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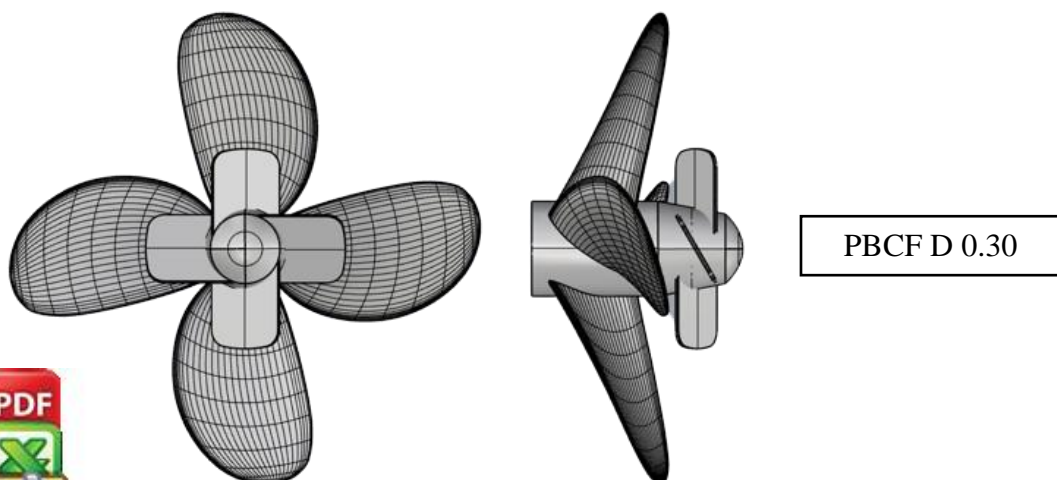
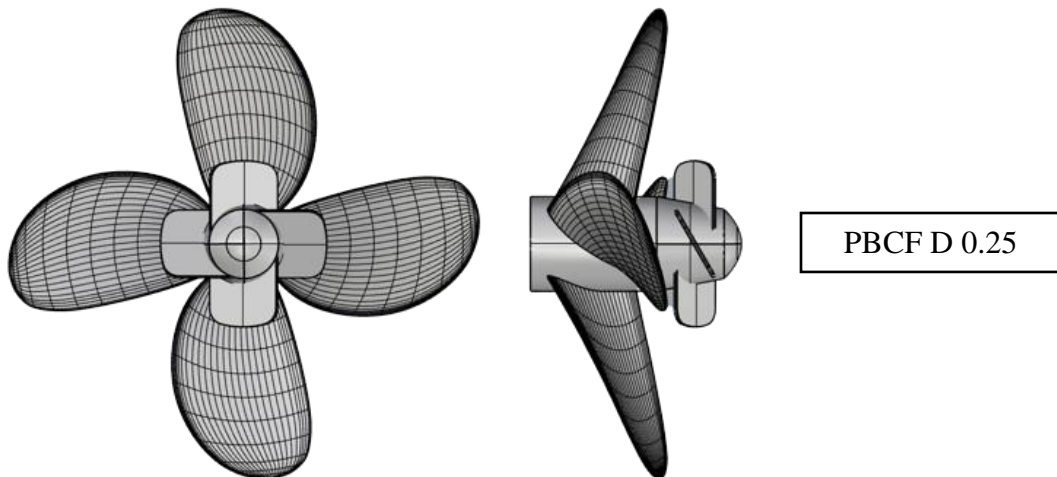
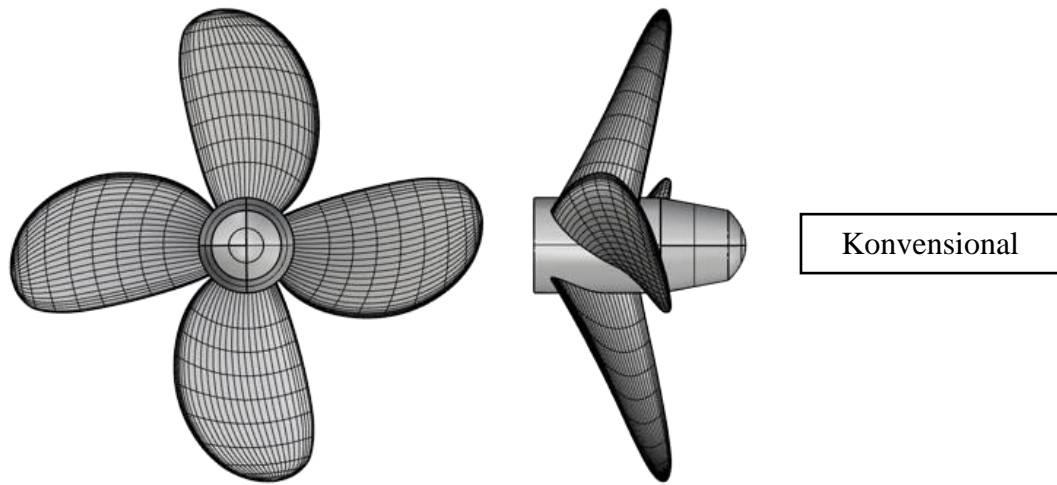
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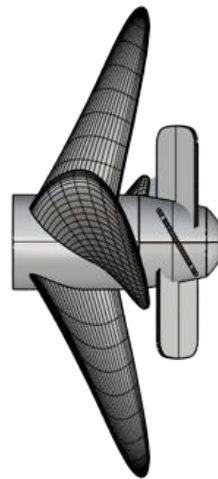
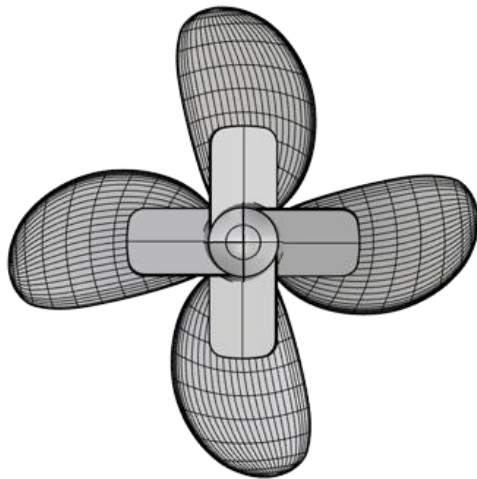
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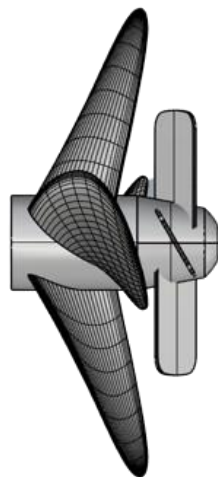
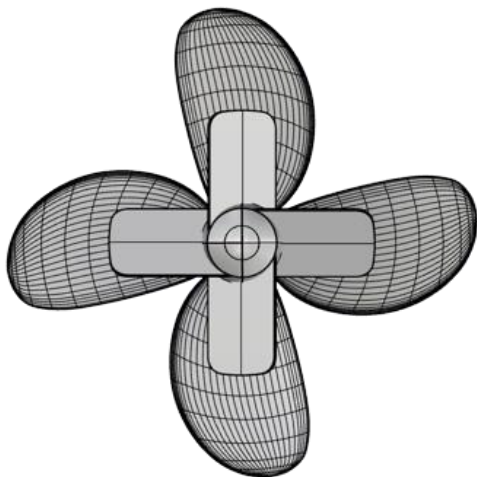


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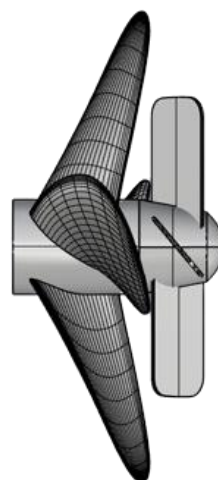
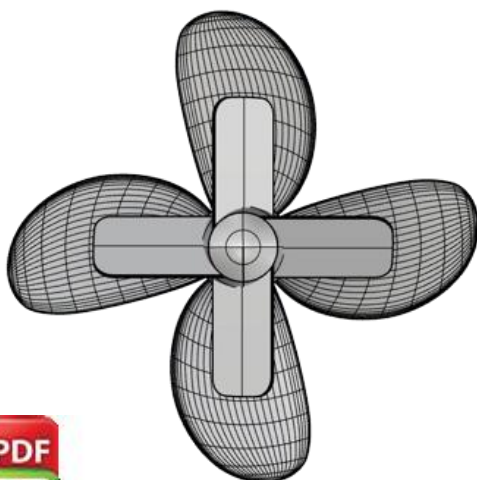
Lampiran 1 Model *Propeller Boss Cap Fins* (PBCF) Pada *Propeller*



PBCF D 0.35

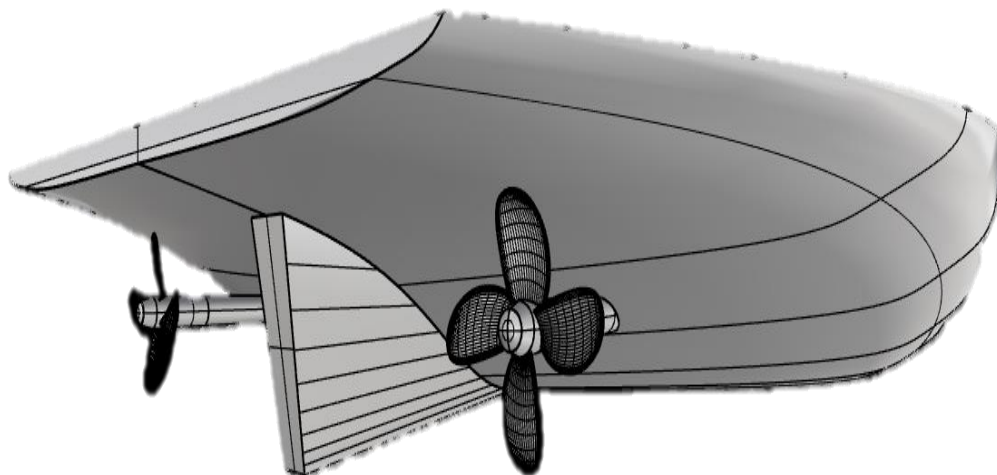


PBCF D 0.40

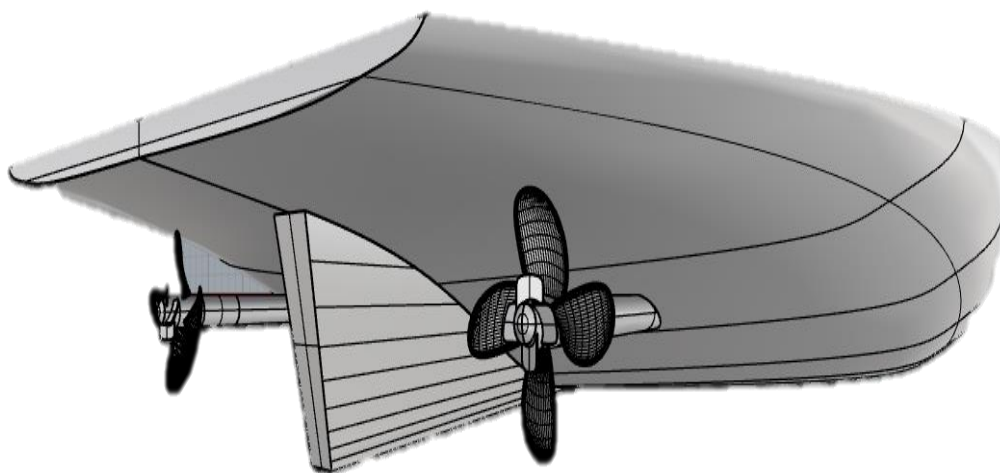


PBCF D 0.45

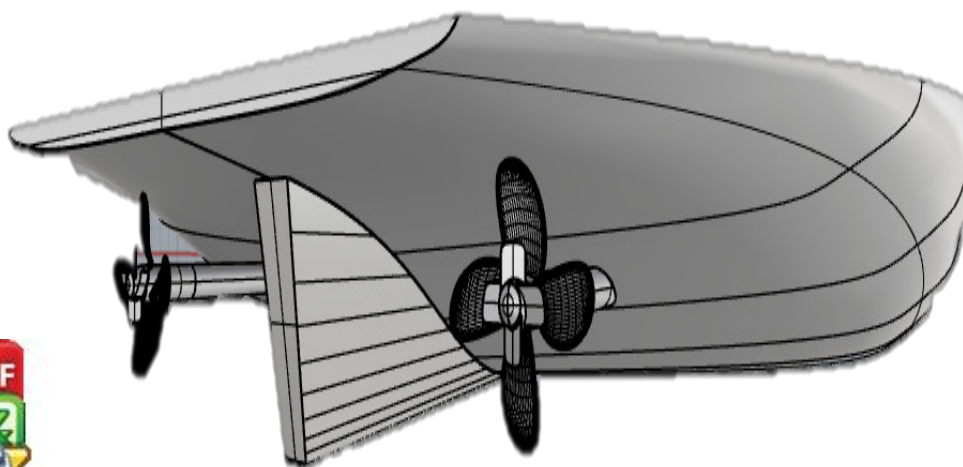


Lampiran 2 Model PBCF Pada *Propeller* dan Lambung Kapal

Gambar 1 Model Tanpa PBCF

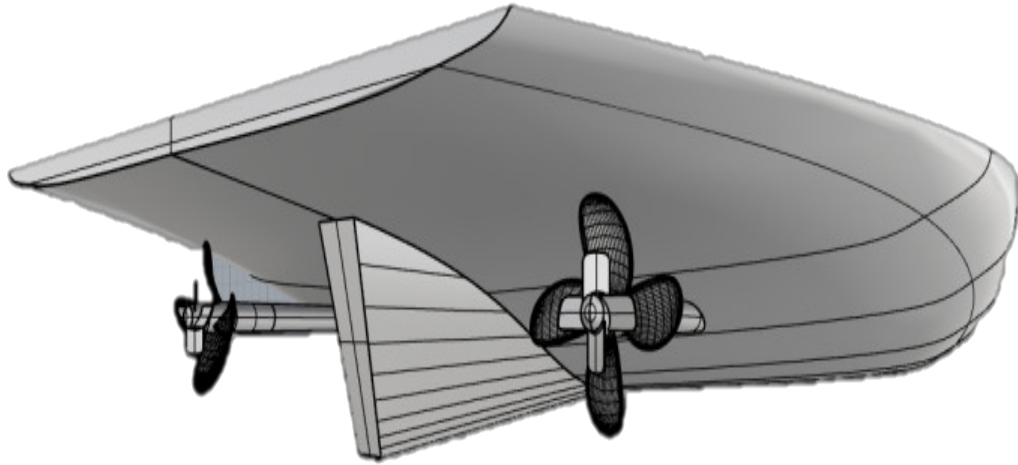


Gambar 2 Model Dengan PBCF (D 0.25)

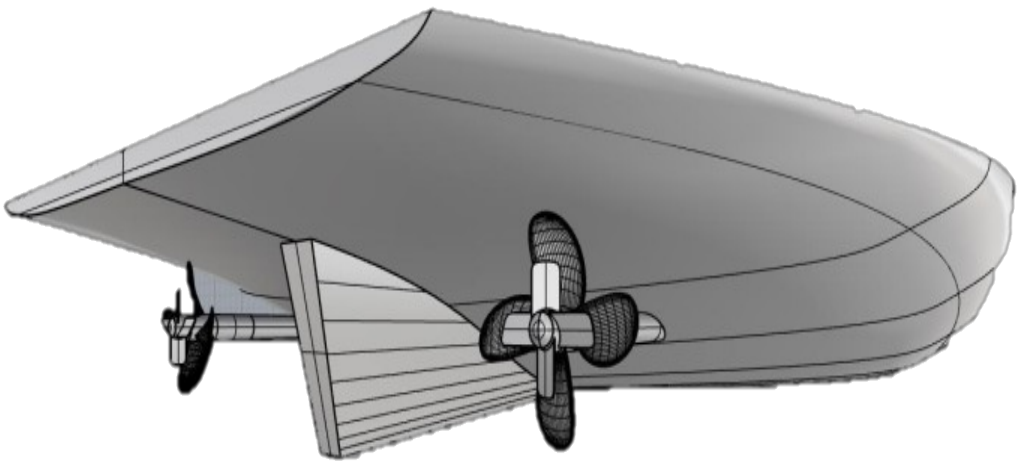


Gambar 3 Model Dengan PBCF (D 0.30)

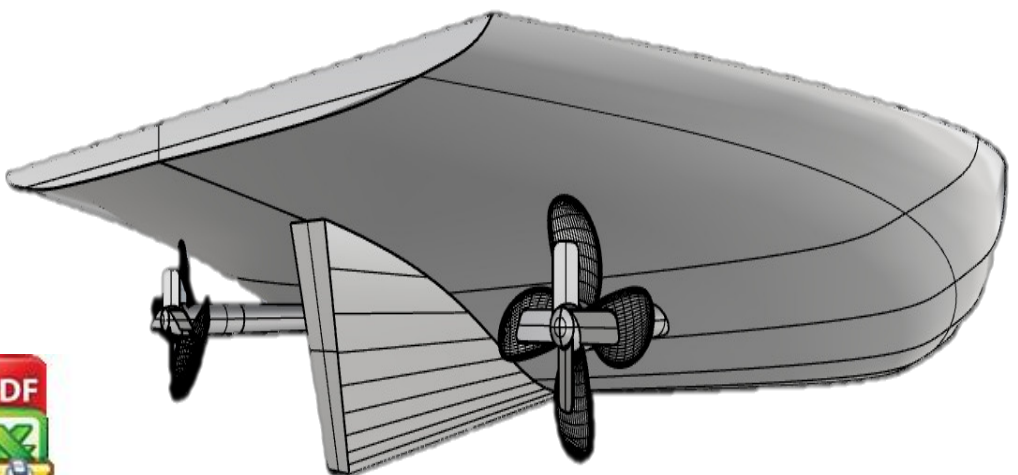




Gambar 4 Model Dengan PBCF (D 0.35)



Gambar 5 Model Dengan PBCF (D 0.40)



Gambar 6 Model Dengan PBCF (D 0.45)



Lampiran 3 Tabel Hasil Eksperimen KMP *Ferry* Ro-Ro 750 GTHubungan Kecepatan Dinas dengan R_T dan EHP Kapal ($T = 2.25$ m)

MODEL							
Run ke-	V (m/s)	R_T (kg)	Re ($\times 10^6$)	C_T ($\times 10^{-3}$)	C_F ($\times 10^{-3}$)	C_R ($\times 10^{-3}$)	Fr
1	0.6547	0.0430	0.7244	6.603	5.034	1.569	0.200
2	0.7275	0.0516	0.8049	6.418	4.916	1.502	0.223
3	0.8002	0.0602	0.8854	6.188	4.814	1.374	0.245
4	0.8366	0.0731	0.9256	6.875	4.767	2.108	0.256
5	0.8730	0.0946	0.9659	8.171	4.723	3.448	0.267
6	0.9355	0.1140	1.0351	8.570	4.653	3.918	0.286

KAPAL						
Run ke-	V(knots)	Re ($\times 10^8$)	C_F ($\times 10^{-3}$)	C_T ($\times 10^{-3}$)	R_T (kN)	P_E (EHP)
1	9	2.469	1.835	3.805	31.176	196.29
2	10	2.744	1.809	3.711	37.542	262.64
3	11	3.018	1.786	3.561	43.586	335.41
4	11.5	3.155	1.776	4.284	57.311	461.08
5	12	3.292	1.766	5.614	81.781	686.55
6	12.86	3.528	1.749	6.607	101.506	913.21



Lampiran 4 Data Maxsurf KMP *Ferry* Ro-Ro 750 GT

	Value	Unit	Holtrop
LWL	48.85	m	48.85 (<i>low</i>)
<i>Beam</i>	14	m	14 (<i>high</i>)
<i>Draft</i>	2.25	m	2.25 (<i>low</i>)
<i>Displaced volume</i>	1119.843	m ³	1119.843
<i>Wetted area</i>	762.015	m ²	762.015
<i>Prismatic coeff.</i>	0.806		0.806
<i>Waterplane area coeff.</i>	0.922		0.922
<i>½ angle of entrance</i>	43.14	deg.	43.14
<i>LCG from midships (+ve for'd)</i>	23.633	m	23.633
<i>Transom area</i>	1.172	m ²	1.172
<i>Transom wl beam</i>	6.548	m	--
<i>Transom draft</i>	0.204	m	--
<i>Max sectional area</i>	28.452	m ²	--
<i>Bulb transverse area</i>	0.038	m ²	0.038
<i>Bulb height from keel</i>	0	m	0
<i>Draft at FP</i>	0.227	m	0.227
<i>Deadrise at 50% LWL</i>	3.06	deg.	--
<i>Hard chine or Round bilge</i>	<i>Round bilge</i>		--
<i>Frontal Area</i>	0	m ²	
<i>Headwind</i>	0	kts	
<i>Drag Coefficient</i>	0		
<i>Air density</i>	0.001	tonne/m ³	
<i>Appendage Area</i>	0	m ²	
<i>Nominal App. Length</i>	0	m	
<i>Appendage Factor</i>	1		
<i>tion allow.</i>	0.00040		
<i>tic viscosity</i>	0.0000011883	m ² /s	
<i>Density</i>	1.026	tonne/m ³	



Lampiran 5 Tahanan Holtrop Maxsurf KMP *Ferry* Ro-Ro 750 GT

<i>Speed</i>	<i>Resistance</i>	<i>Power</i>
9	31.13	144.15
9.1	32.19	150.67
9.2	33.28	157.52
9.3	34.42	164.69
9.4	35.6	172.18
9.5	36.83	179.99
9.6	38.09	188.11
9.7	39.39	196.55
9.8	40.73	205.32
9.9	42.11	214.47
10	43.55	224.05
10.1	45.06	234.12
10.2	46.65	244.78
10.3	48.33	256.09
10.4	50.12	268.15
10.5	52.02	281
10.6	54.04	294.67
10.7	56.17	309.17
10.8	58.39	324.44
10.9	60.7	340.4
11	63.07	356.93
11.1	65.48	373.9
11.2	67.89	391.15
11.3	70.28	408.56
11.4	72.64	426.02
11.5	74.96	443.48
11.6	77.24	460.93
11.7	79.49	478.45
11.8	81.73	496.16
11.9	84	514.24
12	86.33	532.91
12.1	88.75	552.44
12.2	91.31	573.11
12.3	94.07	595.21
12.4	97.05	619.06
12.5	100.3	644.97
	103.86	673.22
	107.77	704.12
	112.06	737.93
	116.76	774.88
	121.89	815.19



Lampiran 6 Nilai Pembacaan Diagram Wageningen B 4 – 55

Data *Propeller* Untuk Pembacaan Diagram Wageningen :

$$V_s = 12.865 \text{ knot} = 21.713 \text{ ft/s}$$

$$N = 8.764 \text{ rps}$$

$$D = 1.422 \text{ m} = 4.6654 \text{ ft}$$

$$P = 1.00251$$

$$\rho = 1.9905 \text{ s/ft}^3$$

$$A_e/A_o = 0.55$$

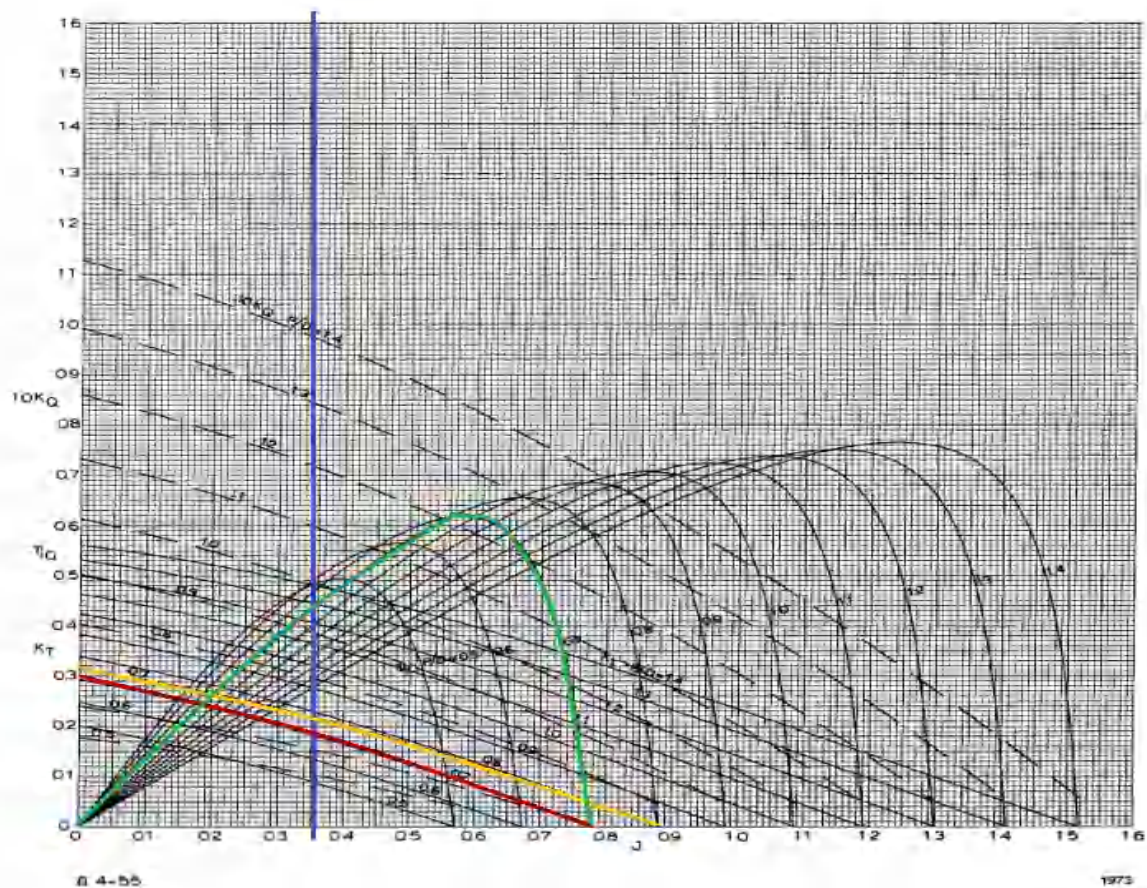
$$C_b = 0.72$$

$$w = 0.31$$

$$V_a = 14.982 \text{ ft/s}$$

$$J = 0.366$$

$$P/D = 0.705$$

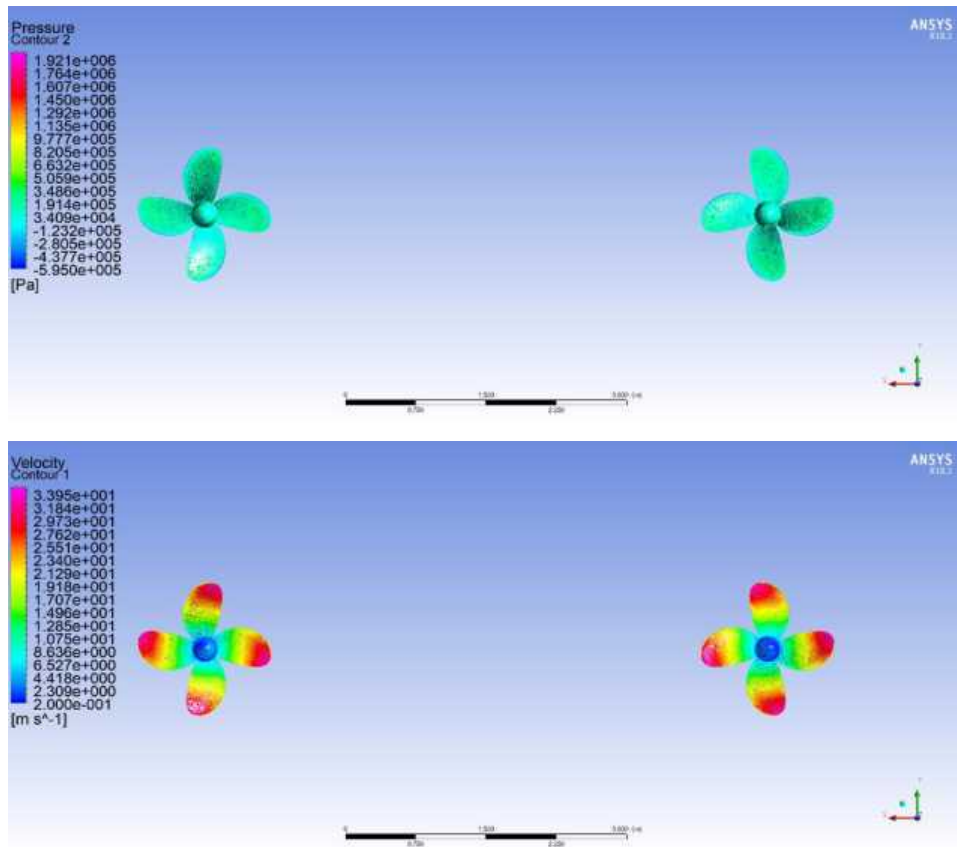


Rekapitulasi Nilai Pembacaan Diagram Wageningen :

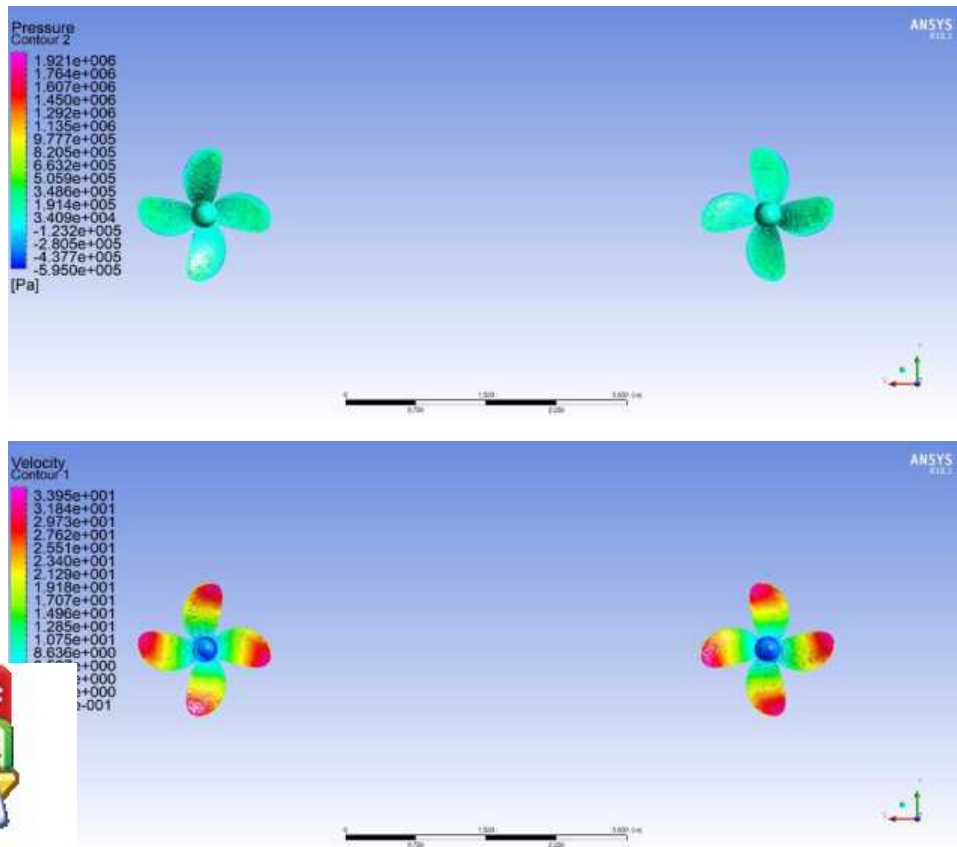
J	K_T	$10K_Q$	η_o
0.100	0.273	0.336	0.137
200	0.245	0.308	0.285
300	0.206	0.278	0.421
366	0.192	0.257	0.488
400	0.179	0.246	0.514
500	0.138	0.210	0.585



Lampiran 7 Visualisasi *Contour* Simulasi *Open Water Test*

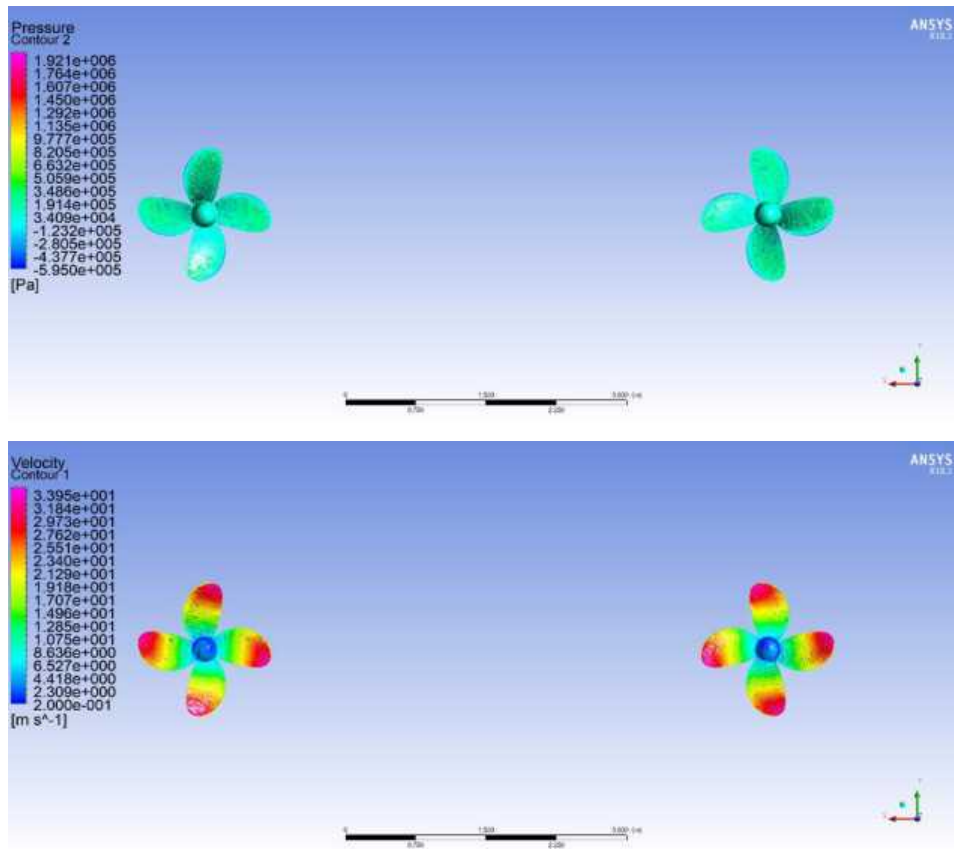


Gambar 7 *Pressure Contour* dan *Velocity Contour* *Open Water Test* 9 Knot

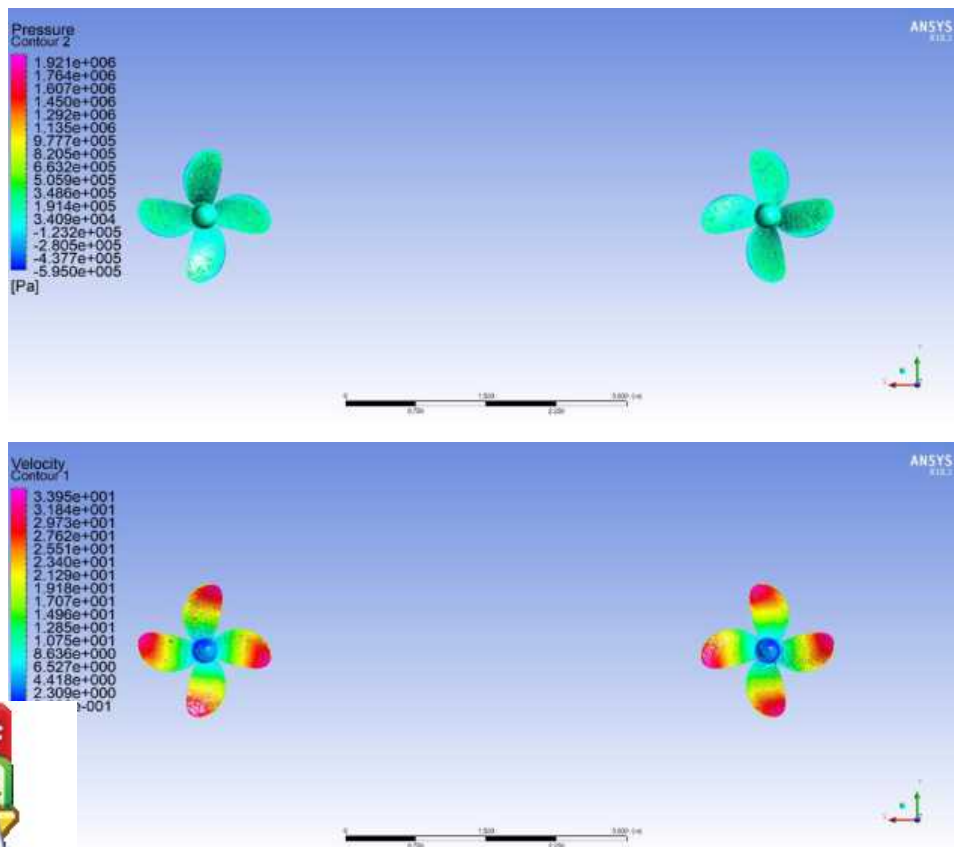


Gambar 8 *Pressure Contour* dan *Velocity Contour* *Open Water Test* 10 Knot

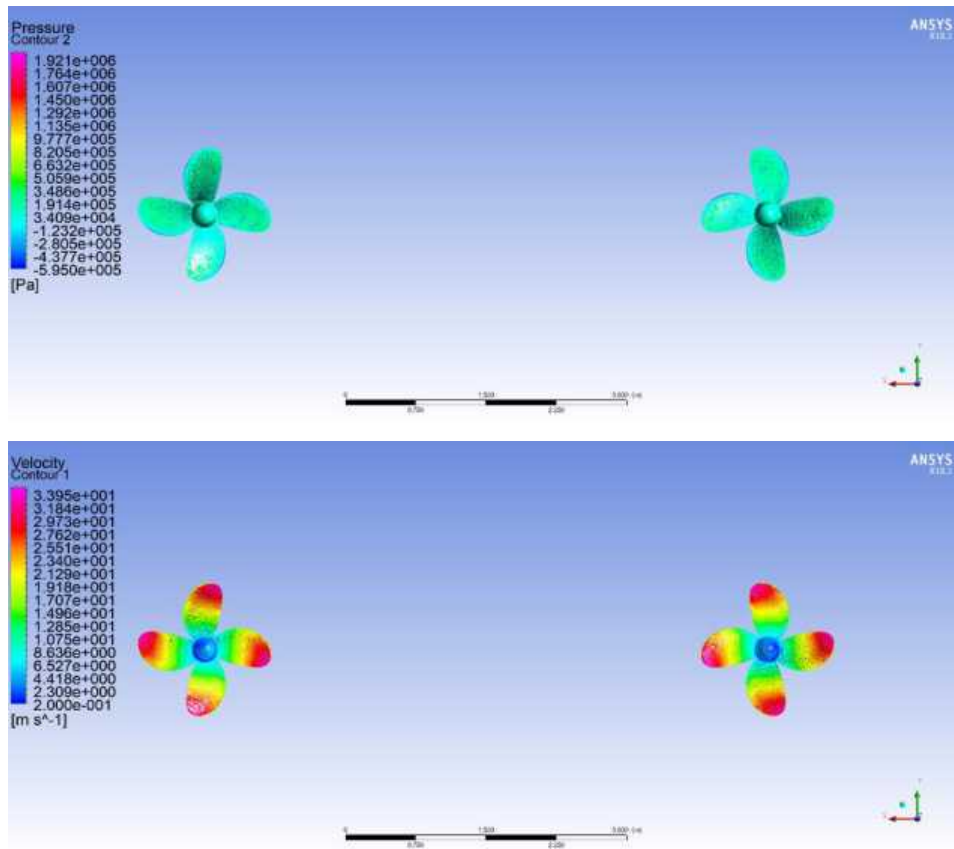




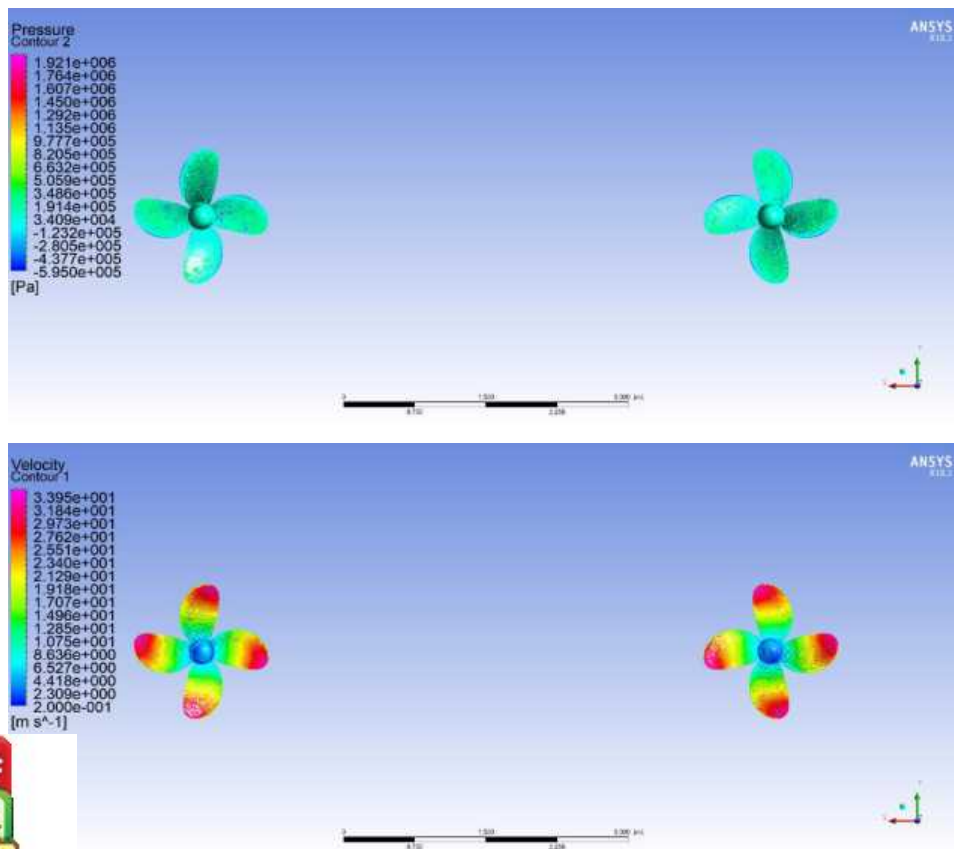
Gambar 9 Pressure Contour dan Velocity Contour Open Water Test 11 Knot



10 Pressure Contour dan Velocity Contour Open Water Test 11.5 Knot



Gambar 11 *Pressure Contour* dan *Velocity Contour* Open Water Test 12 Knot

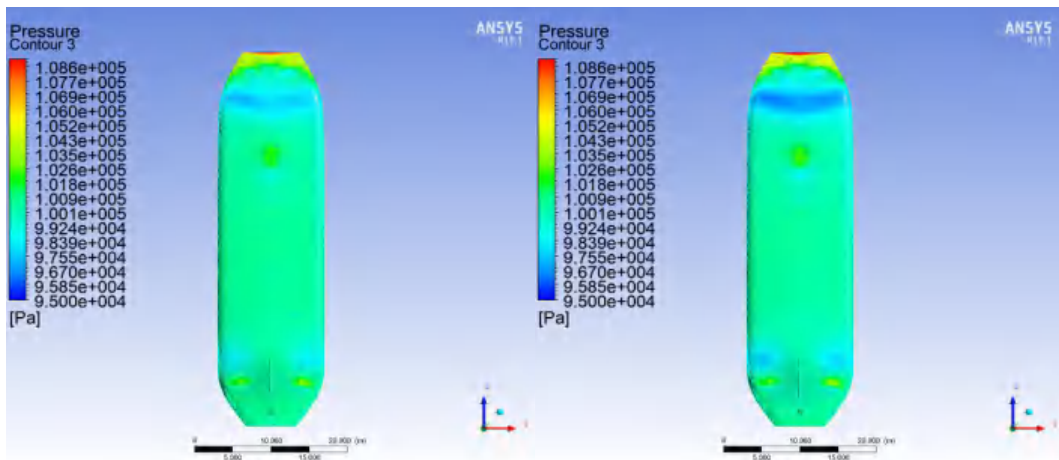


12 *Pressure Contour* dan *Velocity Contour* Open Water Test 12.865 Knot



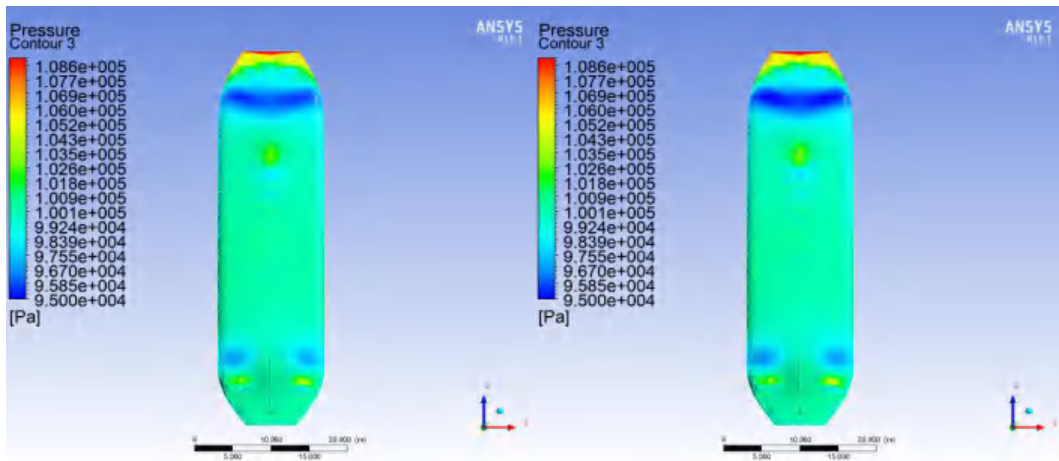
Lampiran 8 Visualisasi *Contour* 6 Kecepatan Kapal (*Bottom View*)

Simulasi Lambung (*Resistance Test*)



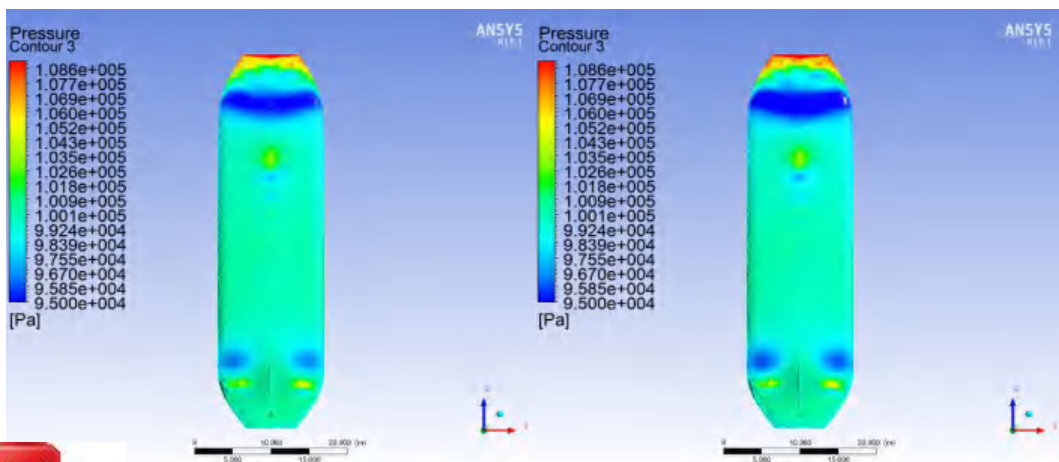
(a)

(b)



(c)

(d)



(e)

(f)

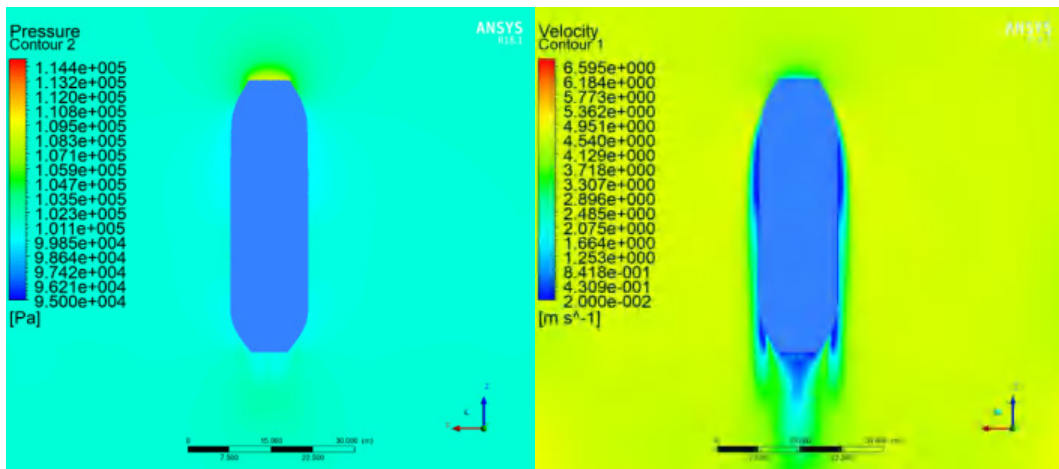


gambar 13 *Pressure Contour Bottom View Simulasi Resistance Test*

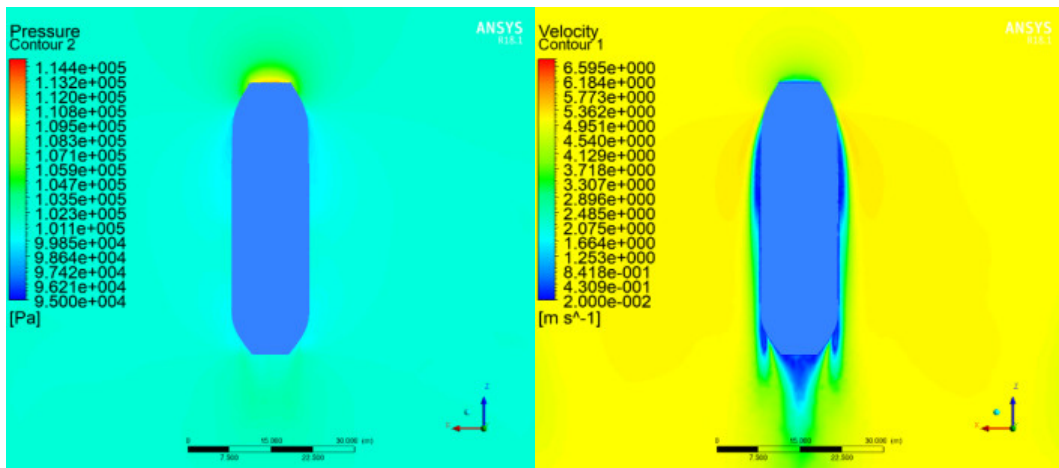
Knot (b) 10 Knot (c) 11 Knot (d) 11.5 Knot (e) 12 Knot (f) 12.865 Knot

Lampiran 9 Visualisasi *Contour* 6 Kecepatan Kapal (*Top View*)

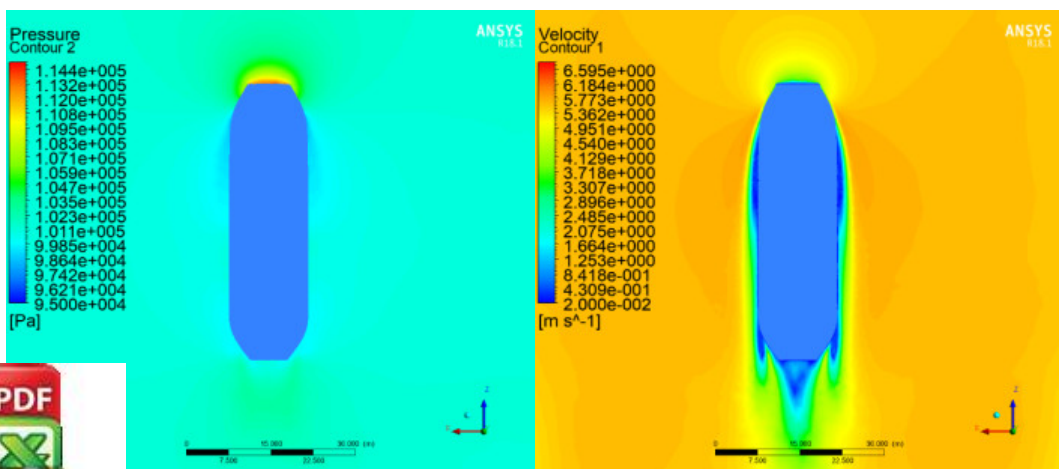
Simulasi Lambung (*Resistance Test*)



Gambar 14 *Pressure Contour* dan *Velocity Contour Top View* 9 Knot

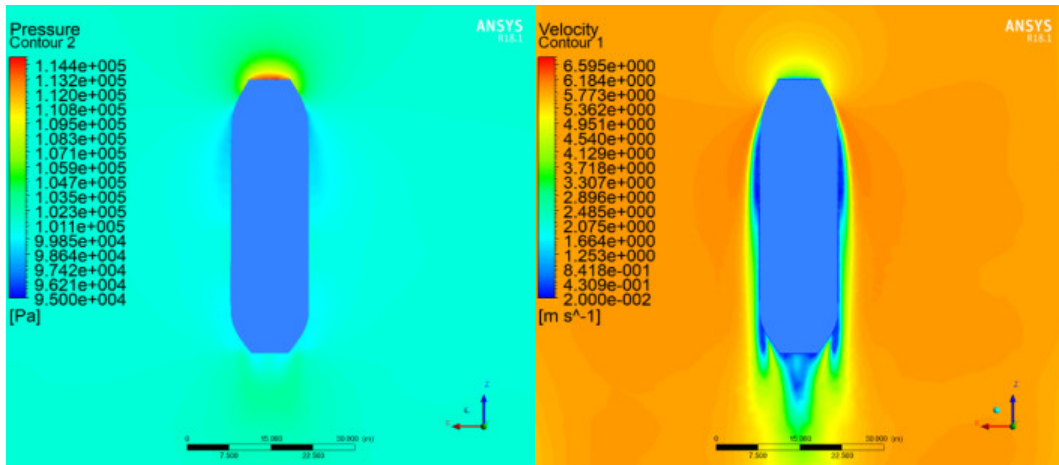


Gambar 15 *Pressure Contour* dan *Velocity Contour Top View* 10 Knot

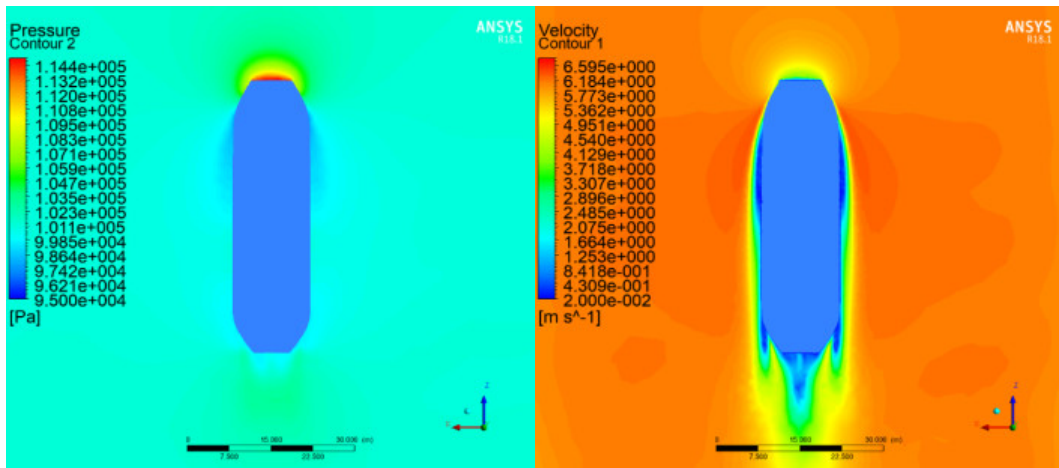


Gambar 16 *Pressure Contour* dan *Velocity Contour Top View* 11 Knot

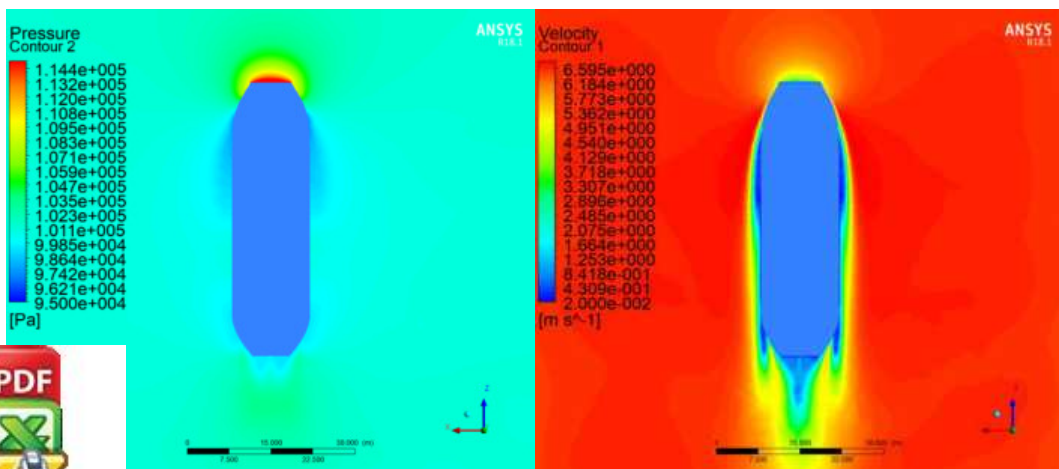




Gambar 17 *Pressure Contour dan Velocity Contour Top View 11.5 Knot*



Gambar 18 *Pressure Contour dan Velocity Contour Top View 12 Knot*

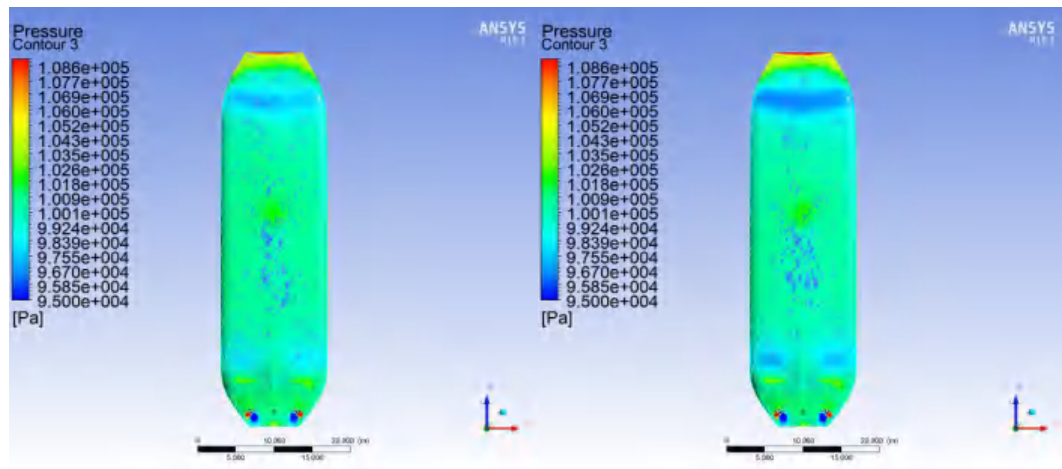


Gambar 19 *Pressure Contour dan Velocity Contour Top View 12.865 Knot*



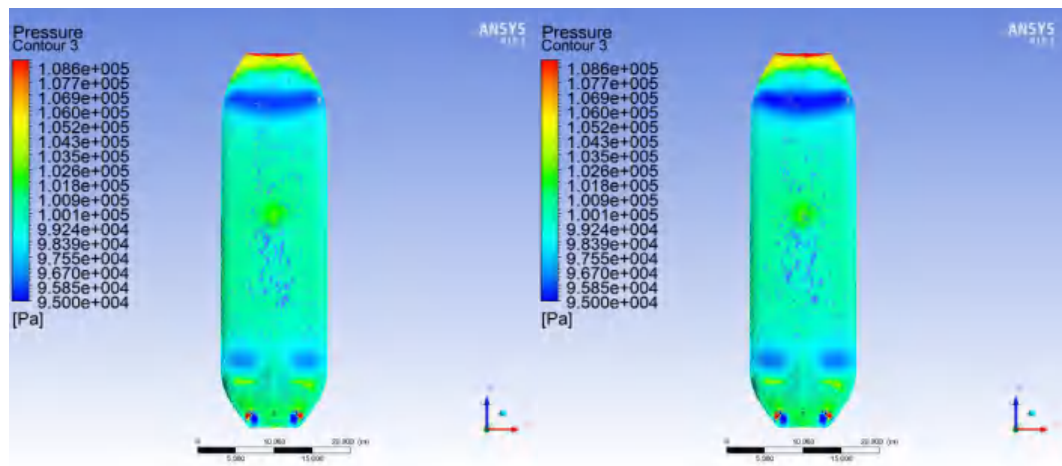
Lampiran 10 Visualisasi *Contour* 6 Kecepatan Kapal (*Bottom View*)

Simulasi *Propeller* dan Lambung (*Self Propulsion Test*)



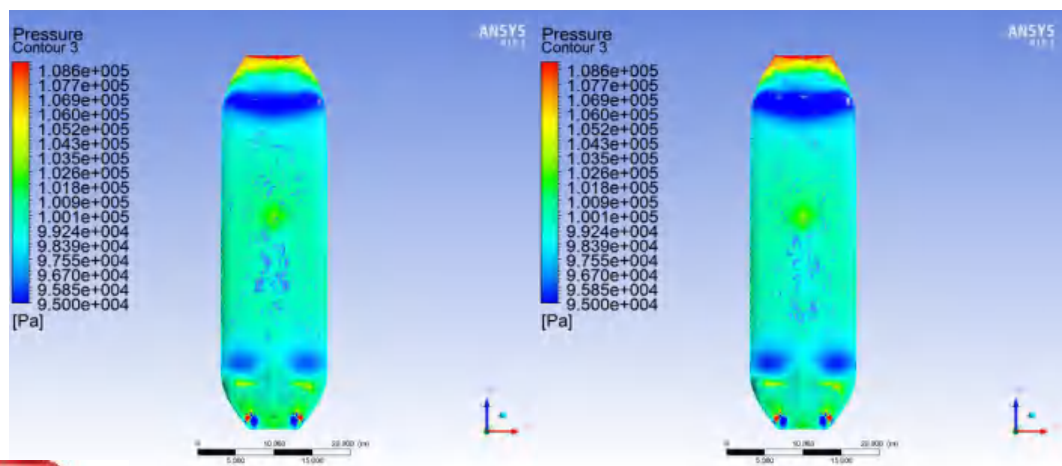
(a)

(b)



(c)

(d)



(e)

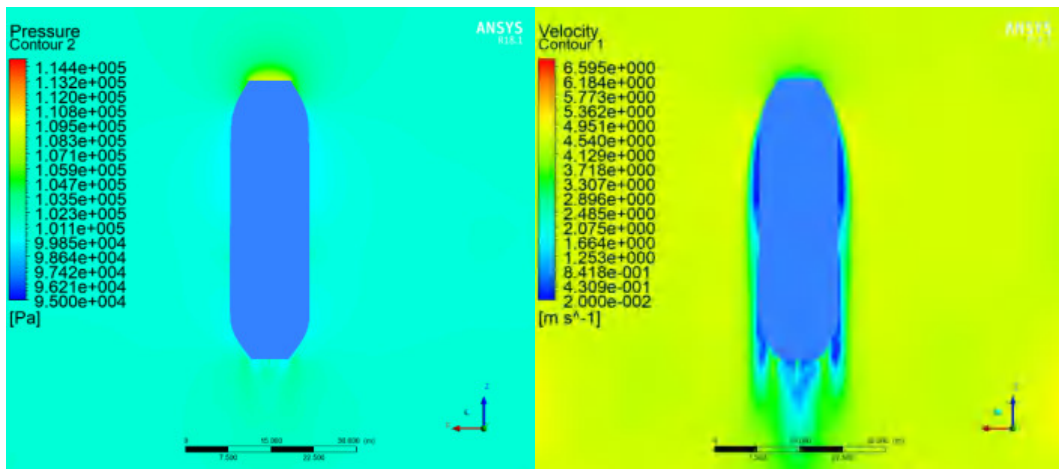
(f)

bar 20 *Pressure Contour Bottom View Simulasi Self Propulsion Test*
 not (b) 10 Knot (c) 11 Knot (d) 11.5 Knot (e) 12 Knot (f) 12.865 Knot

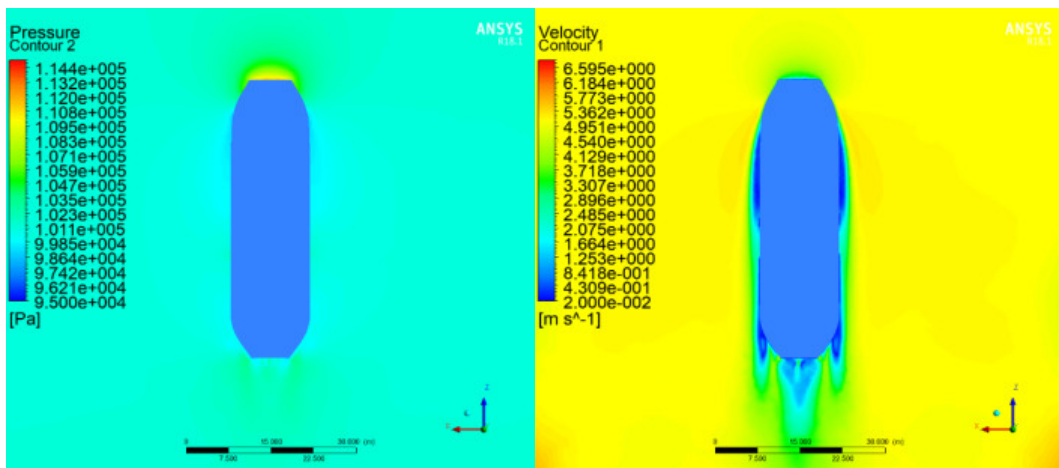


Lampiran 11 Visualisasi *Contour* 6 Kecepatan Kapal (*Top View*)

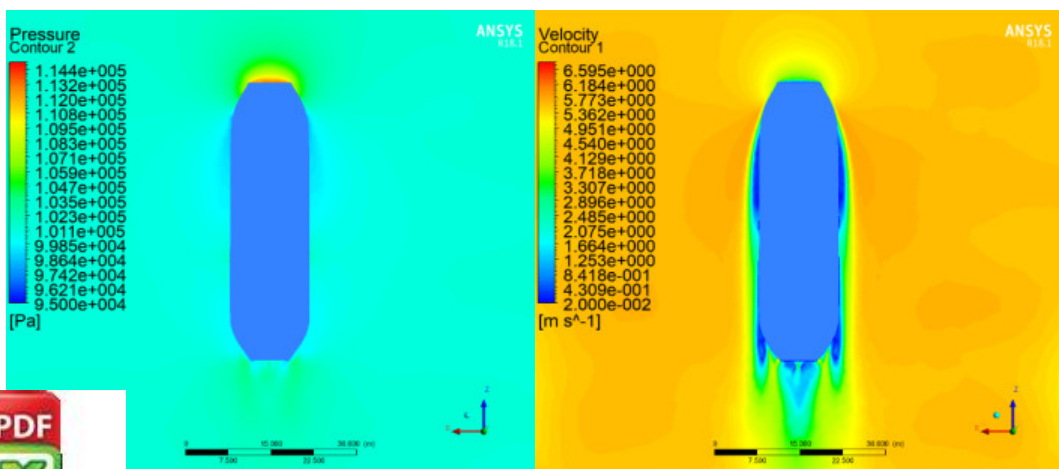
Simulasi *Propeller* dan Lambung (*Self Propulsion Test*)



Gambar 21 *Pressure Contour* dan *Velocity Contour Top View* 9 Knot

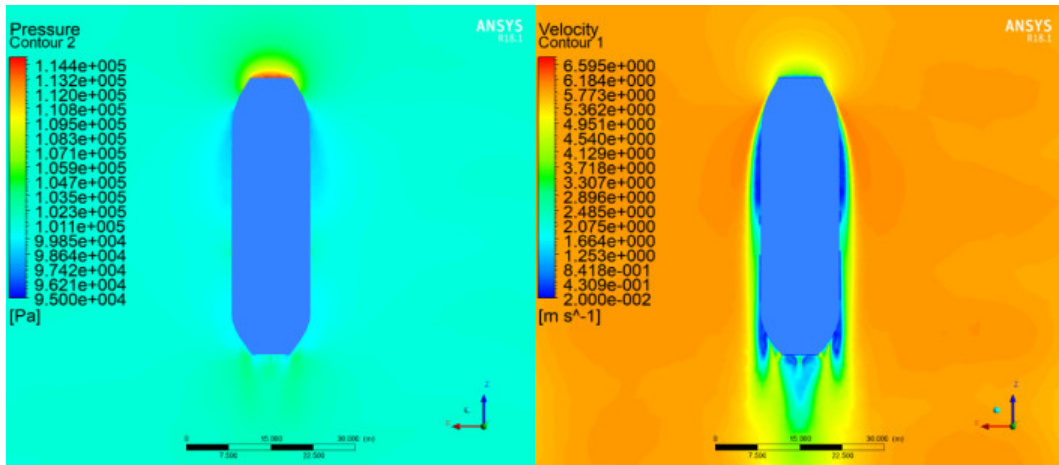


Gambar 22 *Pressure Contour* dan *Velocity Contour Top View* 10 Knot

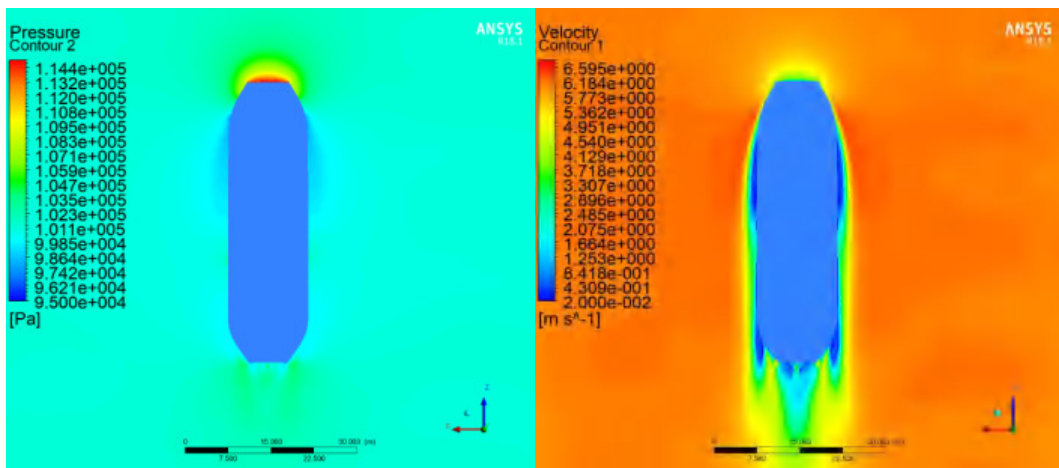


Gambar 23 *Pressure Contour* dan *Velocity Contour Top View* 11 Knot

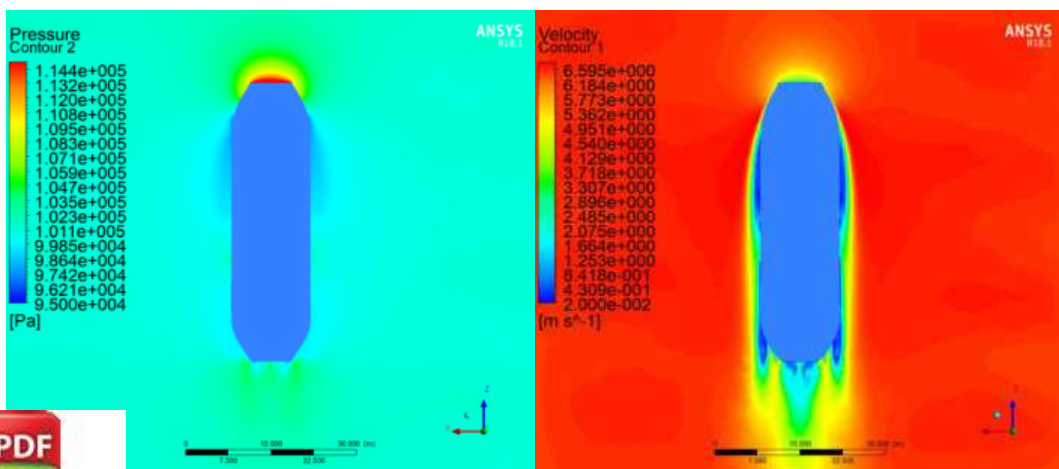




Gambar 24 *Pressure Contour dan Velocity Contour Top View 11.5 Knot*



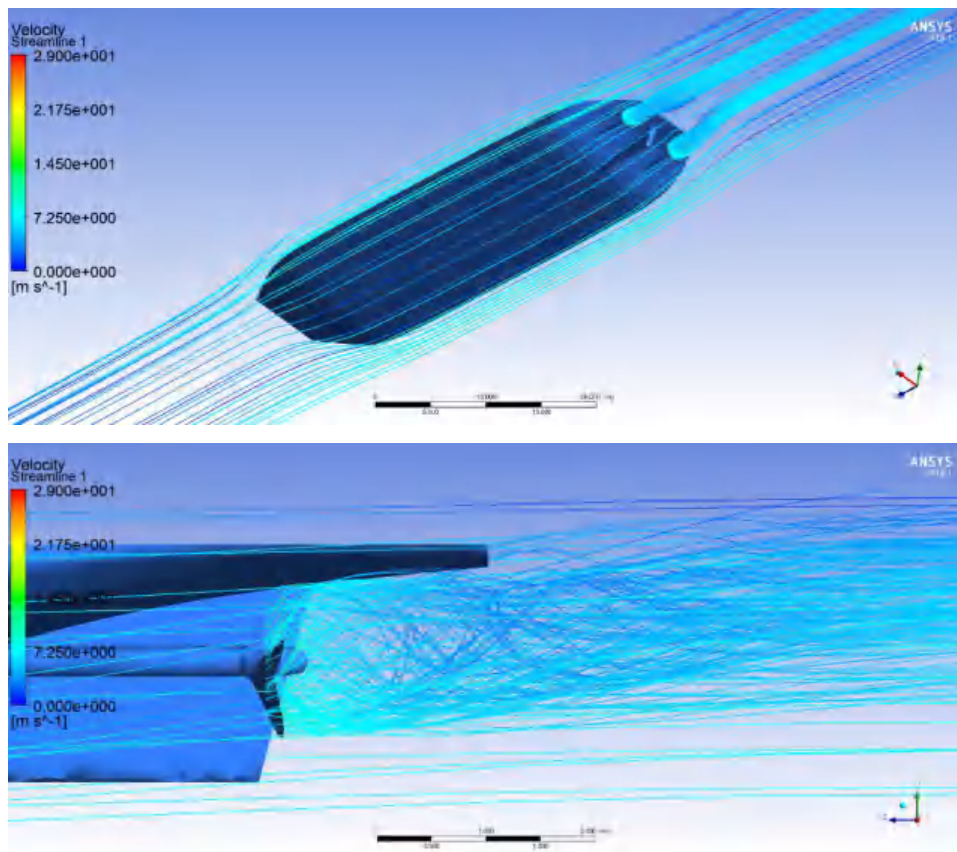
Gambar 25 *Pressure Contour dan Velocity Contour Top View 12 Knot*



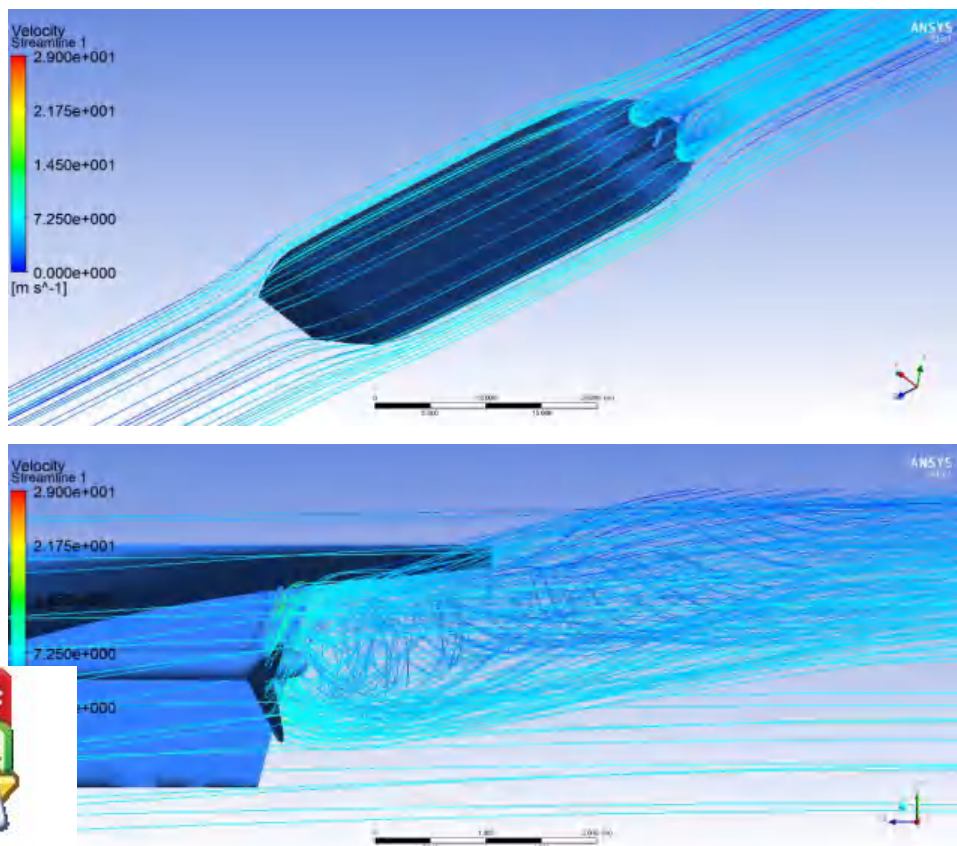
Gambar 26 *Pressure Contour dan Velocity Contour Top View 12.865 Knot*



Lampiran 12 Visualisasi *Streamline* Variasi PBCF

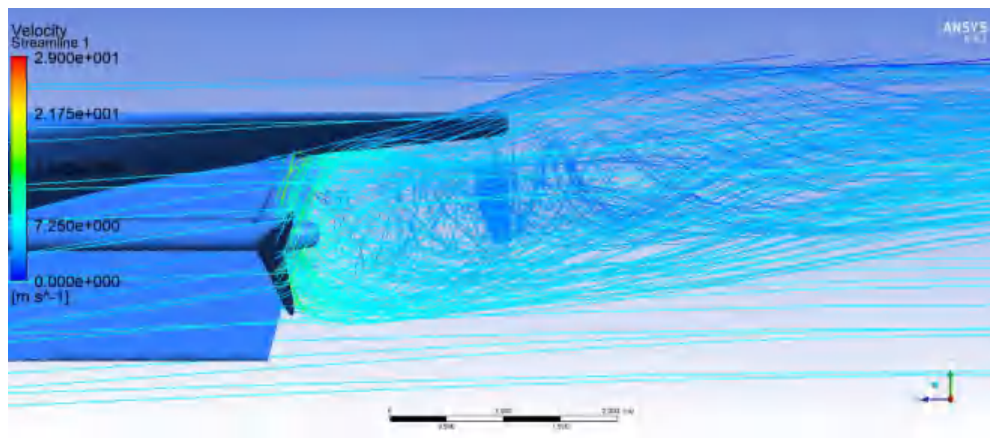
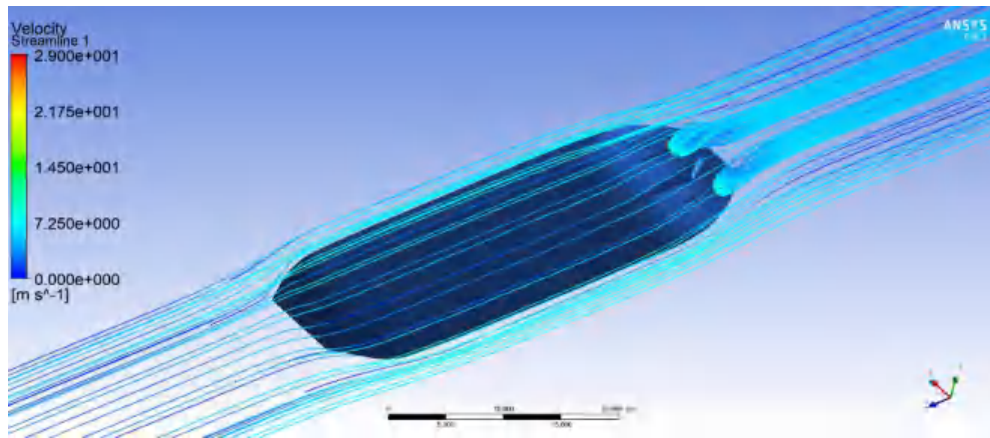


Gambar 27 *Velocity Streamline* Konvensional (N : 527830)

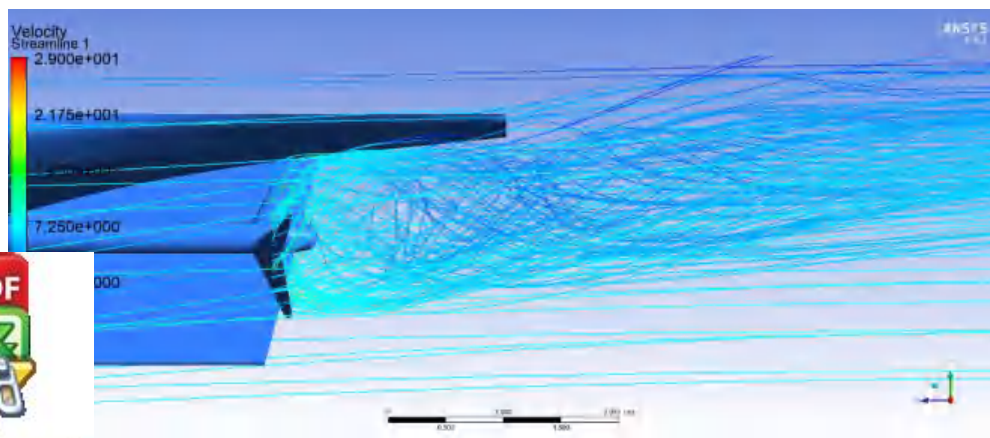
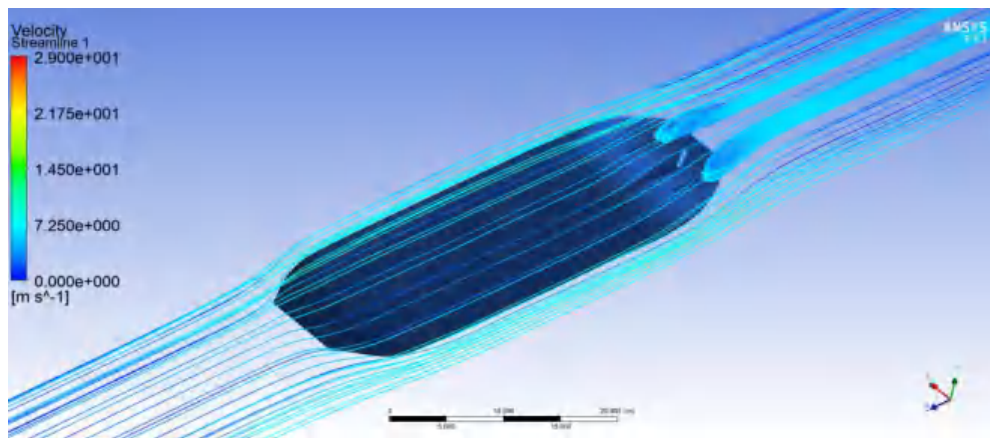


Gambar 28 *Velocity Streamline* Konvensional (N : 898181)



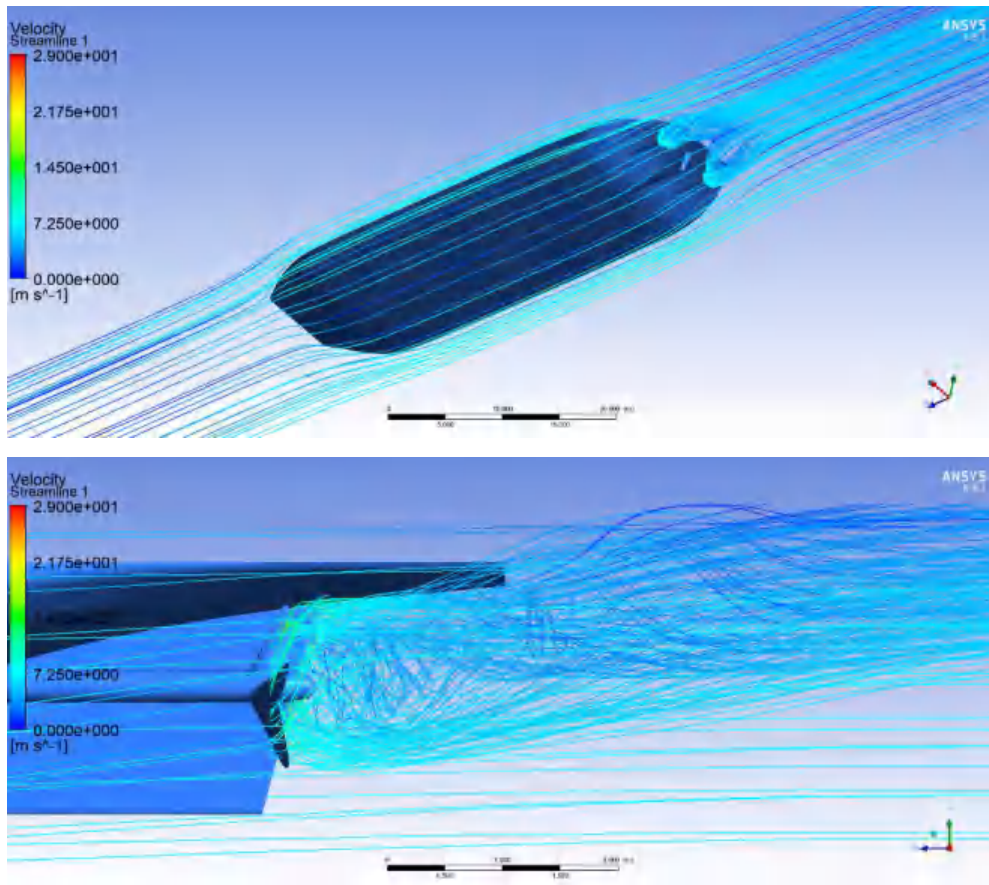


Gambar 29 Velocity Streamline Konvensional (N : 1260814)

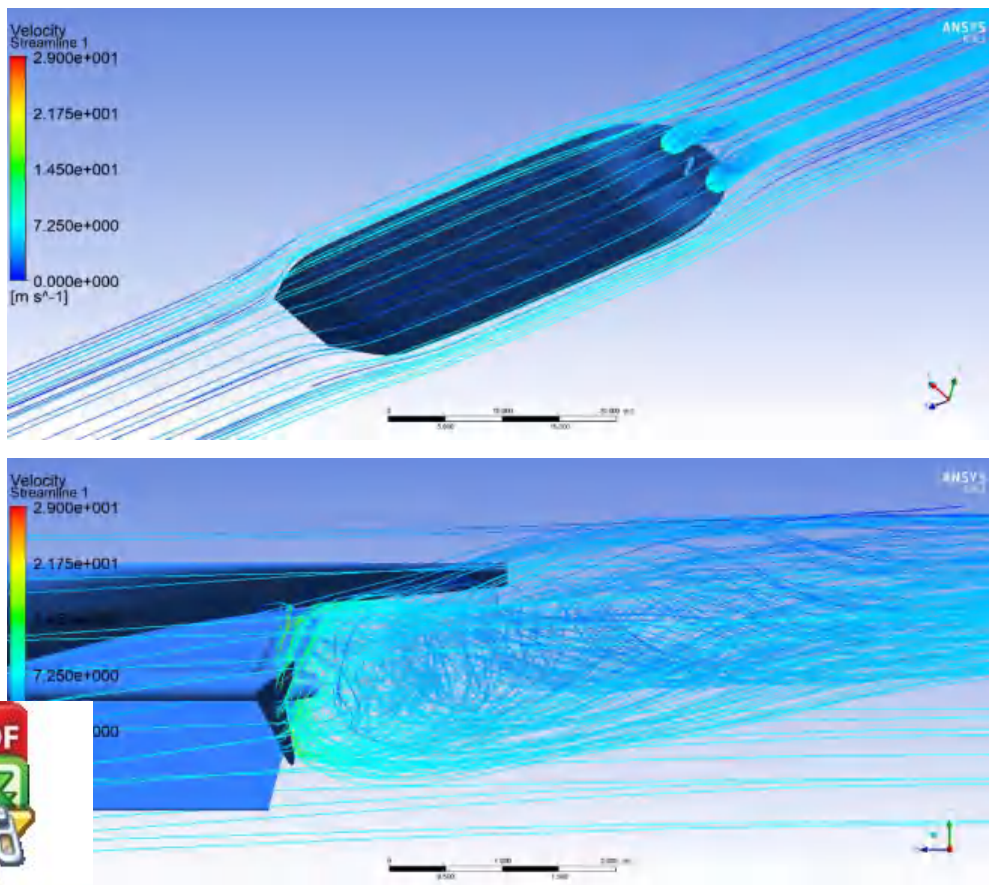


Gambar 30 Velocity Streamline Konvensional (N : 1487580)



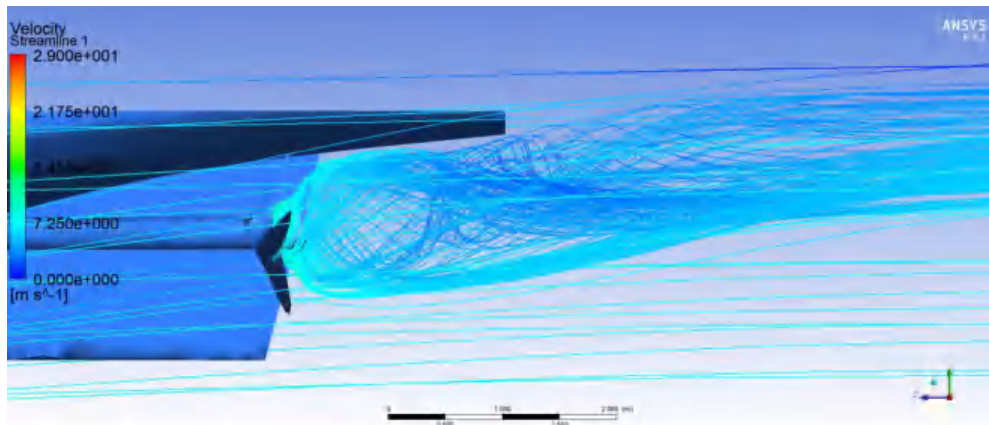
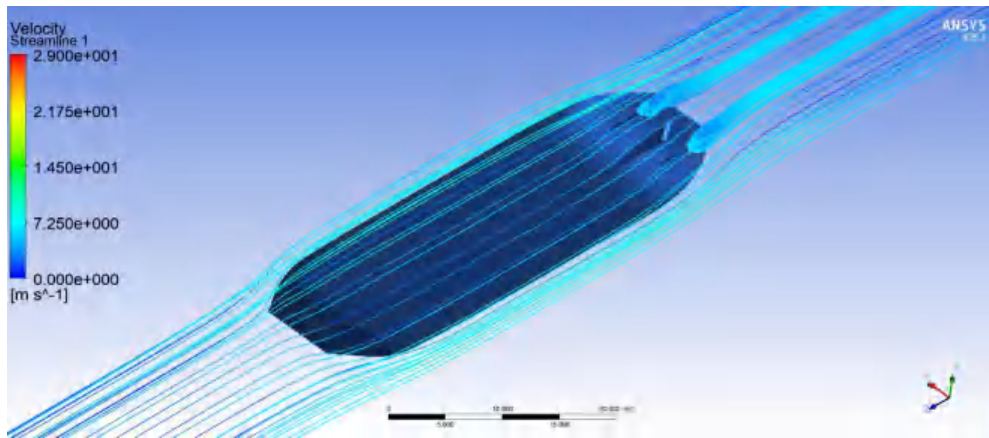


Gambar 31 *Velocity Streamline* Konvensional (N : 2415311)

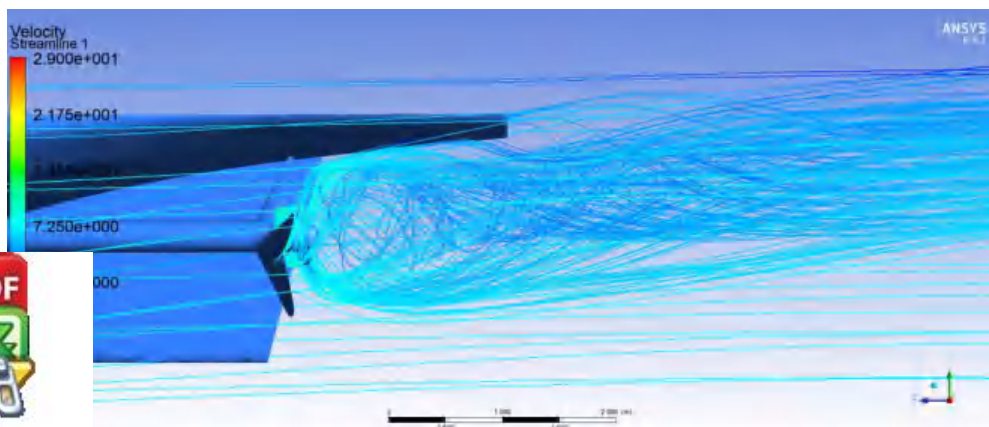
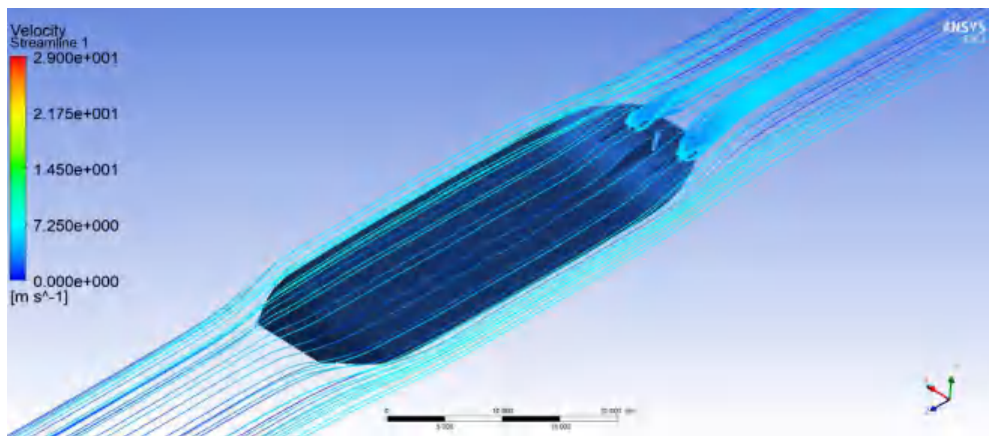


Gambar 32 *Velocity Streamline* Konvensional (N : 4020217)



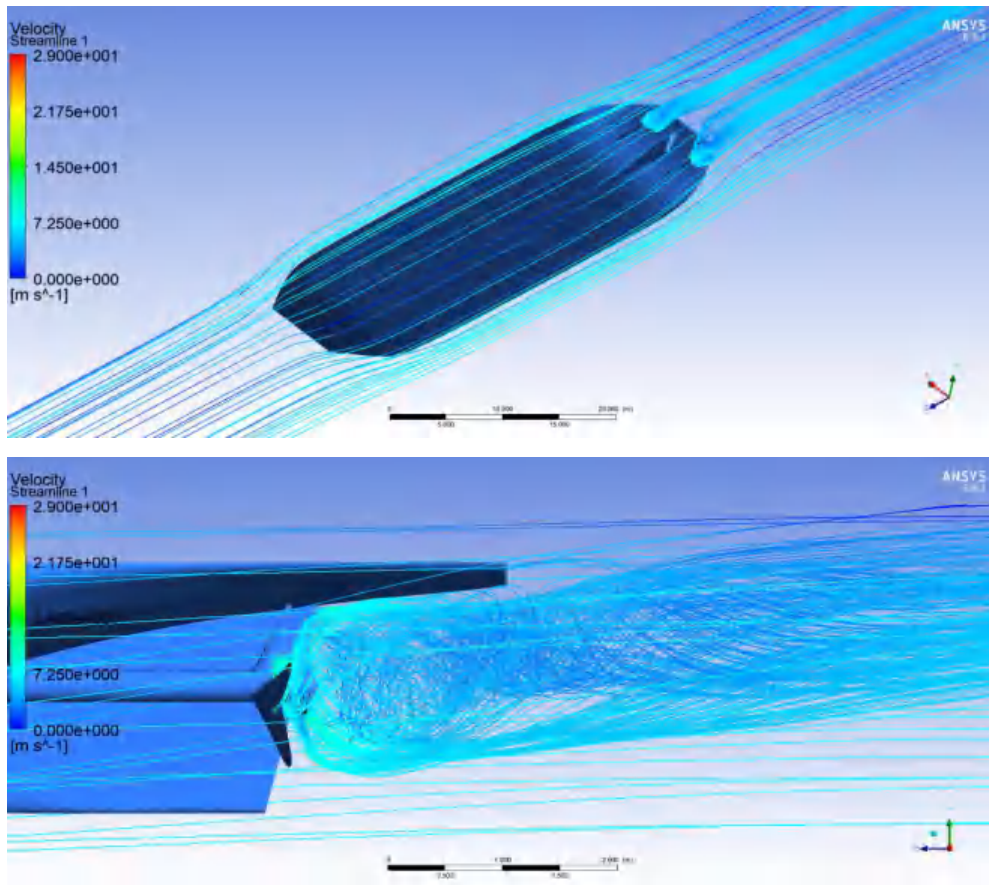


Gambar 33 *Velocity Streamline* PBCF D 0.25 (N : 528913)

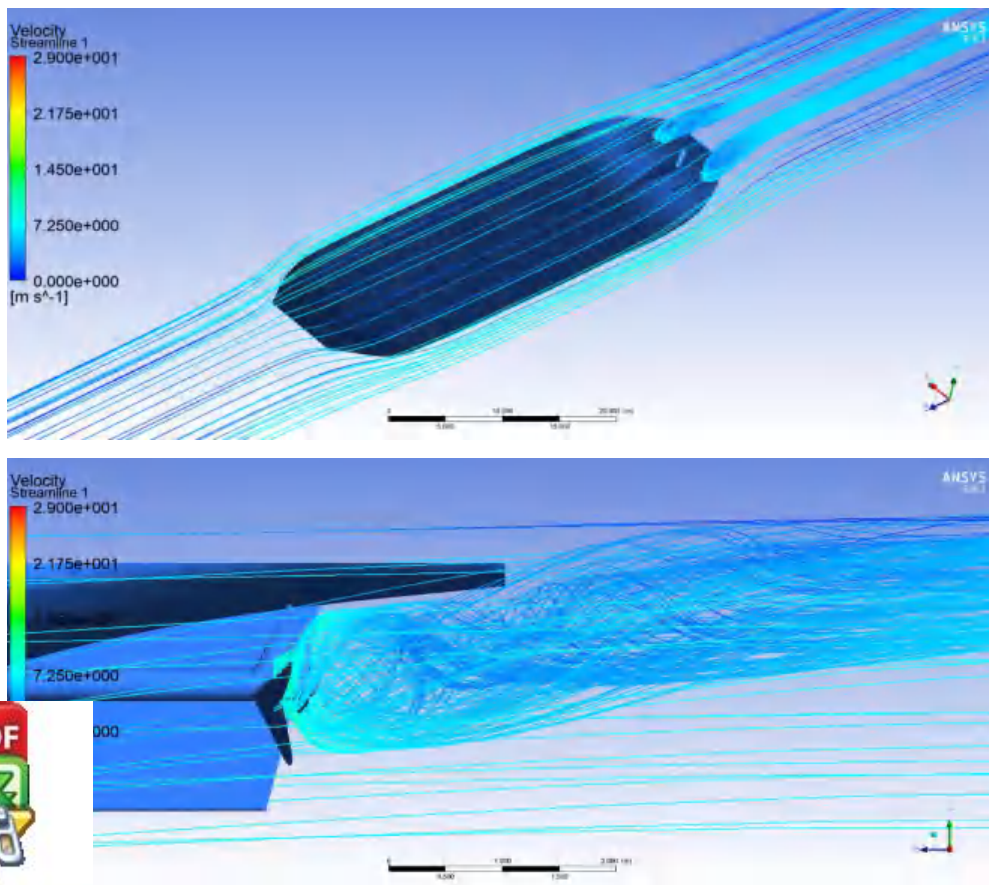


Gambar 34 *Velocity Streamline* PBCF D 0.25 (N : 911731)





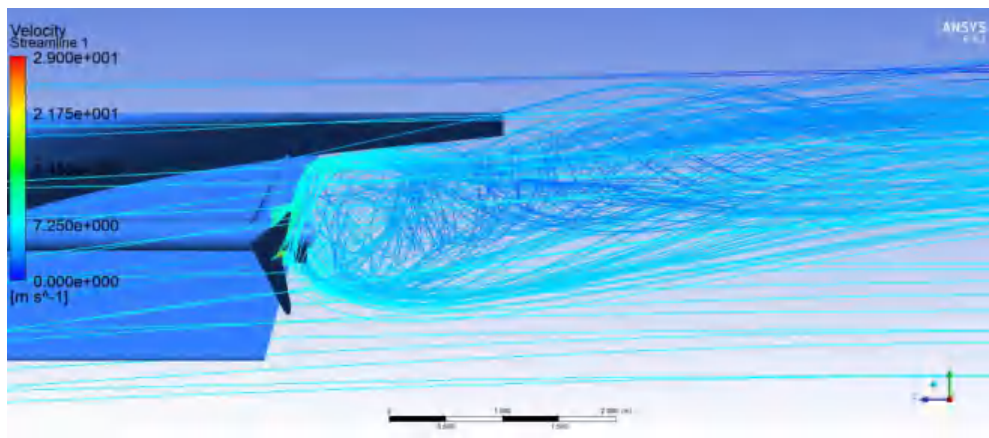
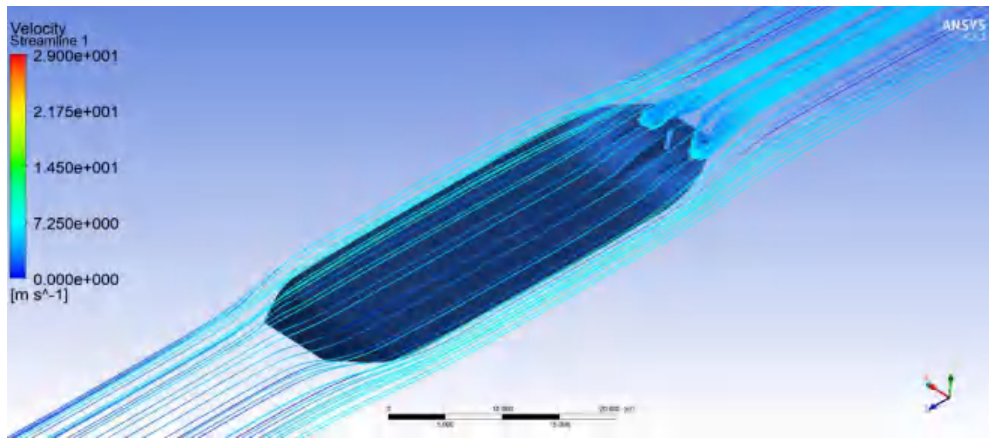
Gambar 35 Velocity Streamline PBCF D 0.25 (N : 1295112)



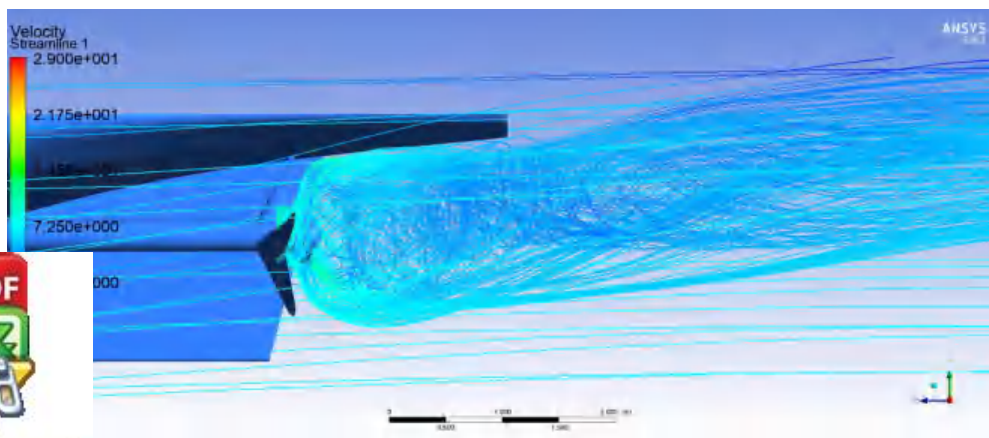
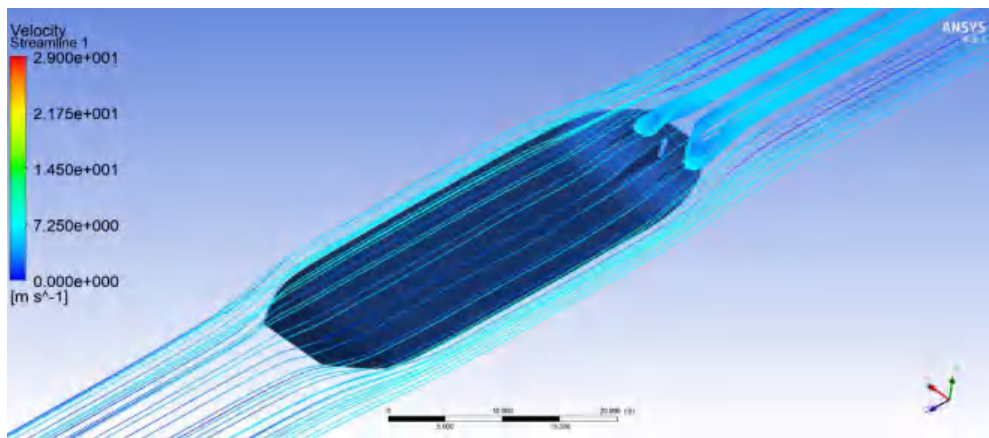
Gambar 36 Velocity Streamline PBCF D 0.25 (N : 1490595)



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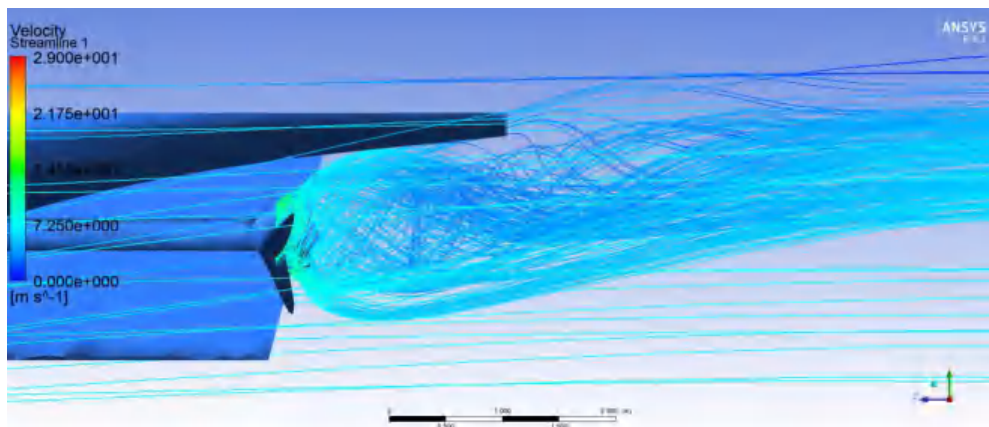
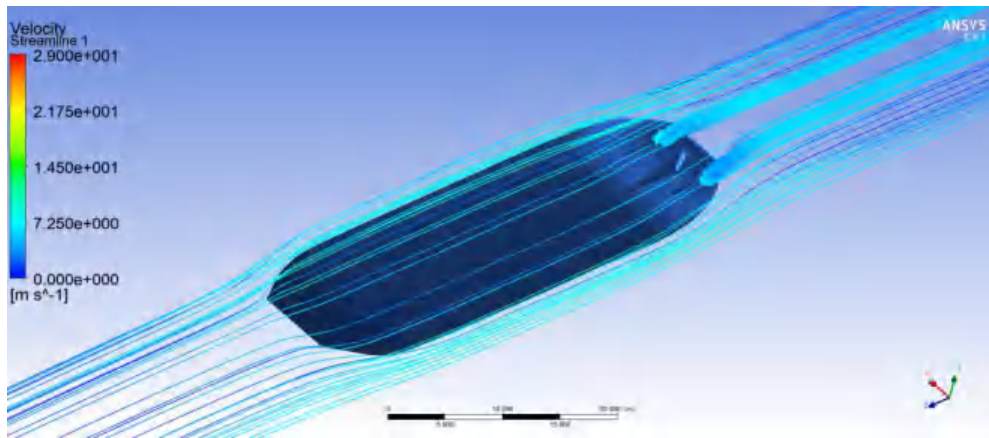


Gambar 37 Velocity Streamline PBCF D 0.25 (N : 2431760)

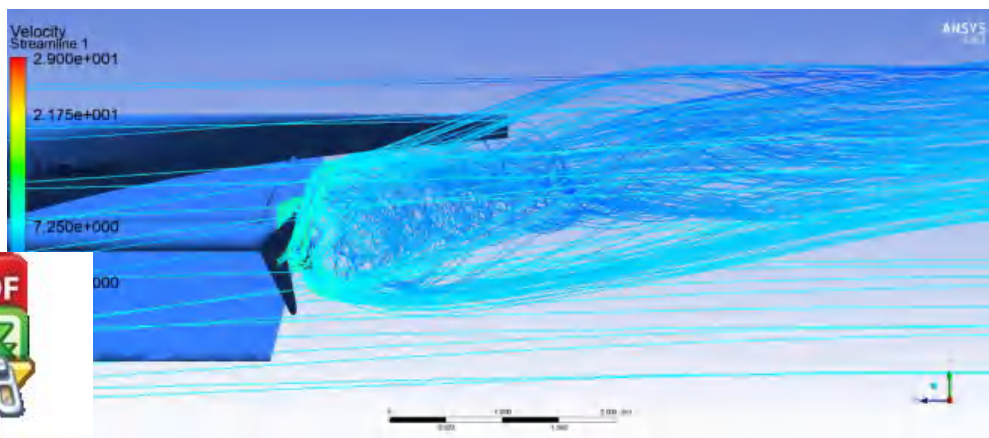
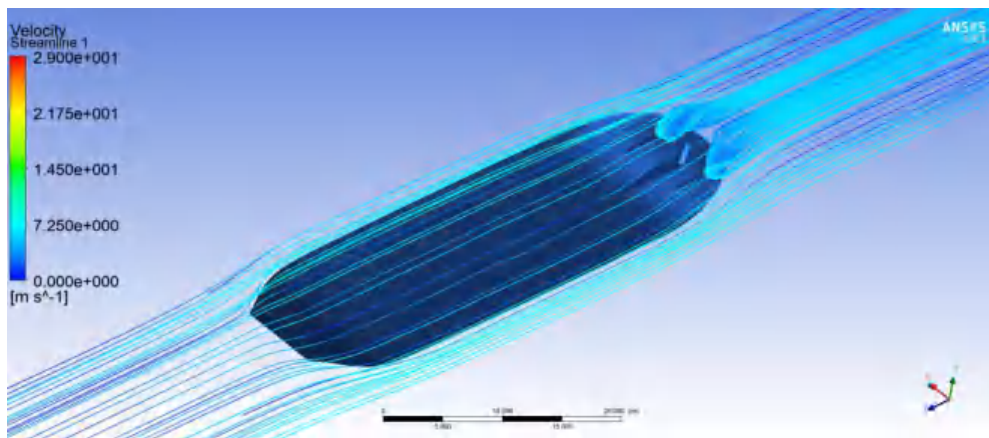


Gambar 38 Velocity Streamline PBCF D 0.25 (N : 4066062)





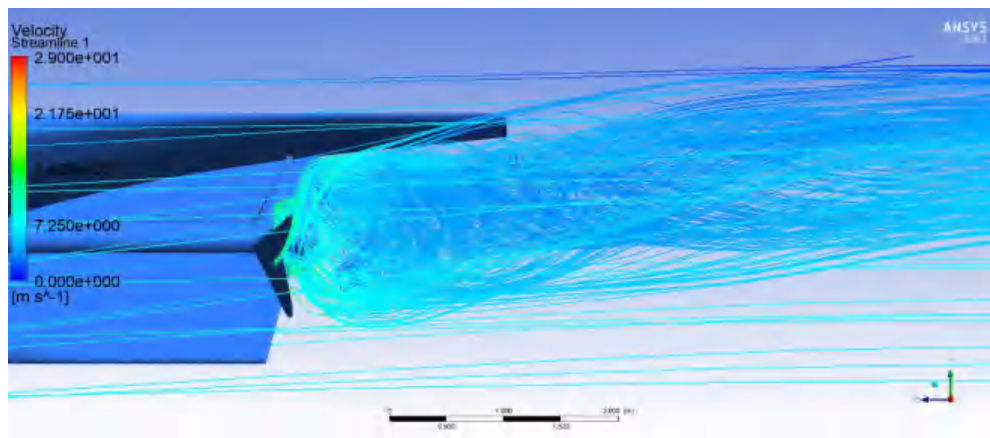
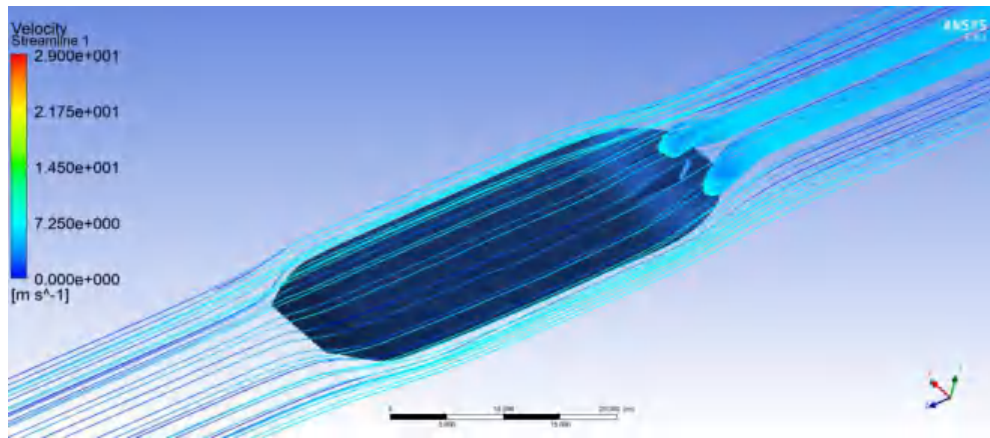
Gambar 39 Velocity Streamline PBCF D 0.30 (N : 529248)



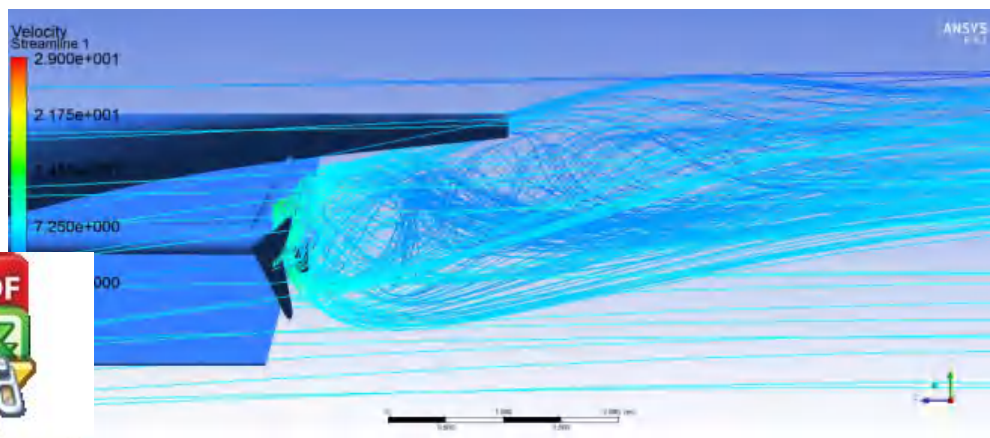
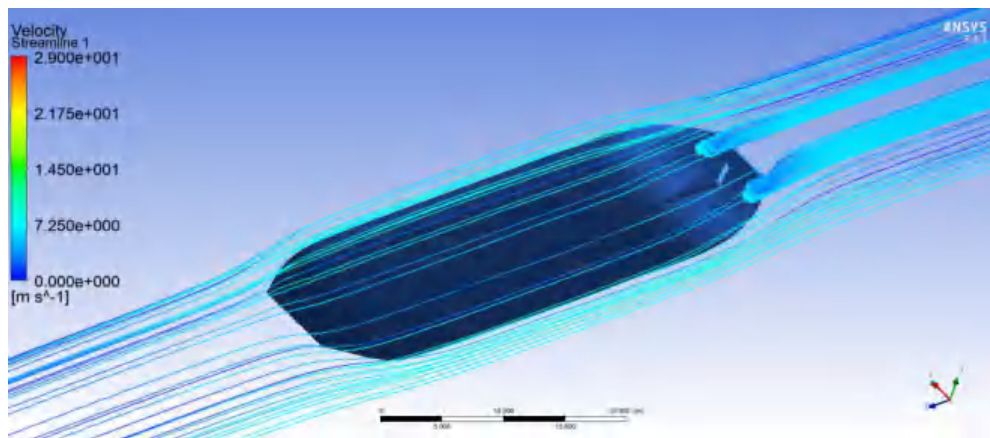
Gambar 40 Velocity Streamline PBCF D 0.30 (N : 914124)



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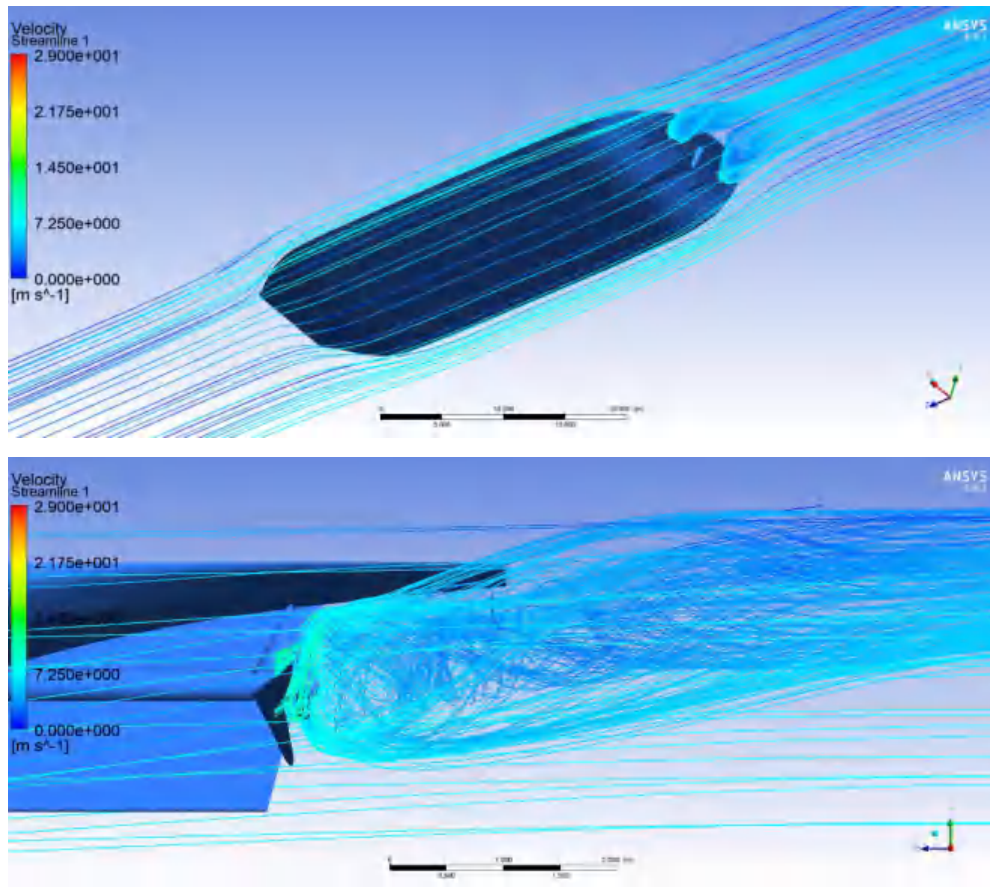


Gambar 41 *Velocity Streamline* PBCF D 0.30 (N : 1297109)

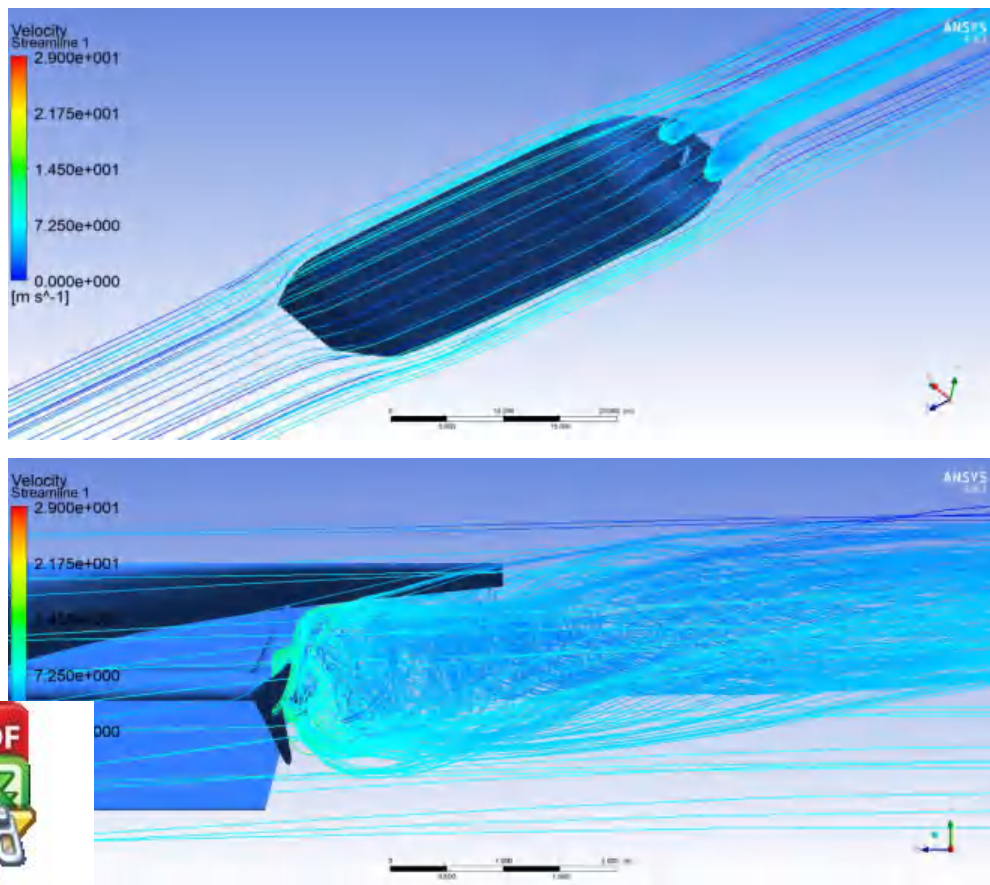


Gambar 42 *Velocity Streamline* PBCF D 0.30 (N : 1491810)





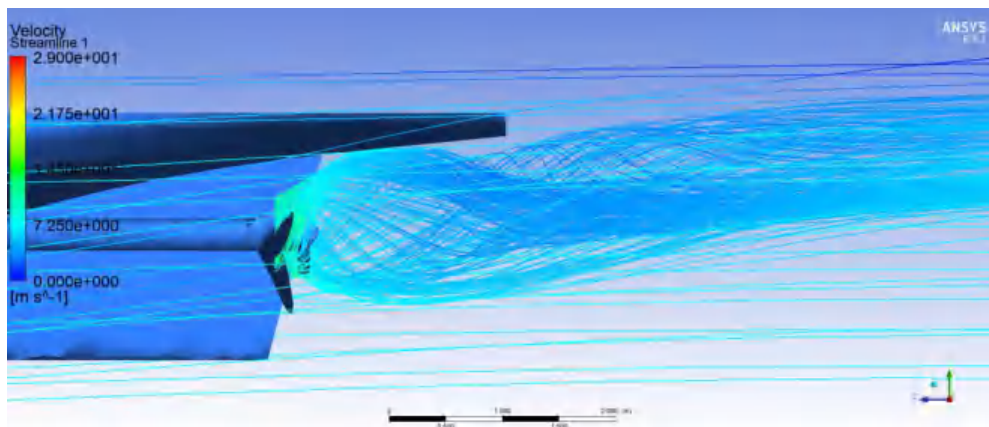
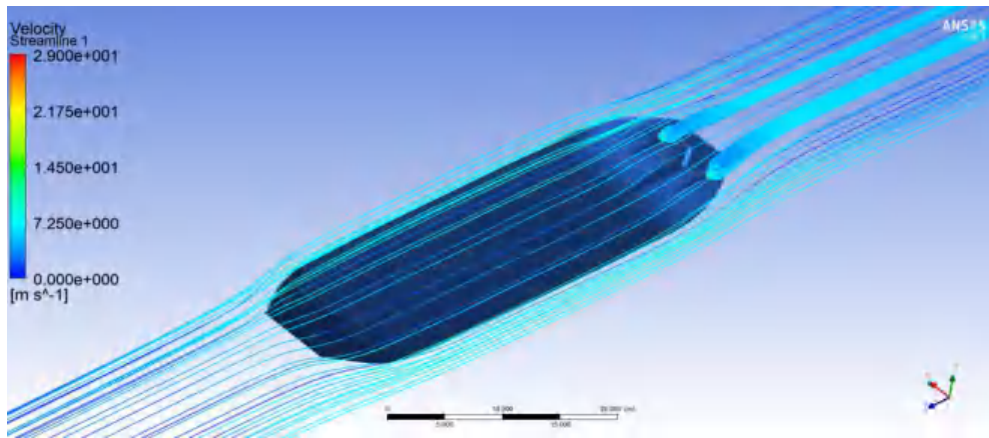
Gambar 43 *Velocity Streamline* PBCF D 0.30 (N : 2435557)



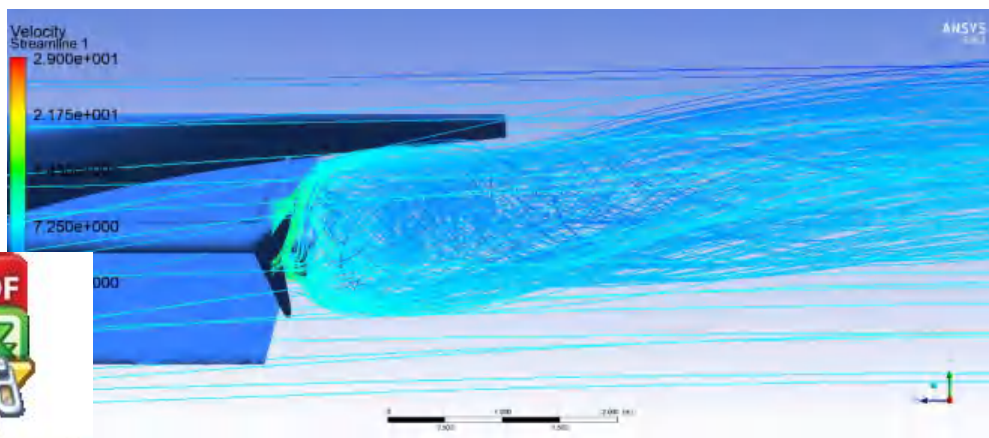
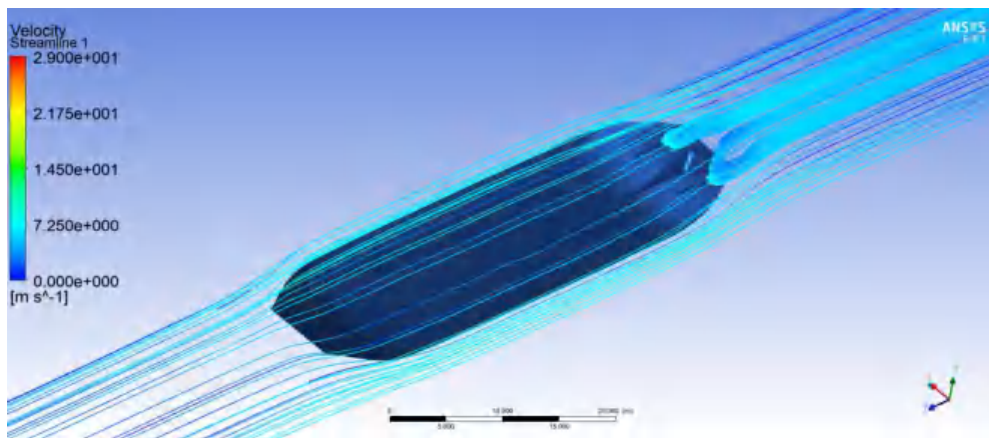
Gambar 44 *Velocity Streamline* PBCF D 0.30 (N : 4070959)



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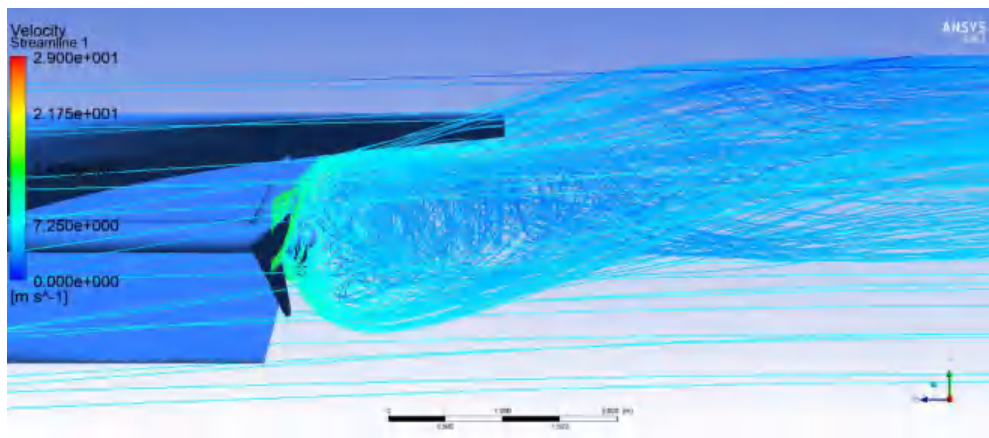
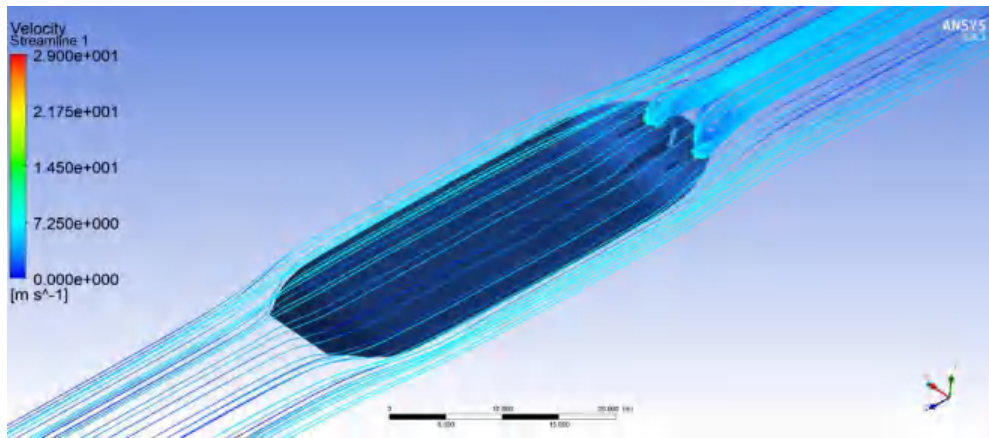


Gambar 45 Velocity Streamline PBCF D 0.35 (N : 529373)

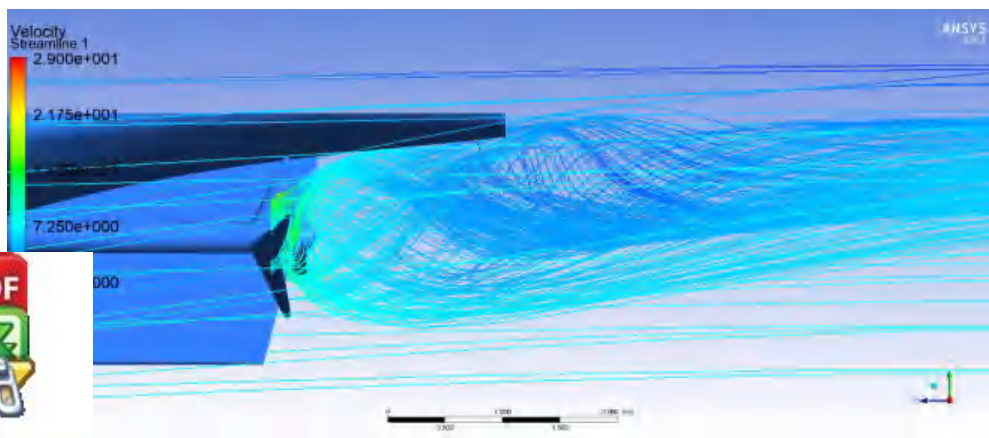
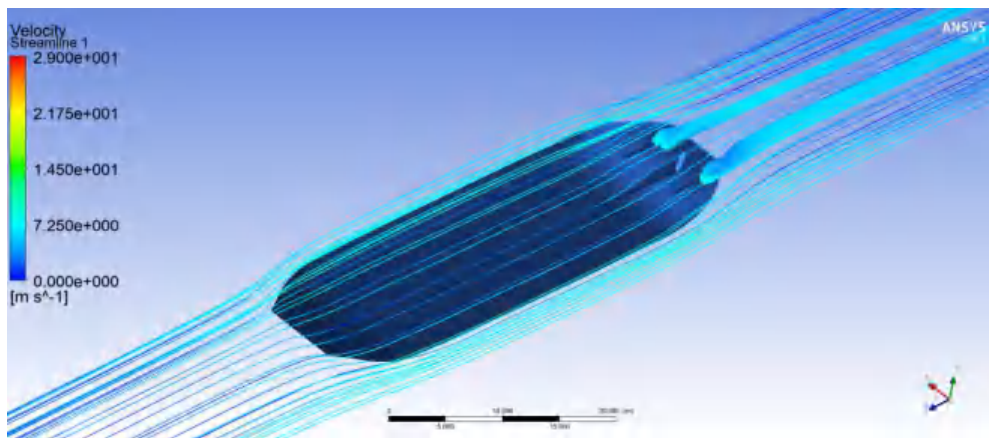


Gambar 46 Velocity Streamline PBCF D 0.35 (N : 915702)



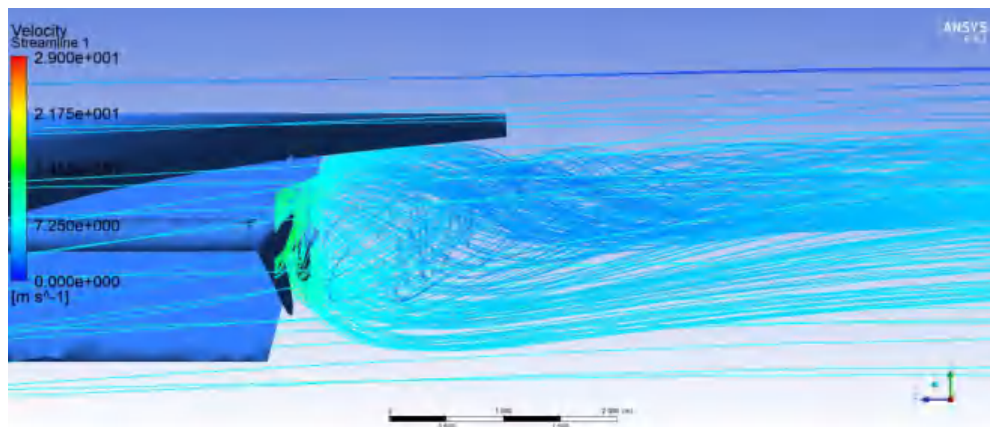
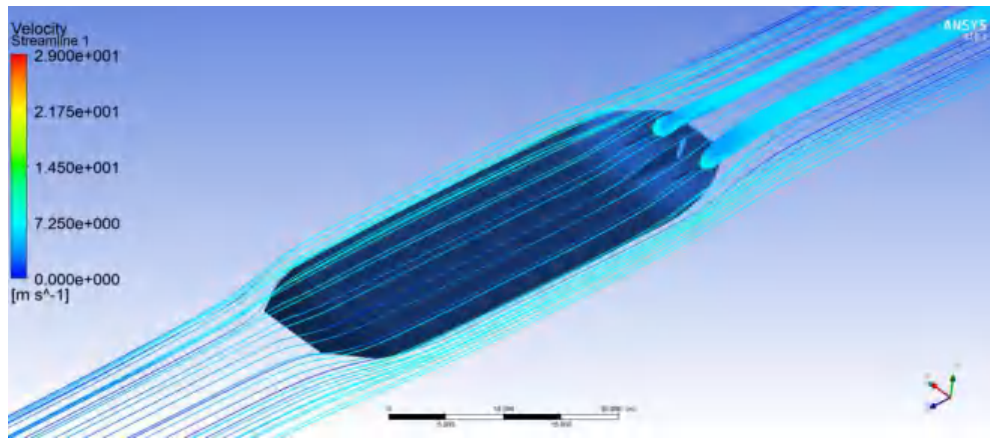


Gambar 47 Velocity Streamline PBCF D 0.35 (N : 1301236)

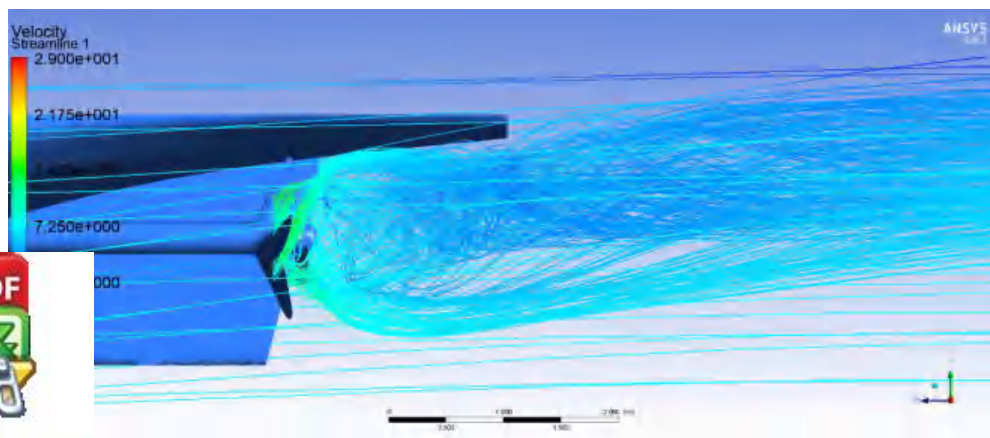
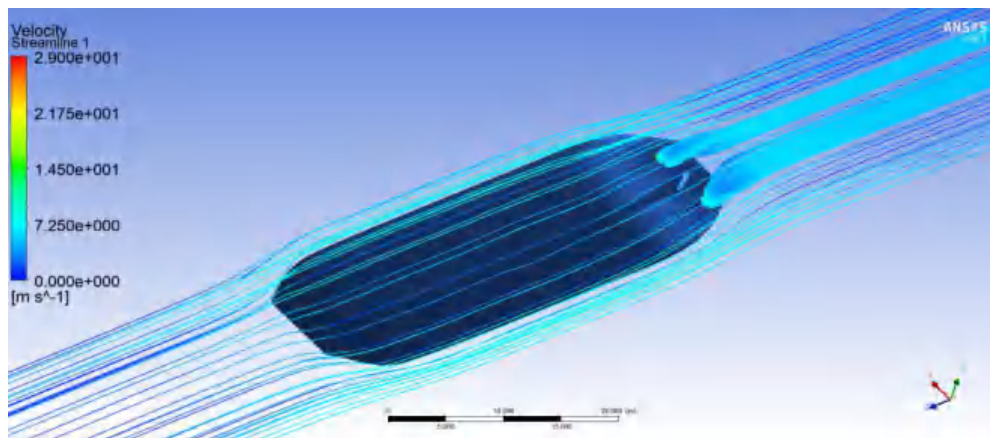


Gambar 48 Velocity Streamline PBCF D 0.35 (N : 1492834)



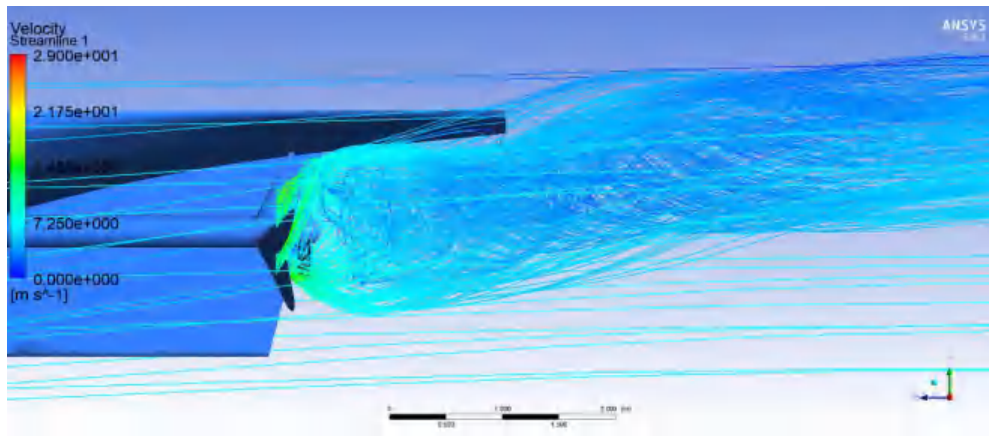
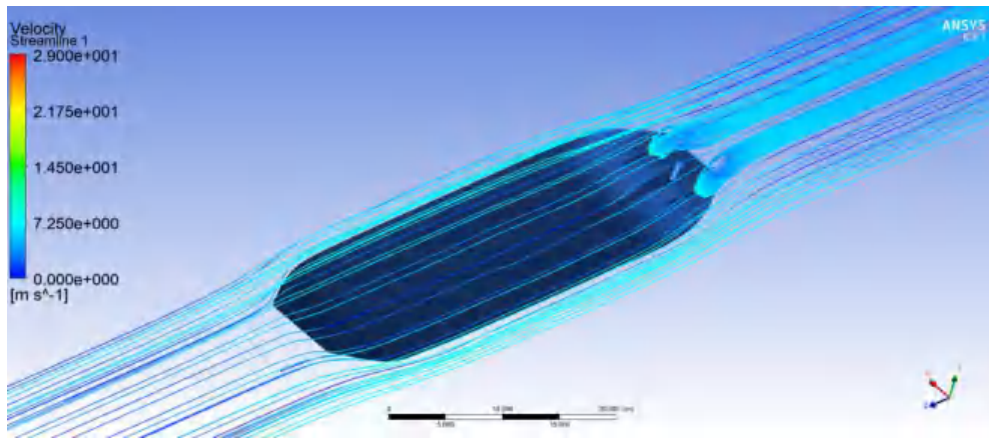


Gambar 49 Velocity Streamline PBCF D 0.35 (N : 2438709)

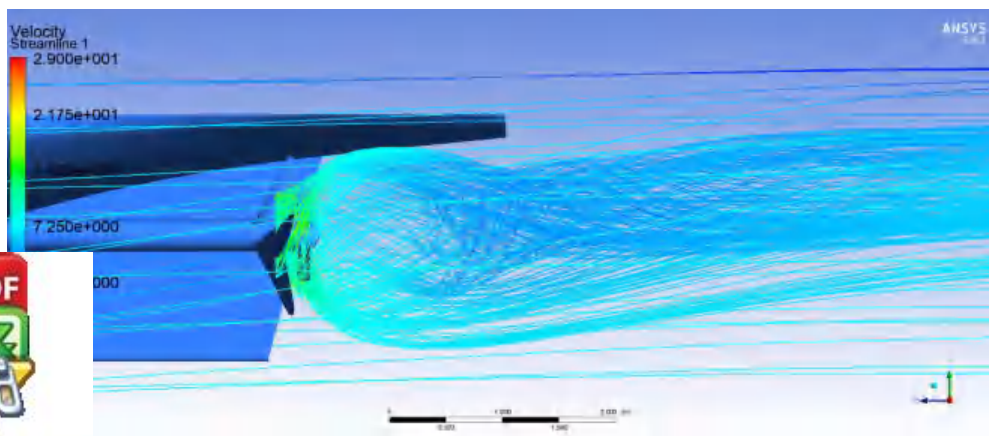
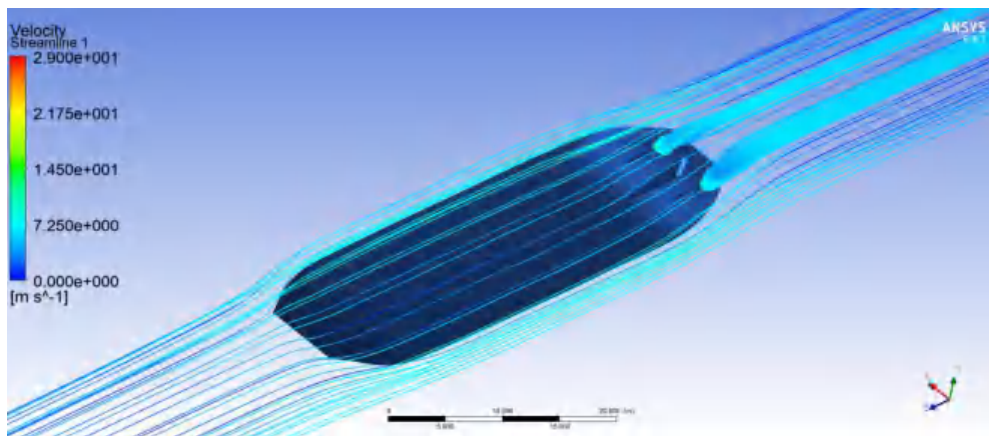


Gambar 50 Velocity Streamline PBCF D 0.35 (N : 4077467)



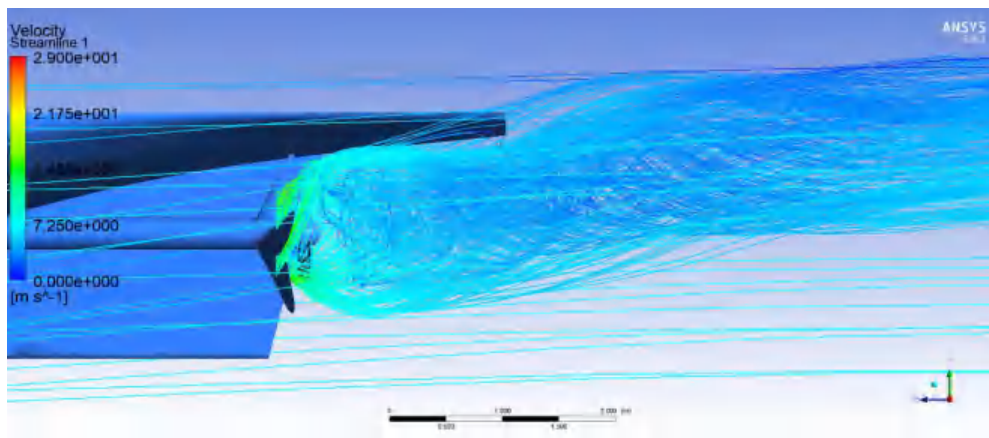
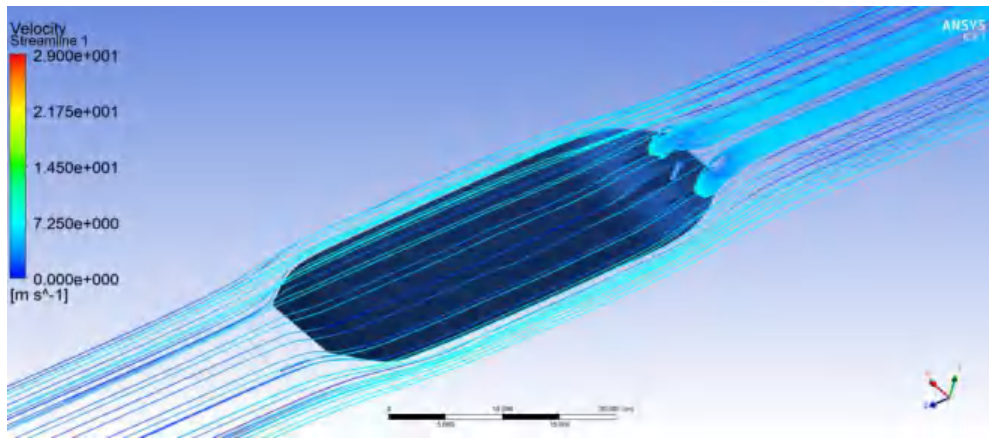


Gambar 51 Velocity Streamline PBCF D 0.40 (N : 529608)

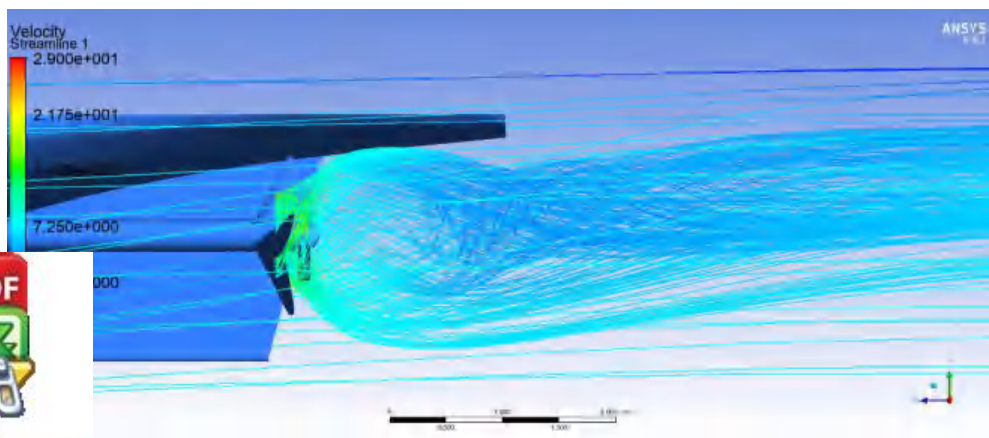
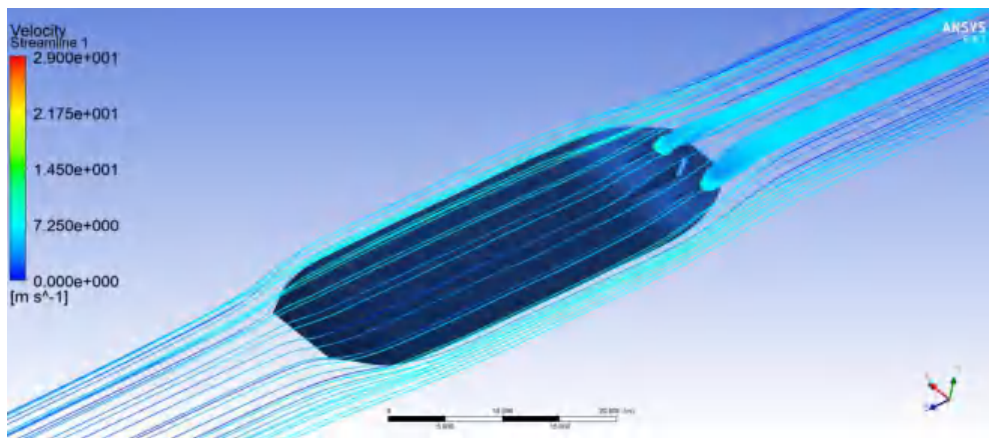


Gambar 52 Velocity Streamline PBCF D 0.40 (N : 915958)



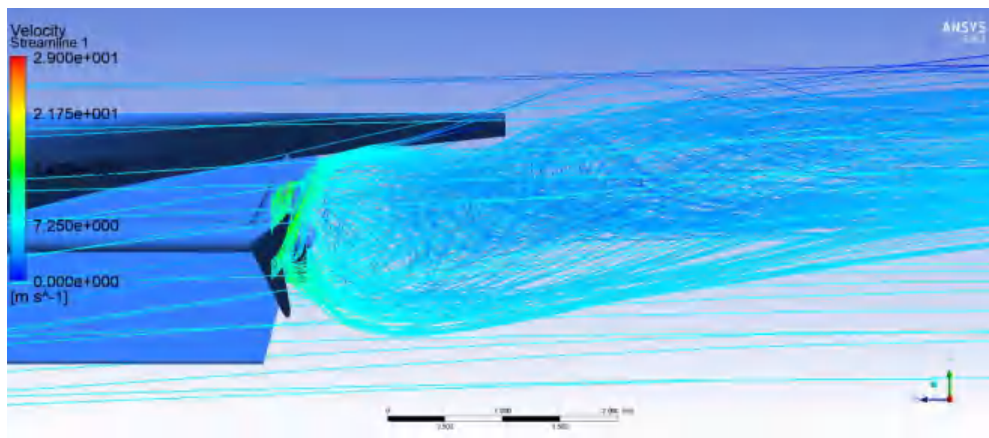
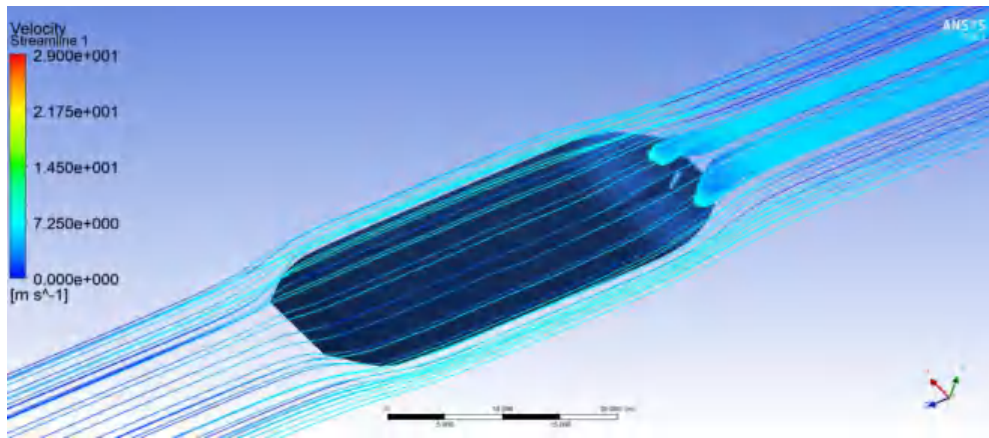


Gambar 53 *Velocity Streamline* PBCF D 0.40 (N : 1302350)

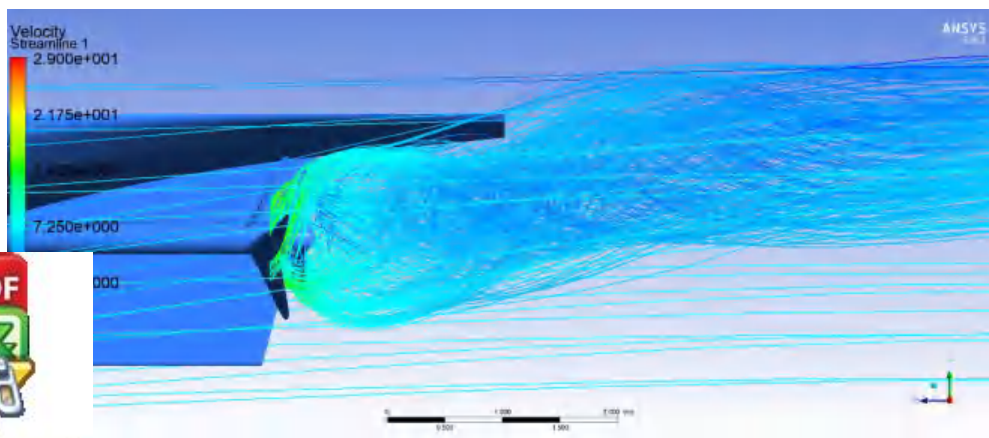
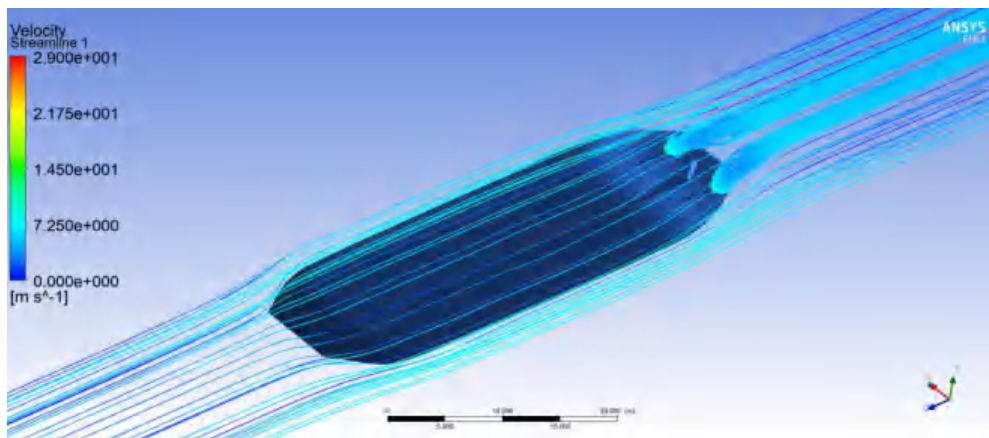


Gambar 54 *Velocity Streamline* PBCF D 0.40 (N : 1492922)



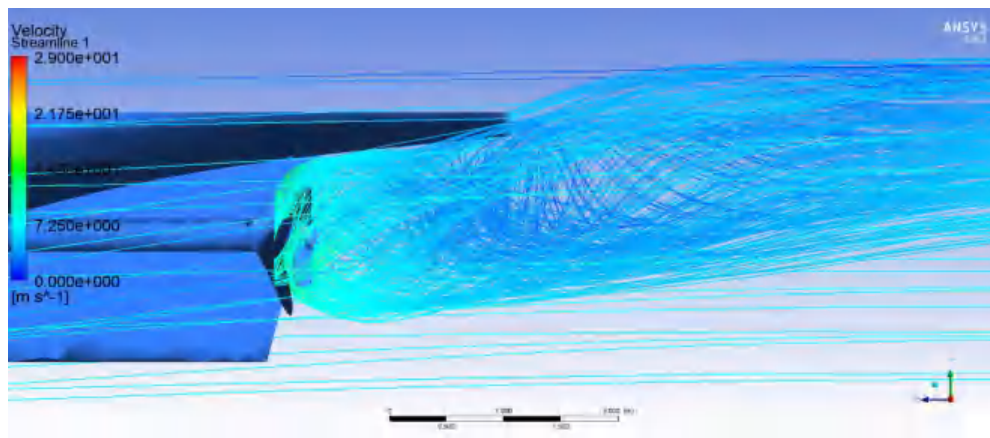
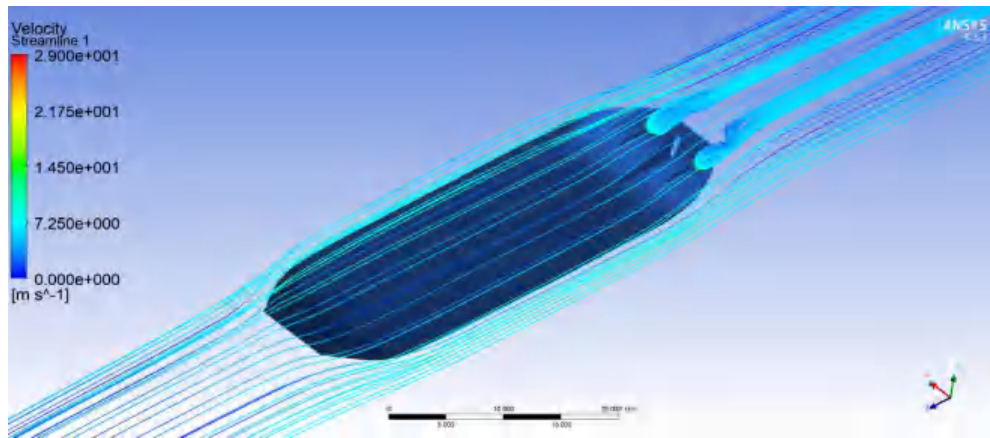


Gambar 55 Velocity Streamline PBCF D 0.40 (N : 2439586)

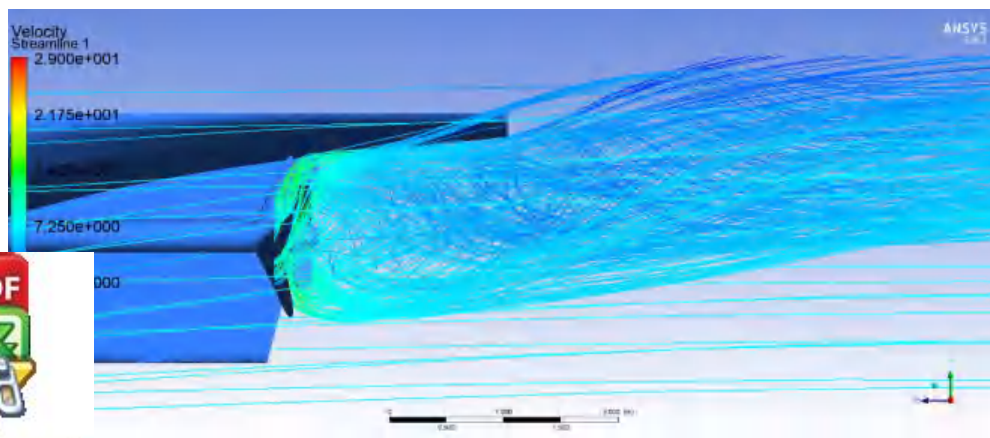
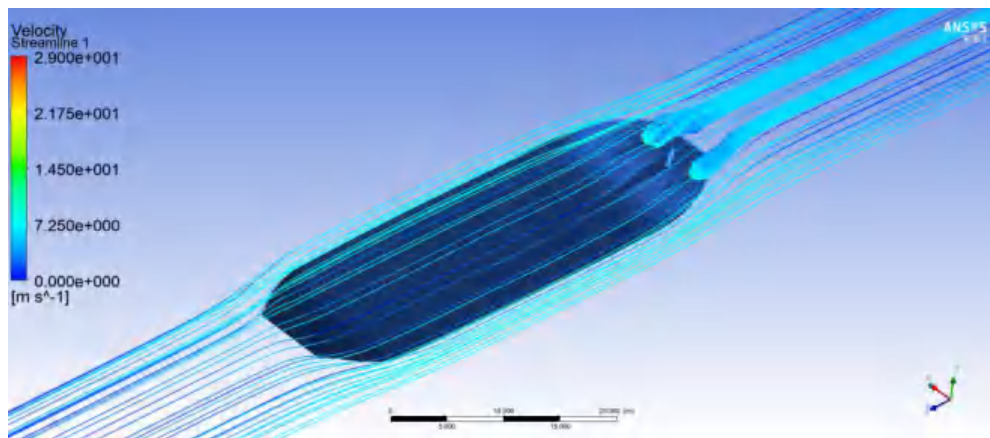


Gambar 56 Velocity Streamline PBCF D 0.40 (N : 4081038)



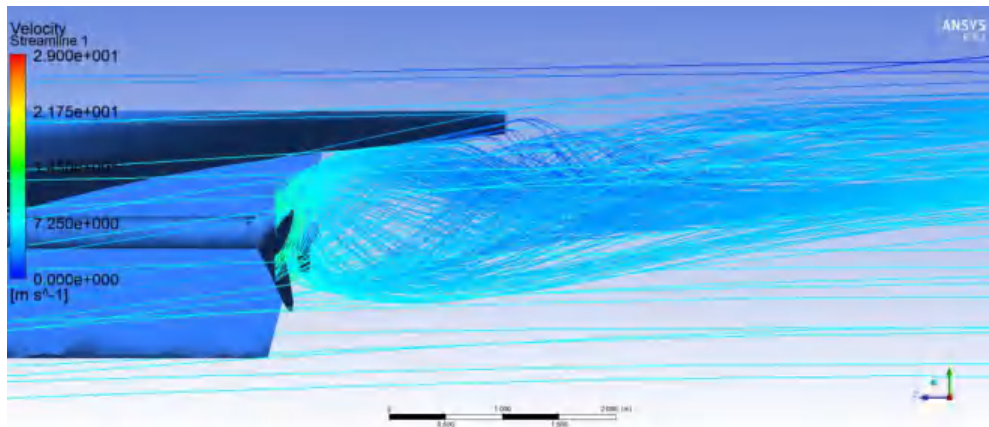
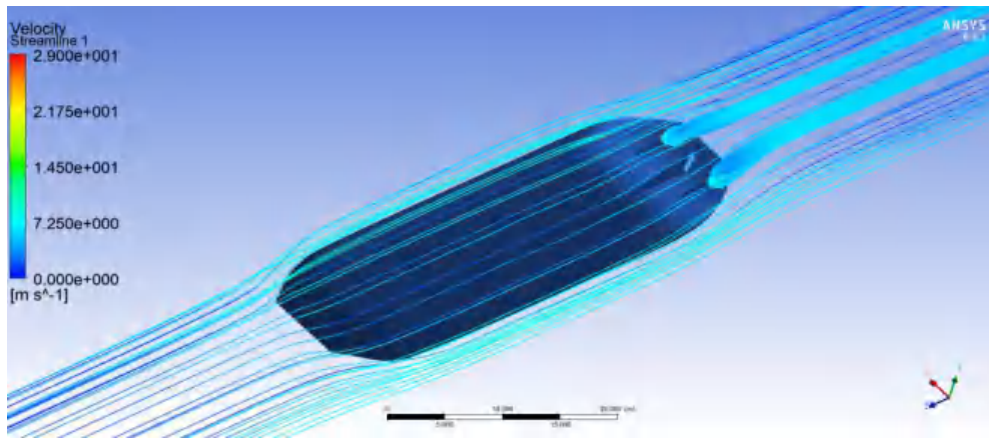


Gambar 57 Velocity Streamline PBCF D 0.45 (N : 529884)

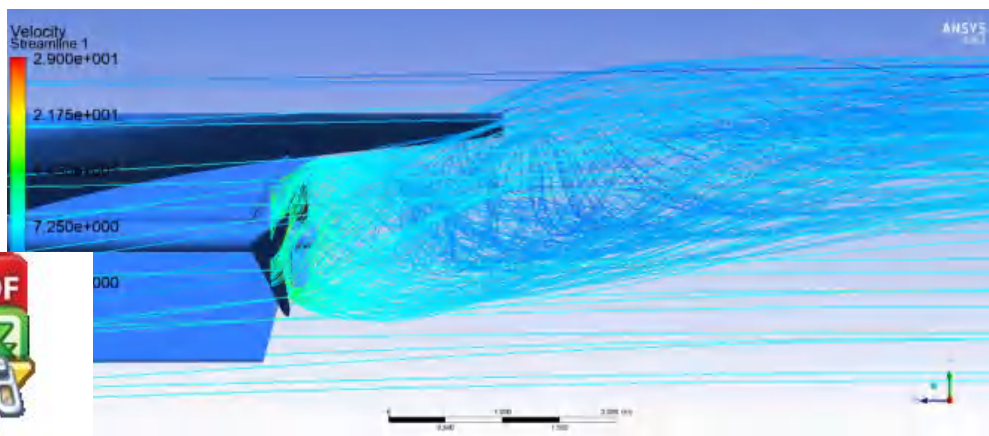
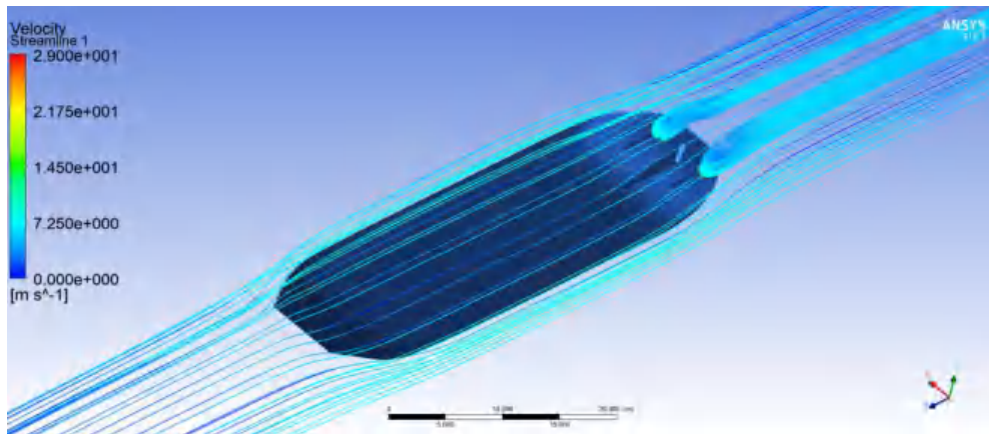


Gambar 58 Velocity Streamline PBCF D 0.45 (N : 916831)



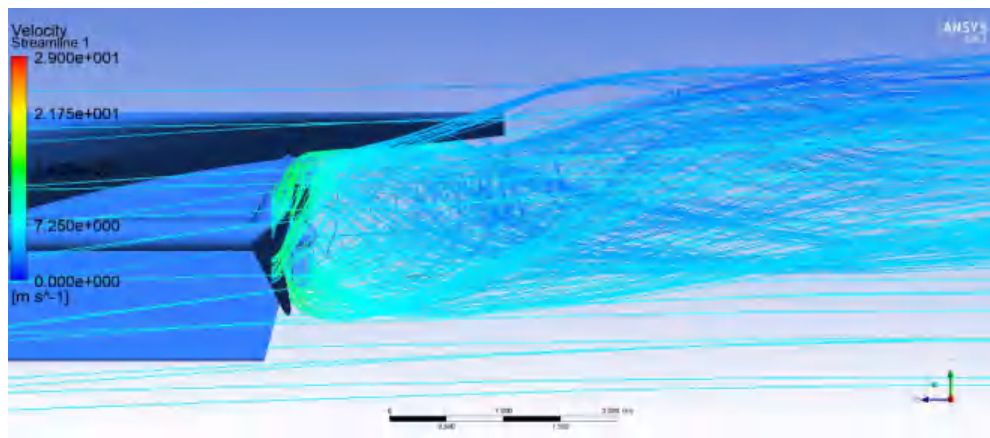
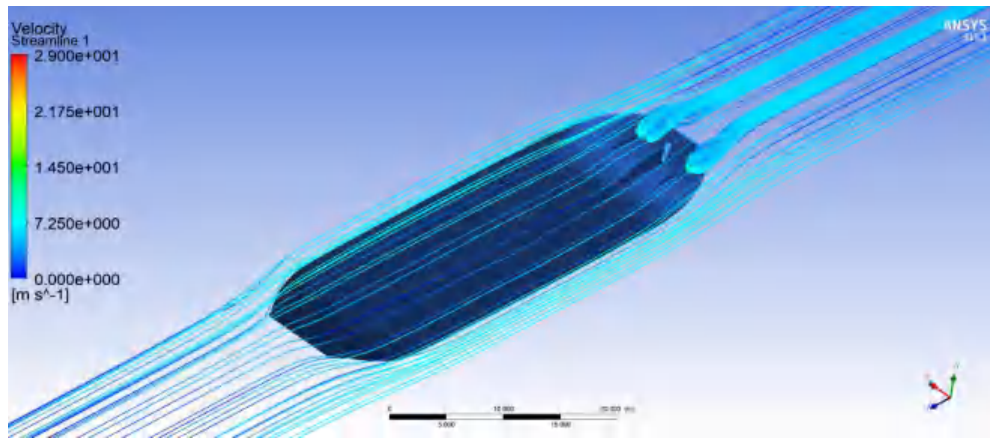


Gambar 59 Velocity Streamline PBCF D 0.45 (N : 1303218)

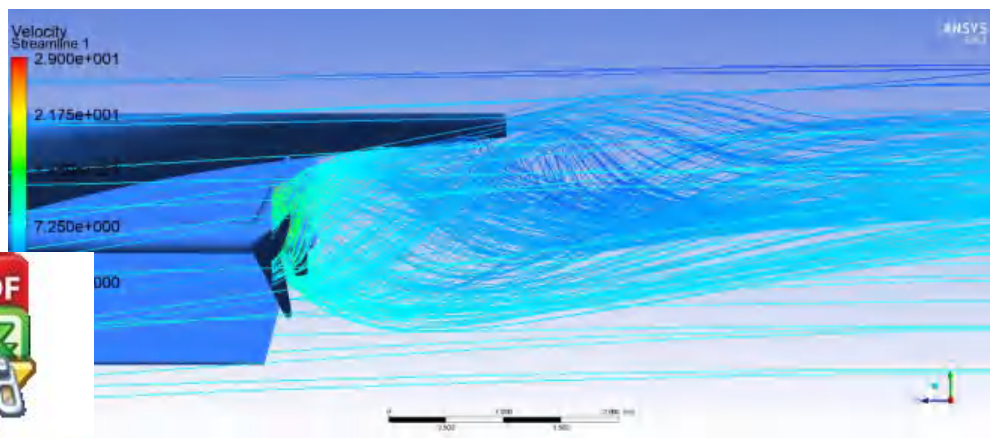
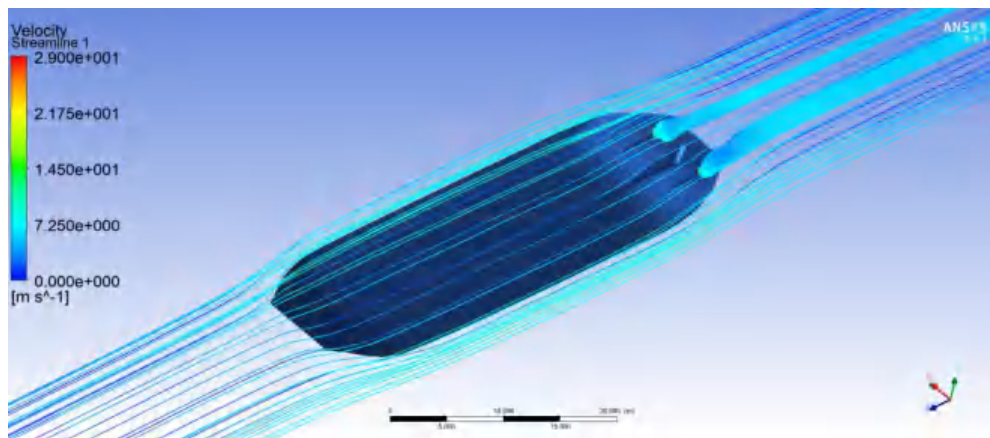


Gambar 60 Velocity Streamline PBCF D 0.45 (N : 1494934)





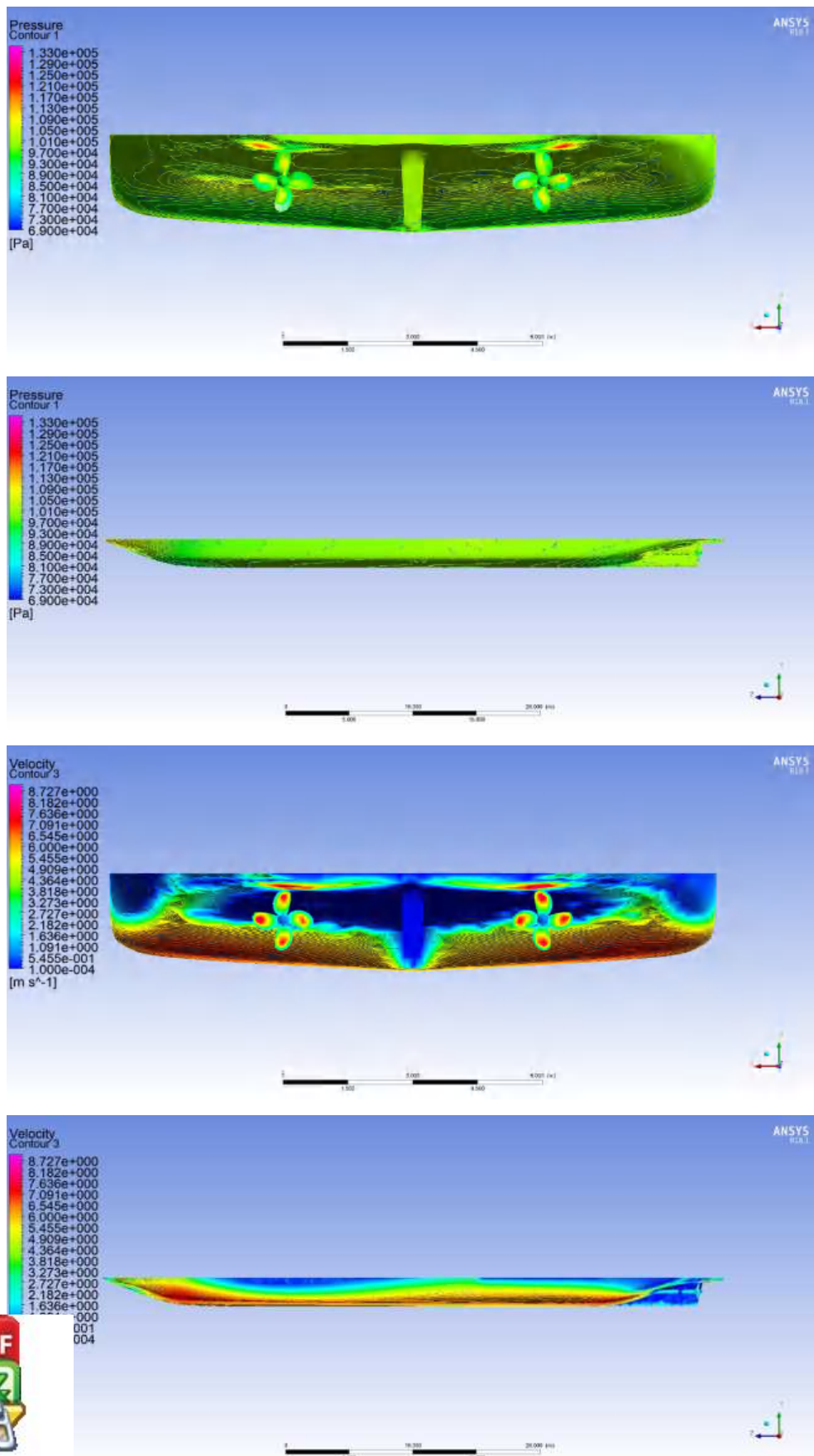
Gambar 61 Velocity Streamline PBCF D 0.45 (N : 2444268)



Gambar 62 Velocity Streamline PBCF D 0.45 (N : 4084822)

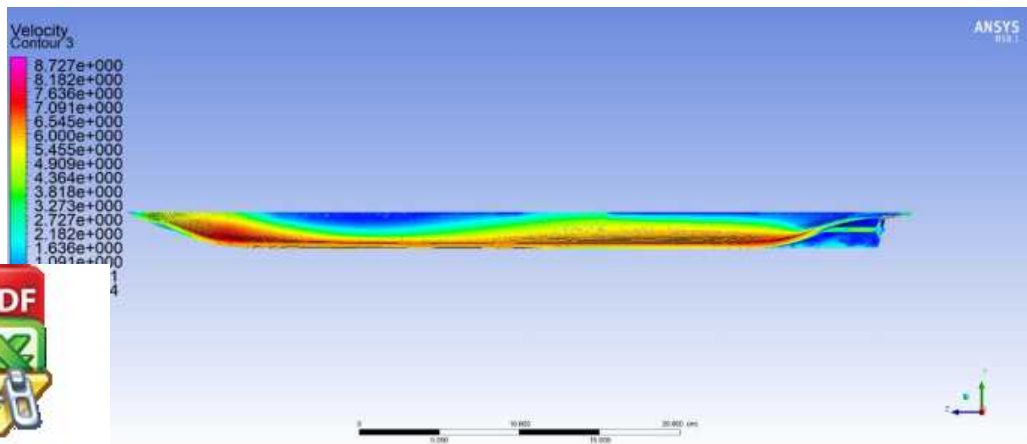
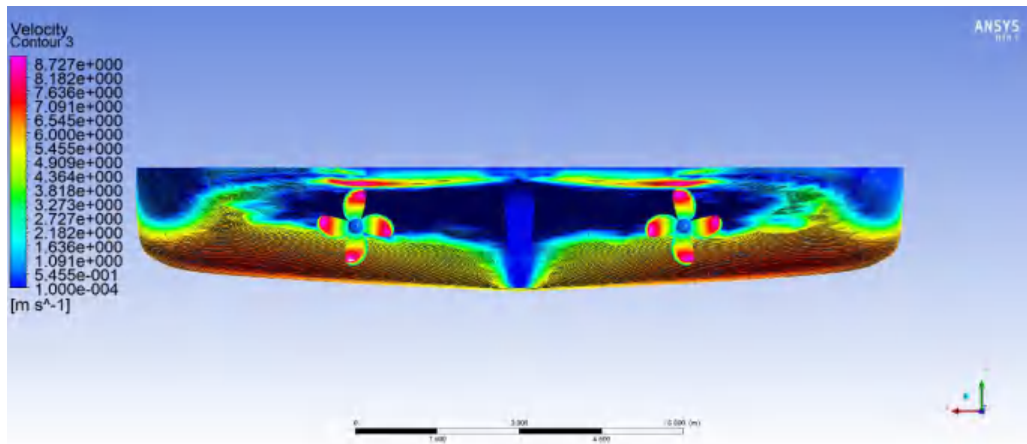
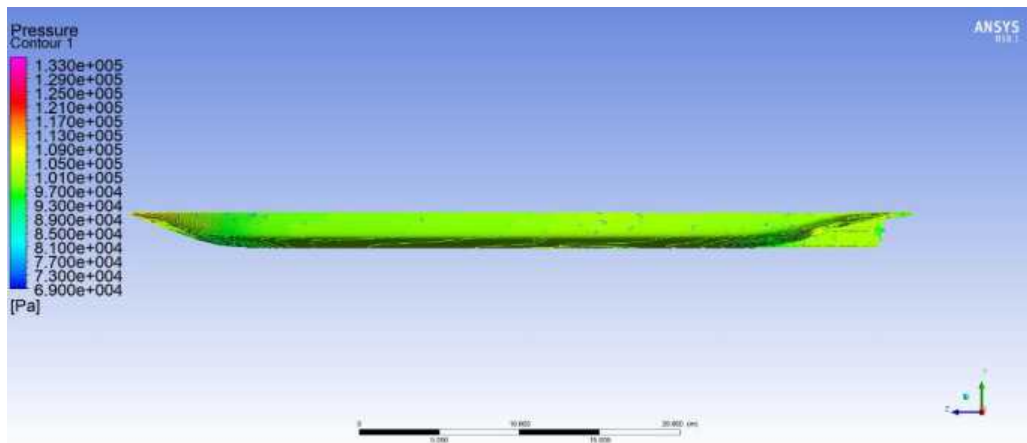
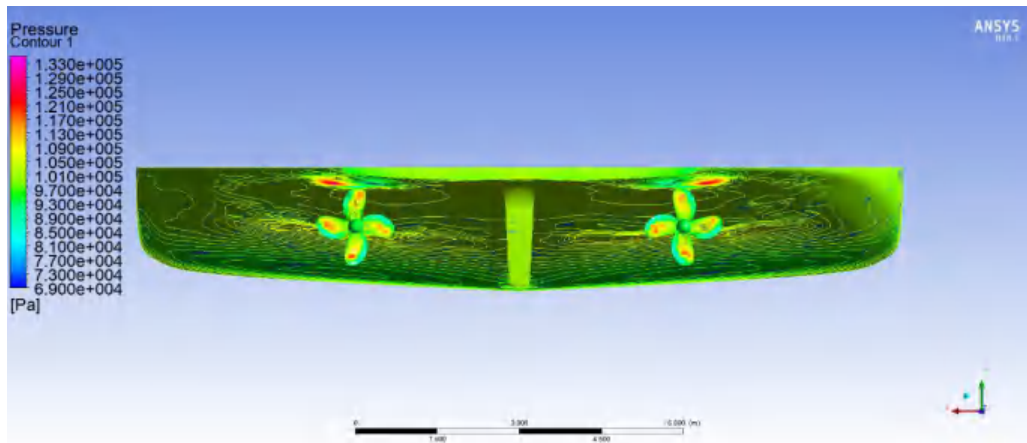


Lampiran 13 Visualisasi *Contour* Variasi PBCF



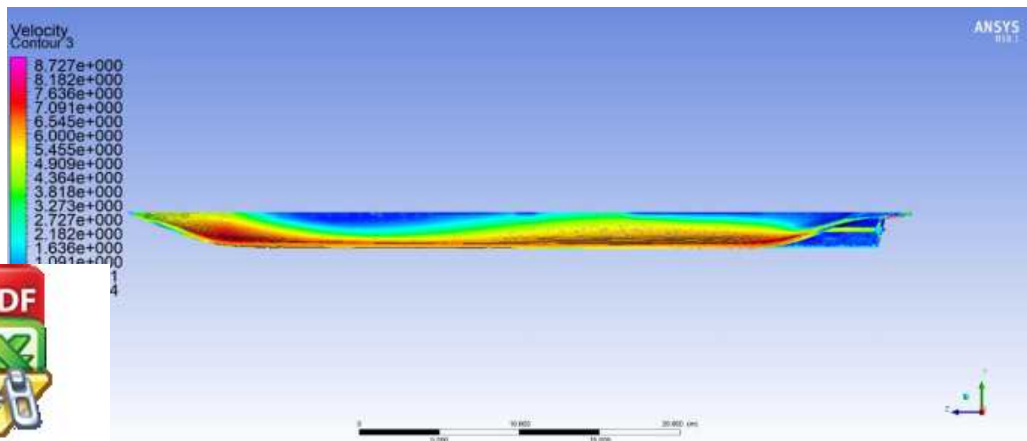
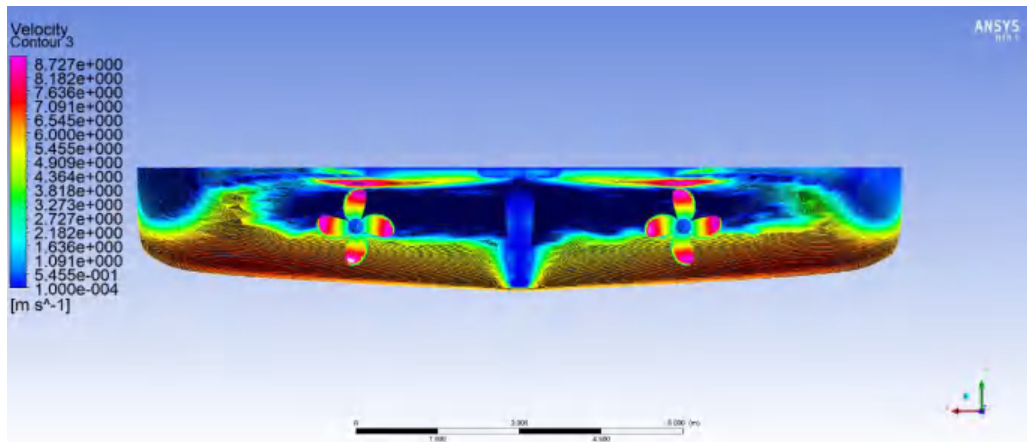
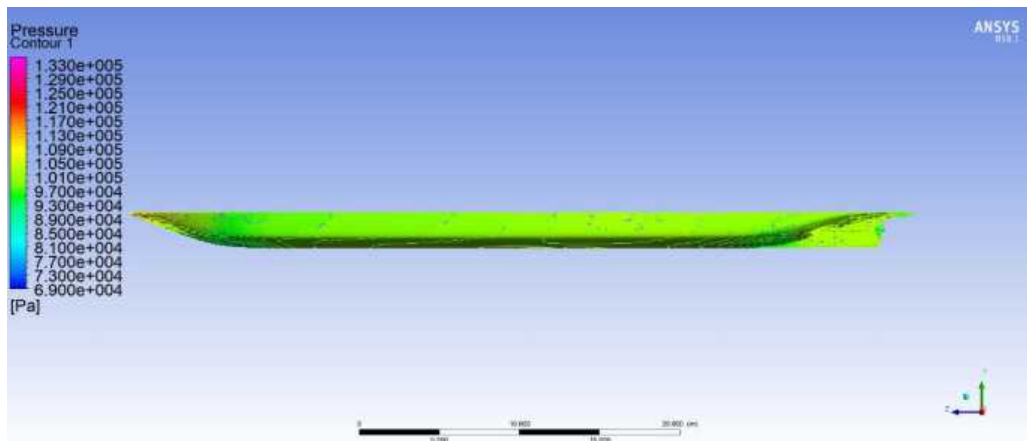
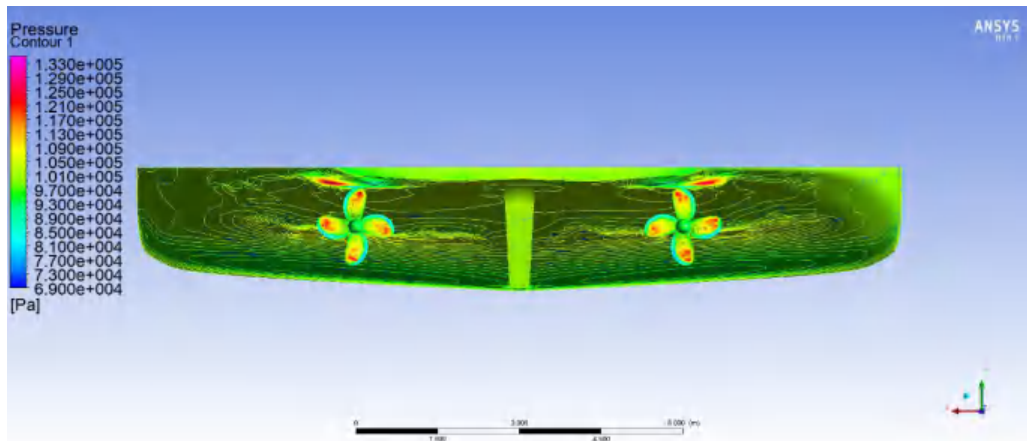
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Gambar 63 *Pressure Contour* dan *Velocity Contour* (N : 527830)



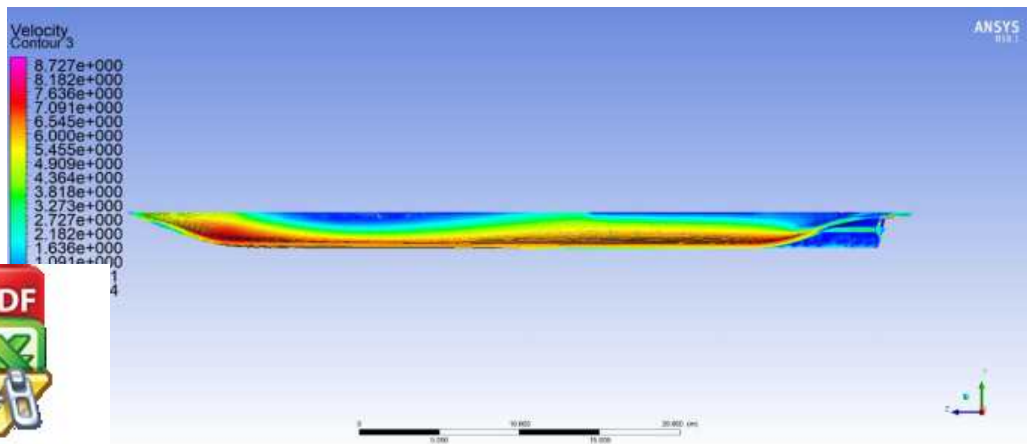
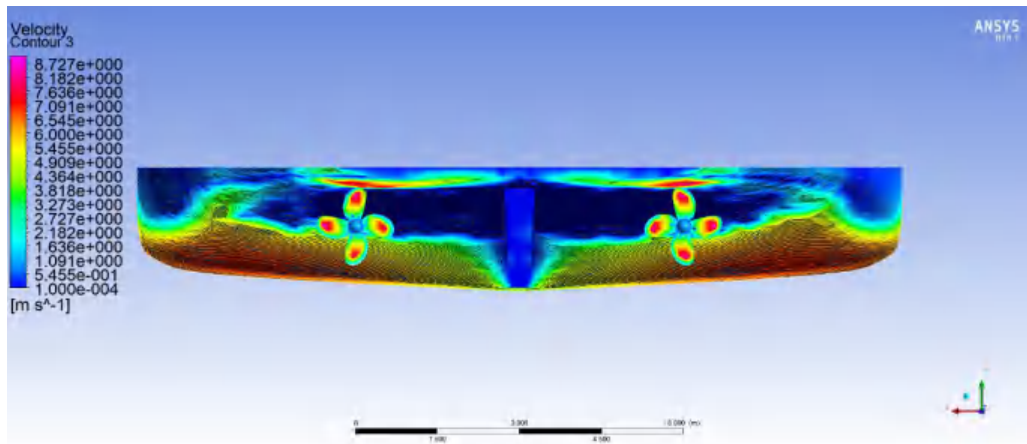
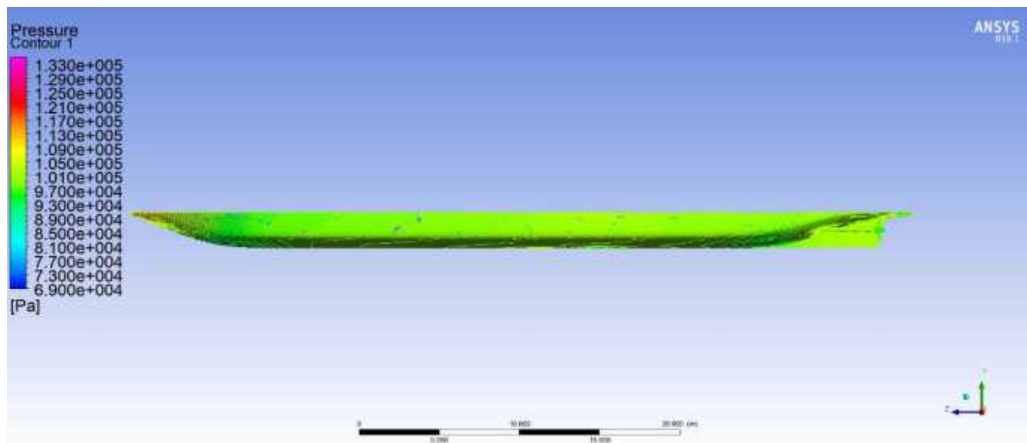
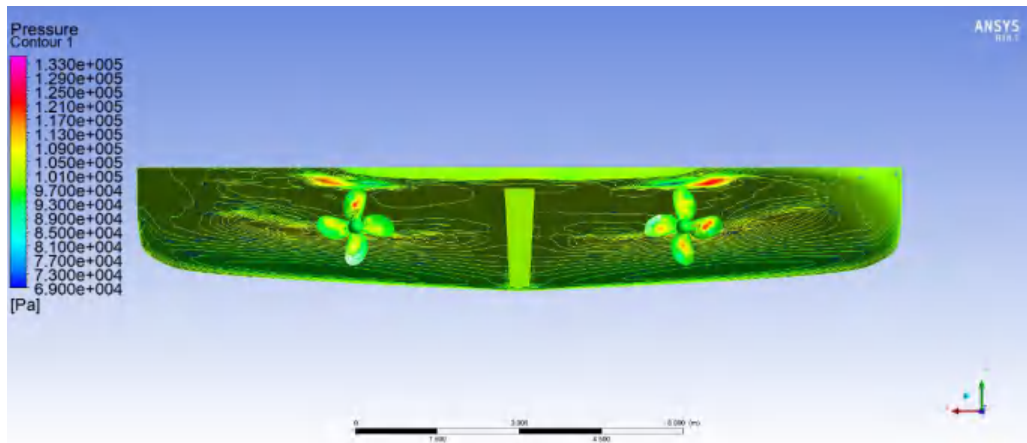
Optimized using trial version
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Gambar 64 Pressure Contour dan Velocity Contour (N : 898181)



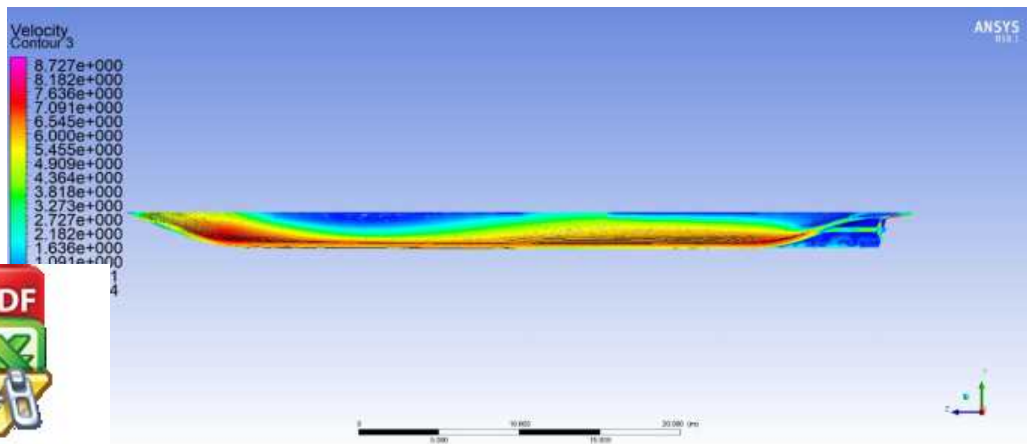
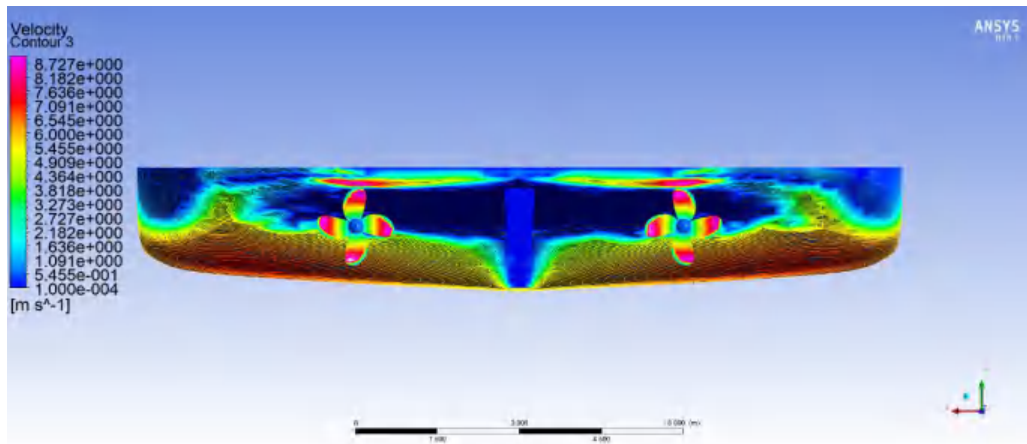
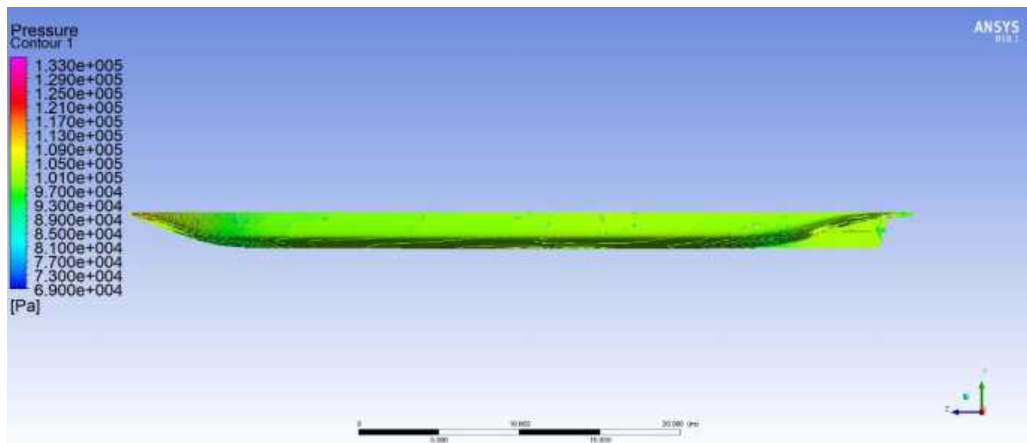
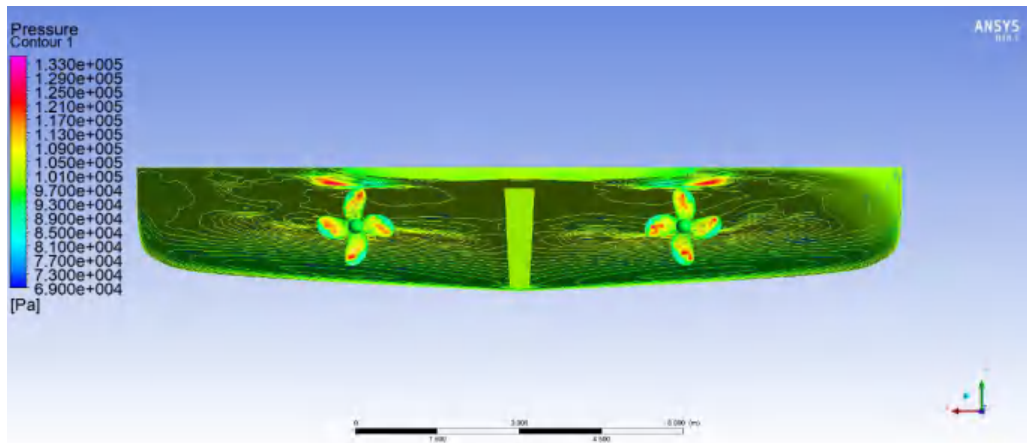
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Gambar 65 Pressure Contour dan Velocity Contour (N : 1260814)



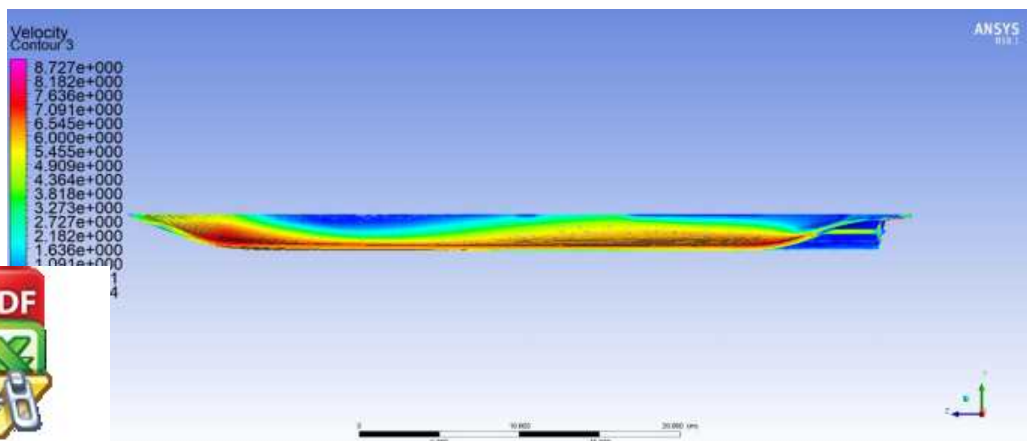
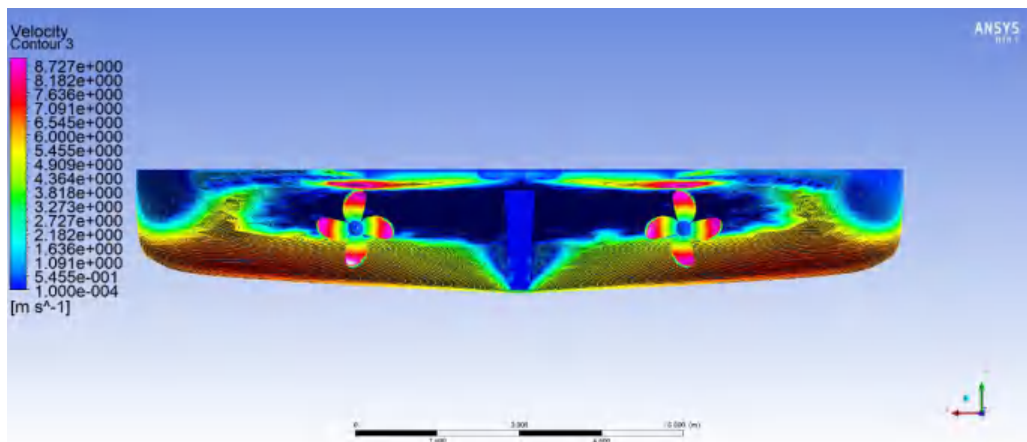
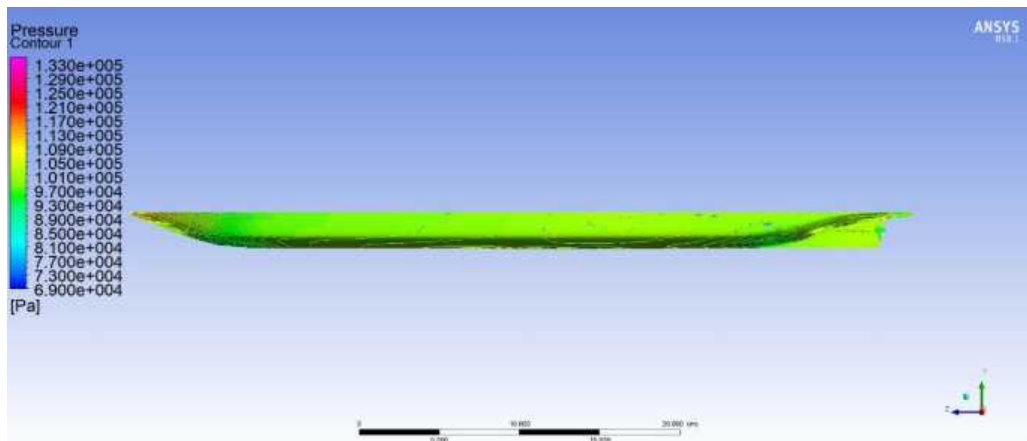
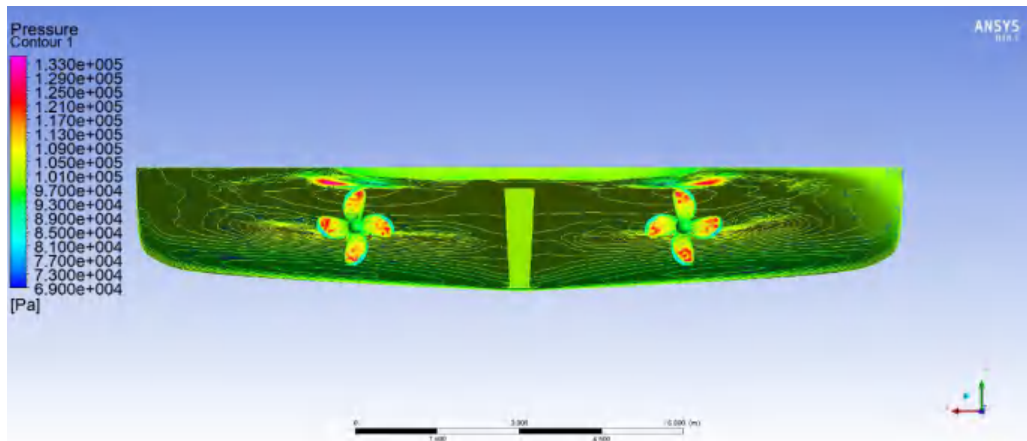
Optimized using trial version
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Gambar 66 Pressure Contour dan Velocity Contour (N : 1487580)



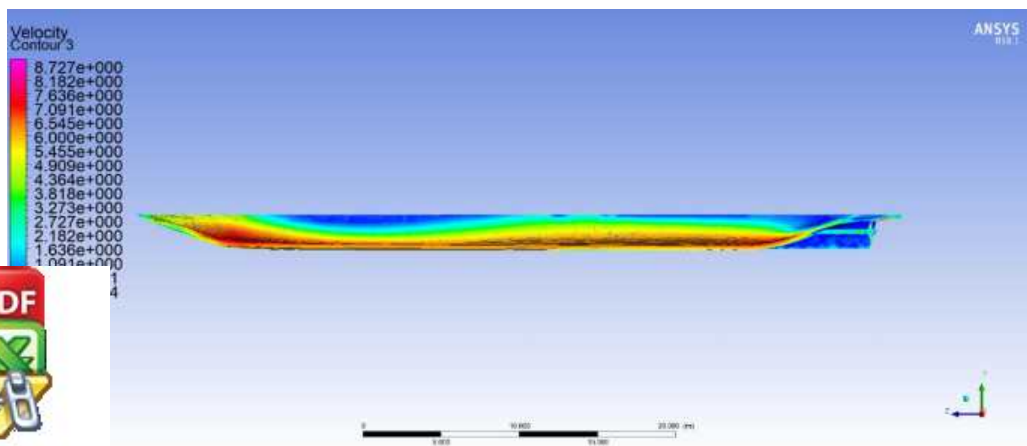
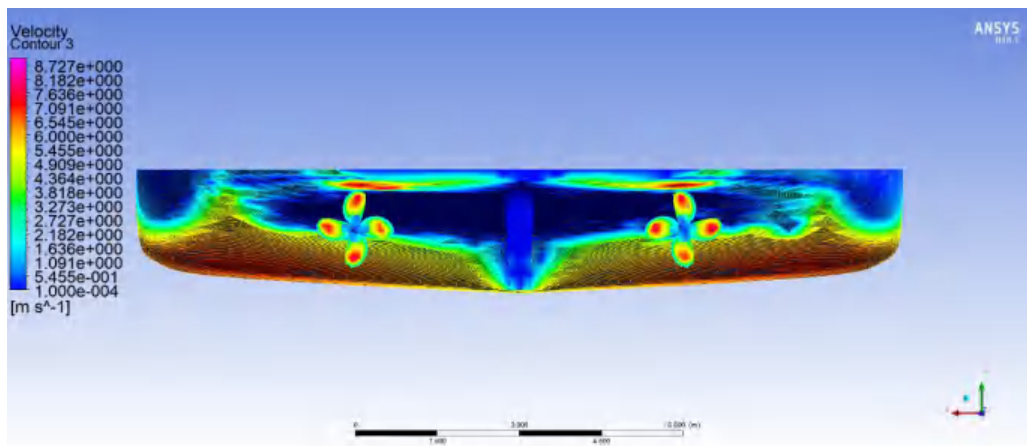
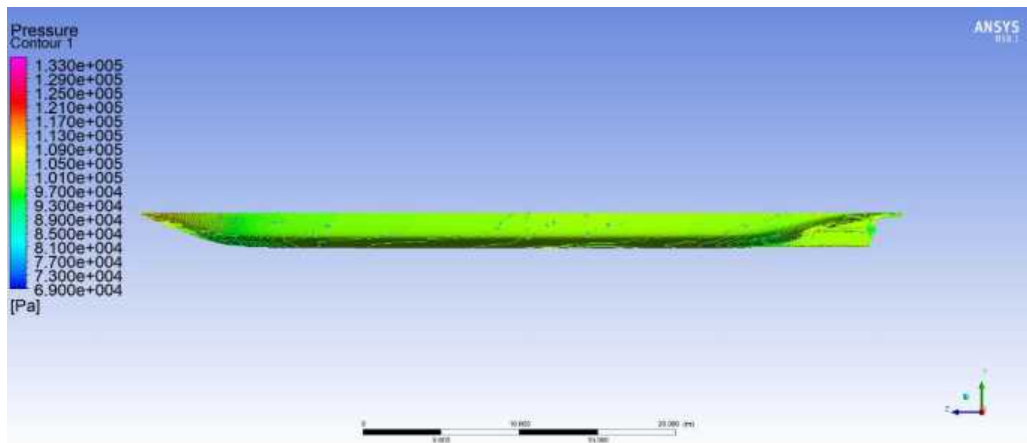
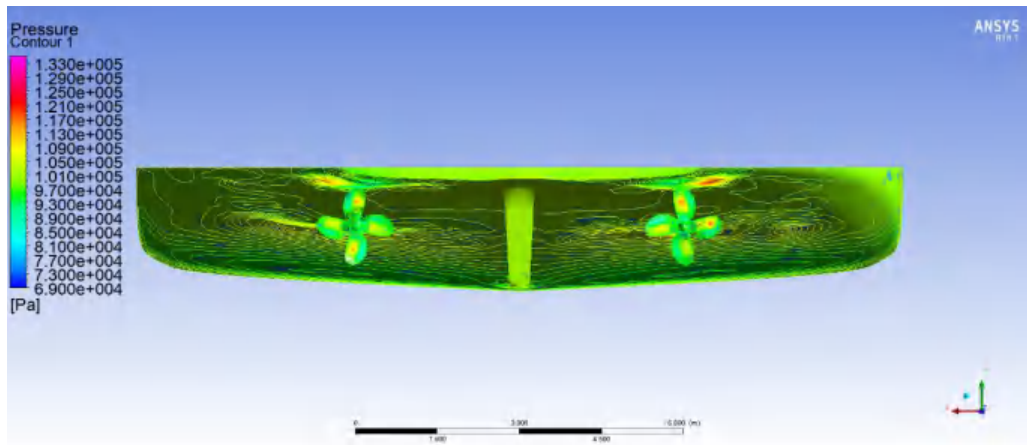
Optimized using trial version
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Gambar 67 Pressure Contour dan Velocity Contour (N : 2415311)



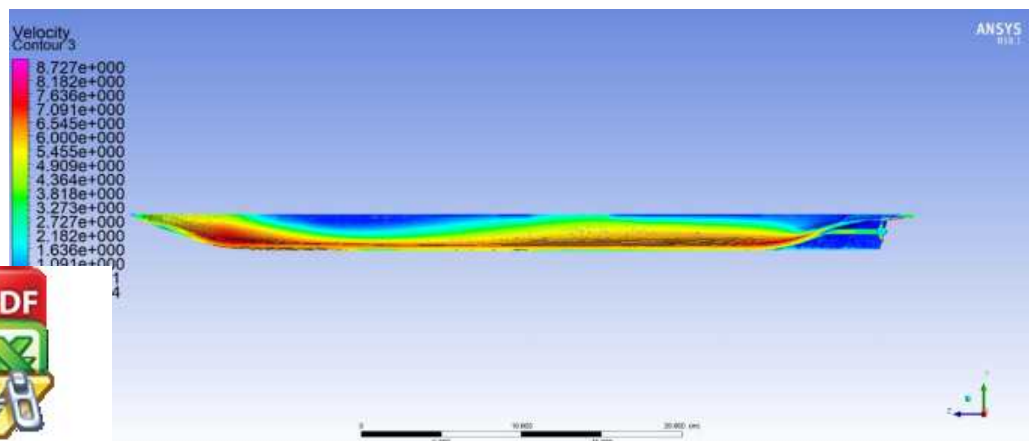
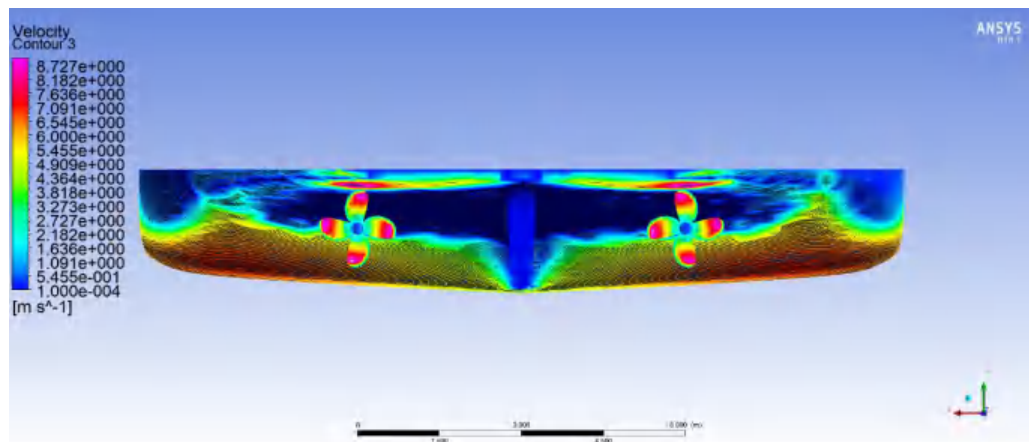
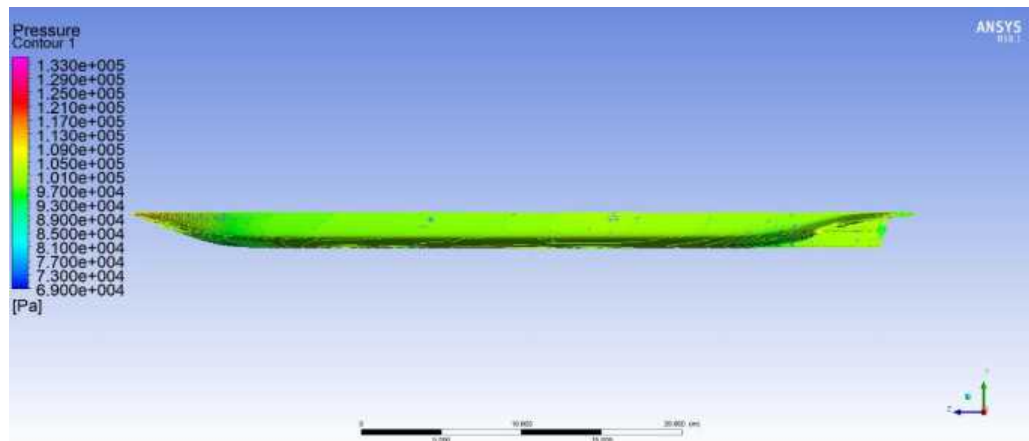
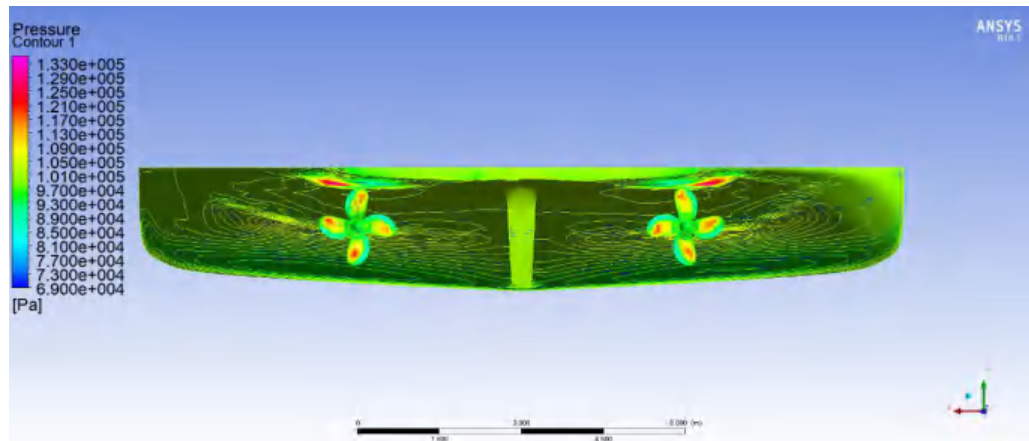
Optimized using trial version
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Gambar 68 Pressure Contour dan Velocity Contour (N : 4020217)



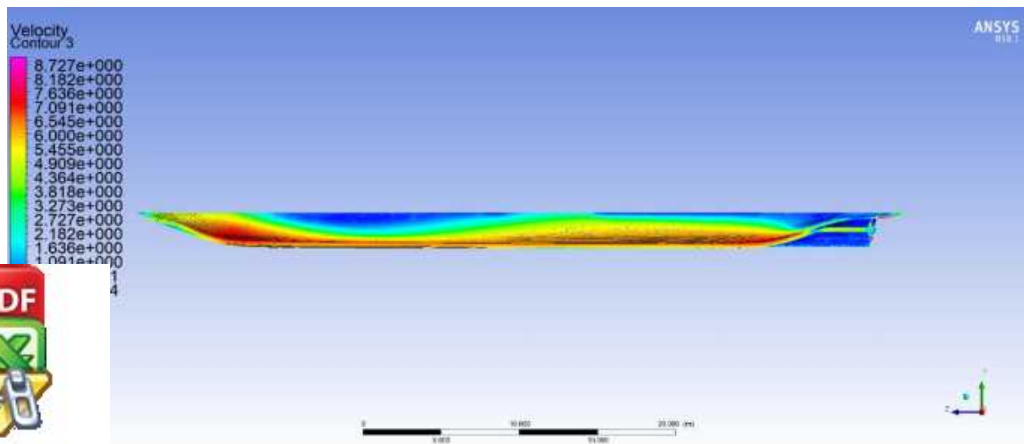
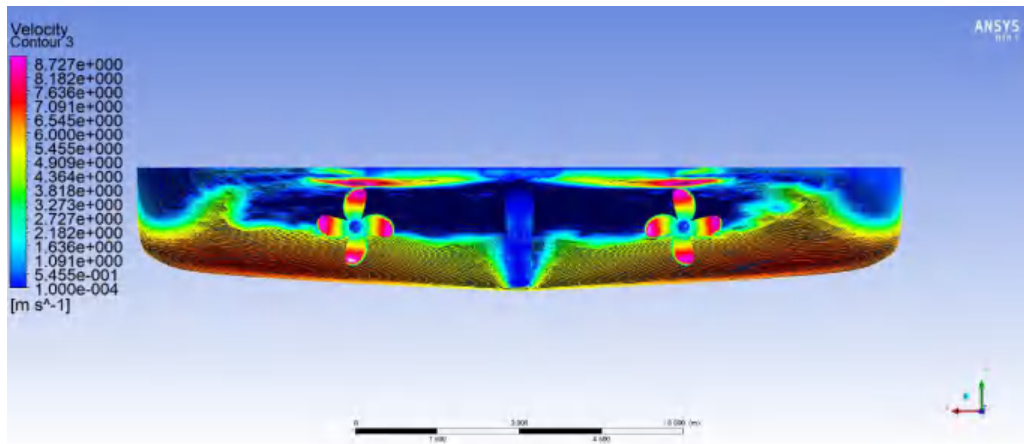
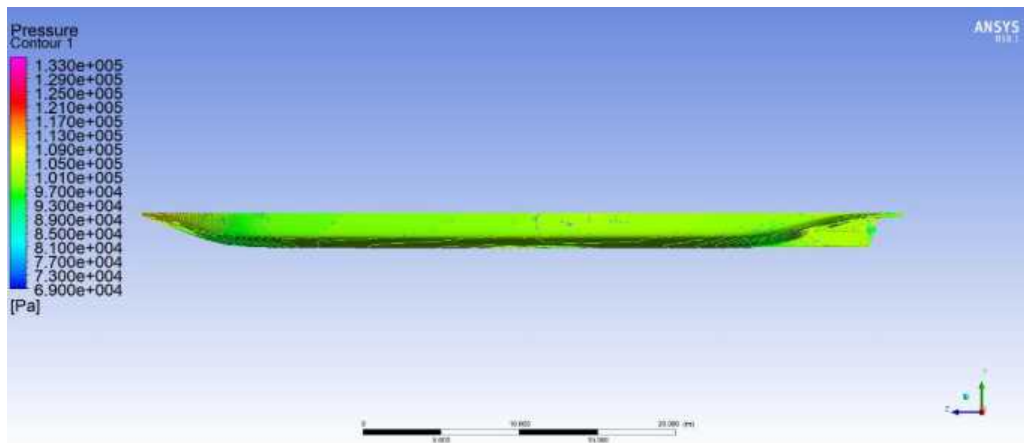
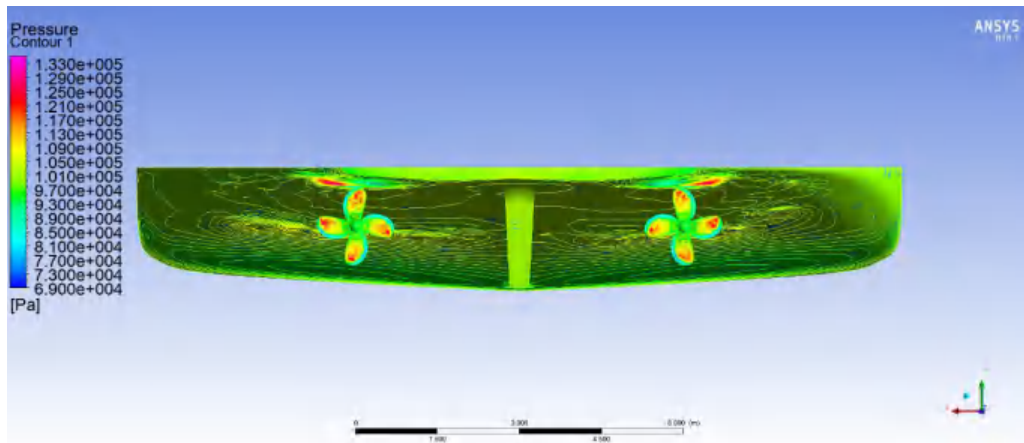
Optimized using trial version
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Gambar 69 Pressure Contour dan Velocity Contour (N : 528913)



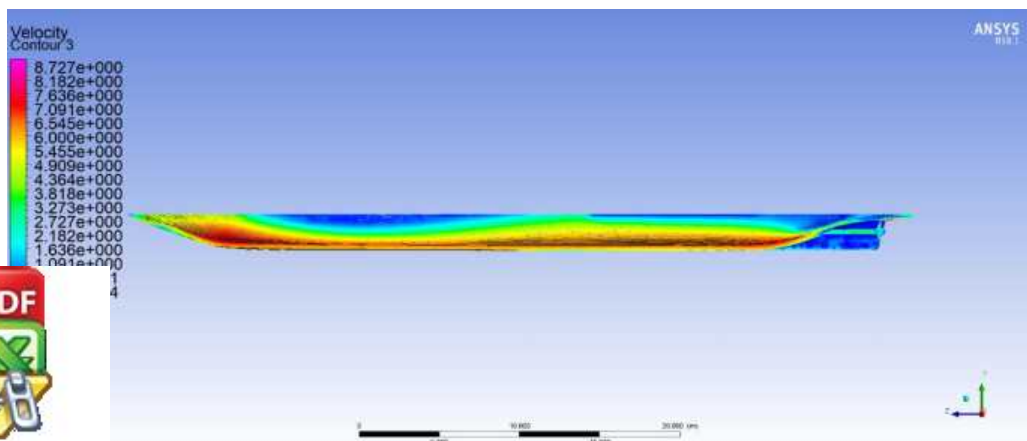
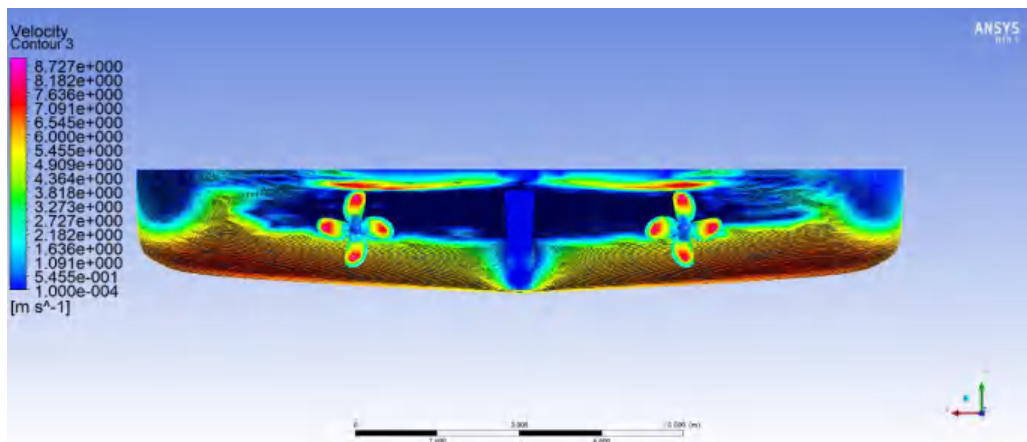
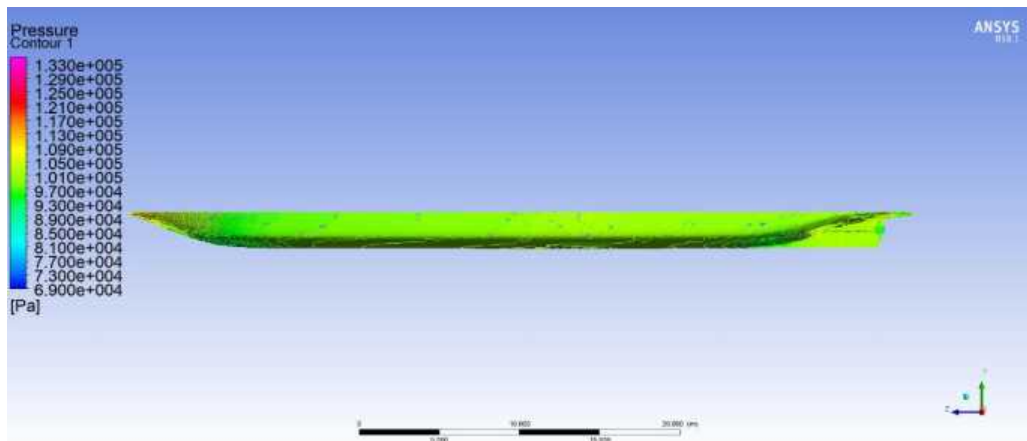
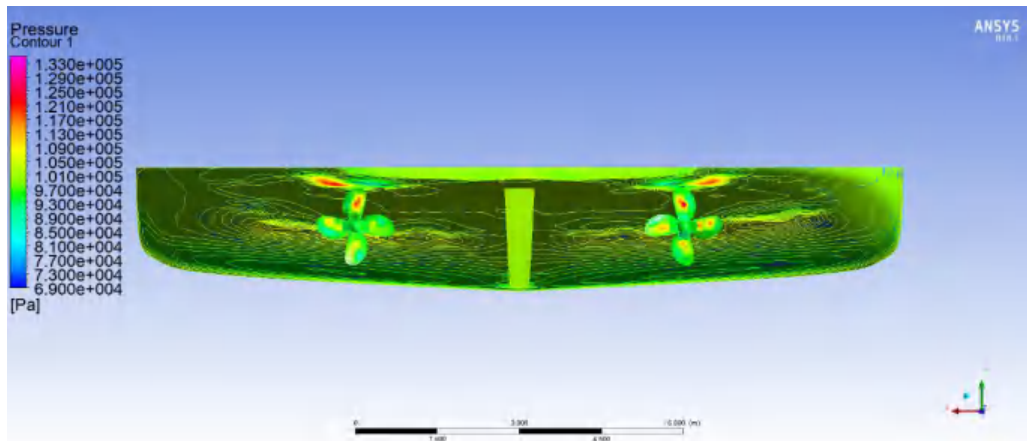
Optimized using trial version
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Gambar 70 Pressure Contour dan Velocity Contour (N :911731)



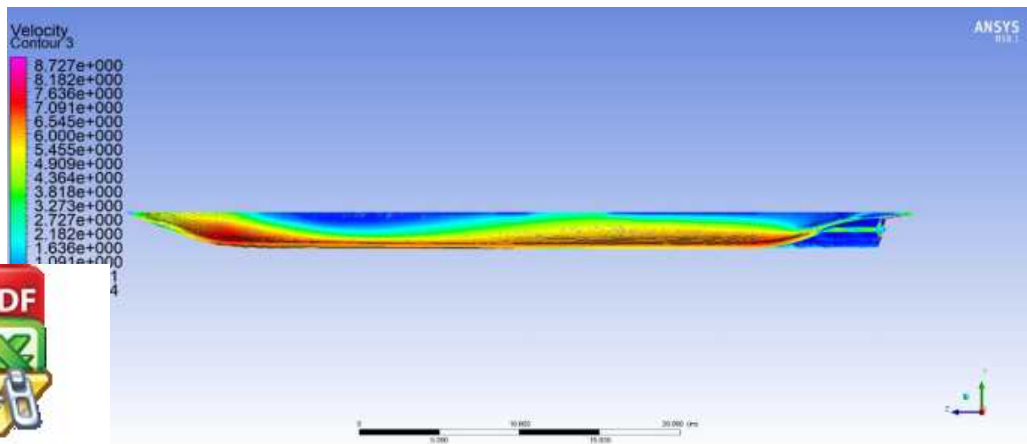
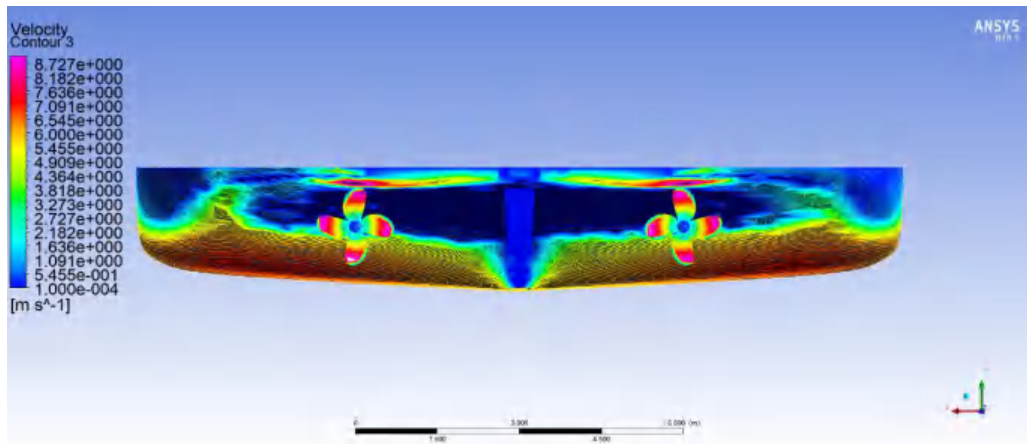
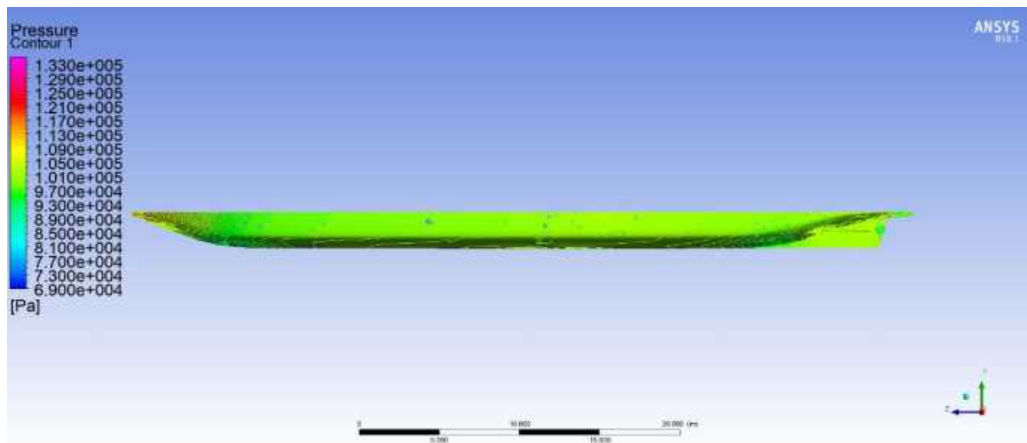
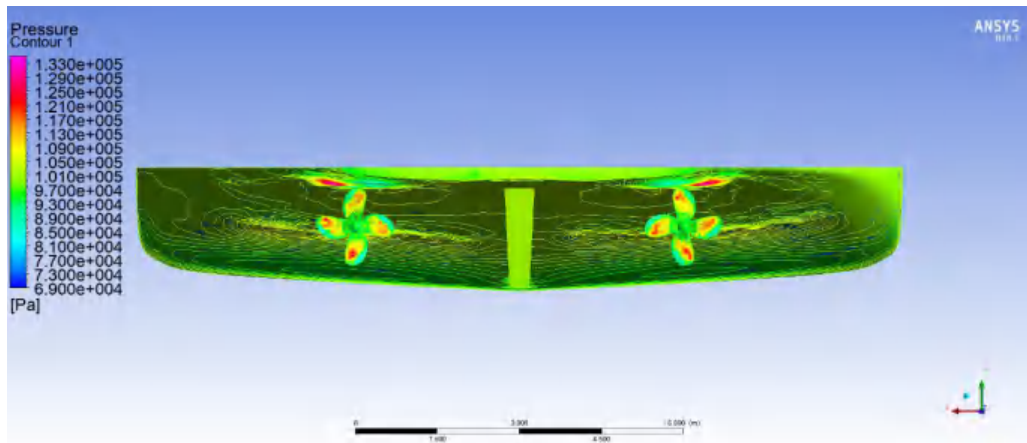
Optimized using trial version
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Gambar 71 Pressure Contour dan Velocity Contour (N : 1295112)



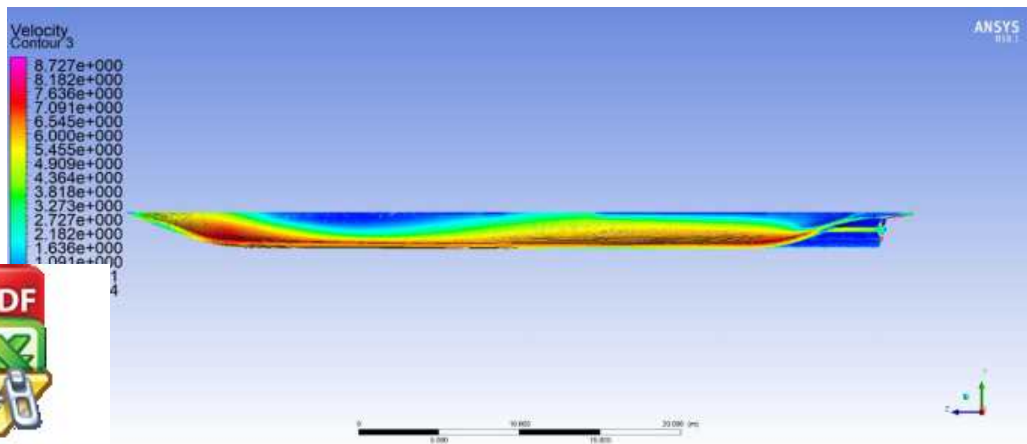
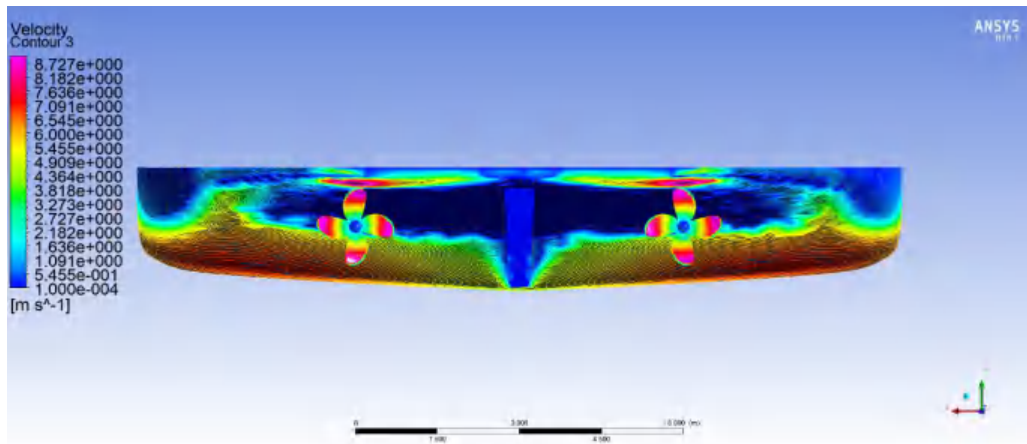
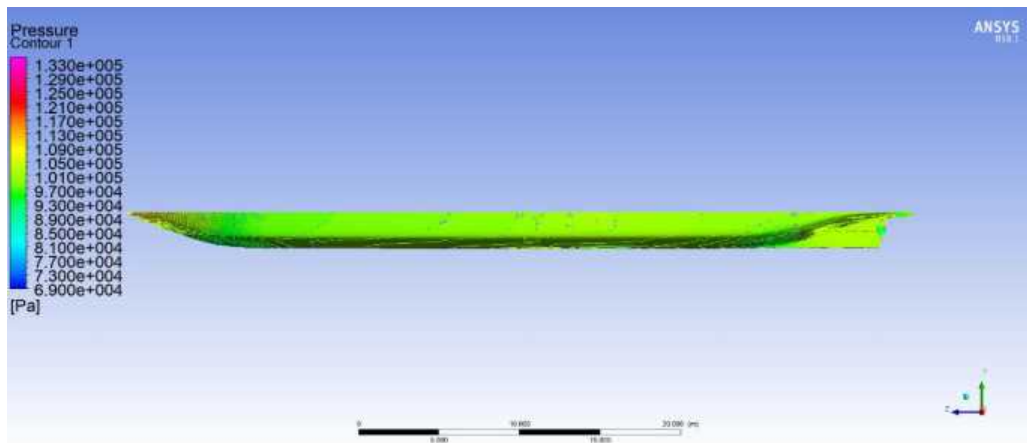
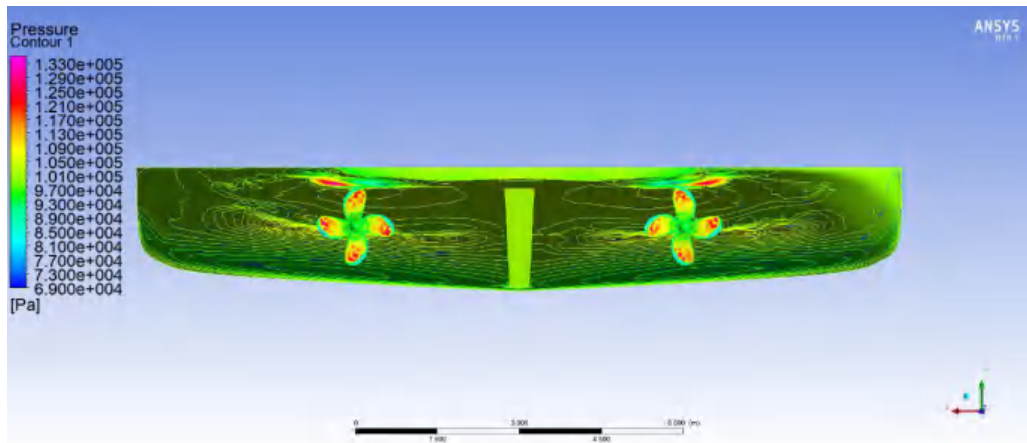
Optimized using trial version
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Gambar 72 Pressure Contour dan Velocity Contour (N : 1490595)



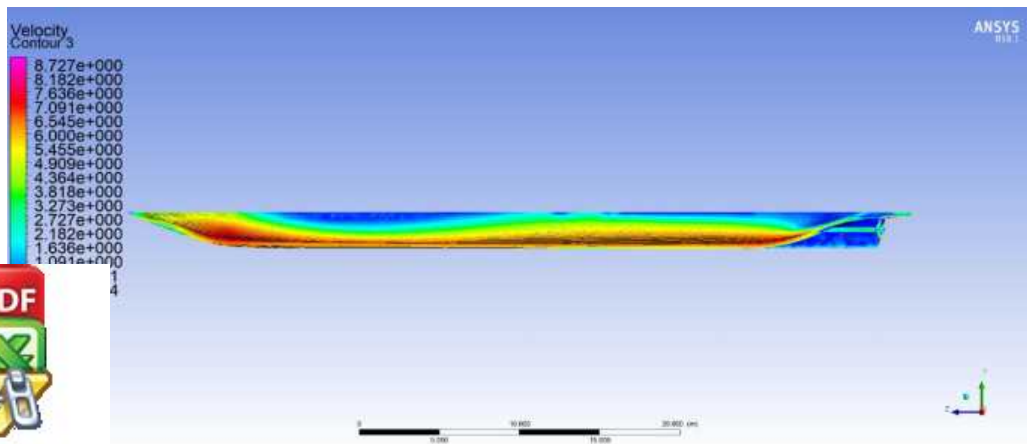
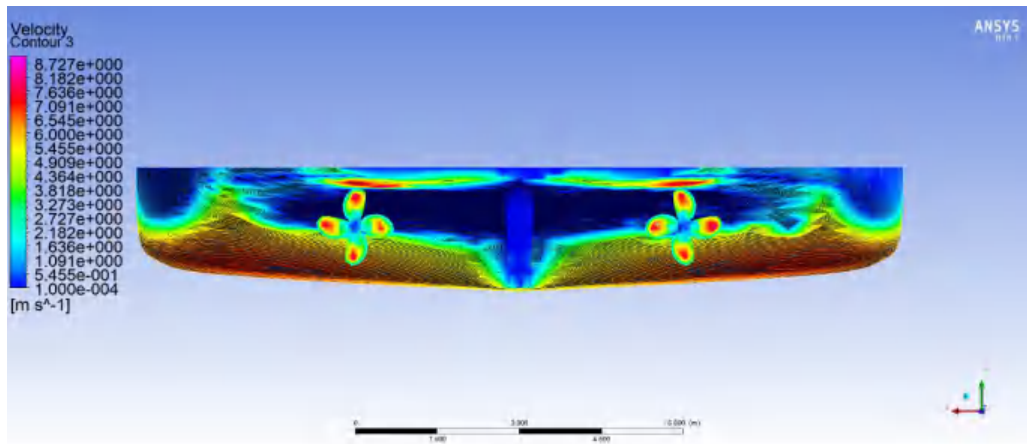
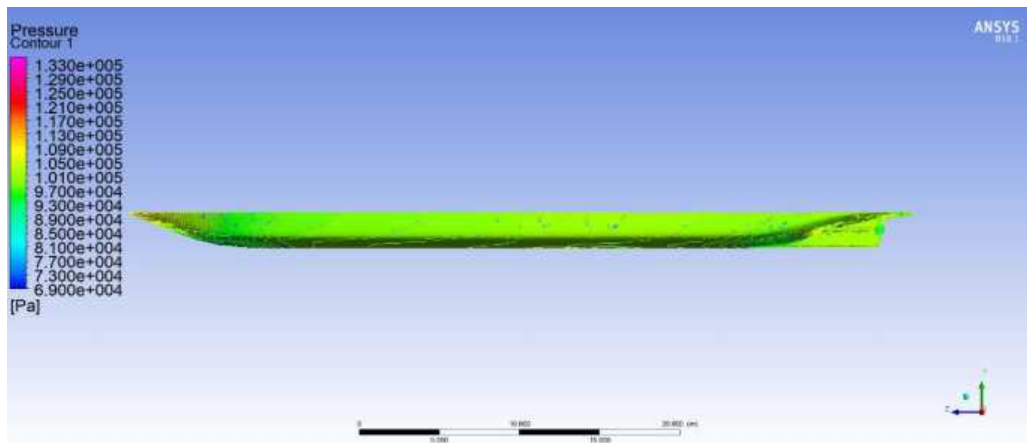
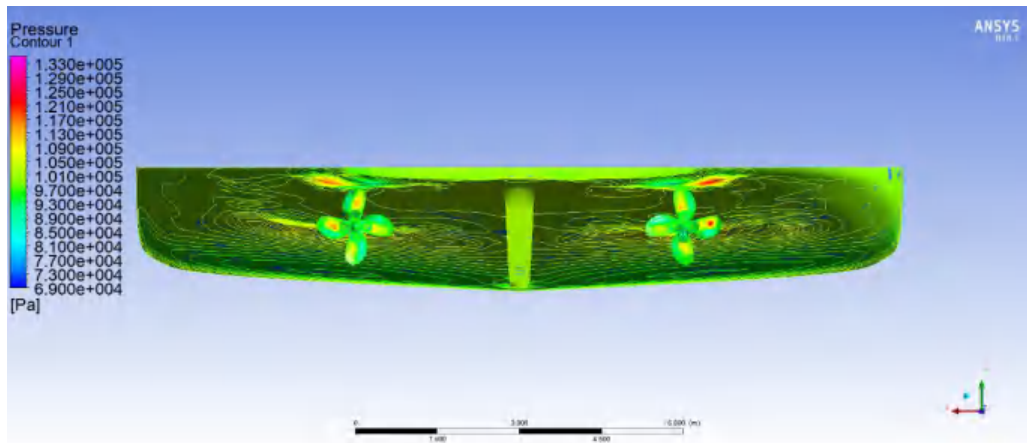
Optimized using trial version
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Gambar 73 Pressure Contour dan Velocity Contour (N : 2431760)



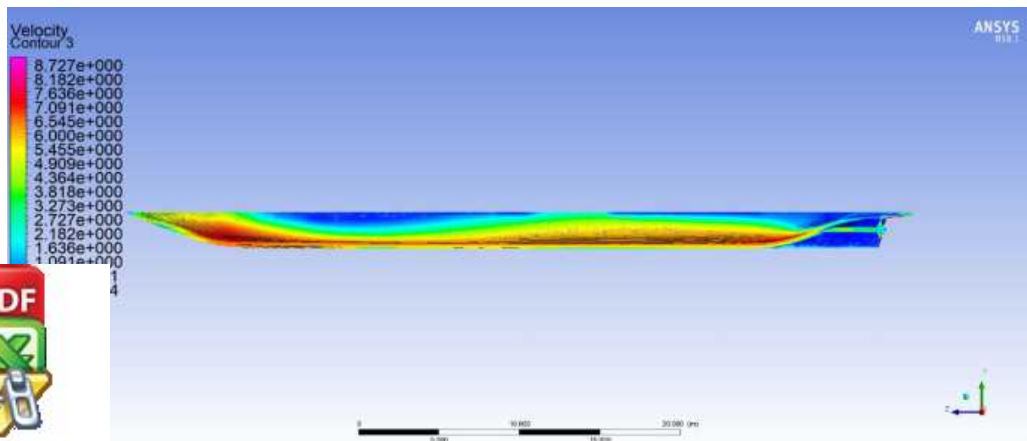
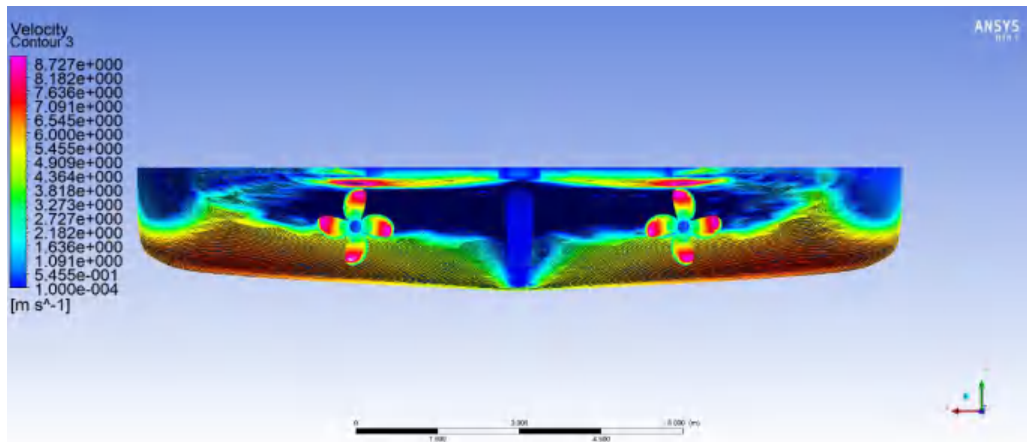
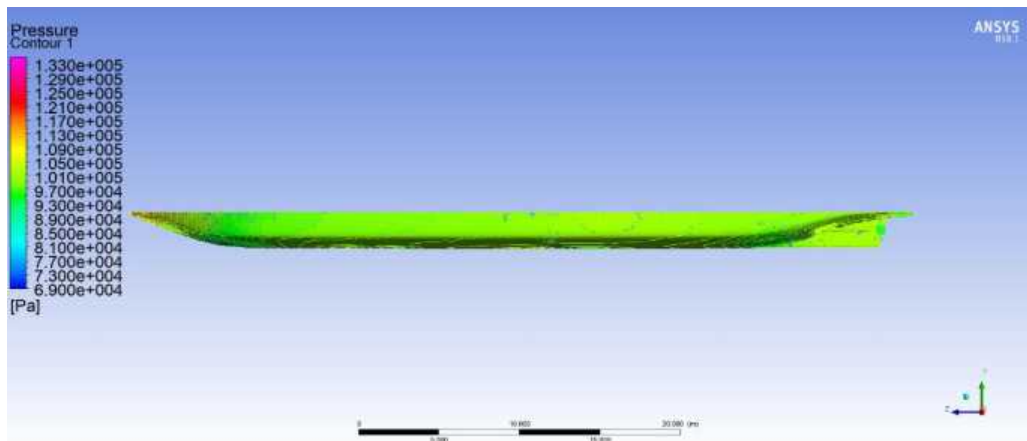
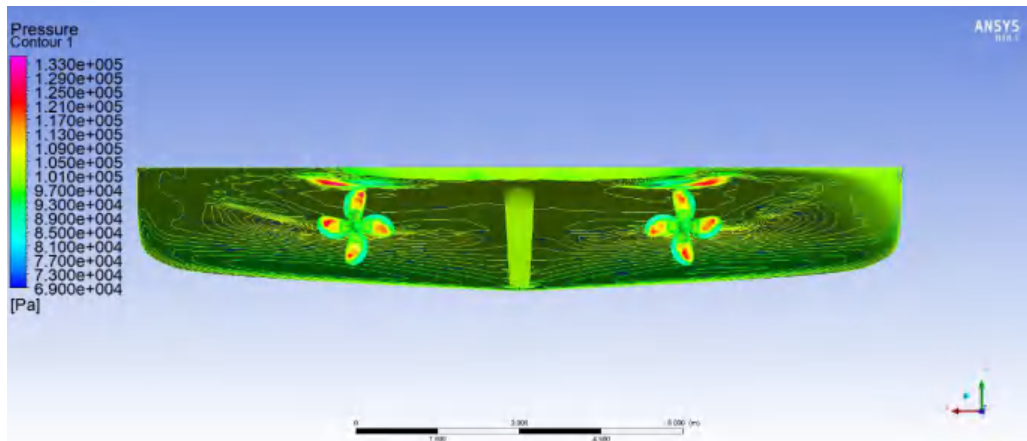
Optimized using trial version
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Gambar 74 Pressure Contour dan Velocity Contour (N : 4066062)



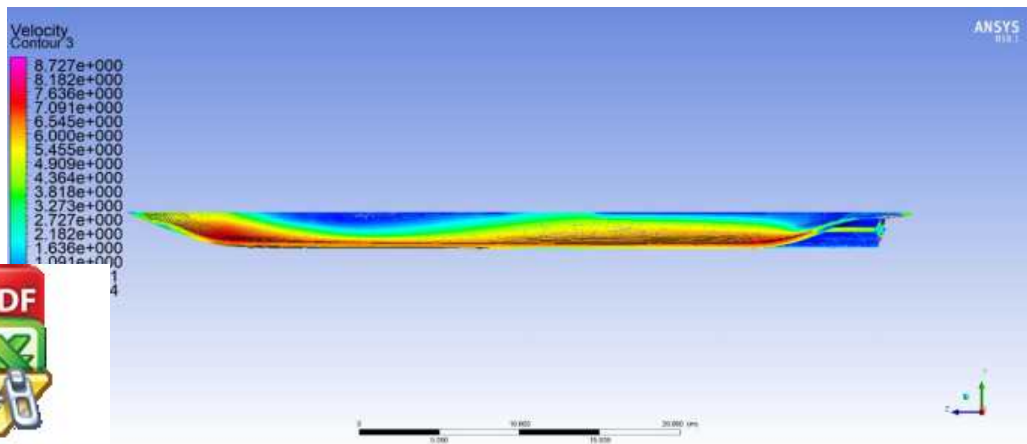
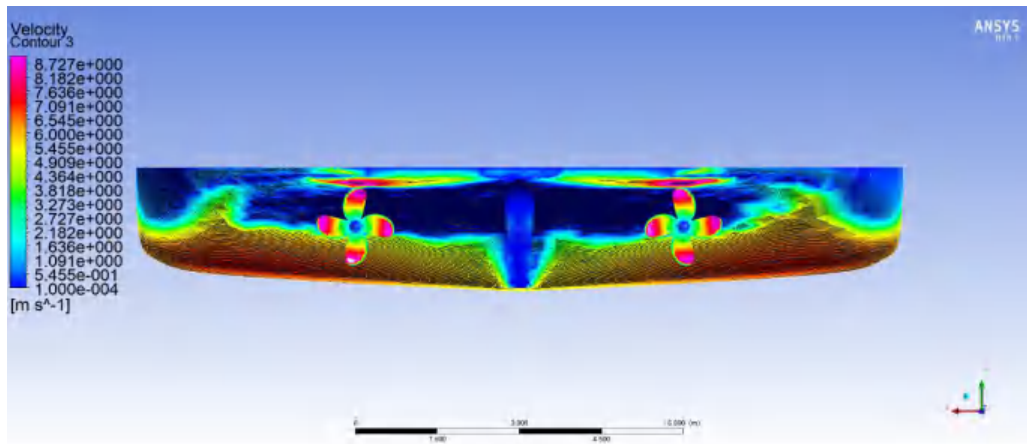
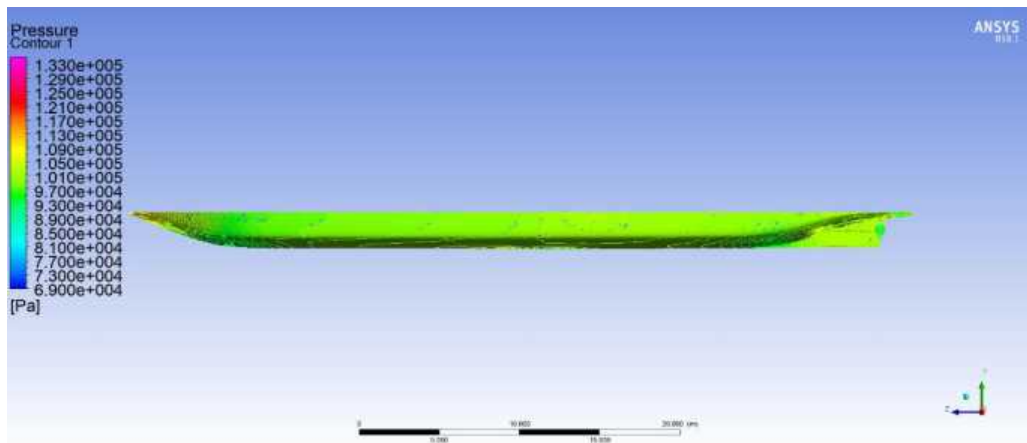
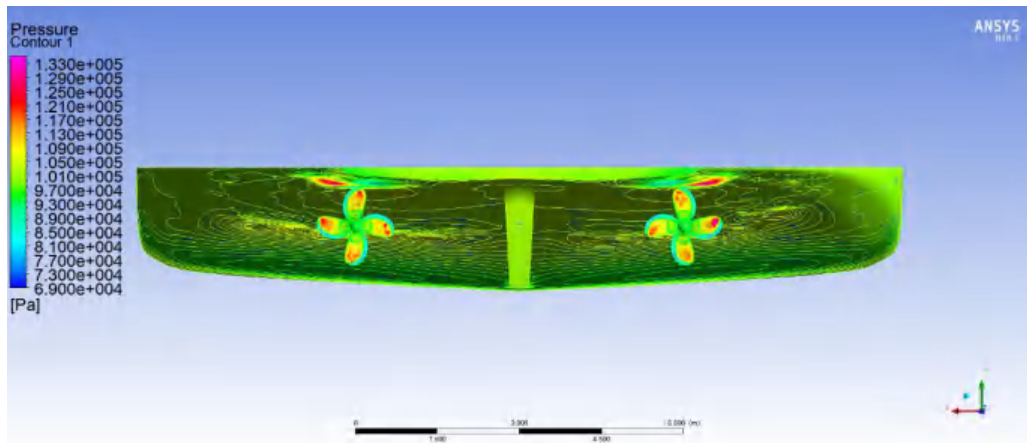
Optimized using trial version
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Gambar 75 Pressure Contour dan Velocity Contour (N : 529248)



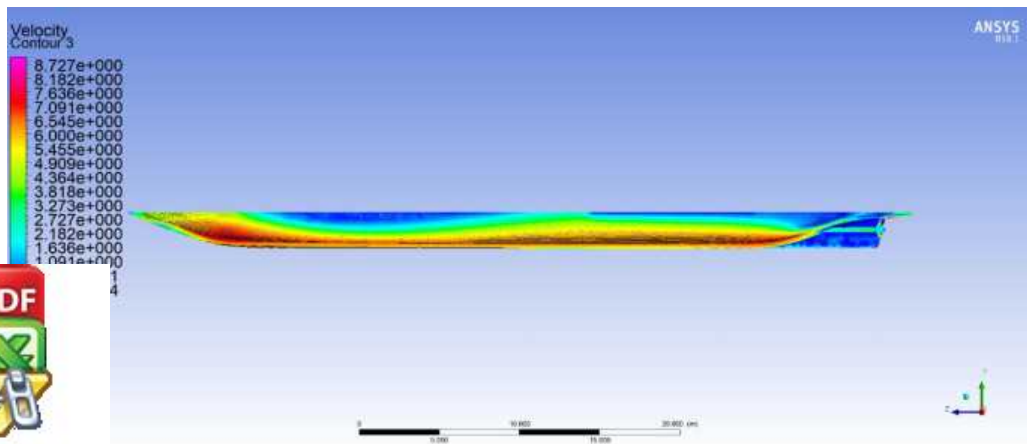
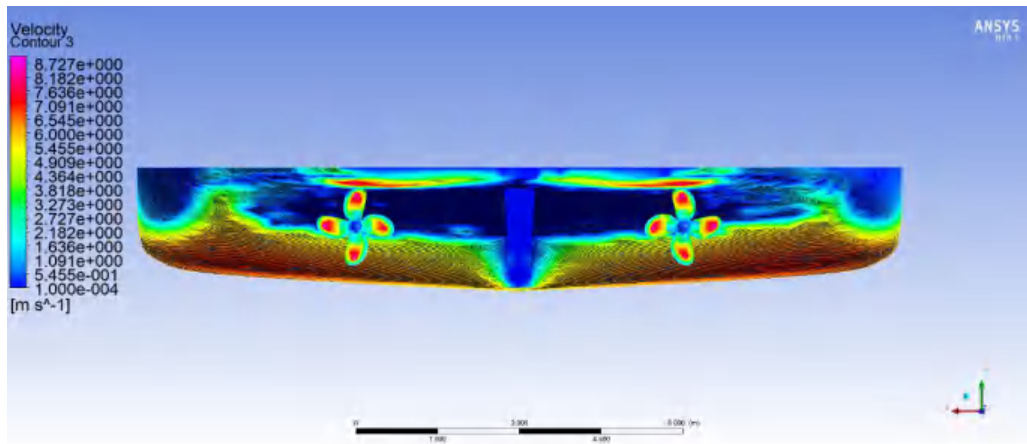
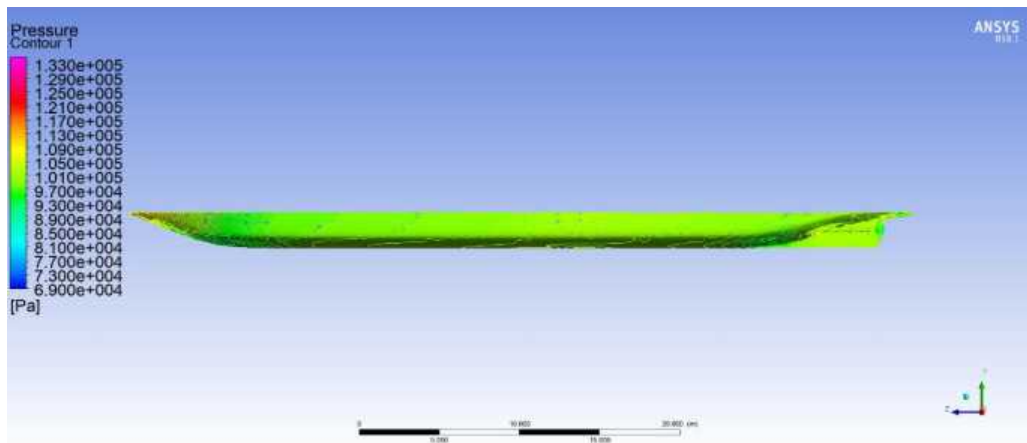
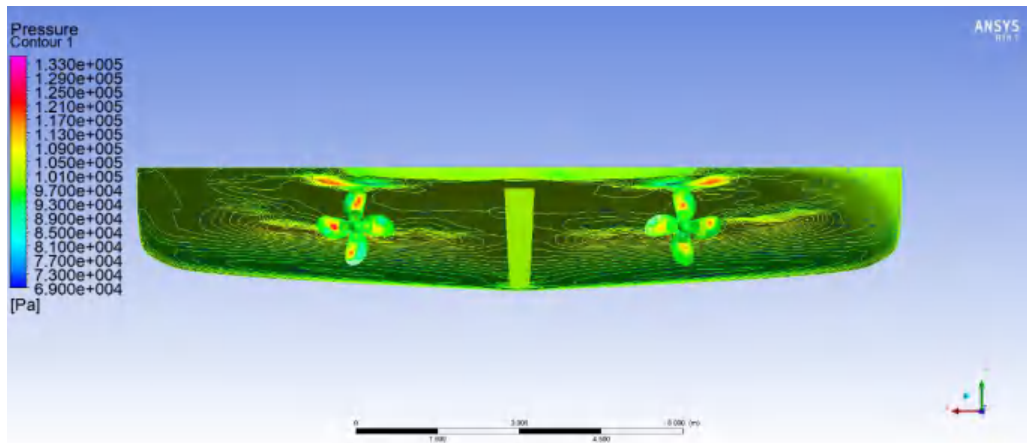
Optimized using trial version
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Gambar 76 Pressure Contour dan Velocity Contour (N : 914124)



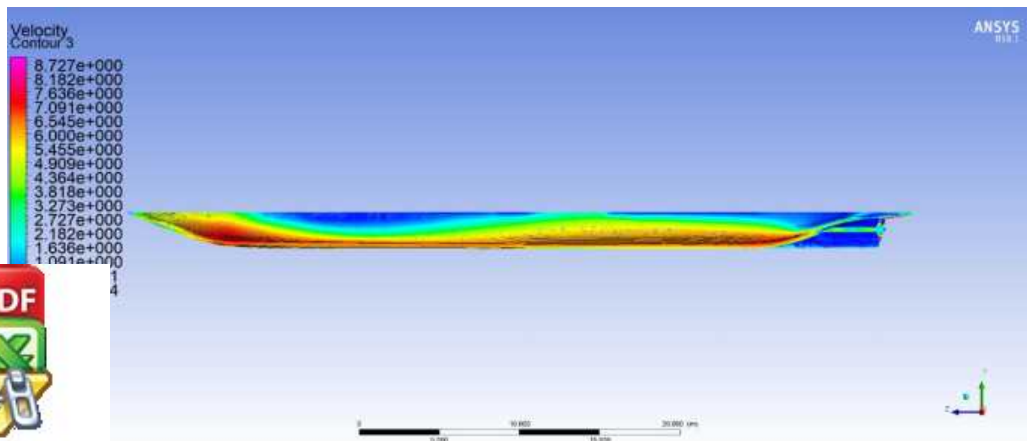
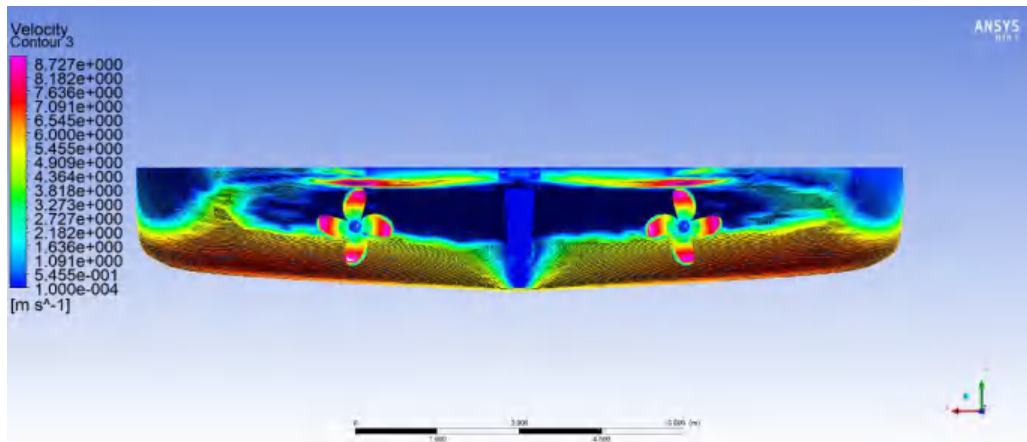
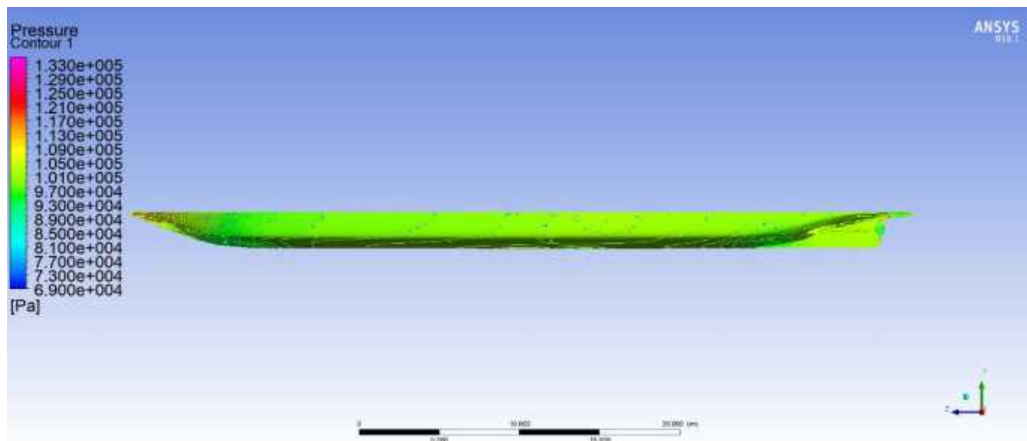
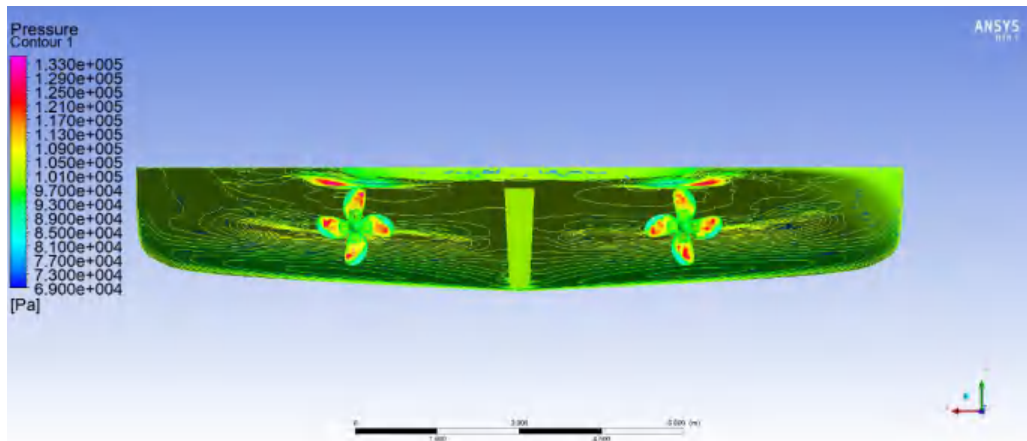
Optimized using trial version
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Gambar 77 Pressure Contour dan Velocity Contour (N : 1297109)



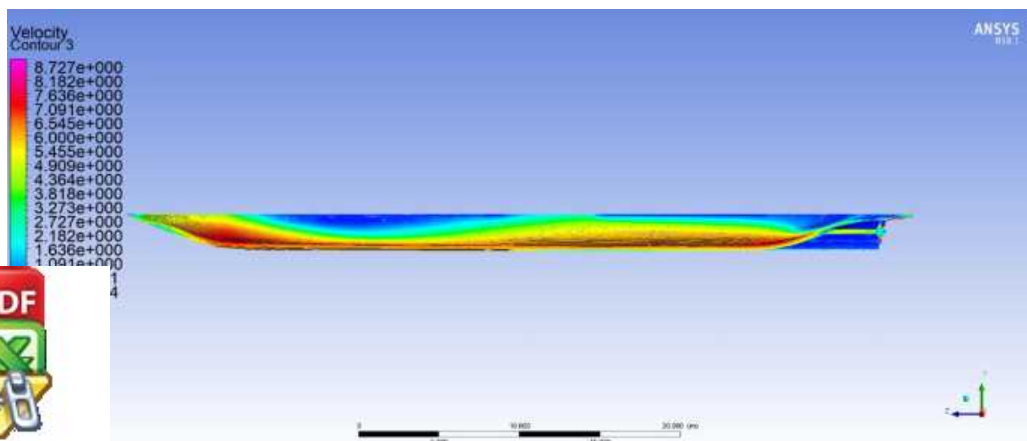
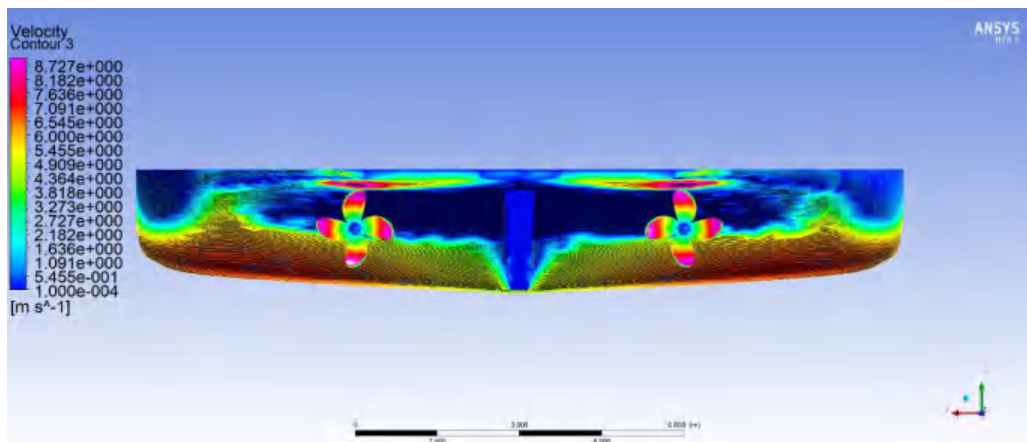
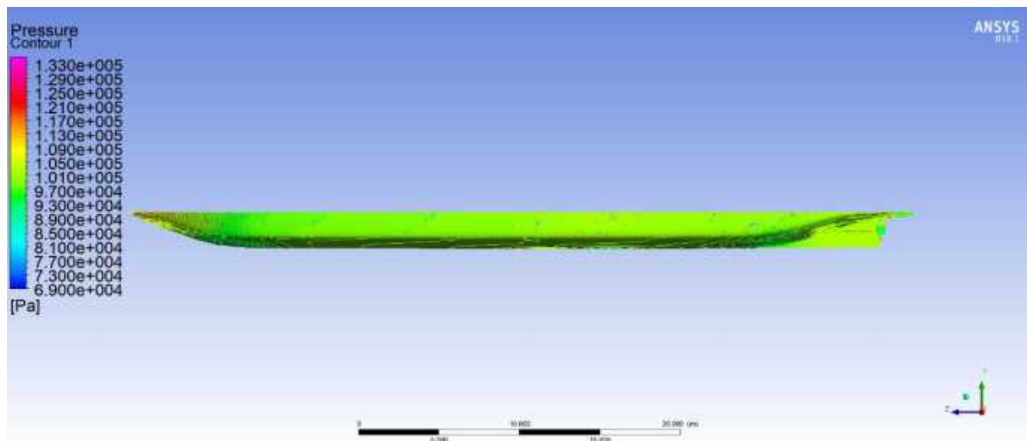
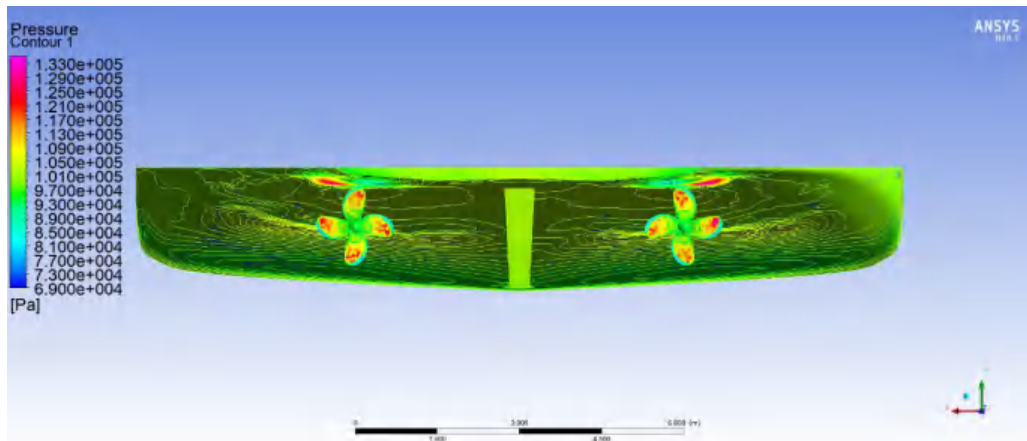
Optimized using trial version
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Gambar 78 Pressure Contour dan Velocity Contour (N : 1491810)



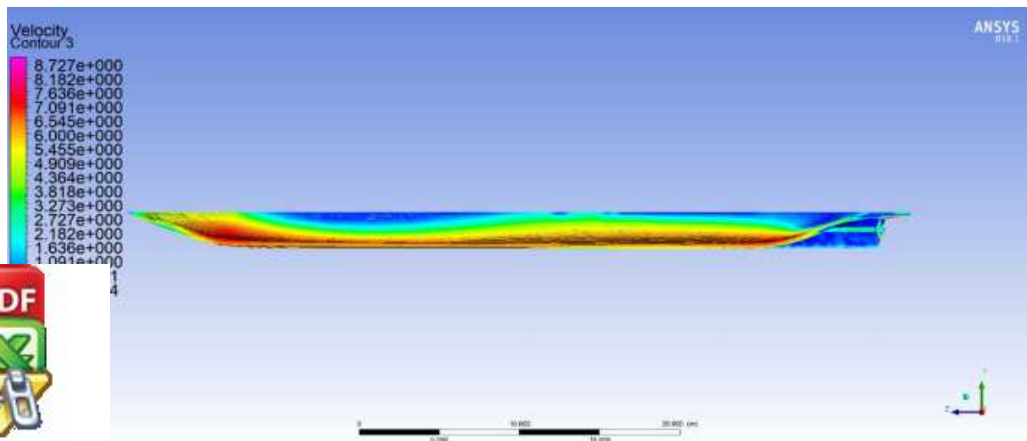
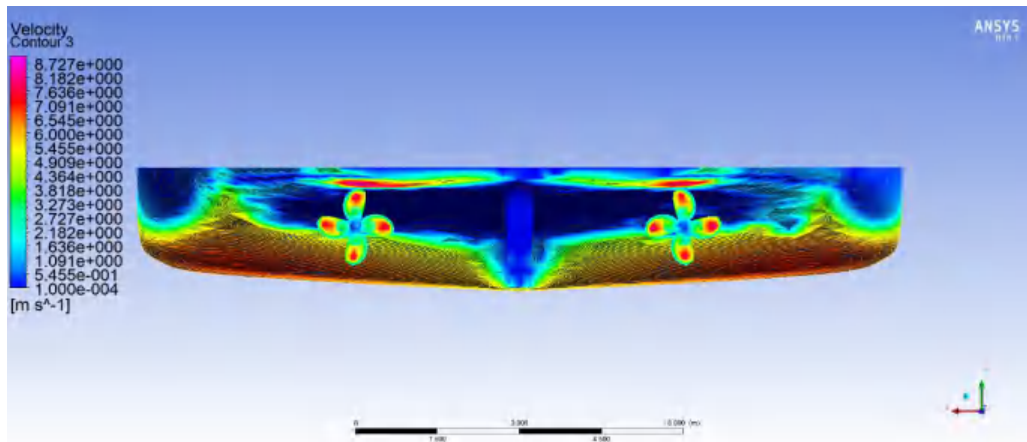
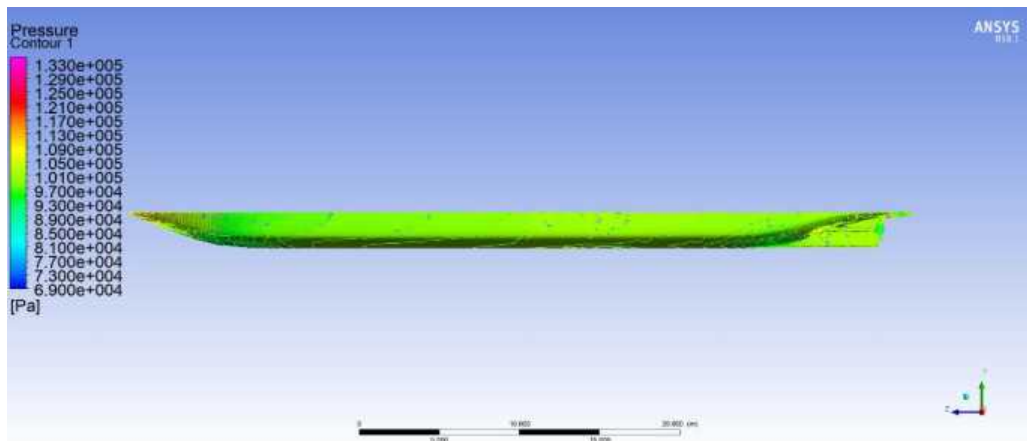
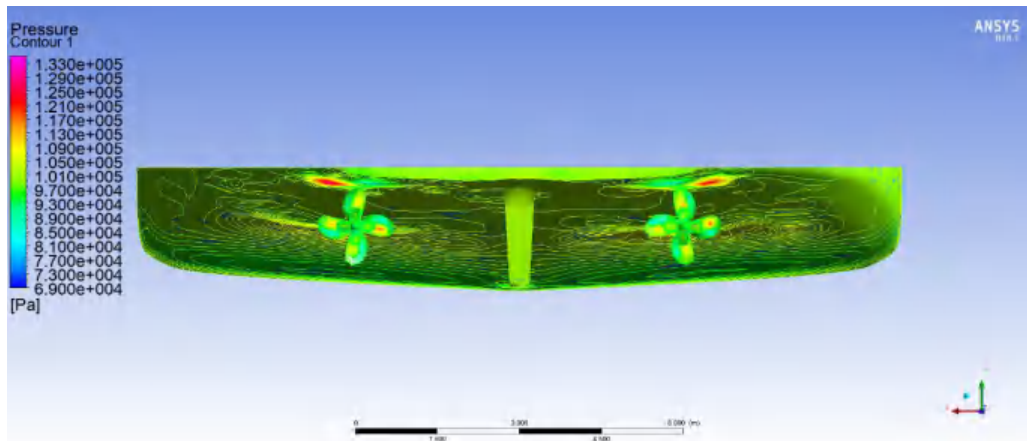
Optimized using trial version
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Gambar 79 Pressure Contour dan Velocity Contour (N : 2435557)



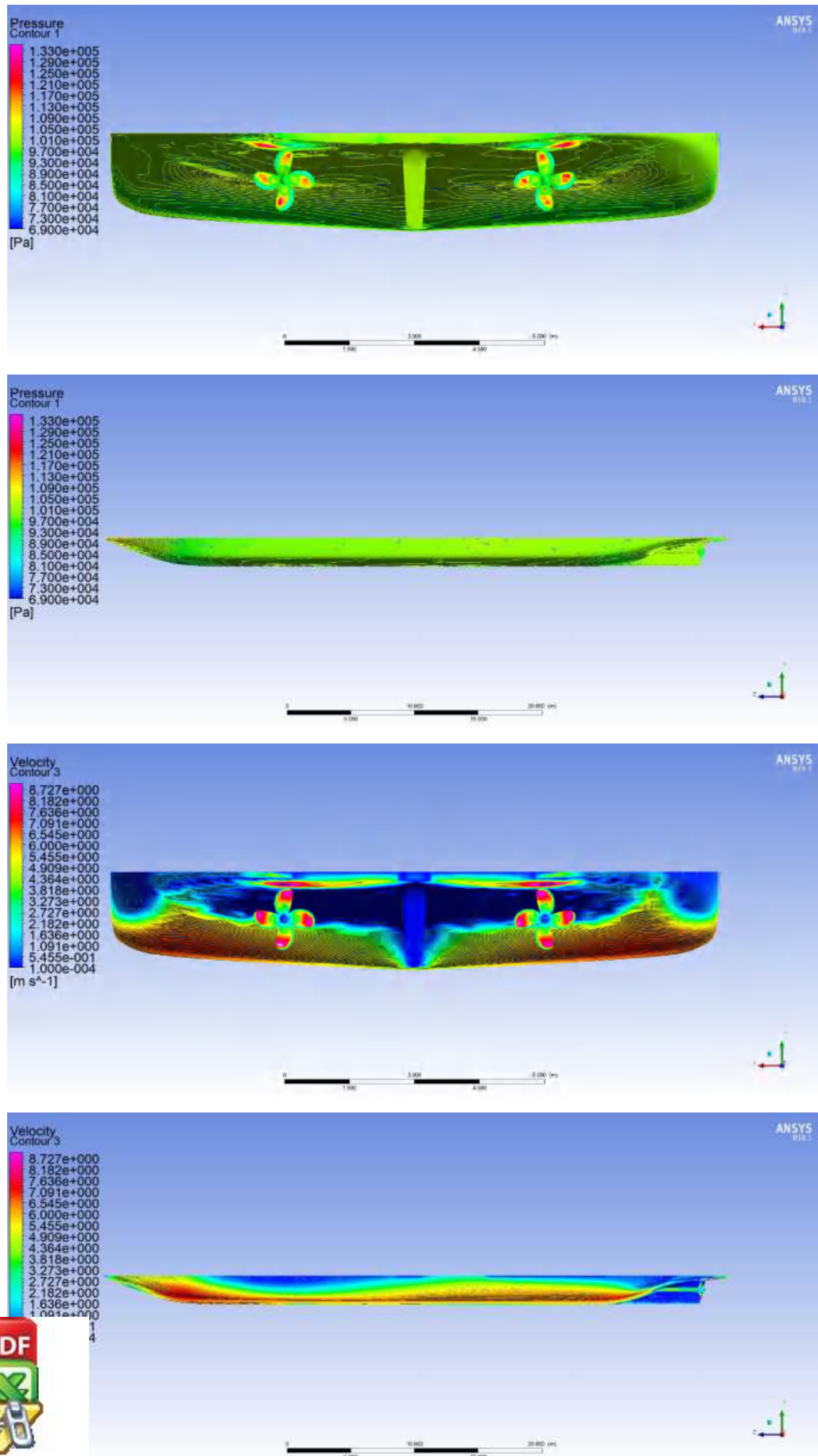
Optimized using trial version
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Gambar 80 Pressure Contour dan Velocity Contour (N : 4070959)



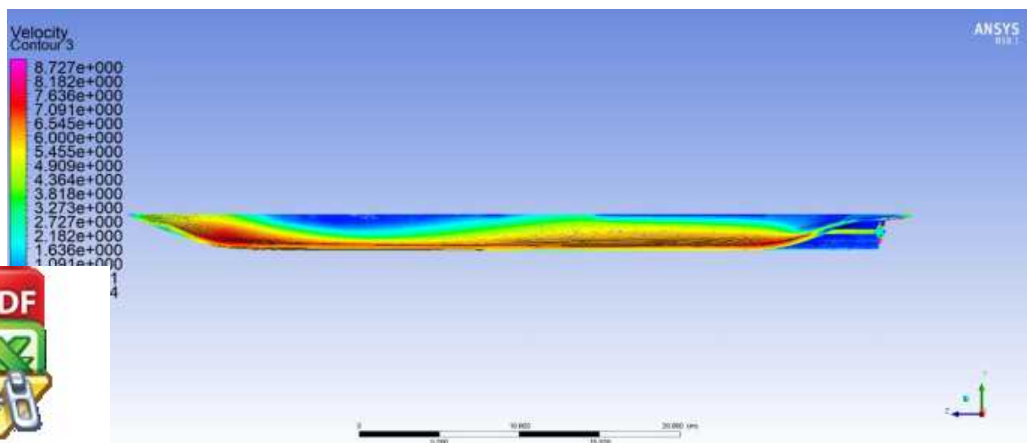
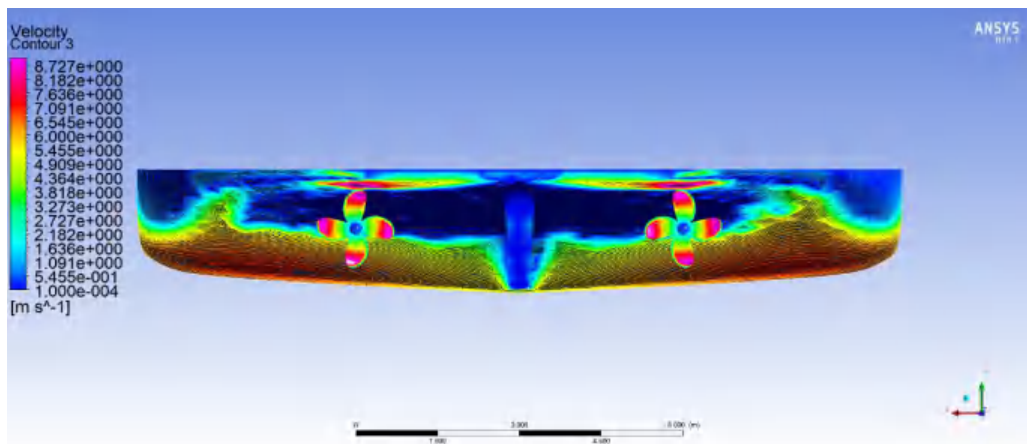
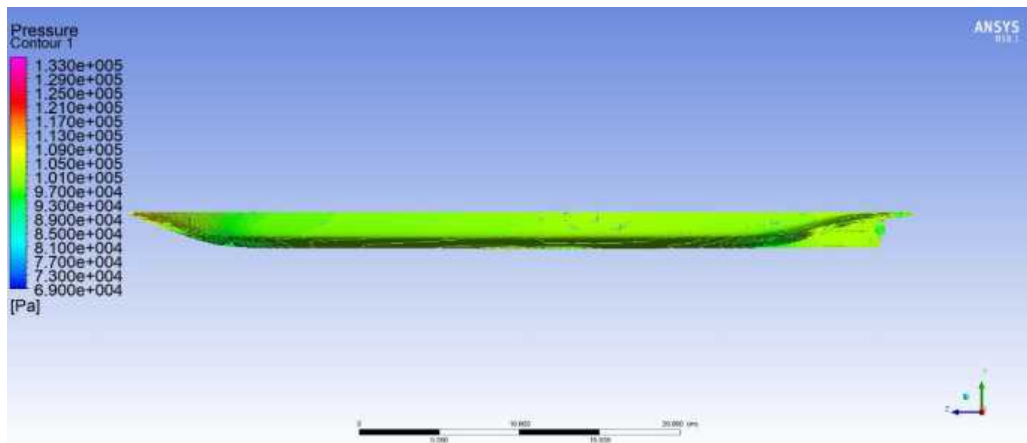
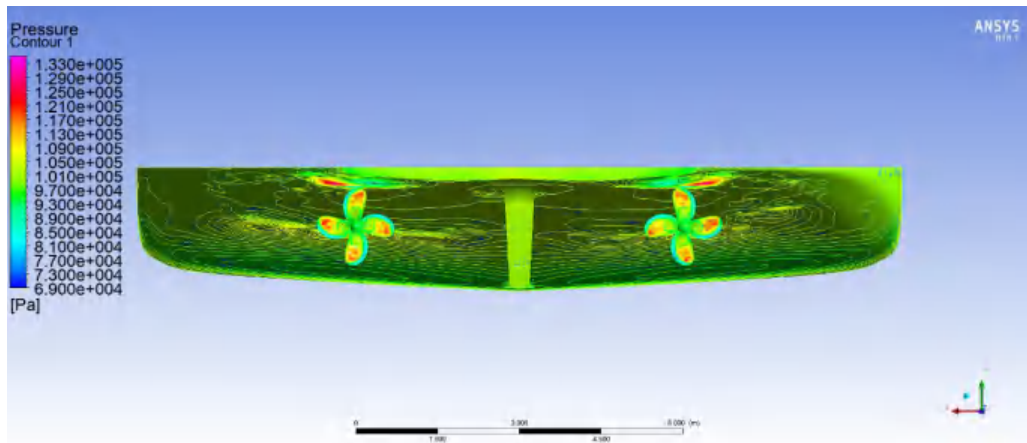
Optimized using trial version
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Gambar 81 Pressure Contour dan Velocity Contour (N : 529373)



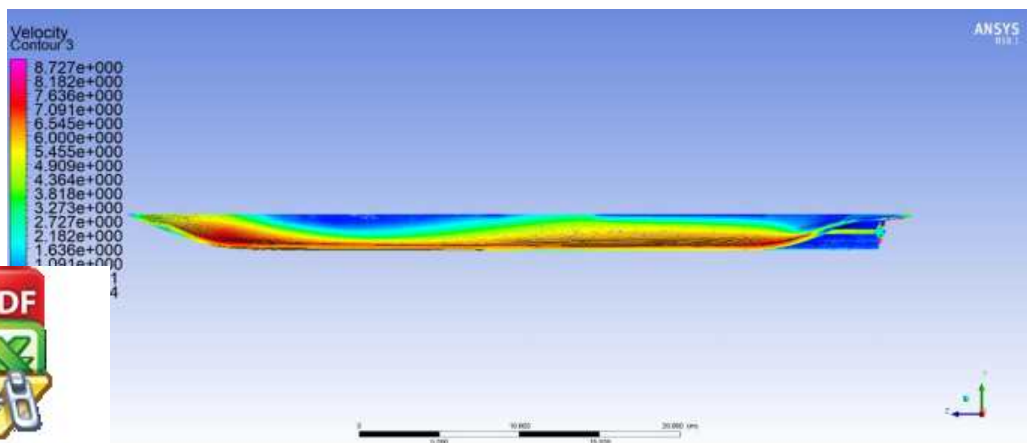
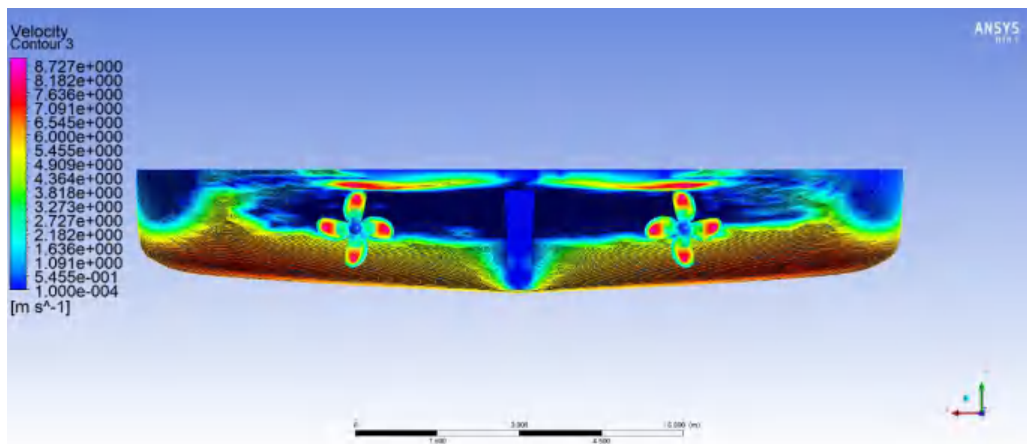
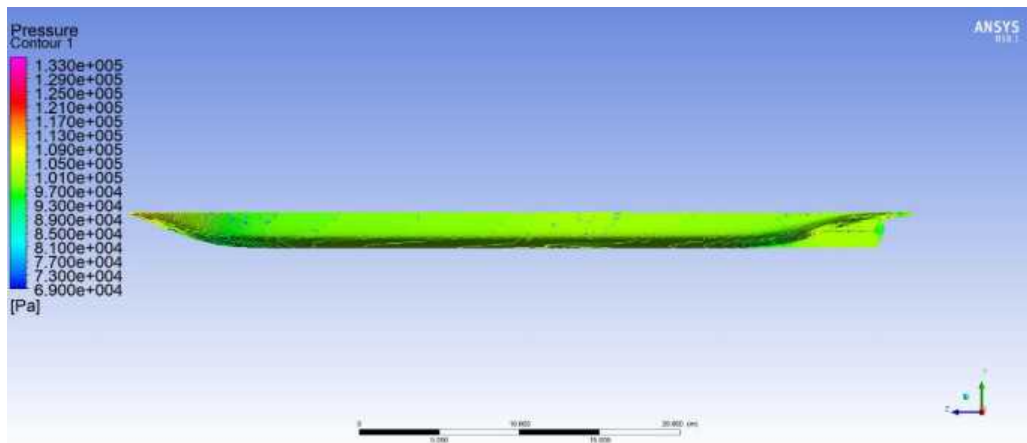
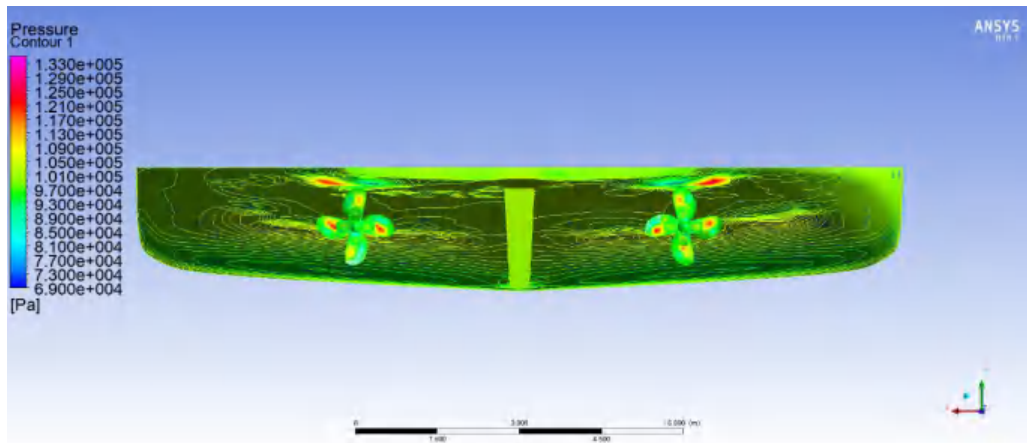
Optimized using trial version
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Gambar 82 Pressure Contour dan Velocity Contour (N : 915702)



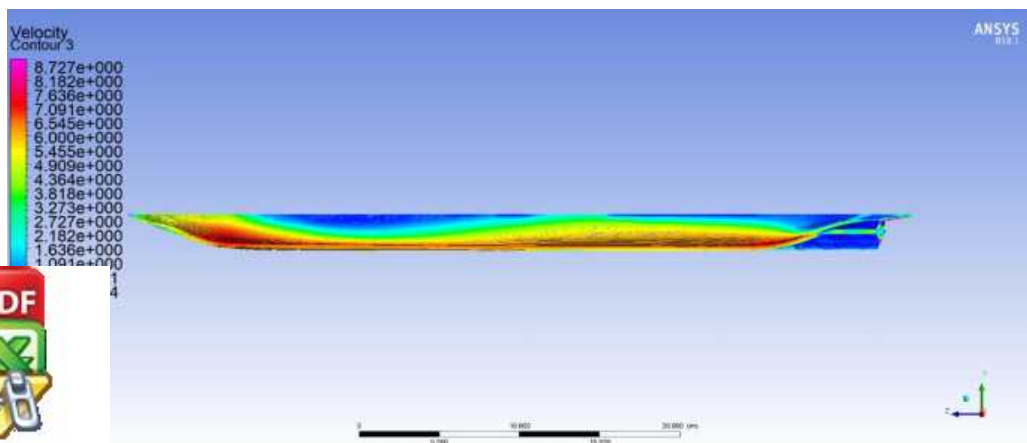
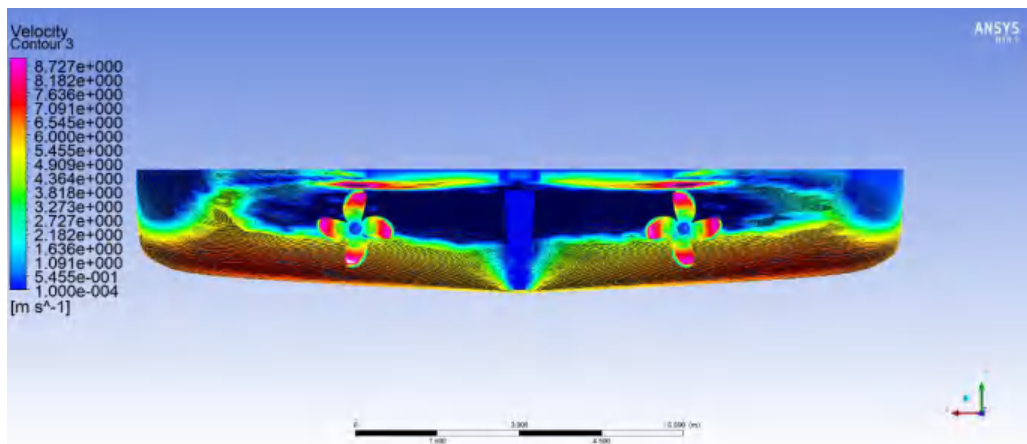
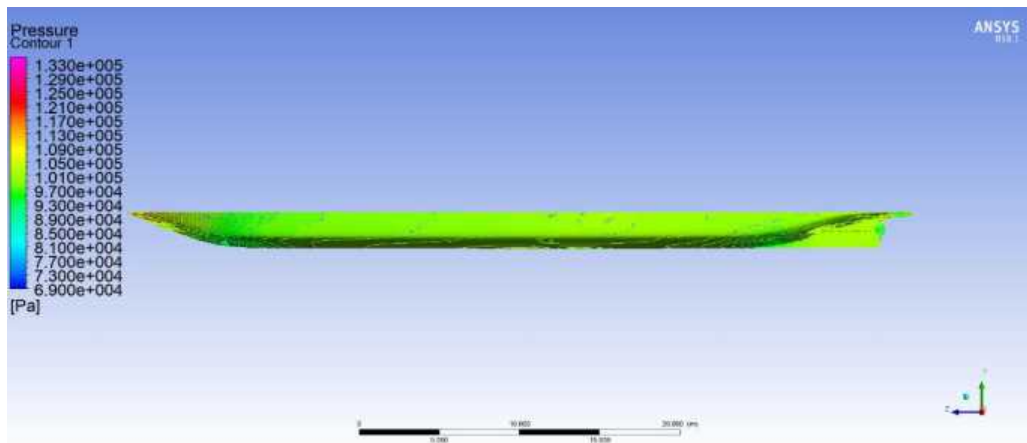
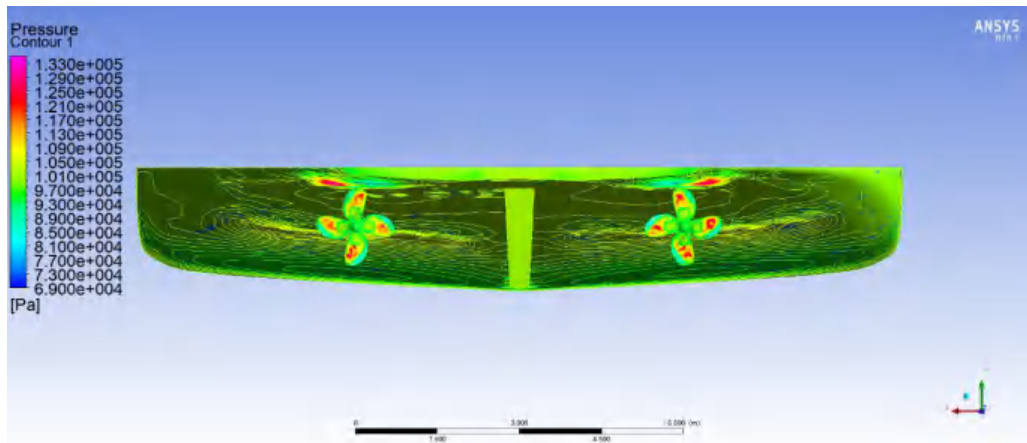
Optimized using trial version
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Gambar 83 Pressure Contour dan Velocity Contour (N :1301236)



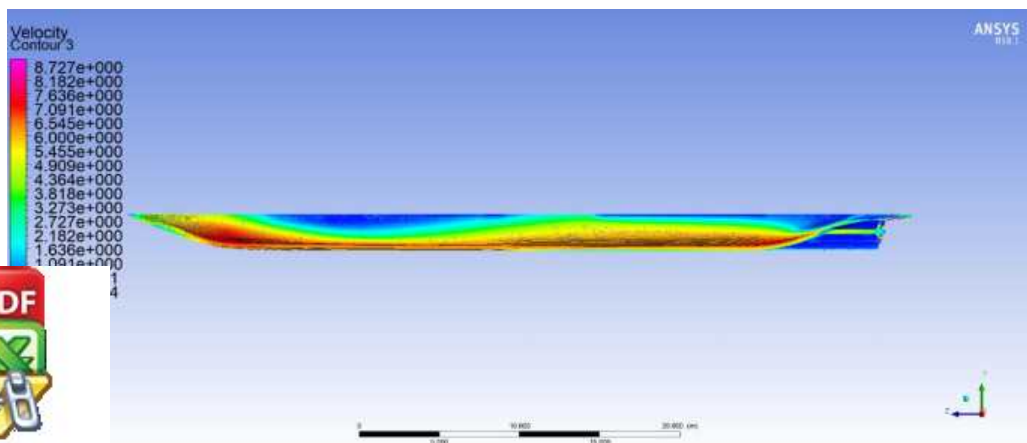
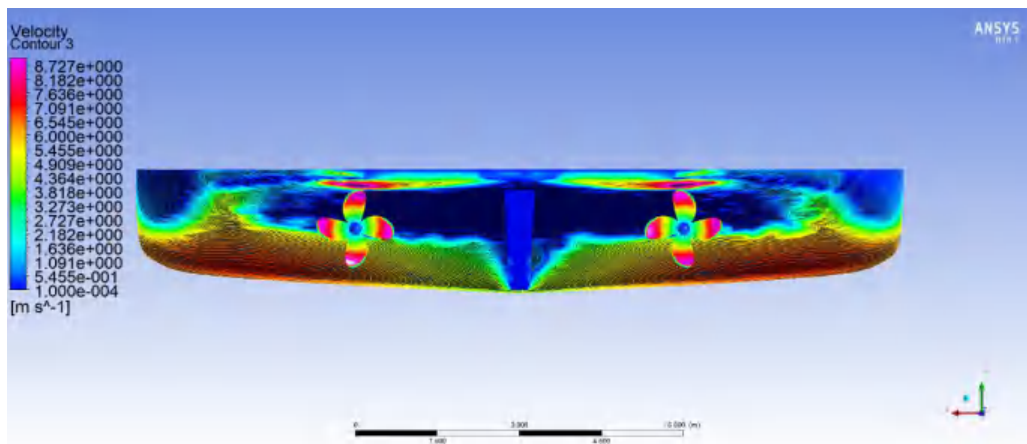
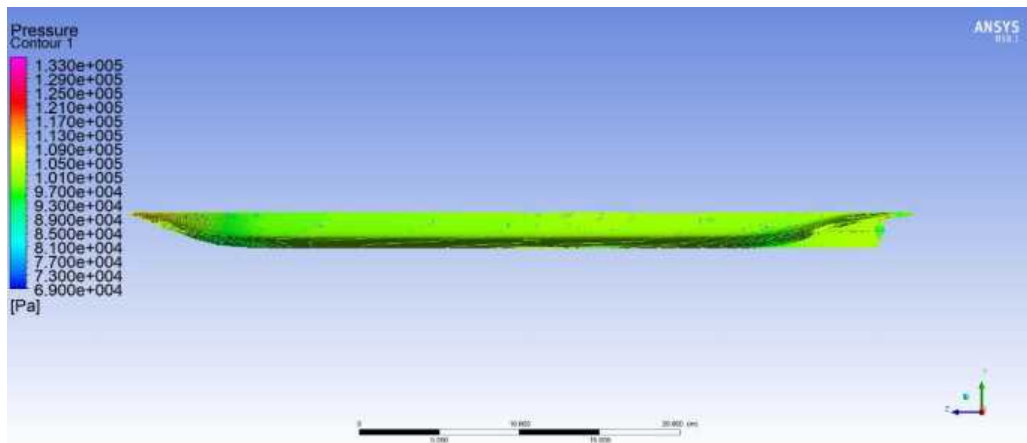
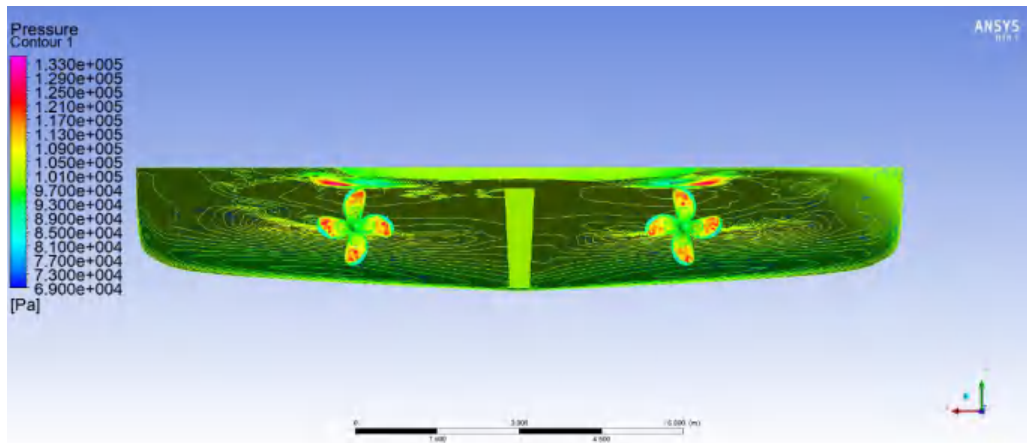
Optimized using trial version
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Gambar 84 Pressure Contour dan Velocity Contour (N : 1492834)



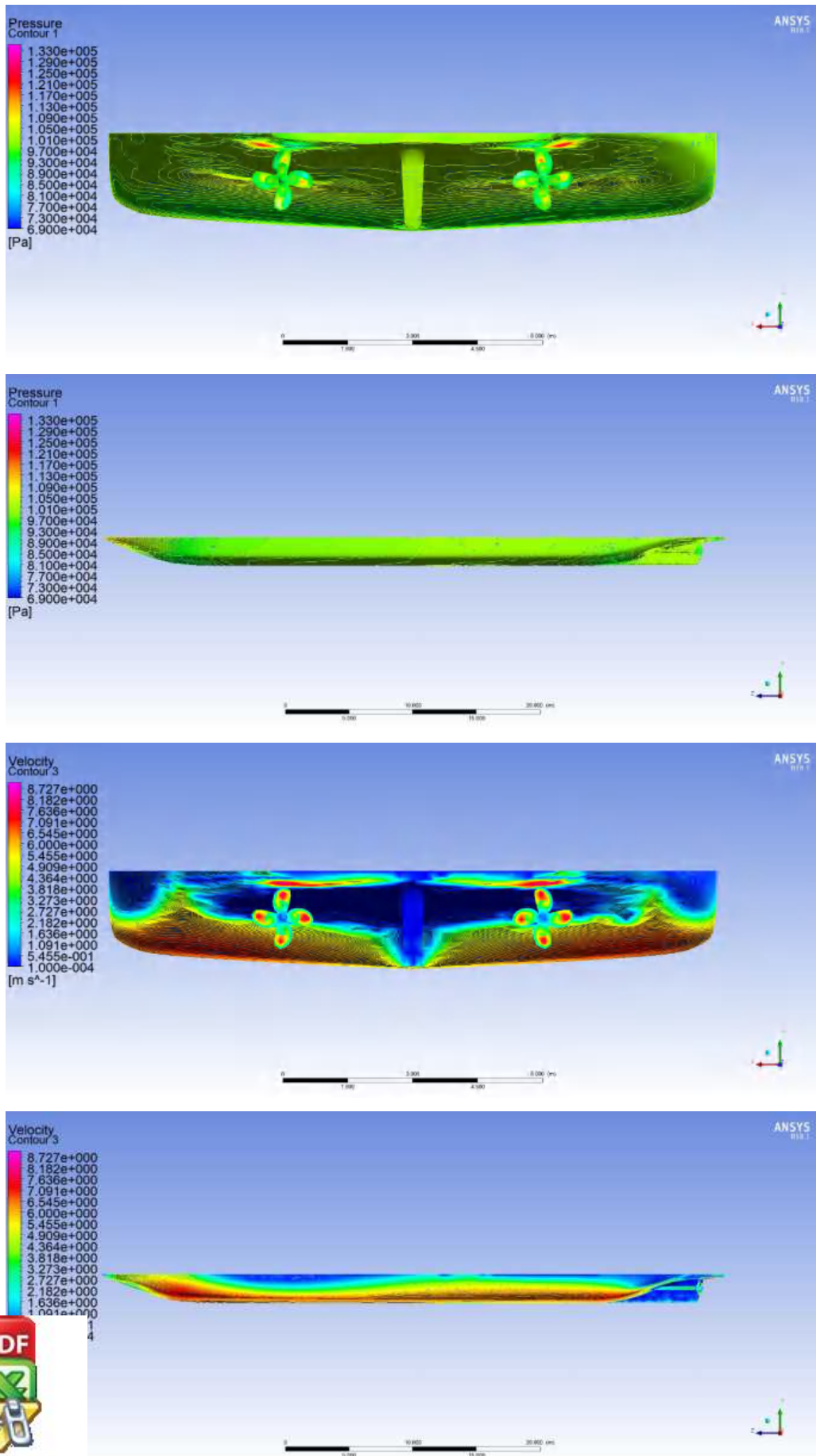
Optimized using trial version
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Gambar 85 Pressure Contour dan Velocity Contour (N : 2438709)



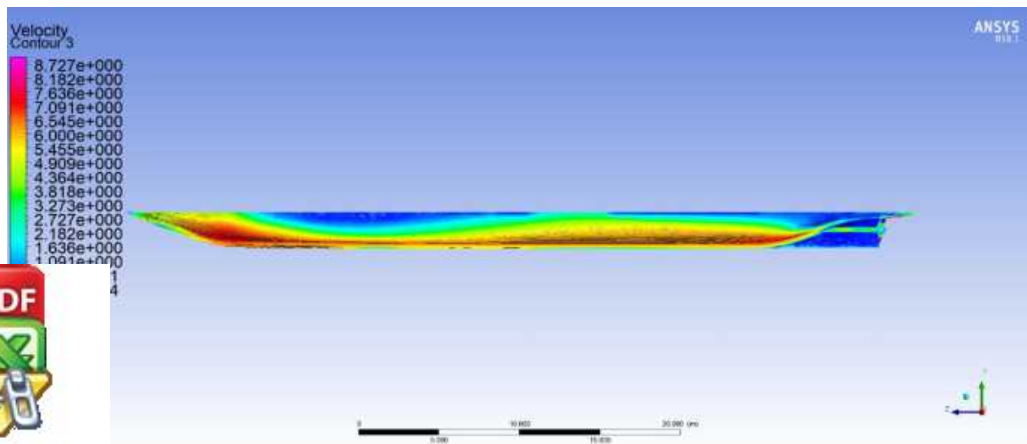
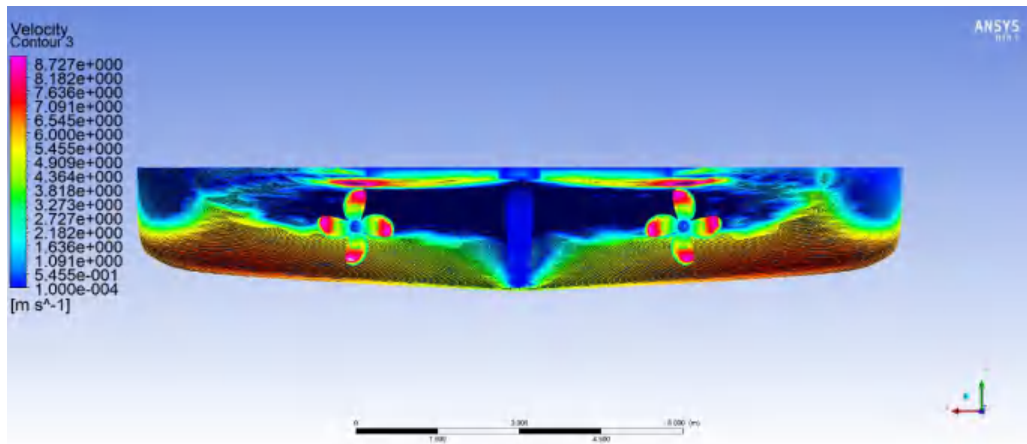
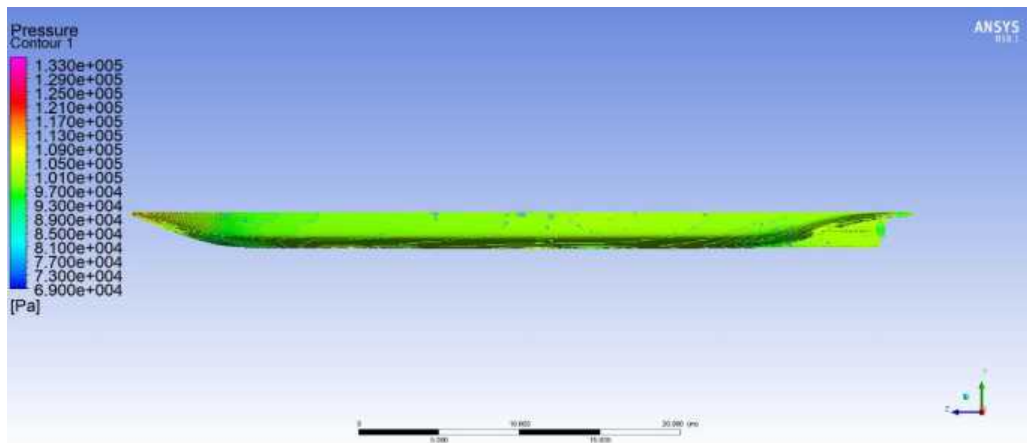
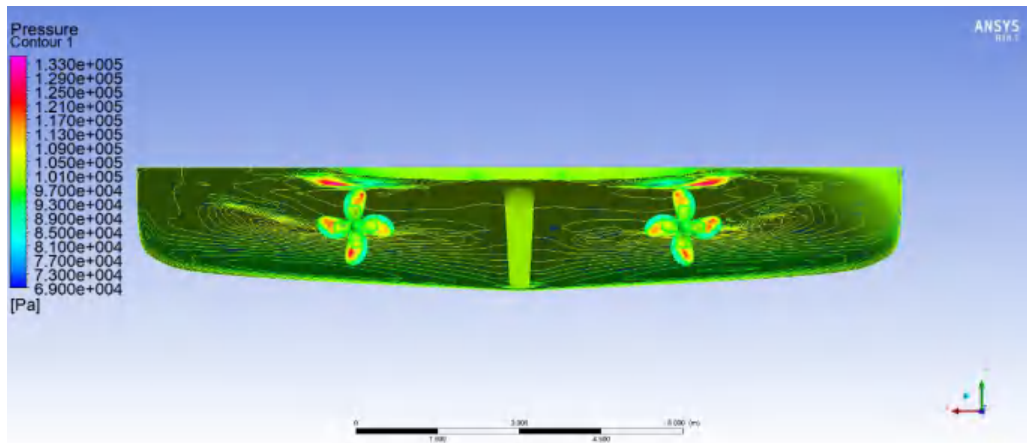
Optimized using trial version
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Gambar 86 Pressure Contour dan Velocity Contour (N : 4077467)



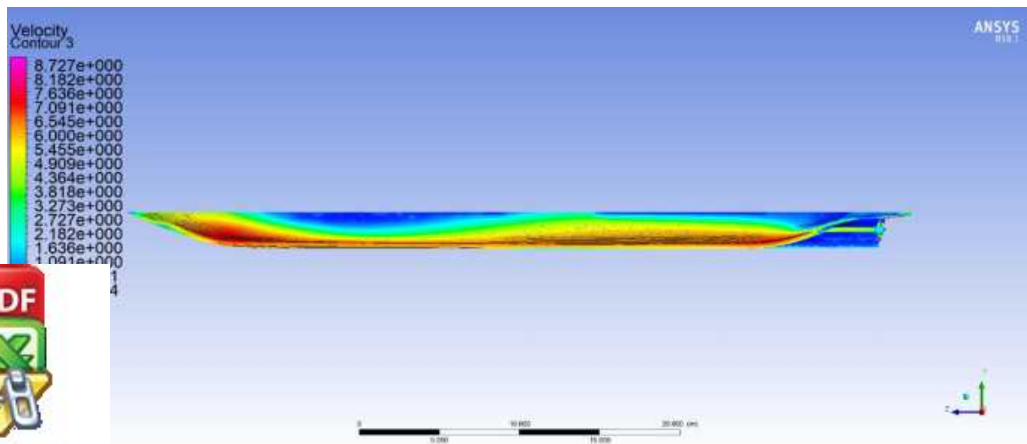
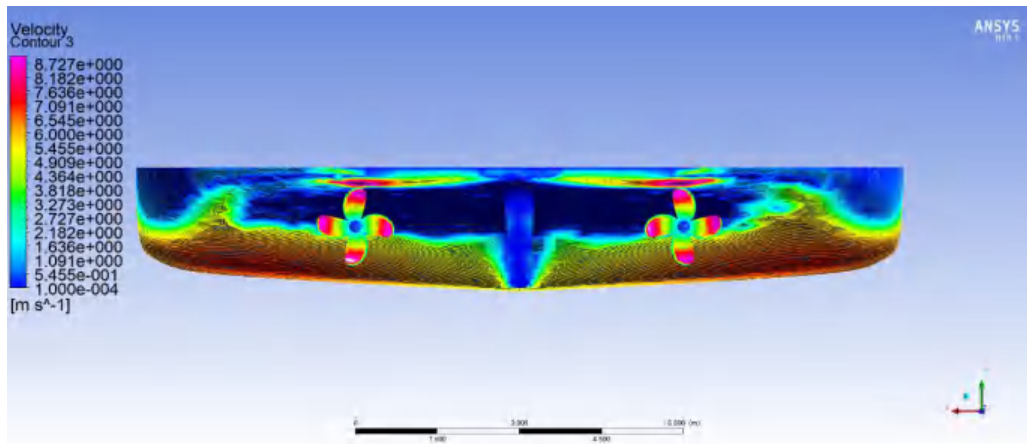
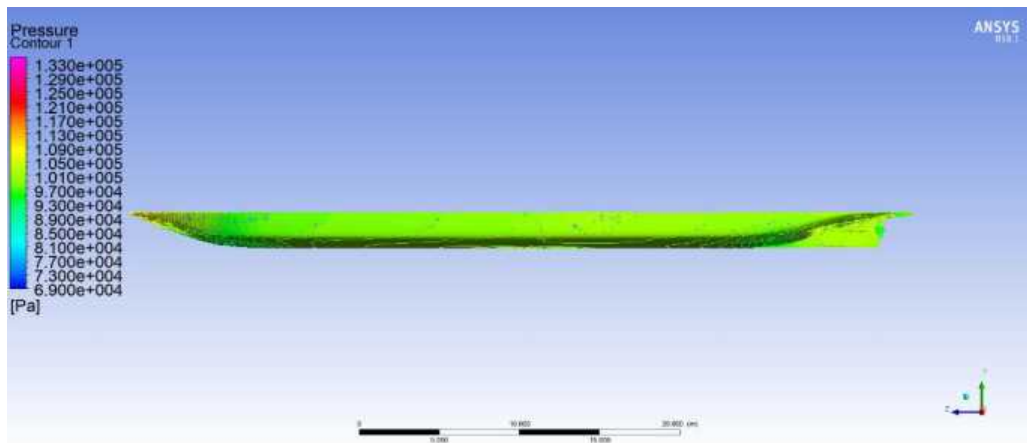
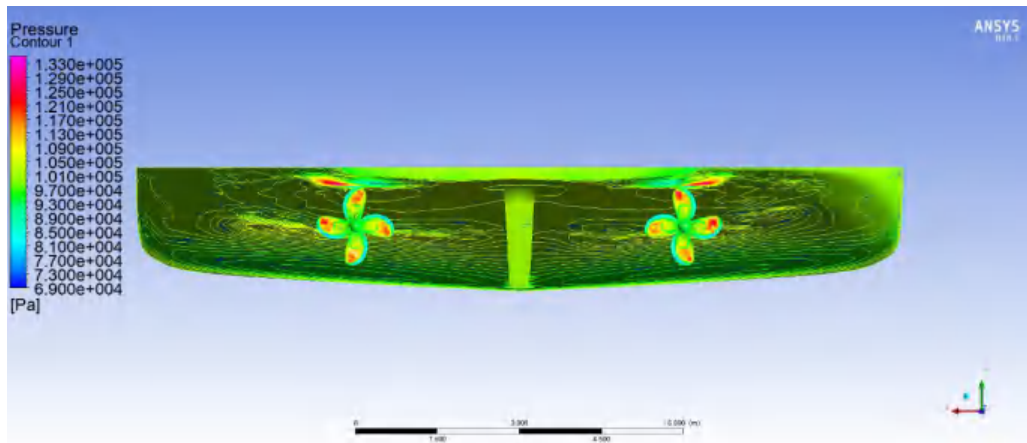
Optimized using trial version
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Gambar 87 Pressure Contour dan Velocity Contour (N : 529608)



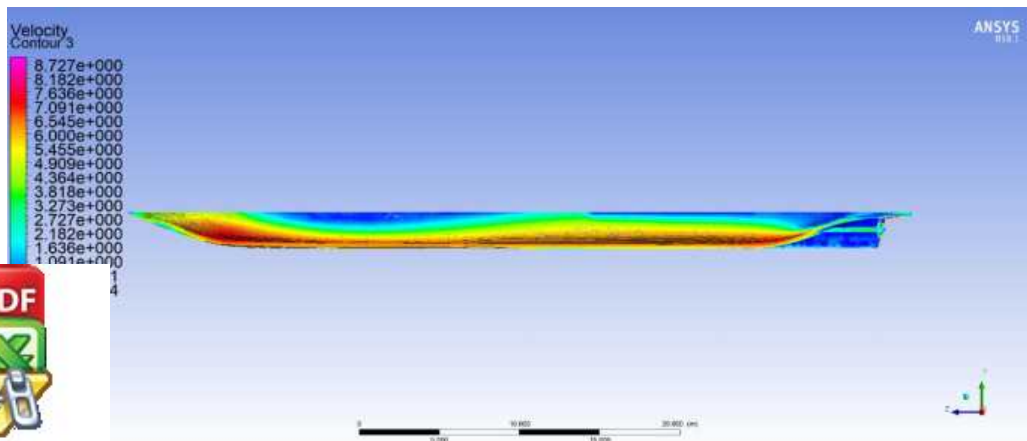
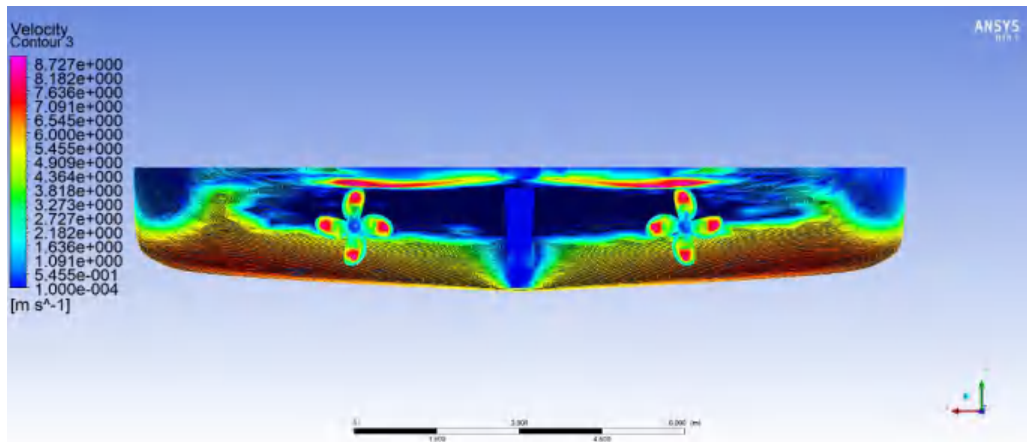
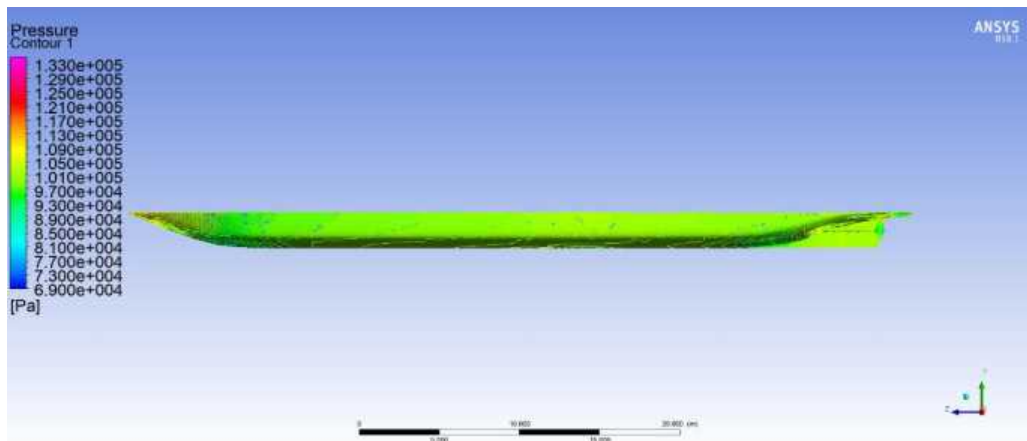
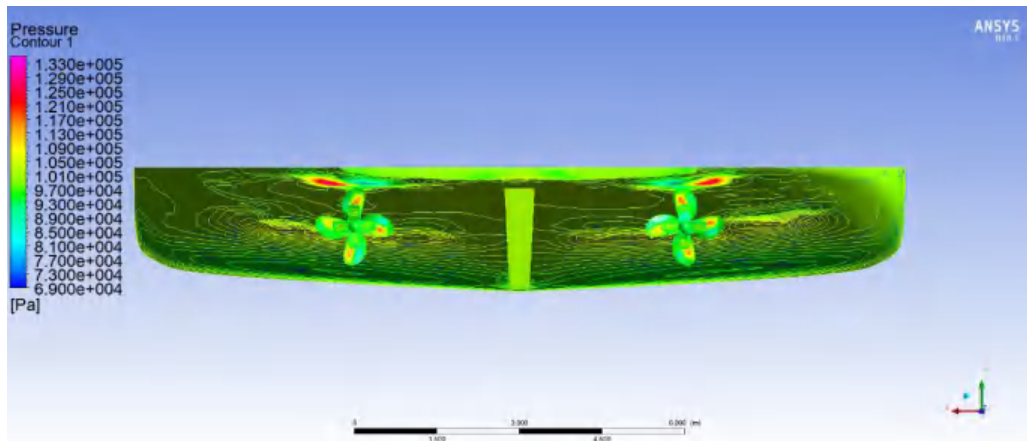
Optimized using trial version
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Gambar 88 Pressure Contour dan Velocity Contour (N : 915958)



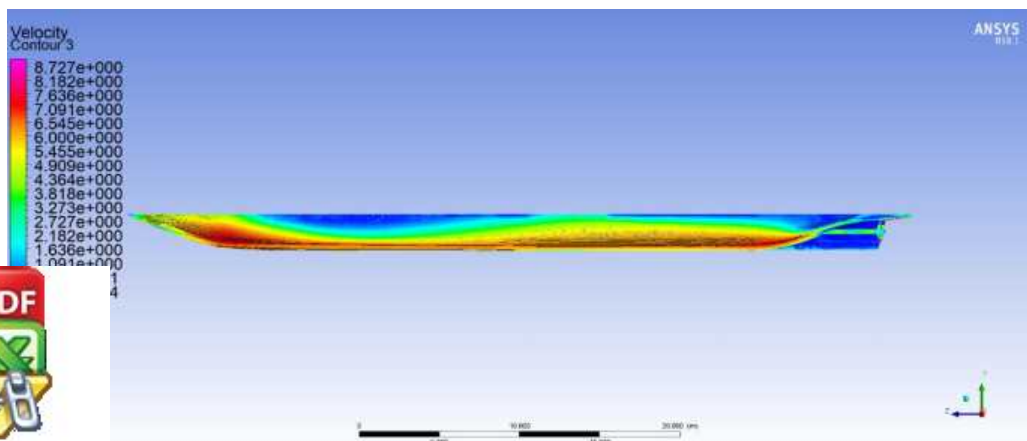
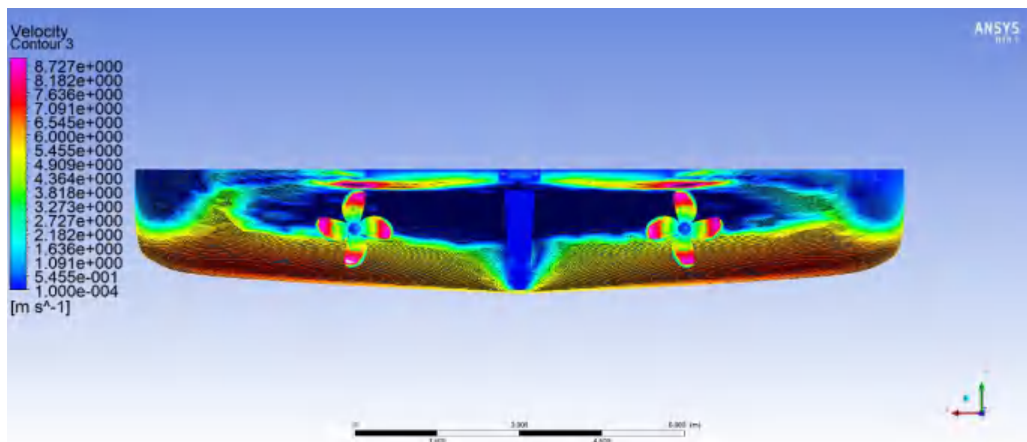
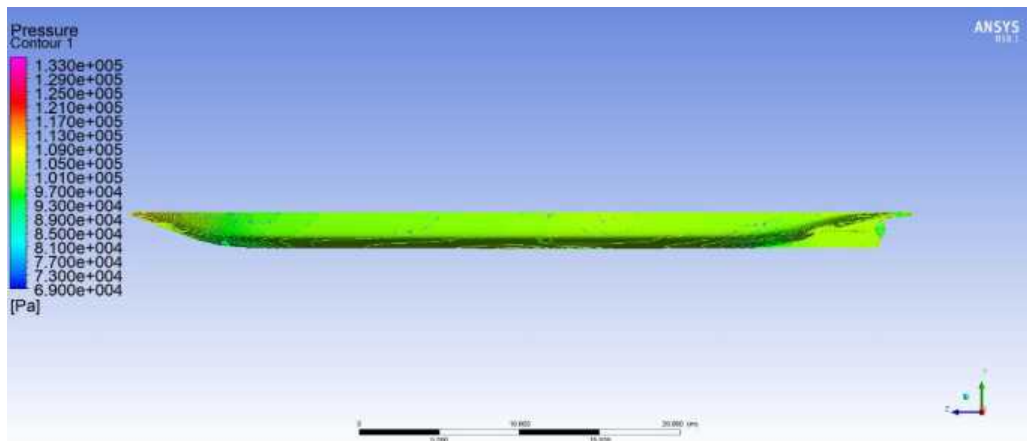
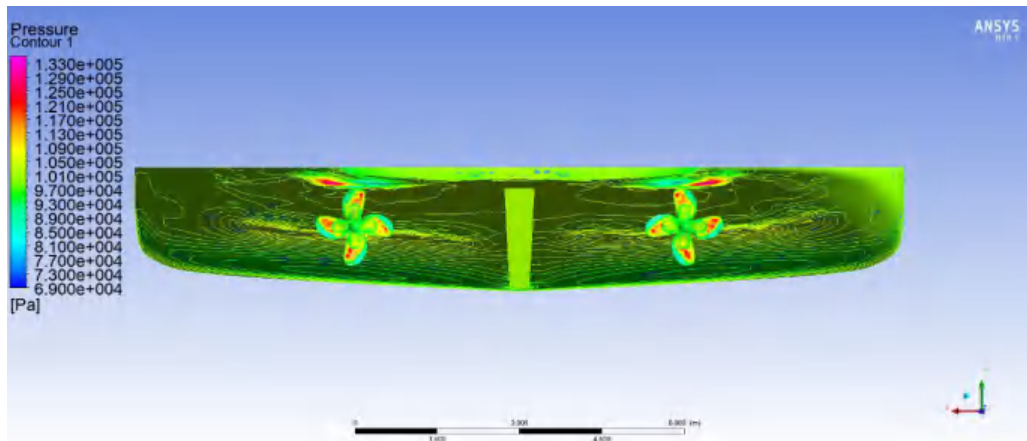
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Gambar 89 Pressure Contour dan Velocity Contour (N : 1302350)



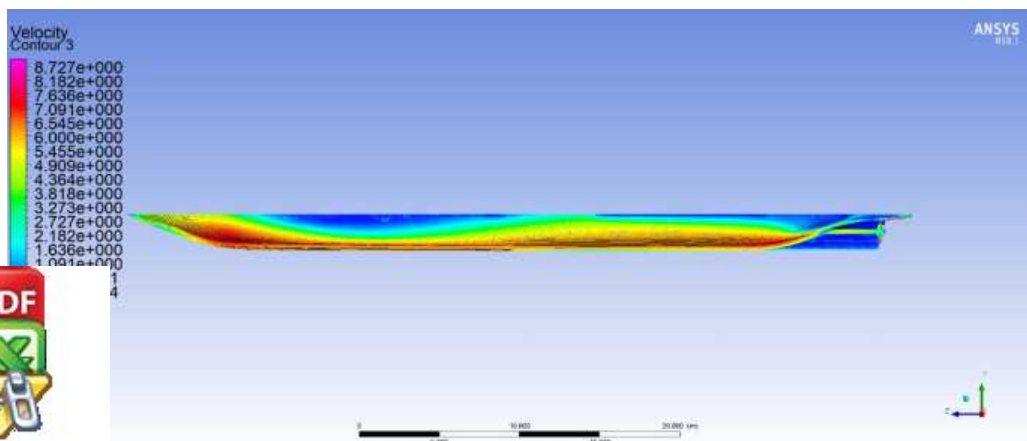
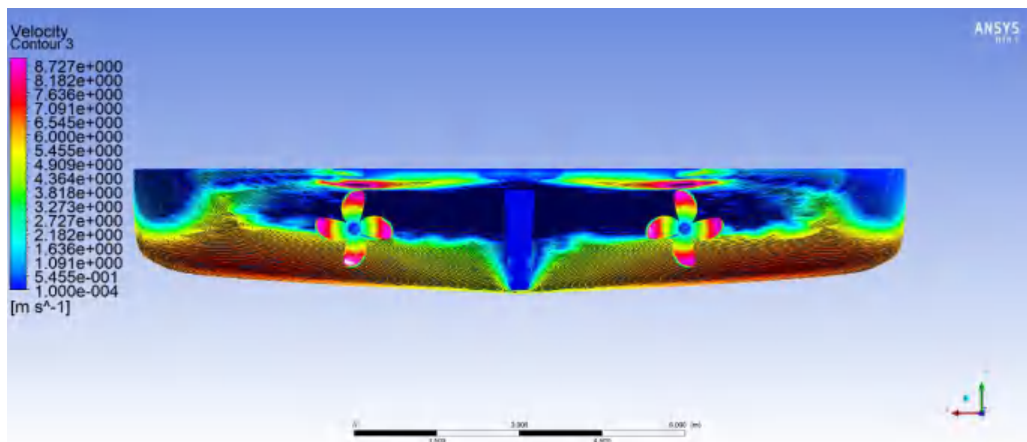
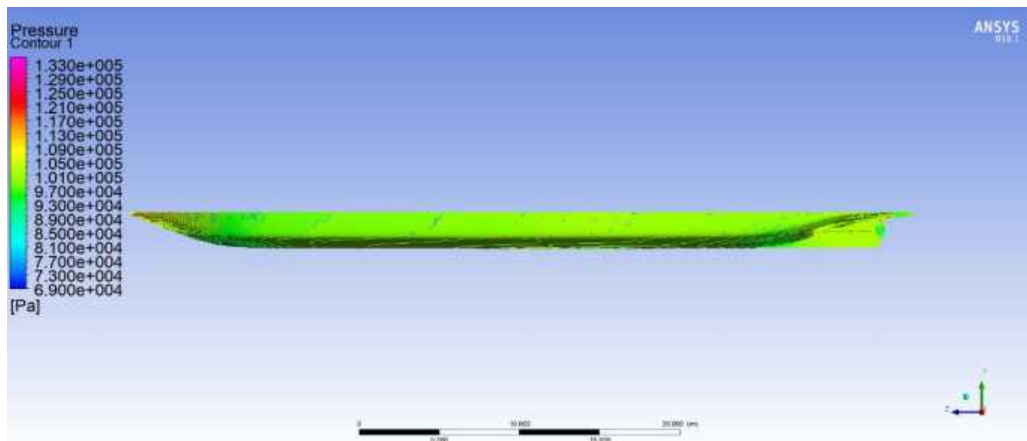
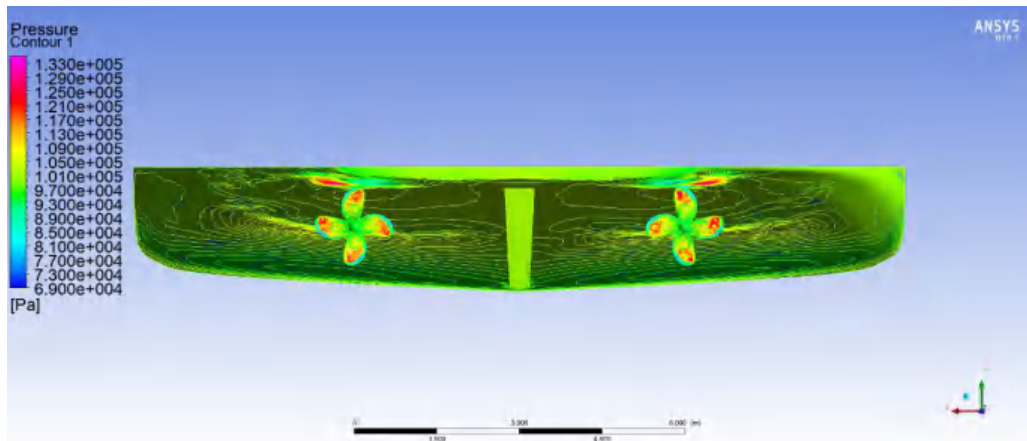
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Gambar 90 Pressure Contour dan Velocity Contour (N : 1492922)



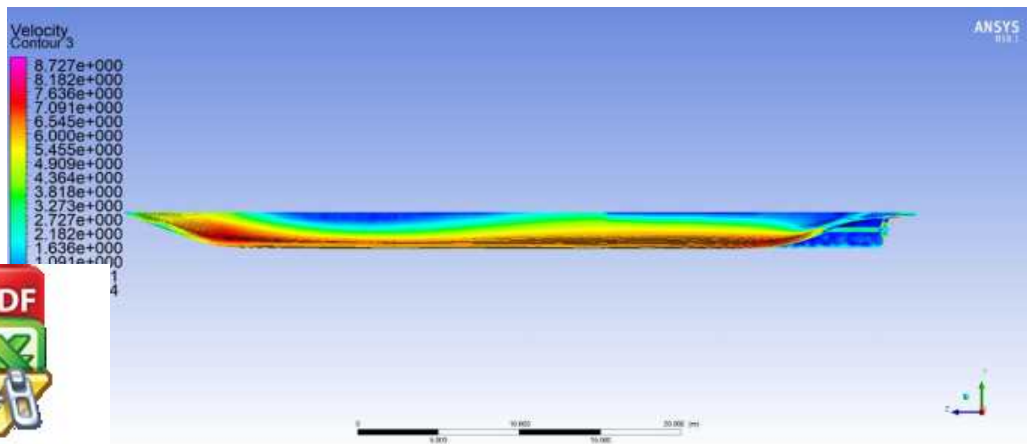
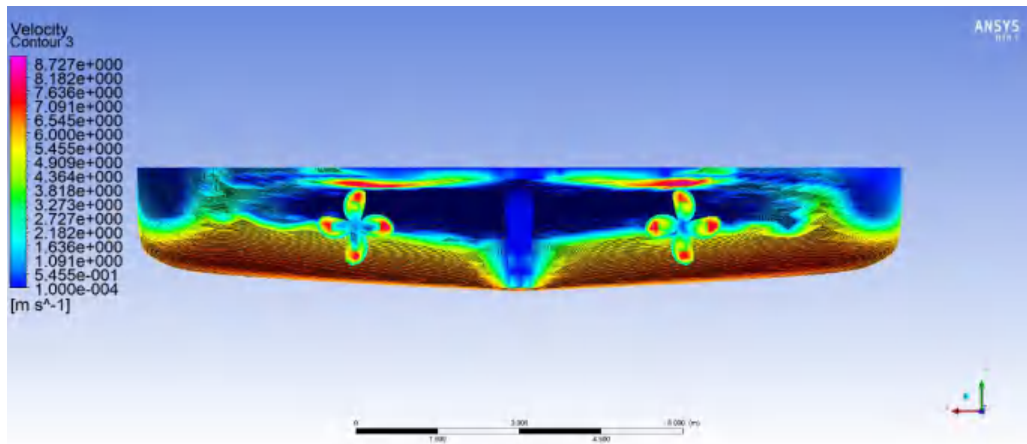
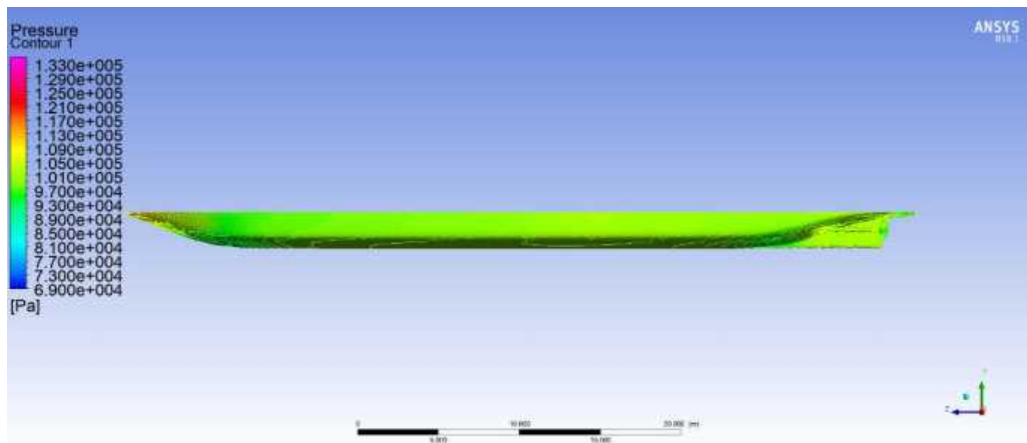
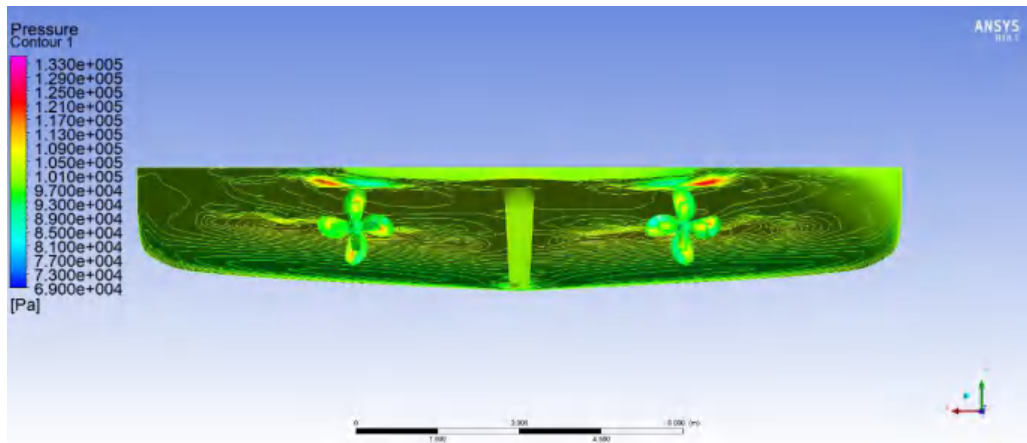
Optimized using trial version
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Gambar 91 Pressure Contour dan Velocity Contour (N : 2439586)



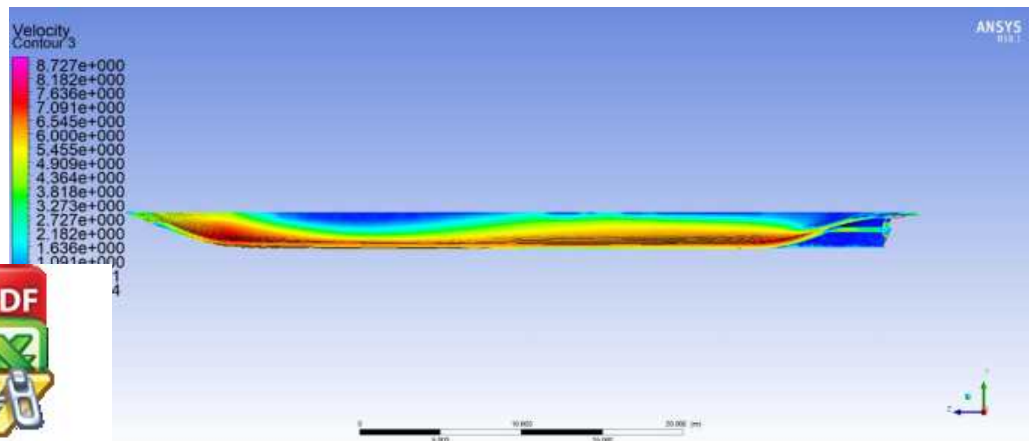
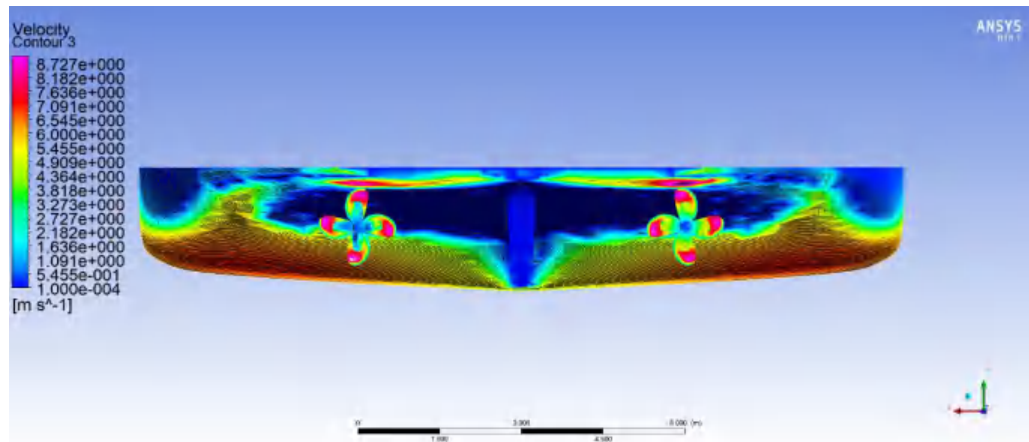
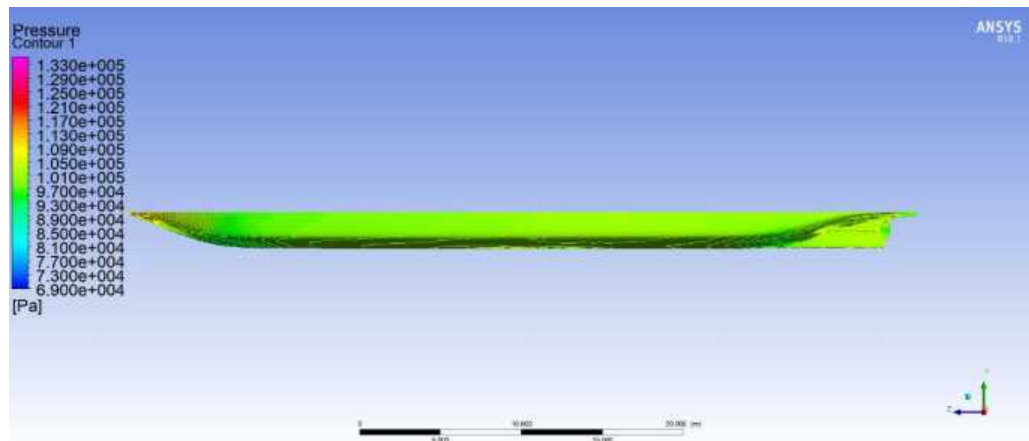
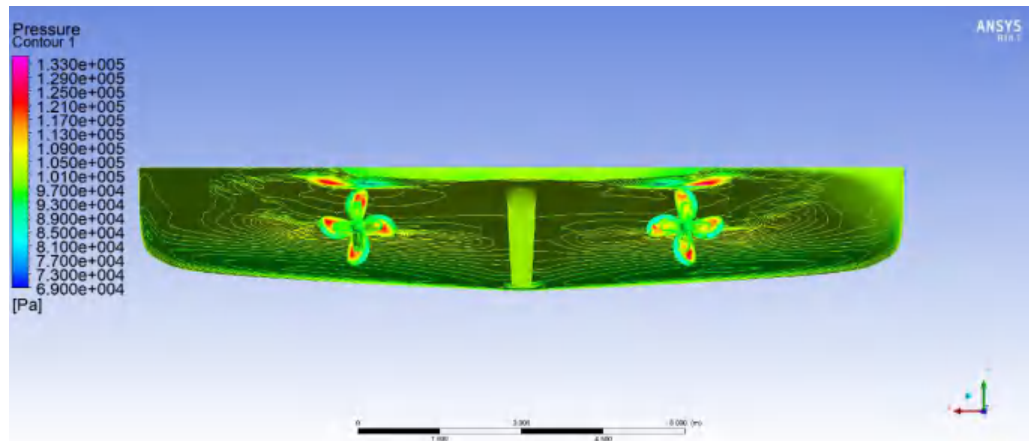
Optimized using trial version
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Gambar 92 Pressure Contour dan Velocity Contour (N : 4081038)



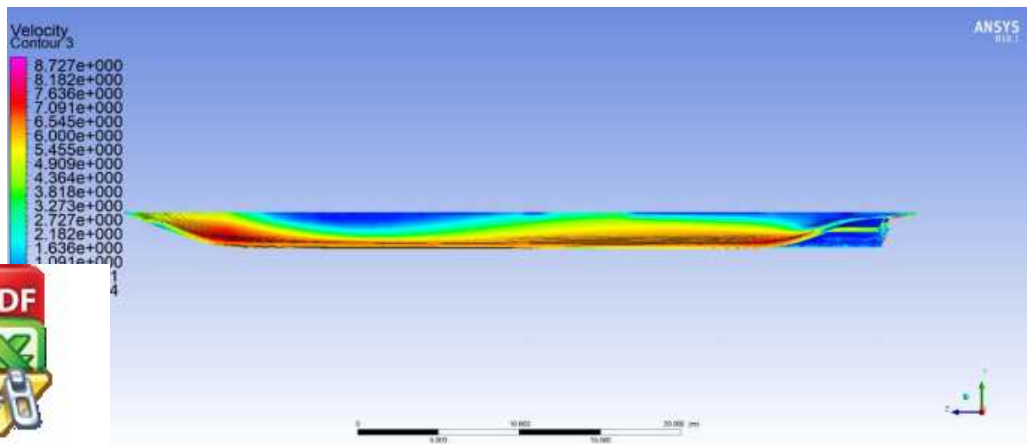
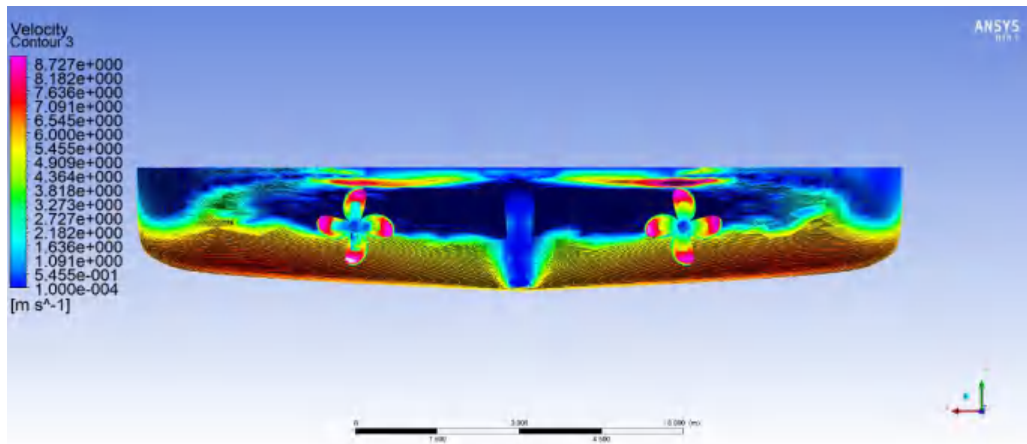
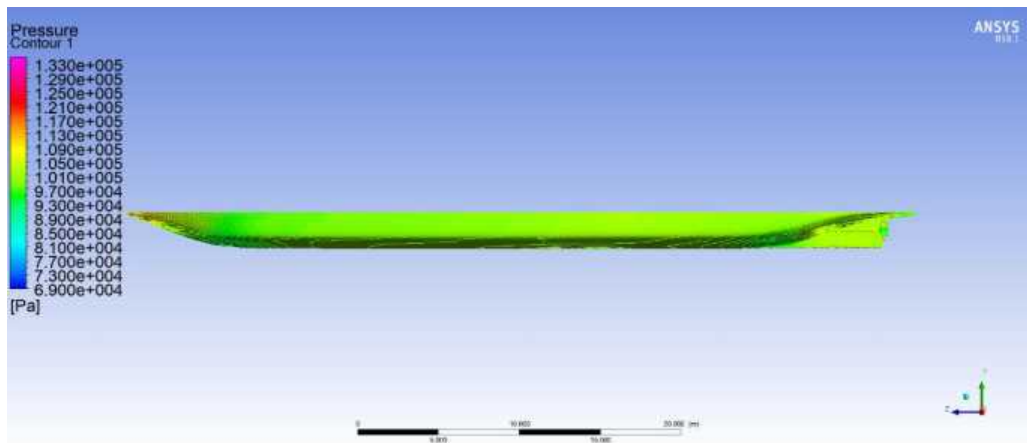
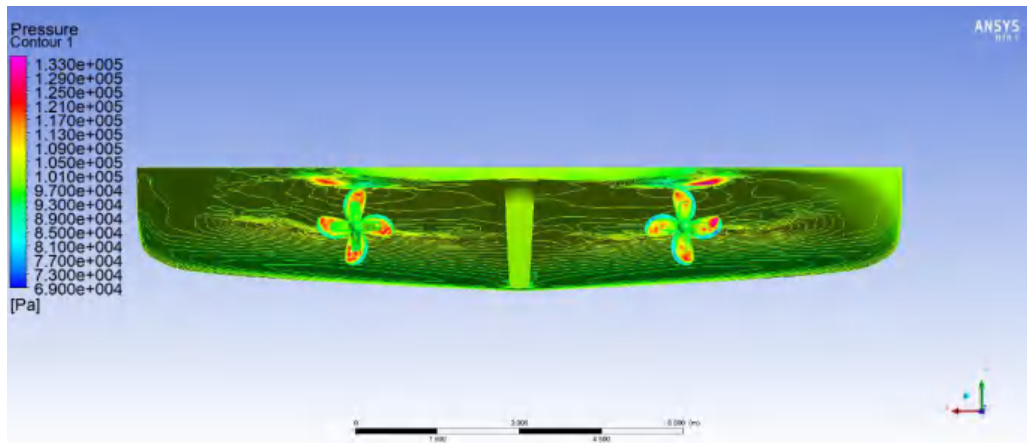
Optimized using trial version
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Gambar 93 Pressure Contour dan Velocity Contour (N : 529884)



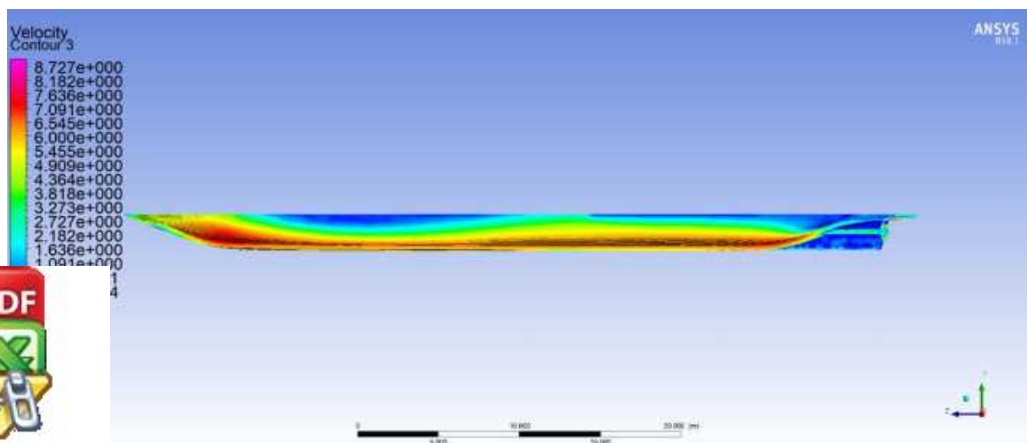
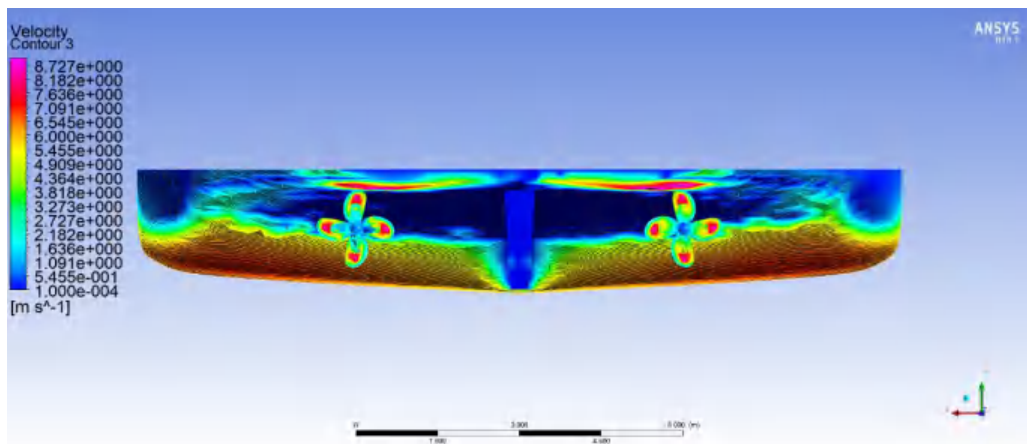
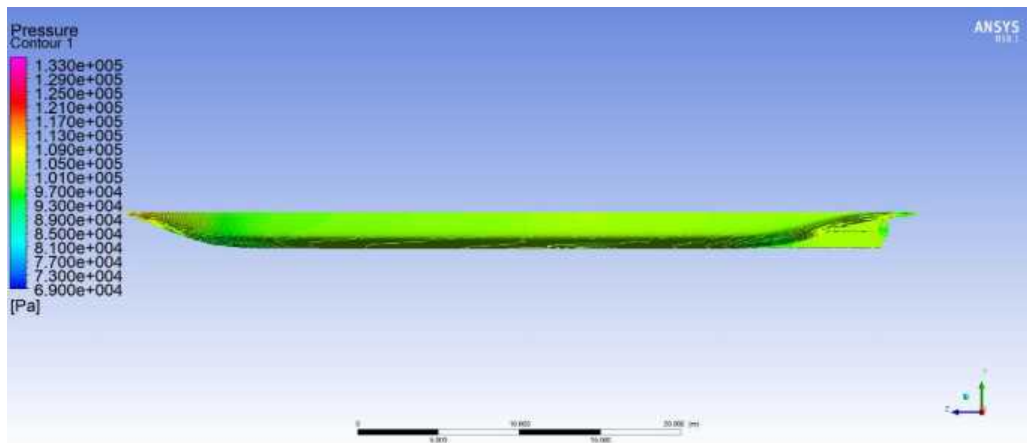
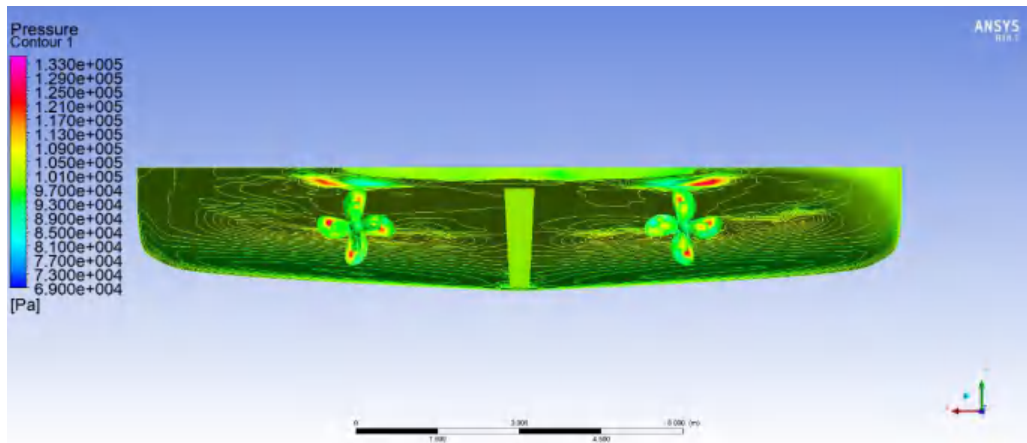
Optimized using trial version
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Gambar 94 Pressure Contour dan Velocity Contour (N : 916831)



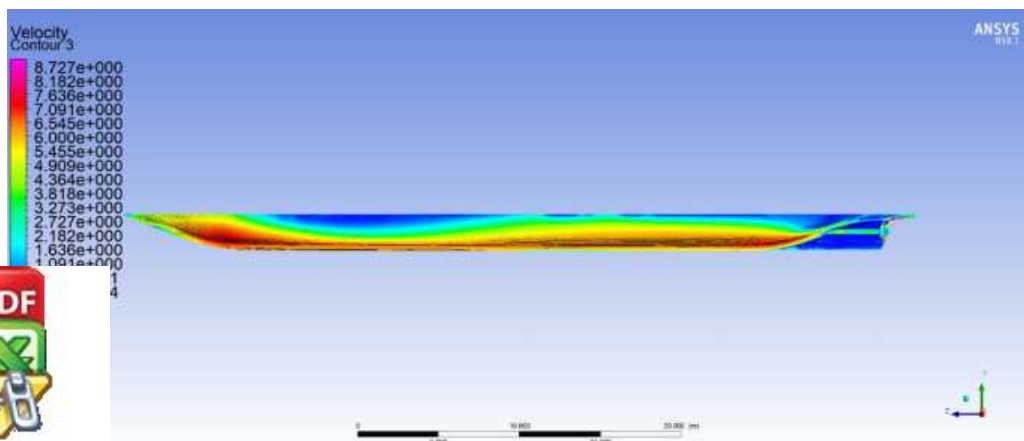
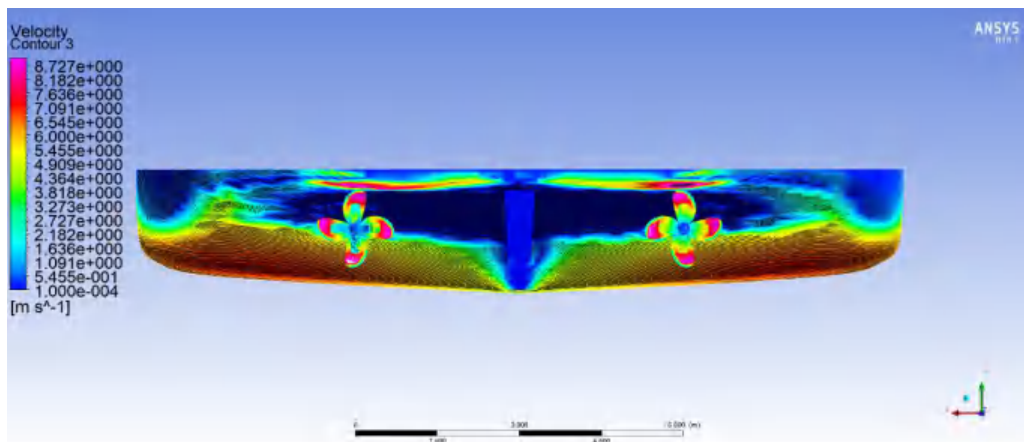
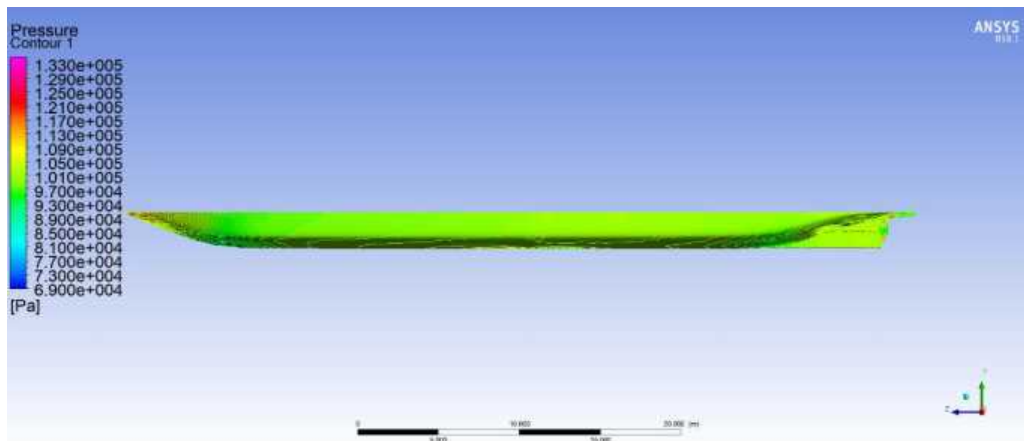
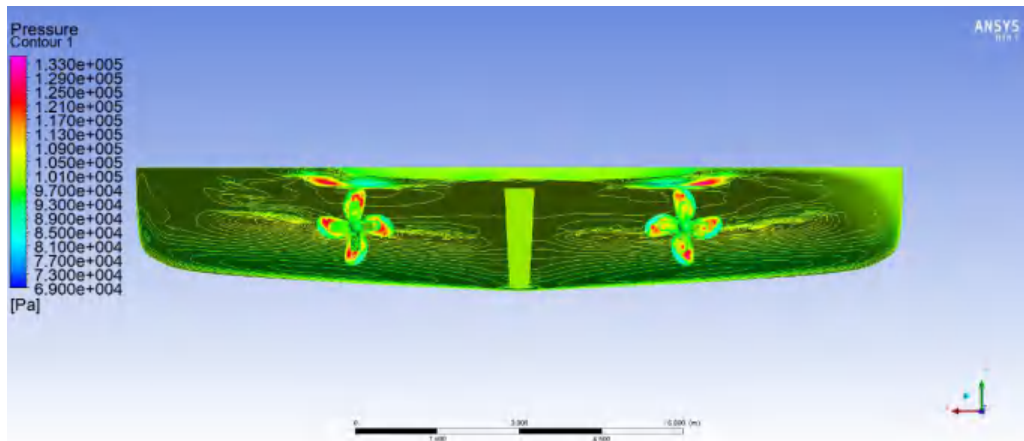
Optimized using trial version
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Gambar 95 Pressure Contour dan Velocity Contour (N : 1303218)



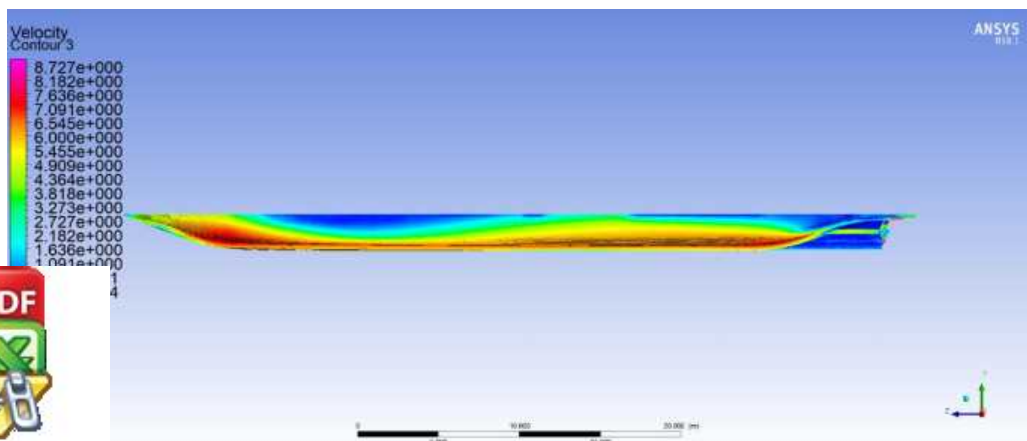
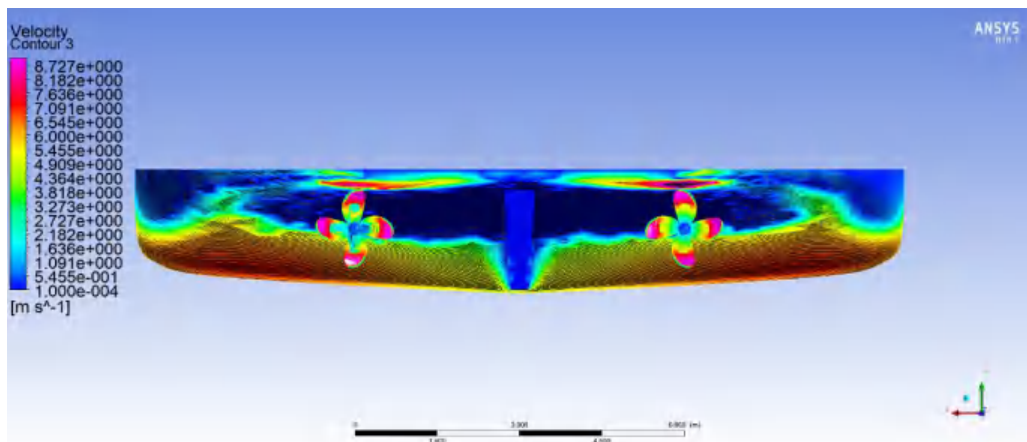
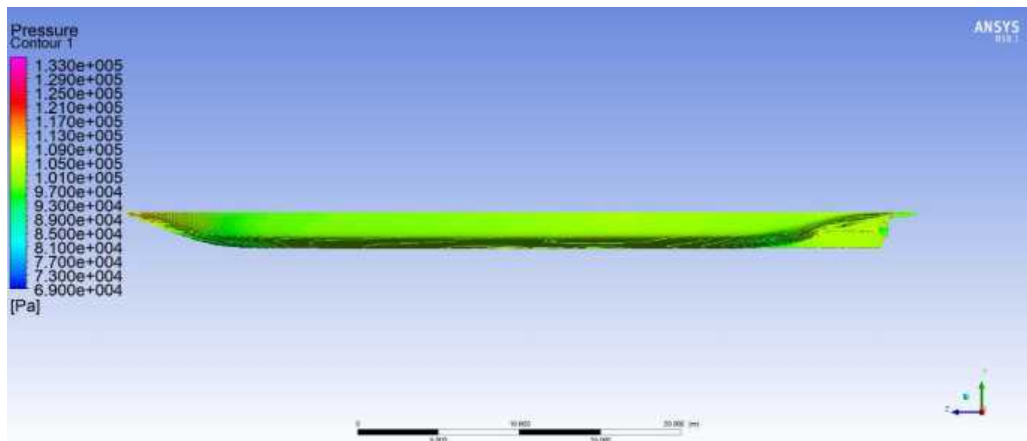
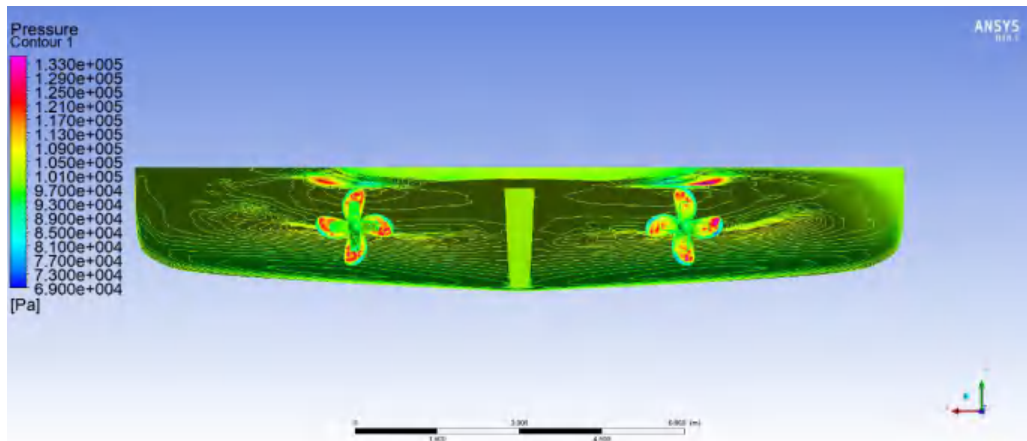
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Gambar 96 Pressure Contour dan Velocity Contour (N : 1494934)



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Gambar 97 Pressure Contour dan Velocity Contour (N : 2444268)



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Gambar 98 Pressure Contour dan Velocity Contour (N : 4084822)