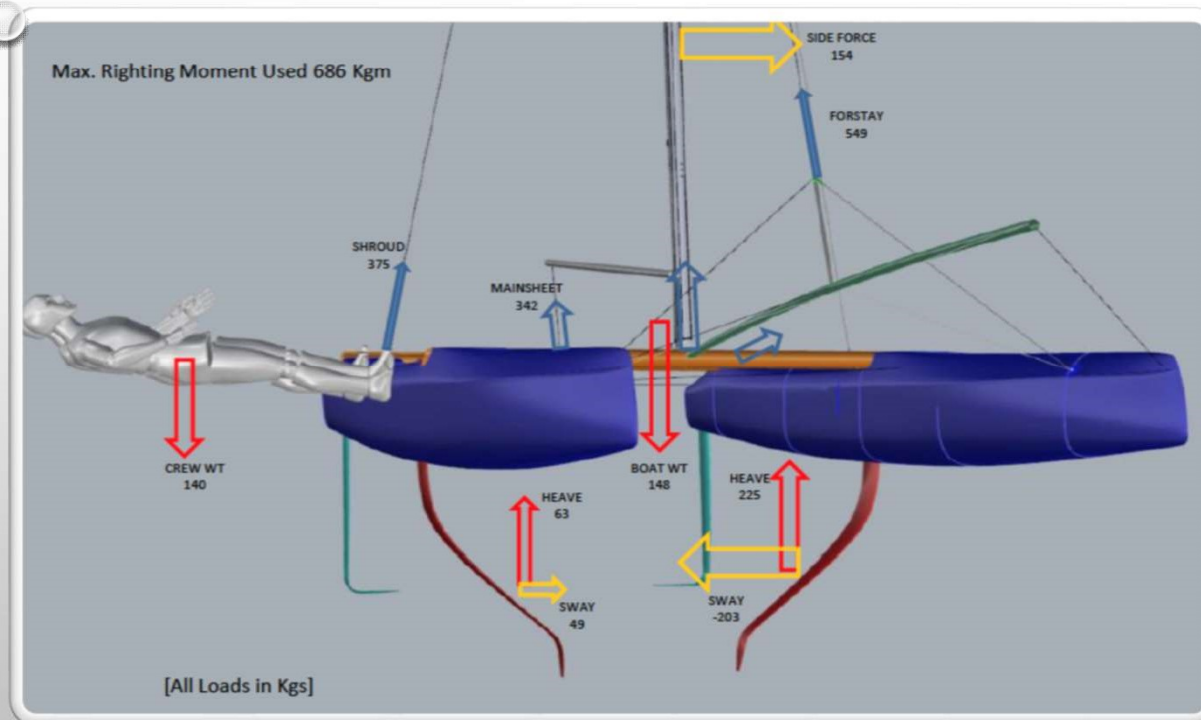


NACRA 17

EGM INFORMATION

19-10-2016






AGENDA

- DISCUSSION ABOUT JIB ADVERTISING
- DISCUSSION ABOUT CONSTITUTION
- DISCUSSION ABOUT FULL FOILING
 - NACRA 17 TRIALS
 - TEAM FEEDBACK
 - OVERVIEW CHANGES
 - PROCESS IMPROVEMENT
 - UPGRADE POSSIBILITIES




TESTING

- SPEED
 - VMG
 - NEW SPINNAKER DESIGN
 - 3 WIND SPEEDS
 - HANDLING
 - OVERALL PERFORMANCE
- 15+ TEAMS PLANNED
 - THROUGHOUT OCTOBER /NOVEMBER
 - 2 BOATS
 - INLAND AND SEA TRIALS
- 




TRIALS DATA

- 7 TEAMS [TO DATE] TESTED BOTH C AN Z BOARD CONFIGURATION
 - DATA BEING COLLECTED VIA:
 - SAILOR SURVEYS
 - DATA RECORDING
 - ON BOARD CAMERA'S
 - DATA AVAILABLE FOR CLASS
 - CURRENTLY UNDER INVESTIGATION
- 



TRIALS TEAM FEEDBACK C FOIL

- SAFER
 - MORE IN CONTROLE
 - NEED RUDDER WINGLETS
 - LESS JUMPY
 - MORE SKIMMING
 - MORE REACTIVE
- OVERALL BETTER
 - INCREASED STABILITY [DOWNWIND]
- 

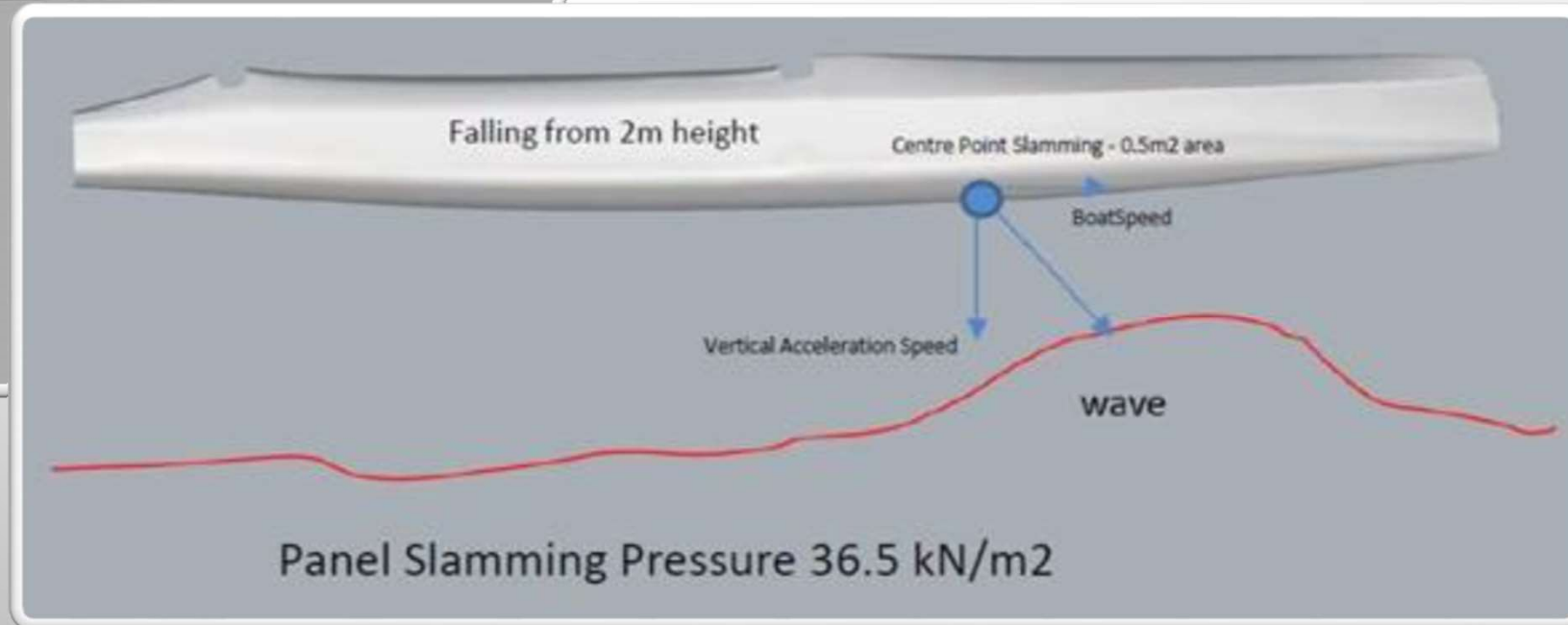
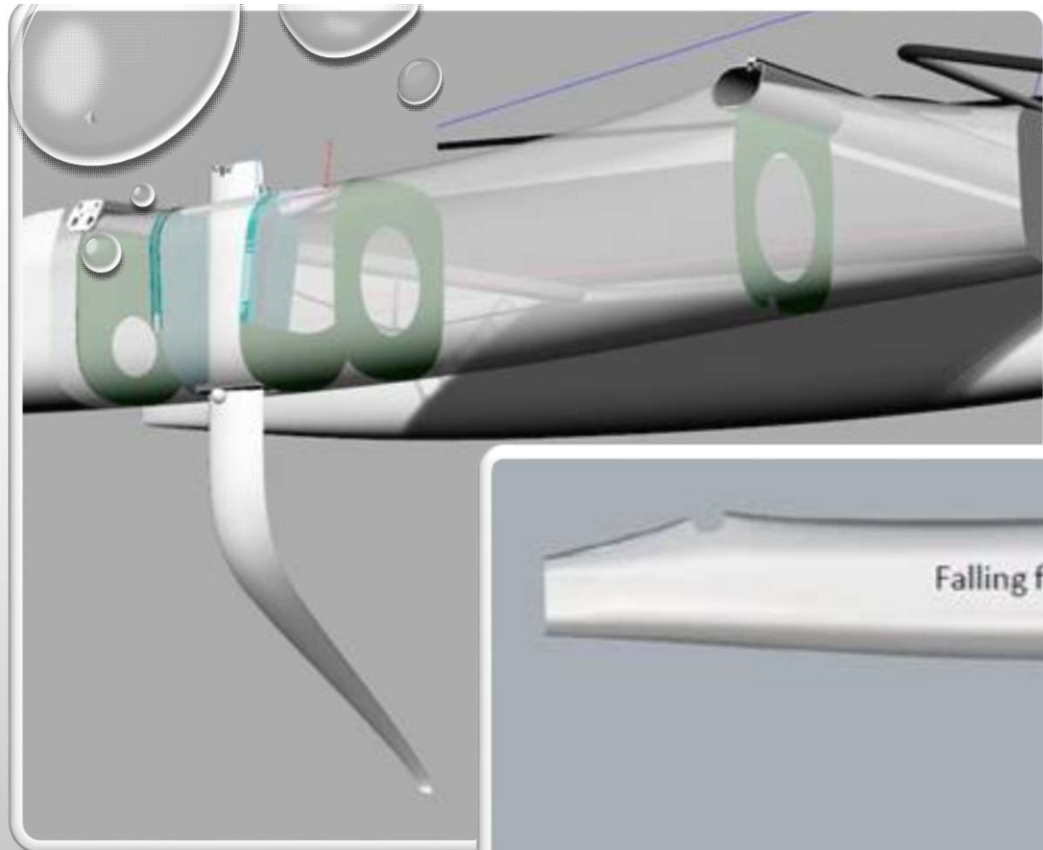


TRIALS TEAM FEEDBACK Z FOIL

- SPECTACULAR
 - RACING WILL BE FAST
 - CHALLENGING BOAT
 - PHYSICAL –MORE MOVEMENTS
 - SAFER IN HIGH WIND
 - EARLY FOILING
 - STABLE
 - FOILING GYBES WILL HAPPEN
- IN CONTROL
 - BARE-AWAY EASIER
 - TEAM WEIGHT OK
 - DEVELOPMENT IN RUDDERS
 - DEVELOPMENT IN HEIGHT CONTROL BOARDS
 - OVERALL IMPRESSIVE
- 

OVERVIEW CHANGES HULLS

- NO CHANGES IN OVERALL SHAPE
- CARBON FIBER INNER SKIN REPLACING E-GLASS INNER SKIN (*NOTE: CARBON FIBER IS GENERAL MUCH STRONGER AND STIFFER THEN E-GLASS AND ALSO MORE DURABLE)
- CARBON FIBER REINFORCEMENT PATCHING REPLACING E-GLASS ON TRANSOM AND DAGGERBOARD-BEARING AREAS.
- BASE LAMINATE INNER SKIN DOUBLED BETWEEN SIDE STAY LOCATION AND FRONT BEAM REGION
- EXTRA BOW SLAMMING FRAME
- TWO ADDITIONAL DAGGERBOARD-CASE FRAMES, AFT AND IN FRONT OF DAGGERBOARD.
- NEW DAGGERBOARD -CASE ARRANGEMENT. SIMILAR ARRANGEMENTS HAVE BEEN APPLIED BY TO BIGGER FULL FOILING CATAMARANS WITH SUCCESS.
- RESIN INFUSION METHOD FOR THE HULL LAMINATE, REPLACING THE WET-LAMINATE VACUUM BAG METHOD TO ACHIEVE BETTER ONE-DESIGN
- HULL TOOLING UPDATE TO ACHIEVE BETTER ONE-DESIGN






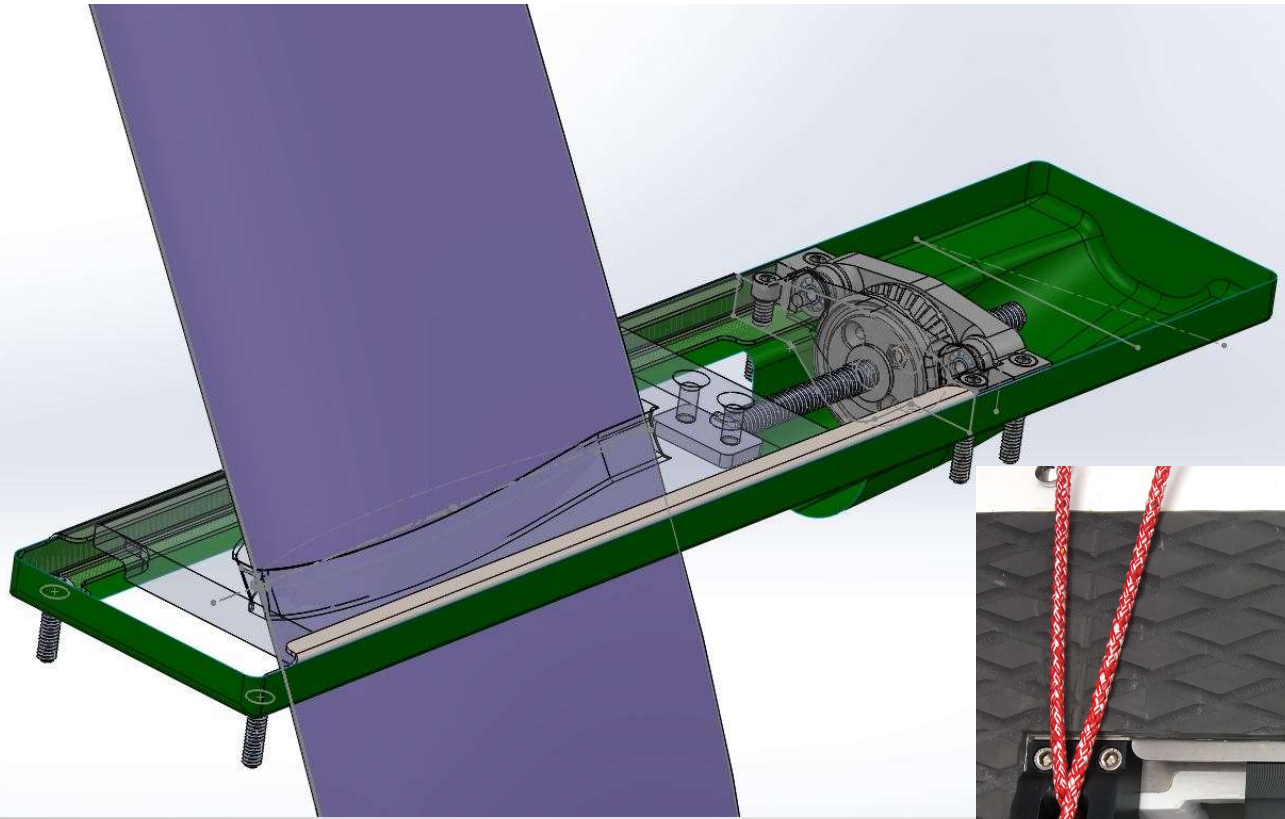
OVERVIEW CHANGES

HULLS – DAGGERBOARD CASES

- BOTTOM BEARING- CNC MILLED
- TOP BEARING – CNC MILLED
- ALIGNMENT VS HULL CENTRELINE
 - ALLOY JIGS
 - NARROW TOLERANCES

HULLS – DAGGER BOARD CASES – ADJUSTMENT SYSTEMS


- STAINLESS STEEL BRACKETS
 - HELIX ANGLE OPTIMISED FOR PRECISION TRIMMING
 - EASY ASSEMBLY
- 





OVERVIEW CHANGES HULLS


HULLS – SHROUD PIN

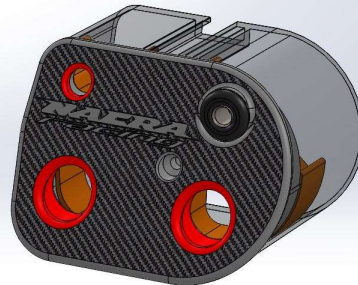
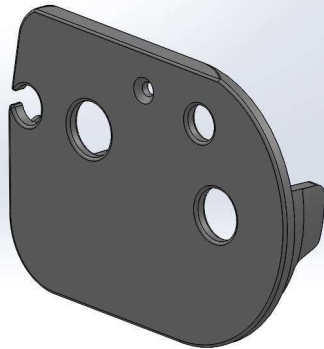
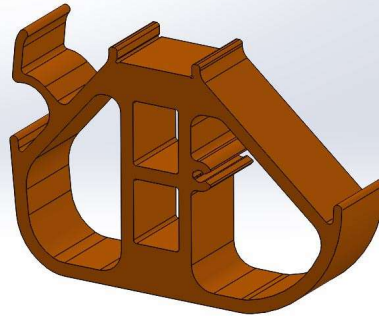
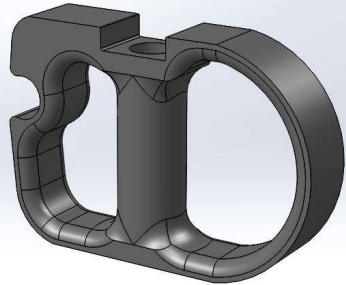
- INCREASED DIAMETER FROM $3/8$ TO $7/16$
 - MATERIAL UPGRADE FROM 17-4 TO 304
- 



OVERVIEW CHANGES BEAMS

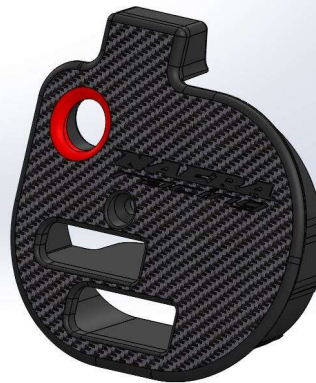
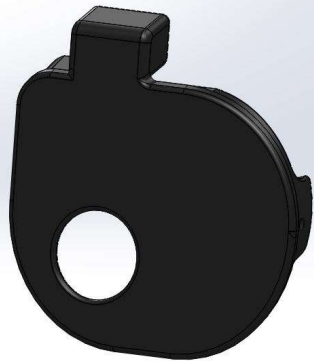
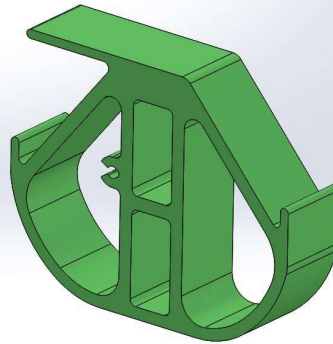
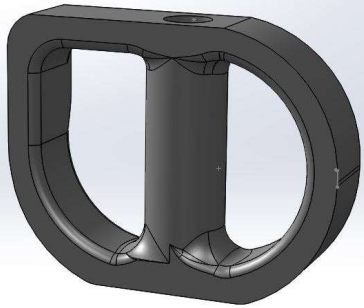
BEAMS

- REAR BEAM
 - INSERT – FOR BETTER FIT, WEIGHT REDUCTION, FORCE DISTRIBUTION
 - BEAM CAP – OVERALL CONVENIENCE, WEIGHT REDUCTION,
 - FRONT BEAM
 - INSERTS
 - BEAM CAP
 - DOLPHIN STRIKER – FORCE DISTRIBUTION
- 



FRONT CB

- INSERT
 - FROM SAND CASTED ALLOY TO EXTRUDED ALLOY
 - IMPROVED TOLERANCES
- CAP
 - FROM SAND CASTED ALLOY TO PLASTIC INJECTION MOLDING
 - IMPROVED TOLERANCES

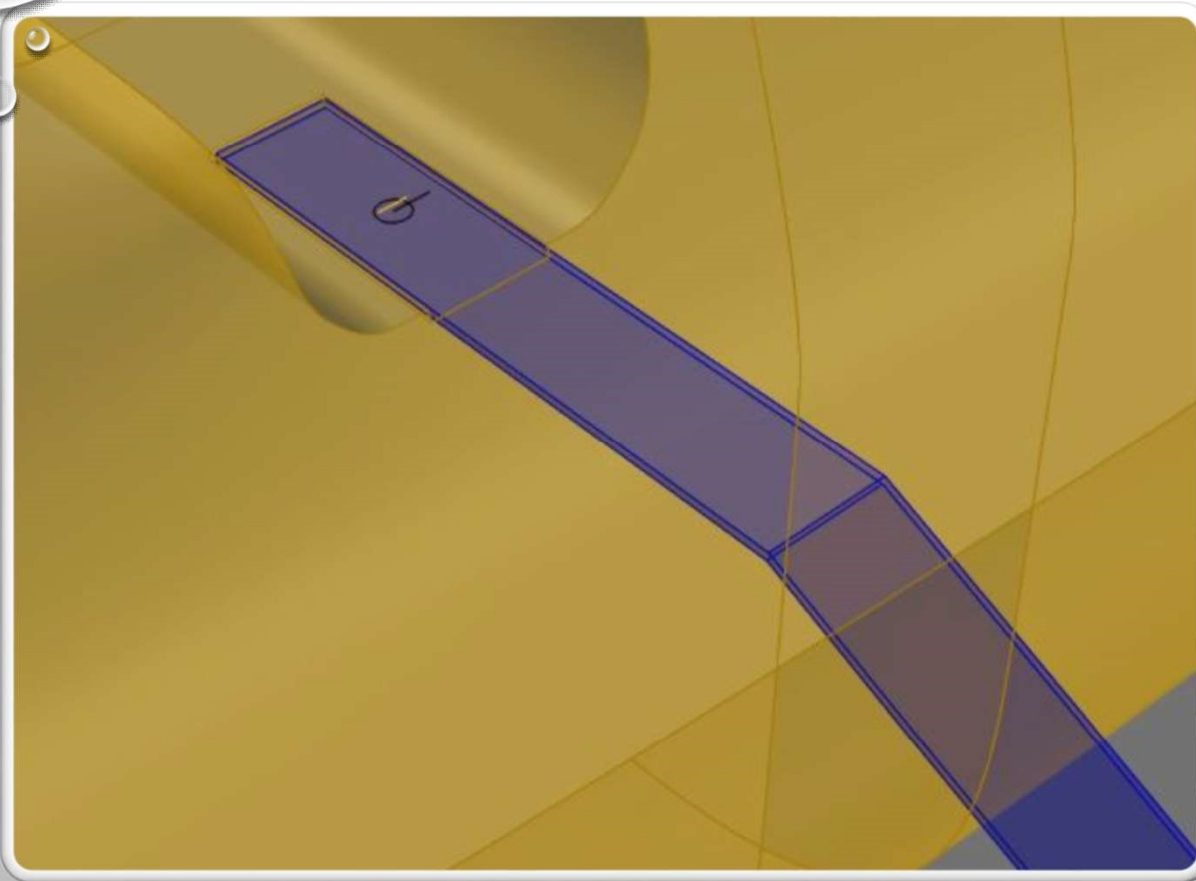


REAR CB

- INSERT
 - FROM SAND CASTED ALLOY TO EXTRUDED ALLOY
 - IMPROVED TOLERANCES
- CAP
 - FROM SAND CASTED ALLOY TO PLASTIC INJECTION MOLDING
 - IMPROVED TOLERANCES

DOLPHIN STRIKER

- POSITION CHANGE
- FORCE DISTRIBUTION





OVERVIEW CHANGES RIGGING


RIGGING - SIDESTAY

- STAYMASTER REPLAYED BY RONSTAN
- TOGGLE INCLUDED
- GENERAL IMPROVEMENT




OVERVIEW CHANGES SAILS

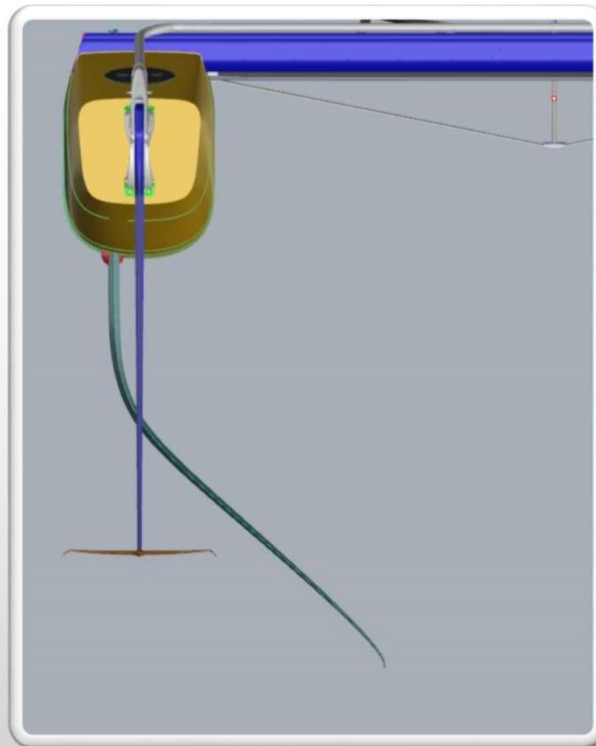
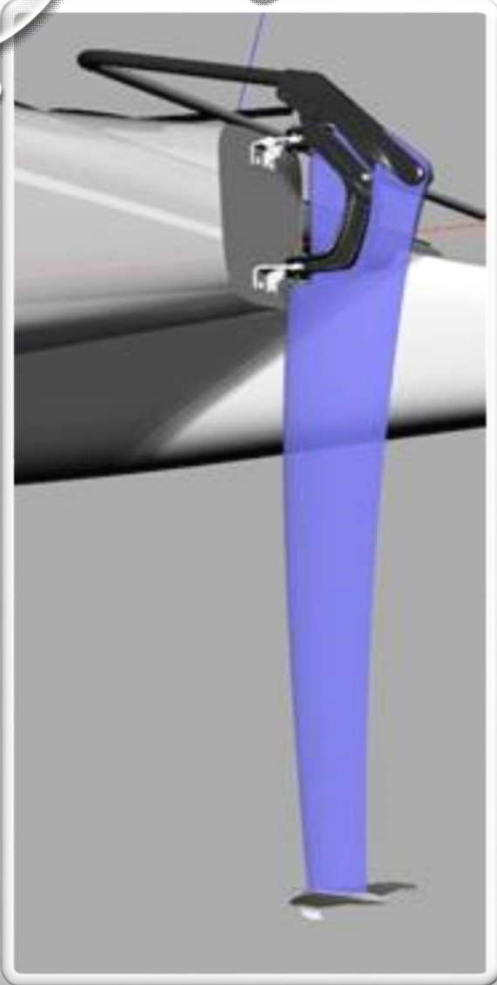
SAILS – SPINNAKER

- NEW DESIGN [FLATTER] DUE TO INCREASED SPEED
 - MATERIAL CHANGE FROM NYLON TO POLYESTER
 - OVERALL SHAPE ONE DESIGN
 - RESPONSIVENESS
 - DURABILITY
- 



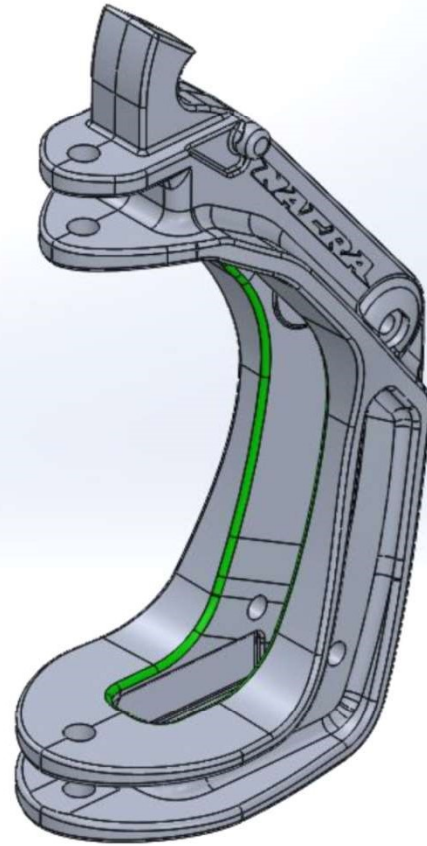
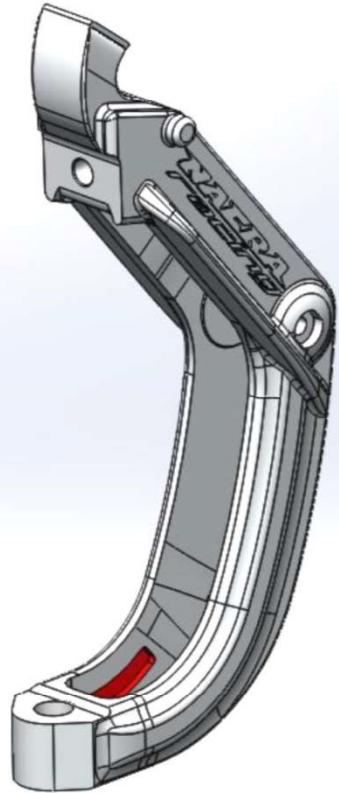
OVERVIEW CHANGES RUDDERS

- RUDDER BLADES
 - FOR PITCH STABILITY
 - HANDLING & SPEED COMPROMISE
 - RUDDER HOUSING
 - REDESIGN DUE TO INCREASED LOADS
 - RAKE ADJUSTMENT
 - SIMPLE
 - STRONG
- 



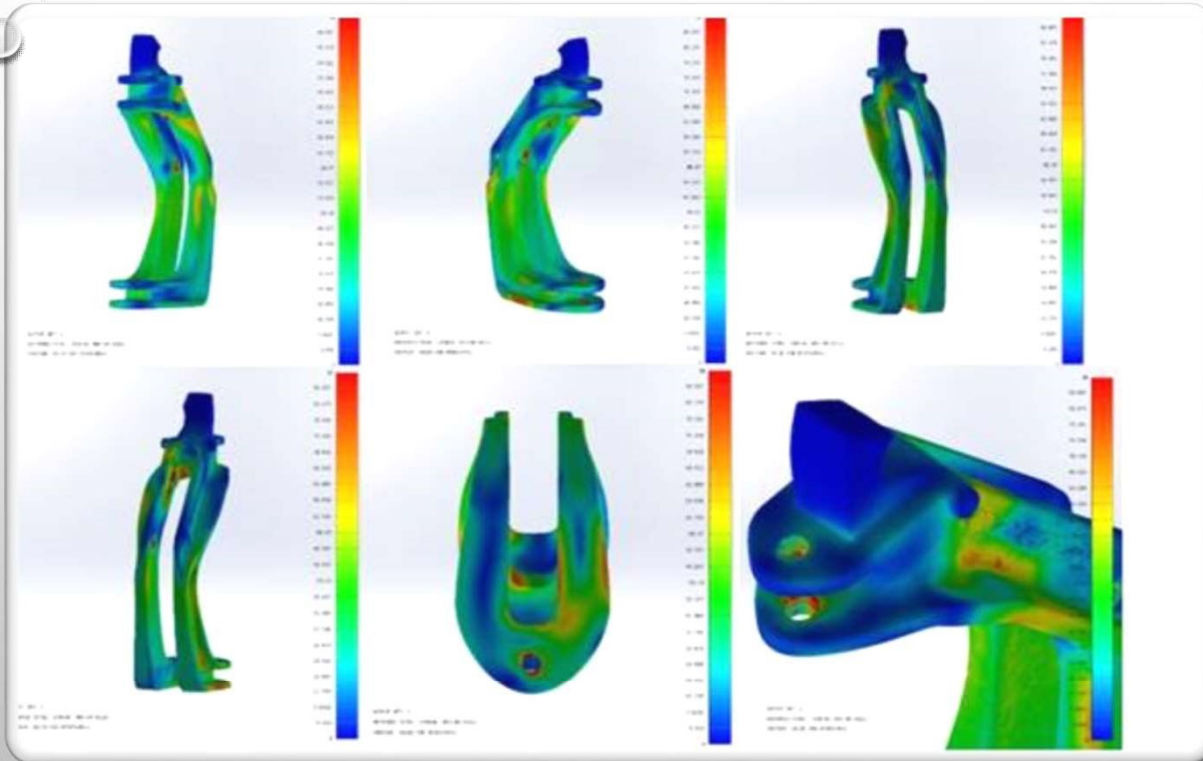
RUDDER BLADE

- INCLUDING STABILIZER BLADE
- 1 PIECE CNC MILLED
- STABILIZER SEPARATE FROM
RUDDER



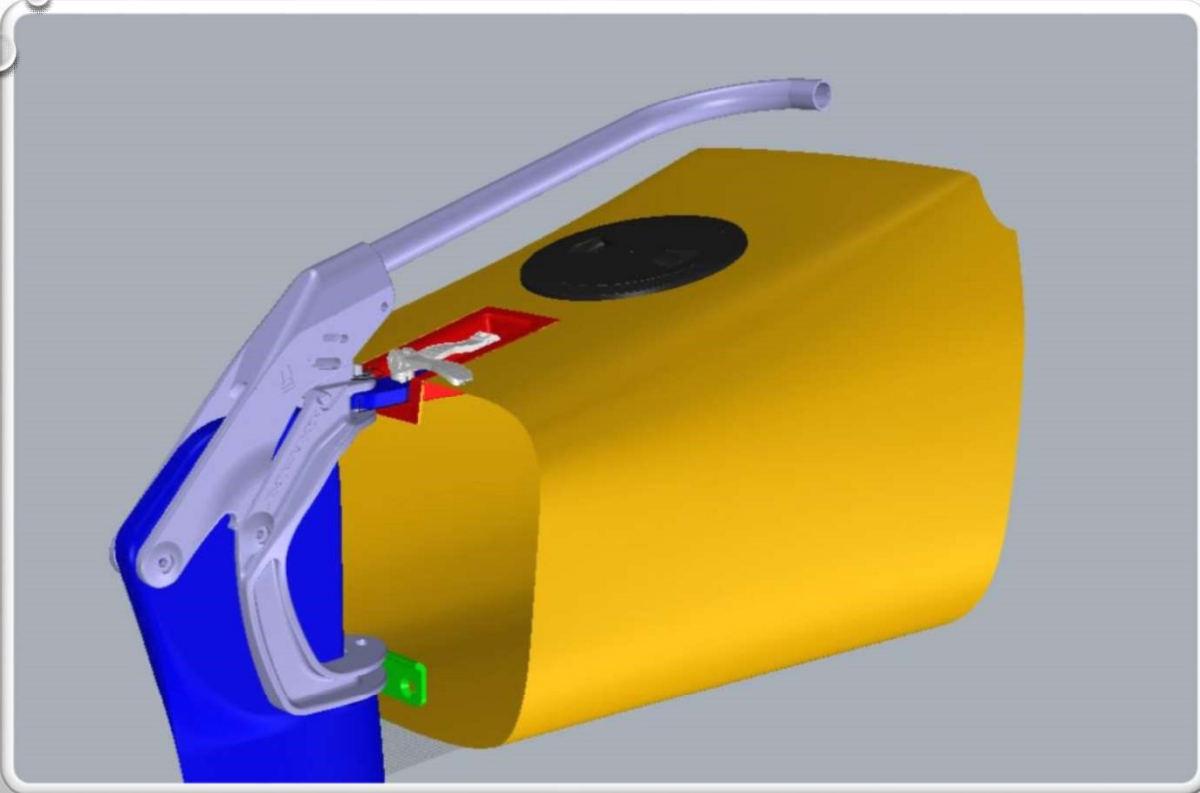
RUDDER LOWER CASING

- LOWER CASING STRESS TESTING
- FEA TESTING



RAKE ADJUSTMENT SYSTEM


- SIMPLE
- ROBUST
- INCLUDED IN RETROFIT KIT





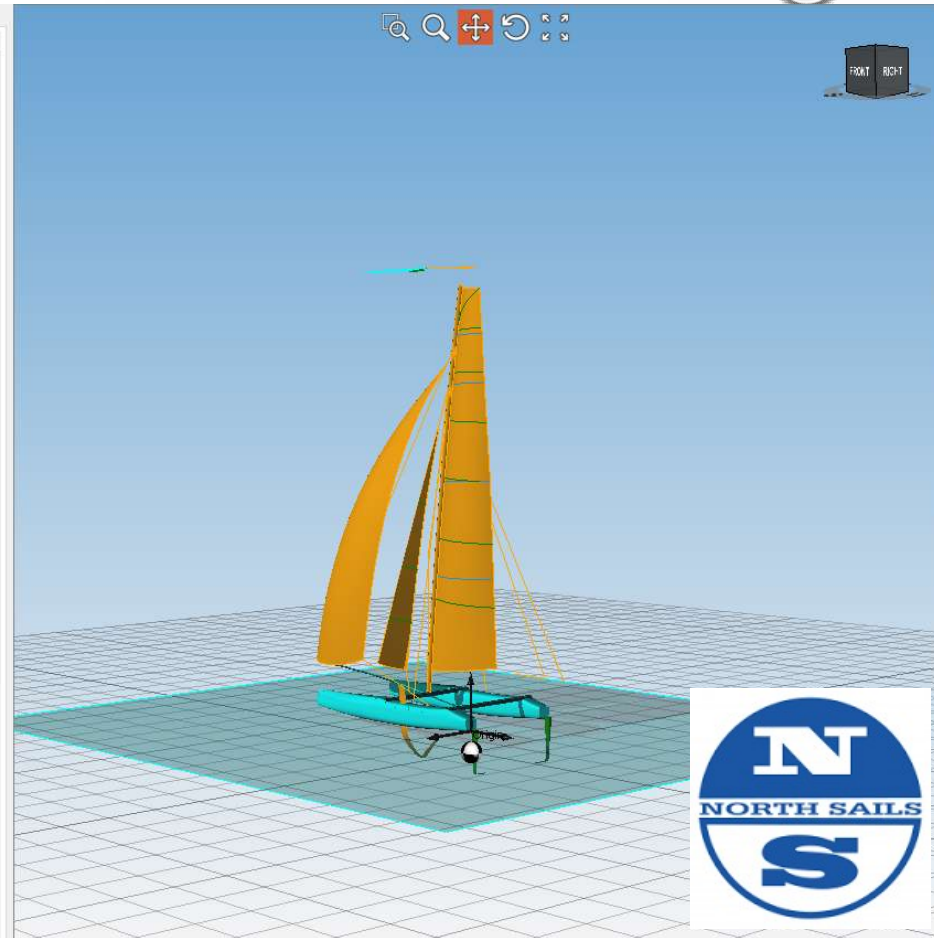
OVERVIEW CHANGES DAGGERBOARDS

DAGGERBOARDS

- NEW DESIGN FOR 4 FOIL FOILING
 - 3 VS 4 FOILS
 - SPEED
 - GENDER EQUALITY
 - COSTS
 - RACING FORMAT & TACTICKS
 - REV 25 VERSIONS TESTED IN CFD AND VPP PROGRAMS USING AC TECHNOLOGY [MM & NORTH SAILS]
 - 3 VERSIONS BUILD & TESTED
- 

Nacra 17 VPP

Iteration #30 Converged										
DOF[5]	Speed	FoilRake	Leeway	TwistM	Rudder	Trim				
Params	33.0262	0.6615	2.3831	0.0000	-2.4482	-0.0322				
Increment	0.0000	0.0000	0.0000	fixed	0.0000	0.0000				
Active	TwistI	Sink	Heel	SailCode	FoilExt	FoilYaw	FoilCant	Elevator	ElevatorWd	ElevRake
Params	-5.0000	0.4500	0.0000	14.0000	-0.4000	0.0000	0.0000	-1.0964	-1.0964	0.0000
Increment	0.0000	fixed	fixed	fixed	fixed	fixed	fixed	0.0000	0.0000	fixed
Active	CrewWgh	Crew(x)	Crew(z)	Crew(y)						
Params	135.000	-2.000	-1.055	0.000						
Increment	fixed	0.0000	0.0000	fixed						
Depends	Vmg	AWA10	AWs10	CWA	TWA	TwS10	SpeedTwS	Aero		
Values	27.2882	26.0014	20.7931	145.72	143.33	10.0000	1.8348	Nacra17-TwS12-BaseAero - AWA_45_rvp		
Balance	Surge	Heave	Sway	Yaw	Pitch	Drag	Lift	L/D	XCE	YCE
HydroDag	55	3340	-1440	-3078	-7543	-5	-1441	282.944	-2.137	-1.106
Aero	-387	139	1360	3425	1225	268	1309	5.186	-2.518	3.032
HydroRuL	92	-326	130	12	-34	97	126	1.292	-0.092	-0.798
HydroRuW	77	-348	-80	-149	-22	74	-83	-1.128	-1.869	8.412
Windage	163	0	30	-210	-175	159	-47	-0.293	6.952	0.324
CrewWgh	0	-1324	0	0	3442	-	-	-	NaN	-
Boat	0	-1400	0	0	3187	-	-	-	NaN	-
AeroTot	-224	138	1390	3215	1050	-166	1390	-0.312	3.756	-
HydroTot	124	2665	-1390	-3215	-7599	166	-1398	-2.312	-0.589	-
Total	-0.00003	-0.00075	-0.00055	-0.00183	0.00057					
d.Primary / d.Secondary parameter gradients										
	Speed	FoilRake	Leeway	Rudder	Trim					
TwistI	-0.0024	0.0406	-0.0417	0.0570	0.0208					
FoilExt	0.6535	-2.9135	-18.4364	16.7520	4.0002					
Elevator	0.0314	0.4205	-0.1509	0.0425	0.5497					
ElevatorWd	0.0905	0.4139	-0.1488	0.2396	0.5455					
Crew(x)	-0.0099	-1.2408	-0.0412	0.0353	-0.0921					
Crew(z)	0.0000	0.0000	0.0000	0.0000	0.0000					
TWA	-0.2016	0.0716	-0.0038	-0.0016	-0.0040					
d.Vmg / d.Secondary parameter gradients										
	TwistI	FoilExt	Elevator	ElevatorWd	Crew(x)	Crew(z)	TWA			
	0.008934	2.539361	0.002297	-0.000310	0.015056	0.000000	0.000180			
Constrain	Value	eq/1q	Target							
ElevRake	0.0000	=	0.0000							
Main										
Sec#	Girth	Front-%	Draft	Camber	Back-%	Twist	Entry	Exit		
0	0.006	0.754	0.498	0.058	0.743	0.000	13.3	11.9		
1	0.083	0.755	0.498	0.091	0.750	1.722	20.6	19.8		
2	0.081	0.760	0.500	0.115	0.760	3.610	25.9	25.9		
3	0.070	0.766	0.502	0.130	0.767	5.692	29.2	29.6		
4	0.074	0.771	0.500	0.137	0.771	8.002	31.1	31.1		
5	0.067	0.775	0.495	0.137	0.770	11.055	31.4	30.5		
6	0.060	0.776	0.492	0.130	0.770	14.243	30.3	29.3		
7	0.051	0.775	0.500	0.118	0.777	17.321	27.3	27.8		
8	0.039	0.772	0.525	0.100	0.789	20.509	22.2	25.9		



NUMECA

Pressure (normal stress)

40000

20000

0

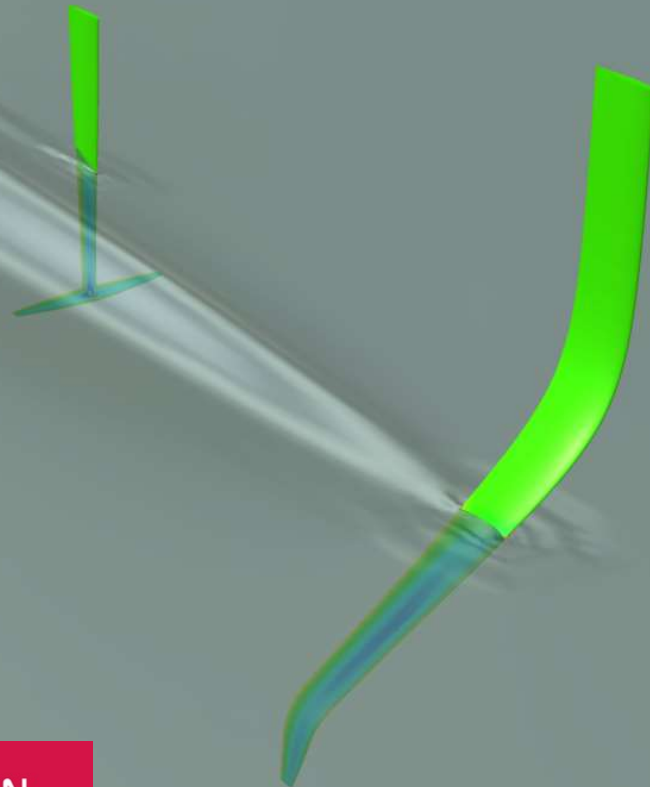
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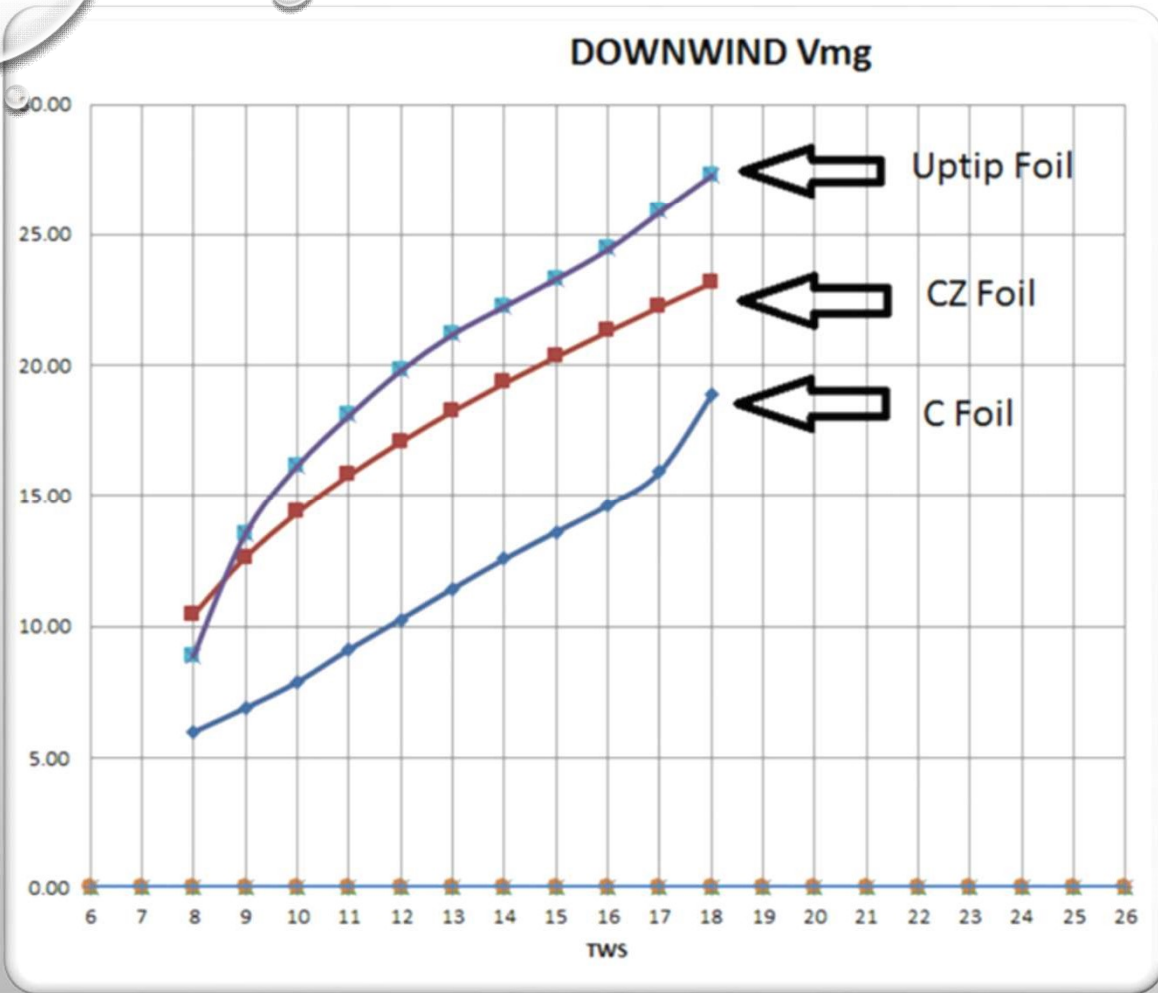
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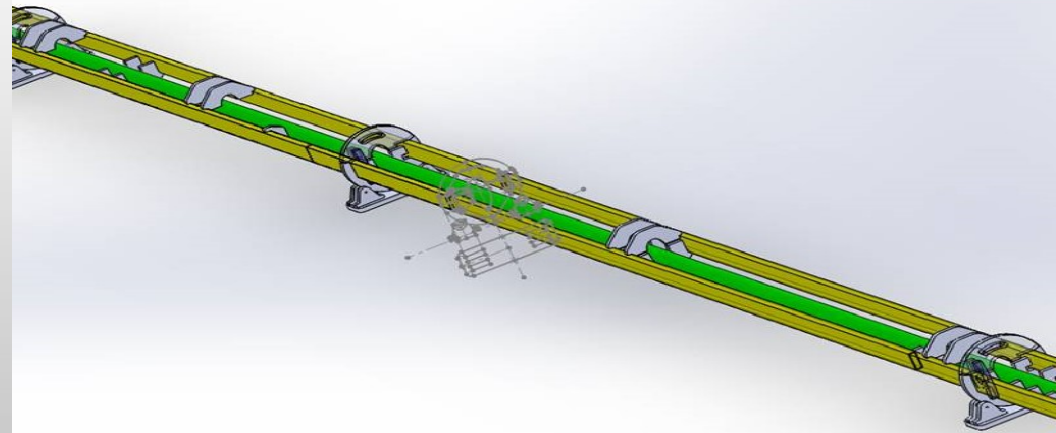
OVERVIEW CHANGES

DAGGERBOARDS

- OVERALL COMPROMISE BETWEEN
 - SPEED
 - HEAVE STABILITY
 - PITCH STABILITY
 - CREW WORK
 - RACE FORMAT


OVERVIEW PROCESS IMPROVEMENT

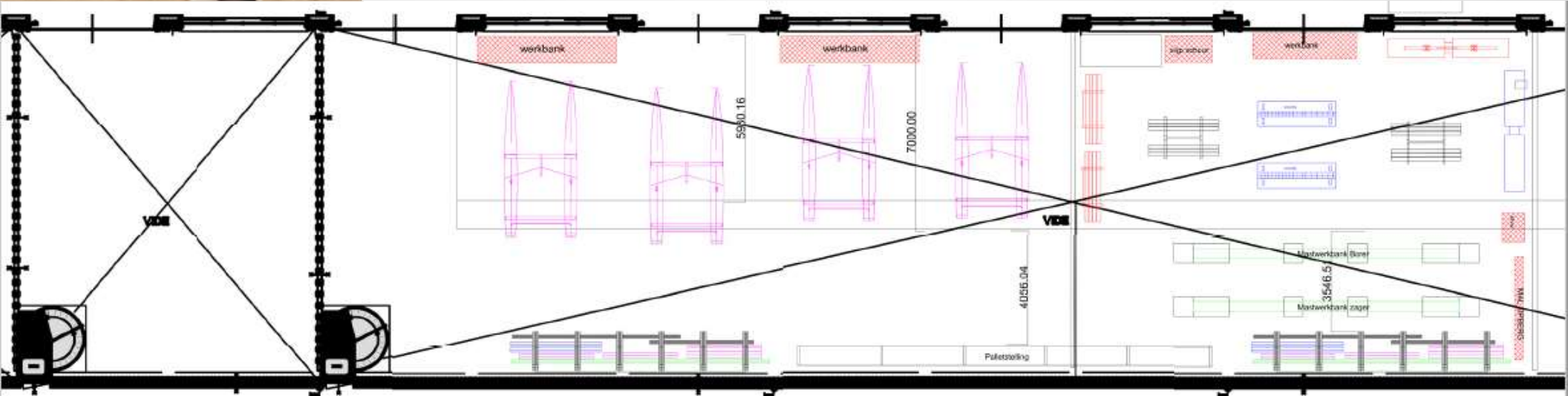
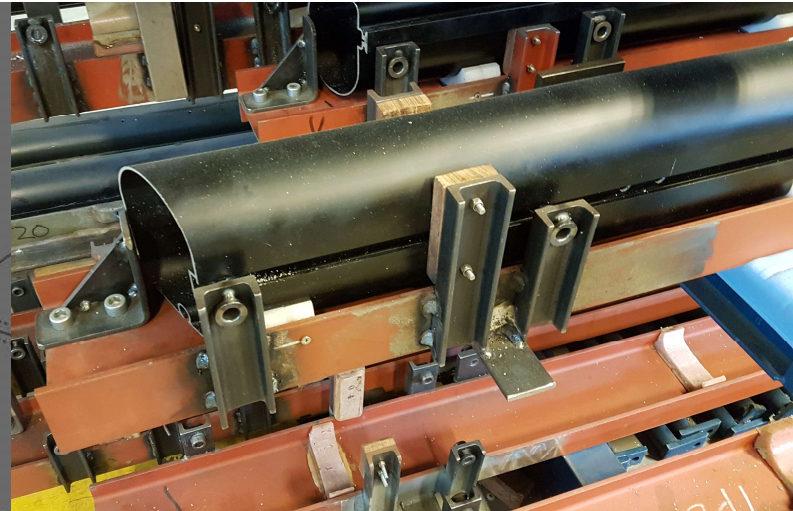
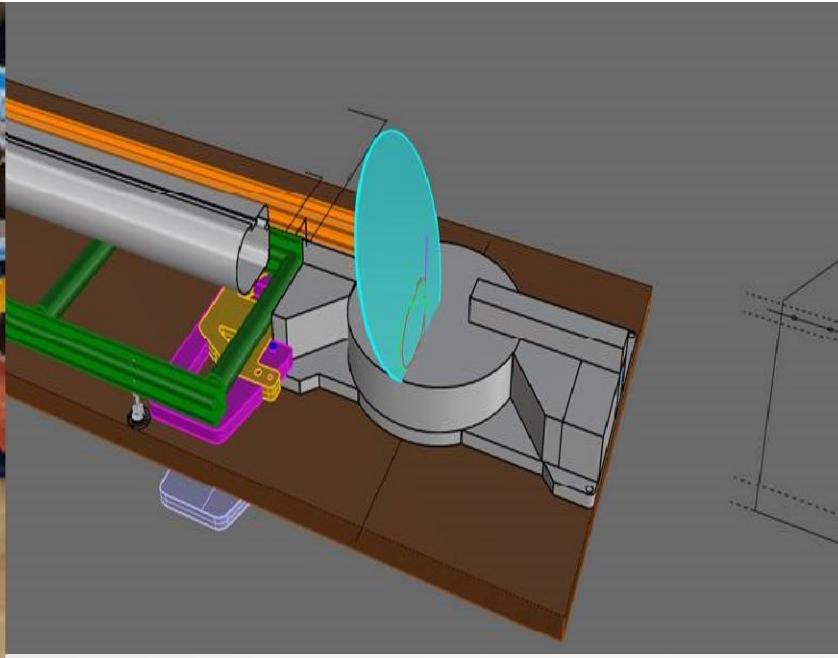
- NEW QC COMPLETE BOAT PROCESS
 - ALL BOATS WILL BE COMPLETELY BUILT PRIOR TO SHIPPING
 - QC DOCUMENTS AVAILABLE WITH BOAT
- NEW HULL PRODUCTION PLANT [ISO 9000/14000 COMPLIANT]
 - NEW PRODUCTION TOOLING
 - TOLERANCES JIGS PER PRODUCTION STAGE





OVERVIEW PROCESS IMPROVEMENT

- NEW QC COMPONENT LEVEL PROCESS
 - ALL MAJOR COMPONENTS WILL BE PRE FITTED TO BOAT TO INSURE OVERALL TOLERANCES [TOLERANCE-ON-TOLERANCE]
 - QC REPORTS AVAILABLE [AS PER CURRENT MAST PROCESS]
 - HULLS
 - RUDDERS
 - DAGGER BOARDS
 - BEAMS
- 



The background features a light gray gradient with several realistic water droplets of various sizes and shapes scattered across the surface. The droplets have highlights and shadows, giving them a three-dimensional appearance. The text 'UPGRADE POSSIBILITIES' is centered in the middle of the page.

UPGRADE POSSIBILITIES

UPGRADE KIT EXISTING BOAT

- COMPOSITE PARTS
 - DEK & DAGGERBOARDS CASE
 - HULL REINFORCEMENT- PARTS & CARBON CLOTH
 - TRANSOM REINFORCEMENTS PARTS & CARBON CLOTH
- PROGRIP
- TEMPLATES & MANUAL
- RAKE TRIMKIT INCL UPPER & LOWER BEARING, LINES, BITS & PIECES
- RUDDER LOWER CASTING INCLUDING LOWER & UPPER PINTELS
- T RUDDER BLADES
- Z DAGGERBOARDS
- SPINNAKER
- LABOURCOST REFERENCE - €1500
- KIT PRICE € 6400
- TOTAL PRICE - € 7900

NEW PLATFORM


- 2 HULLS INCL RUDDER PINTELS
- FRONT BEAM- WITHOUT HARKEN PARTS
- REAR BEAM – WITHOUT HARKEN PARTS
- TRAMPOLINE
- LOWER RUDDER
- T RUDDERS
- Z DAGGERBOARDS
- RAKE TRIM KIT INCLUDING UPPER AND LOWER BEARINGS, LINES, BIT & PIECES
- SPINNAKER
- DIRECT SUPPLY TO TEAMS
- € 14,500 EX TAX, EX WORKS, MAX QTY 100

CLUBSET

- SET TO CONVERT SPARE PARTS AND EXISTING PLATFORM INTO N17 CLUBRACER
- PROMOTION LEAFLET AVAILABLE FROM NACRA
- DIRECT SUPPLY
- ALUMINIUM MAST
- RUDDER STABILIZER KIT
- LINE PACKAGE
- IN COMBINATION WITH PLATFORM PURCHASE
- € 825, EX VAT, EX WORKS




NEW NACRA17 COMPLETE

- FULL BOAT
 - SUPPLY VIA DEALER NETWORK
 - PRICE €24.250, EX VAT, EX WORKS
- 



FOILING TRANSFER VOUCHERS

- SMOOTH TRANSFER TO FULL FOILING
 - AVAILABLE FOR 25 TEAMS WHO PURCHASE PLATFORM OR COMPLETE BOAT
 - VOUCHER PER REGATTA [AS PER CLASS DISCRETION]
 - €500 MAX 4 VOUCHERS
 - VOUCHERS CAN BE USED FOR PARTS & SAILS PURCHASE
- 

CALCULATIONS

UPGRADE KIT

KIT PRICE € 7900
VOUCHERS MAX € 0
NET - €7900

PLATFORM

PLATFORM PRICE € 14.500
CLUBRACER KIT € 825
SELLING CLUBRACER € 7.500
VOUCHERS MAX € 2000
NET- €5.825

COMPLETE BOAT

BOAT PRICE € 24.250
VOUCHERS MAX € 2000
NET- €22.250

The image features a light gray background with a subtle gradient. In the top-left and top-right corners, there are clusters of realistic water droplets of various sizes, rendered with soft shadows and highlights. A similar cluster of droplets is located in the bottom-right corner. The text 'Q&A' is centered in the upper half of the page.

Q&A