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## Lampiran 1. Data Kapal Ferry Roro 750 GT

<b>Ukuran Utama Kapal</b>	<b>Nilai</b>
Panjang keseluruhan kapal (LOA)	54,00 m
Panjang antara garis tegak (LBP)	47,45 m
Lebar (B)	14,00 m
Tinggi (H)	3,40 m
Sarat (T)	2,45 m
Kecepatan (V)	6,618 m/s
Displacement ( $\Delta$ )	1127 Ton

## Koefisien Bentuk Kapal

<b>Koefisien bentuk kapal</b>	
Cb	0,72
Cm	0,98
Cw	0,82
Cph	0,73
Cpv	0,87



## Lampiran 2. Setup CFD

No	Parameter	Keterangan
1	<i>Domain Type</i>	<i>Fluid Domain</i>
2	<i>Material</i>	<i>Water</i>
3	<i>Morphology</i>	<i>Continous Fluid</i>
4	<i>Buoyancy Model</i>	<i>Non Bouyant</i>
5	<i>Domain Motion</i>	<i>Stationary</i>
6	<i>Mesh Deformation</i>	<i>None</i>
7	<i>Turbulance</i>	<i>Shear Stress Transport</i>
8	<i>Wall Function</i>	<i>Automatic</i>
9	<i>Combustion</i>	<i>None</i>
10	<i>Thermal Radiation</i>	<i>None</i>
11	<i>Velocity Tpe</i>	<i>Cartesian</i>
12	<i>Cartesian Velocity Components</i>	<i>Automatic with Value <math>U = 0 \text{ m/s}^{-1}</math>, <math>V = 0 \text{ m/s}^{-1}</math>, <math>W = 0 \text{ m/s}^{-1}</math></i>
13	<i>Static Pressure</i>	<i>1 atm</i>

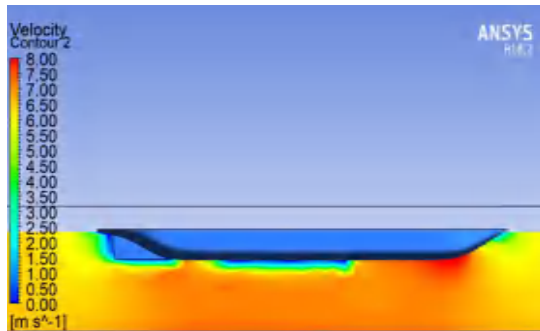
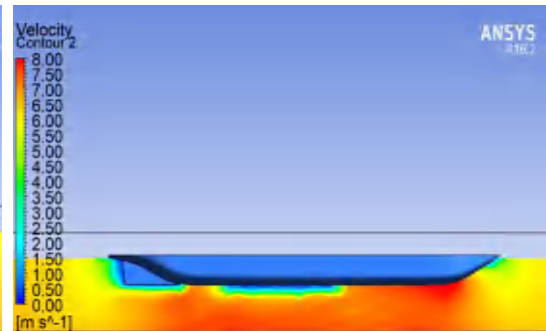
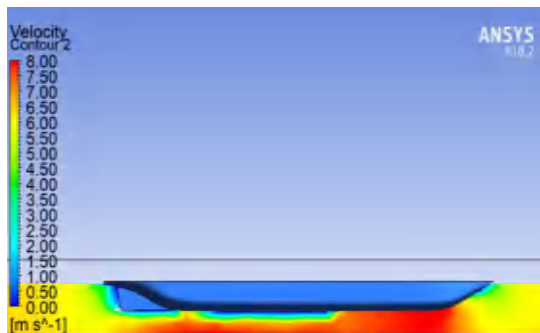
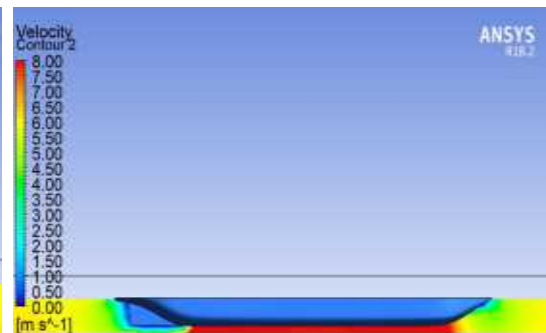


## Lampiran 3. Nilai Tahanan Kapal Ferry Roro 750 GT

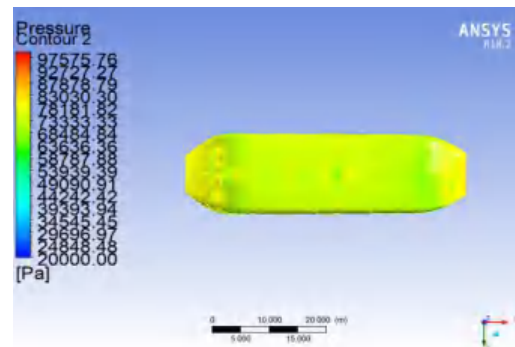
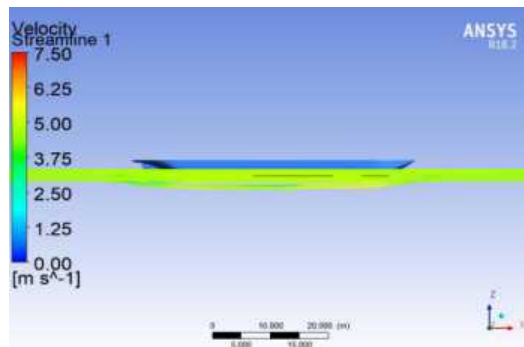
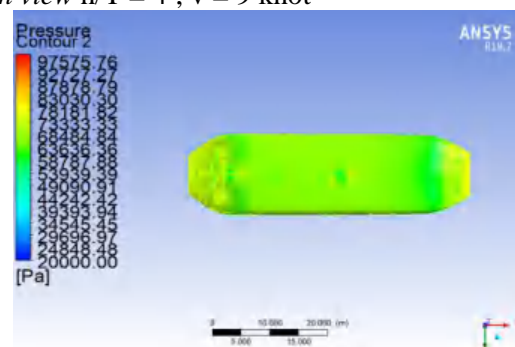
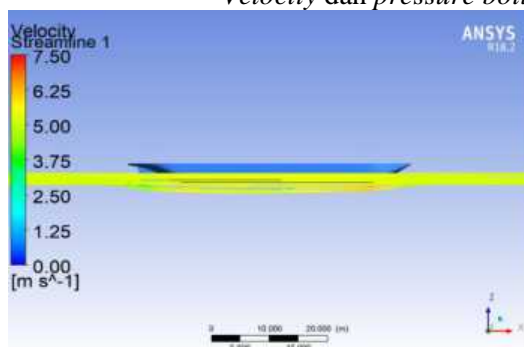
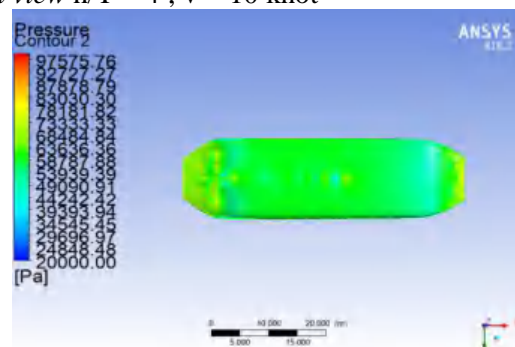
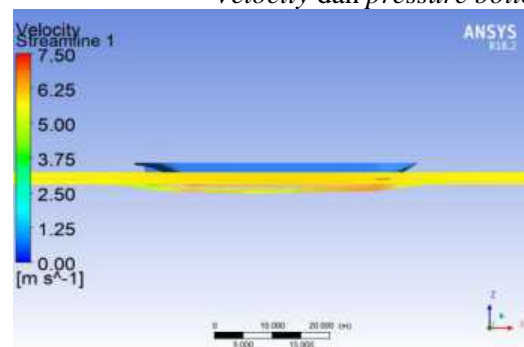
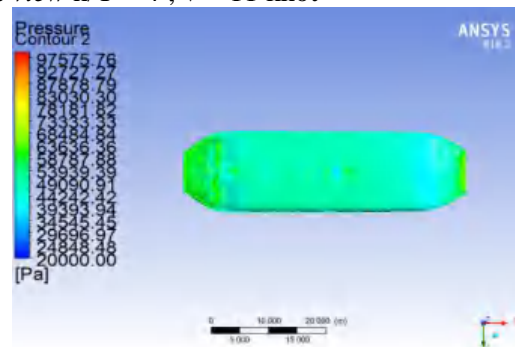
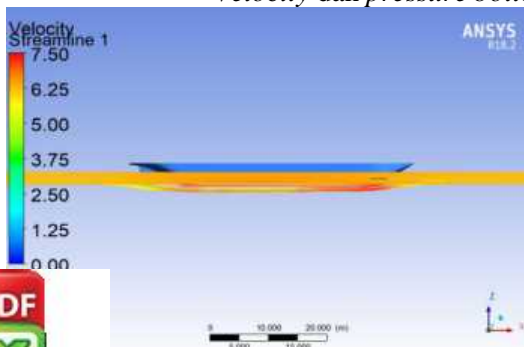
	Speed (kn)	Froude No. LWL	Froude No. Vol.	Holtrop Resist. (kN)	Holtrop Power (kW)
11	3.216	0.078	0.164	4.0	6.687
12	3.538	0.086	0.181	4.8	8.795
13	3.859	0.094	0.197	5.7	11.296
14	4.181	0.102	0.214	6.6	14.222
15	4.502	0.109	0.230	7.6	17.603
16	4.824	0.117	0.247	8.7	21.473
17	5.146	0.125	0.263	9.8	25.861
18	5.467	0.133	0.279	11.0	30.804
19	5.789	0.141	0.296	12.2	36.338
20	6.110	0.148	0.312	13.5	42.504
21	6.432	0.156	0.329	14.9	49.354
22	6.754	0.164	0.345	16.4	56.950
23	7.075	0.172	0.362	18.0	65.371
24	7.397	0.180	0.378	19.6	74.715
25	7.718	0.188	0.394	21.4	85.110
26	8.040	0.195	0.411	23.4	96.715
27	8.362	0.203	0.427	25.5	109.719
28	8.683	0.211	0.444	27.8	124.363
29	9.005	0.219	0.460	30.4	141.000
30	9.326	0.227	0.477	33.3	159.877
31	9.648	0.234	0.493	36.5	181.131
32	9.970	0.242	0.510	40.1	205.462
33	10.291	0.250	0.526	44.3	234.307
34	10.613	0.258	0.542	49.2	268.630
35	10.934	0.266	0.559	54.7	307.499
36	11.256	0.274	0.575	60.2	348.719
37	11.578	0.281	0.592	65.8	391.737
38	11.899	0.289	0.608	71.8	439.537
39	12.221	0.297	0.625	79.2	497.871
40	12.542	0.305	0.641	88.9	573.592
41	12.864	0.313	0.657	101.7	672.982



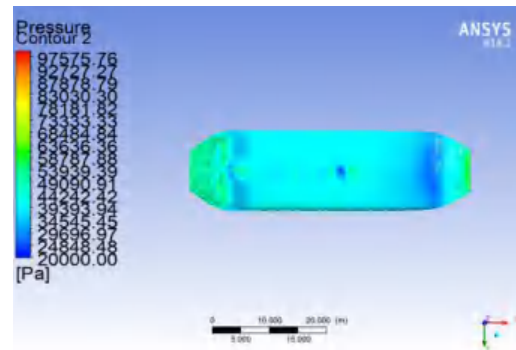
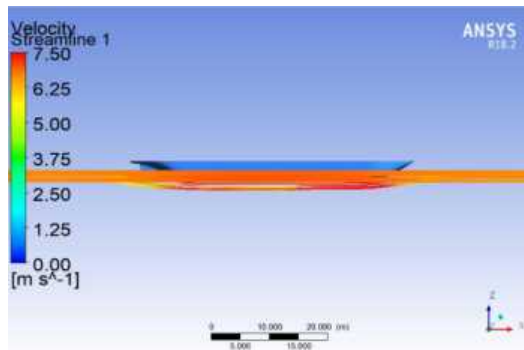
## Lampiran 4. Velocity Contour Pada Setiap Perubahan Kedalaman Perairan

Velocity contour side view  $h/T = 4$ Velocity contour side view  $h/T = 3$ Velocity contour side view  $h/T = 2$ Velocity contour side view  $h/T = 1.3$ 

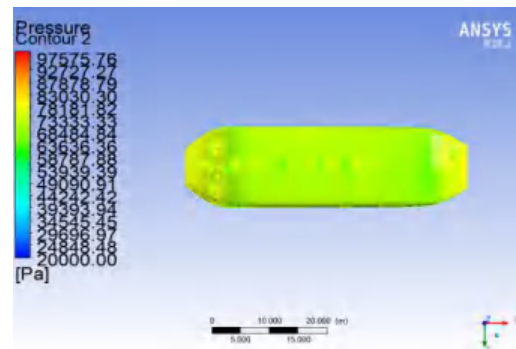
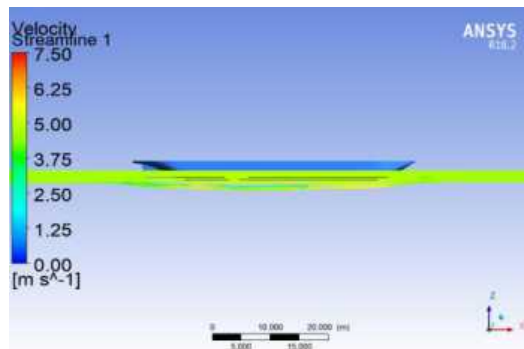
## Lampiran 5. Visualisasi Tahanan Pada Variasi Kedalaman Sarat 2,05m

Velocity dan pressure bottom view  $h/T = 4$  ;  $v = 9$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 10$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 11$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 12$  knot

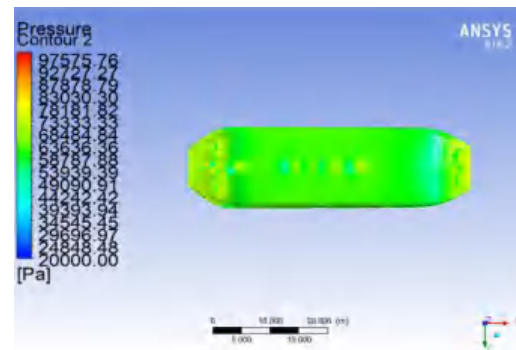
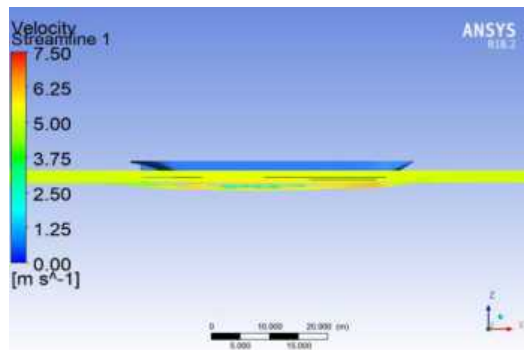




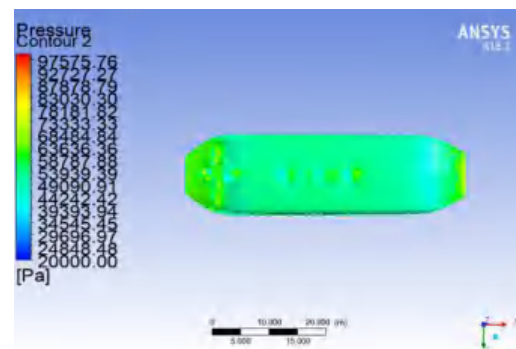
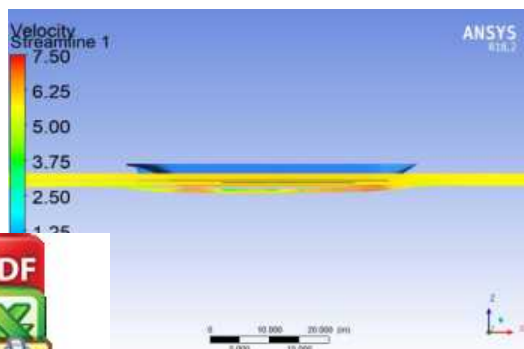
Velocity dan pressure bottom view  $h/T = 4$  ;  $v = 12,864$  knot



Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 9$  knot

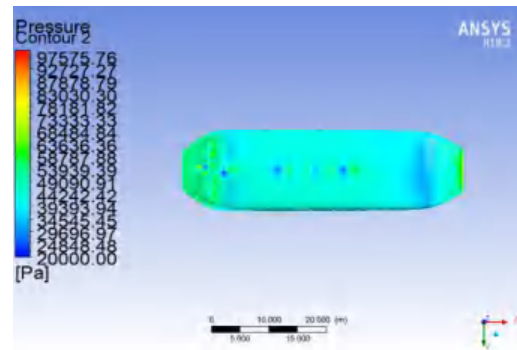
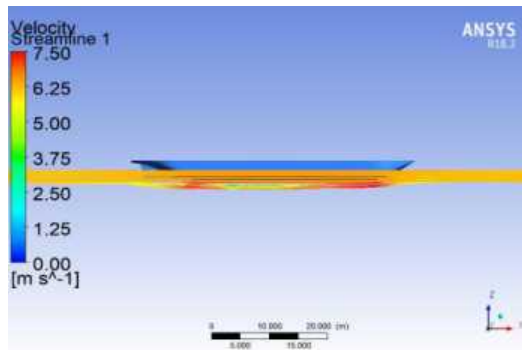


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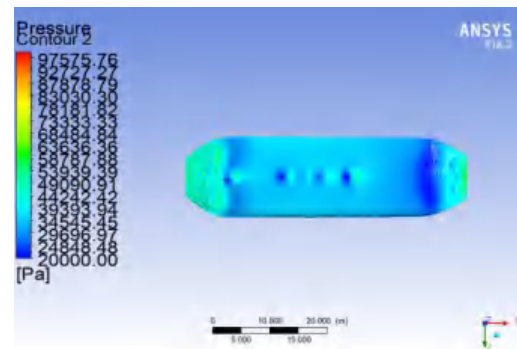
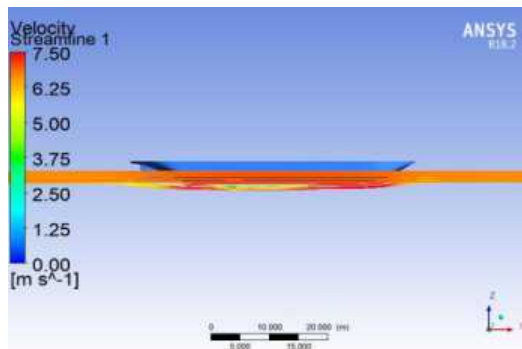


Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 11$  knot

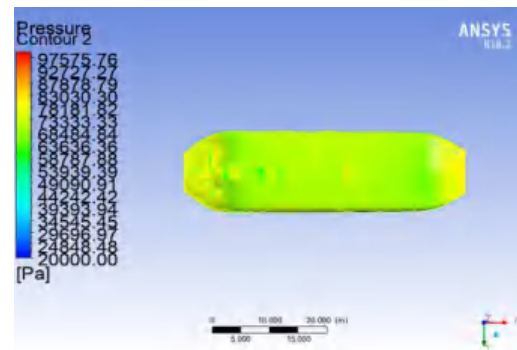
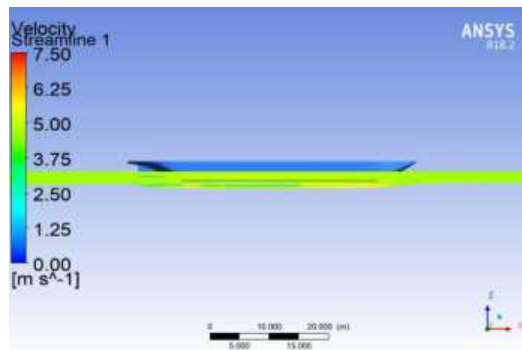




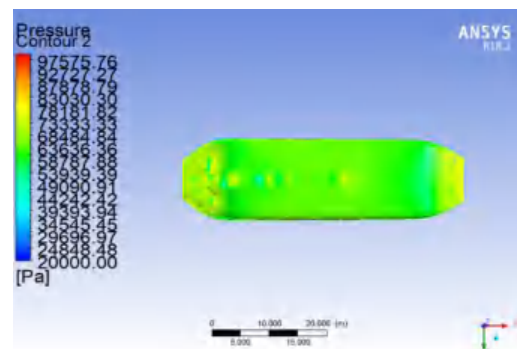
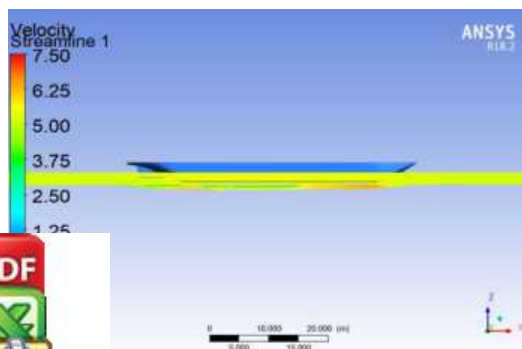
Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 12$  knot



Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 12,864$  knot

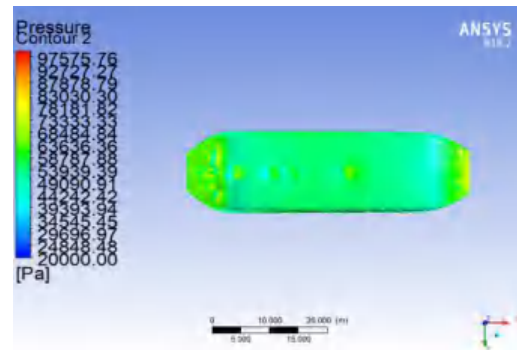
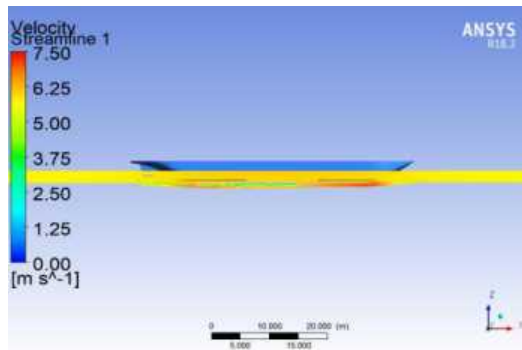


Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 9$  knot

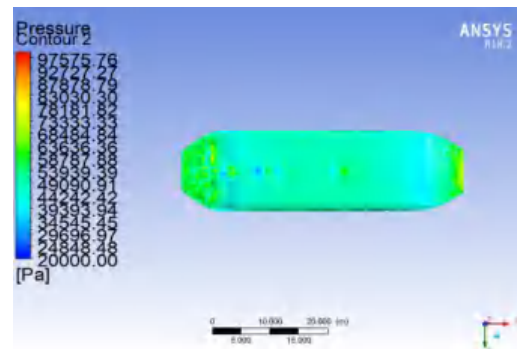
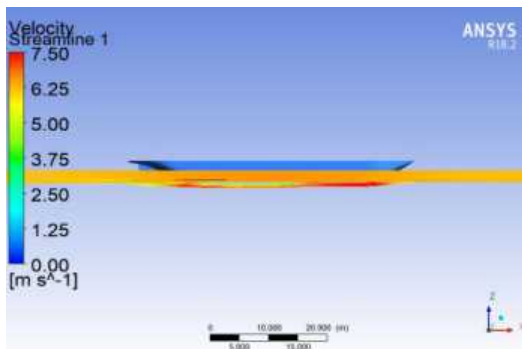


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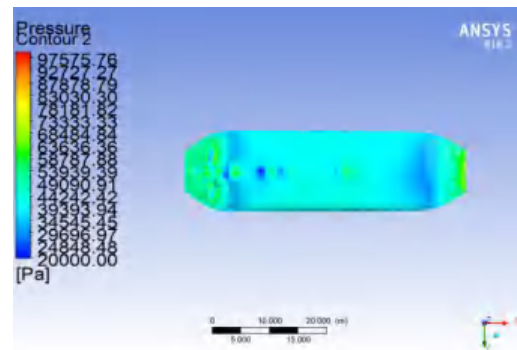
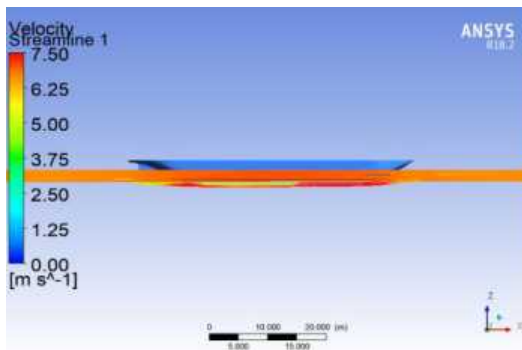




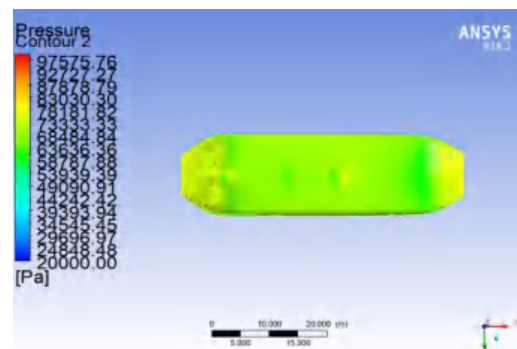
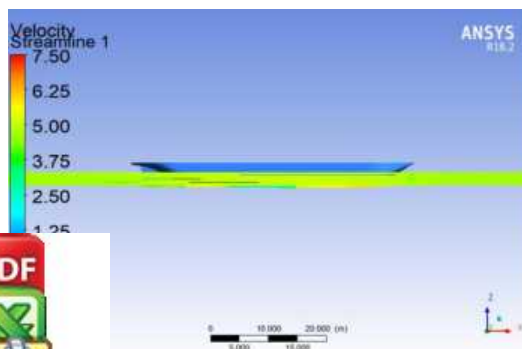
Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 11$  knot



Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 12$  knot

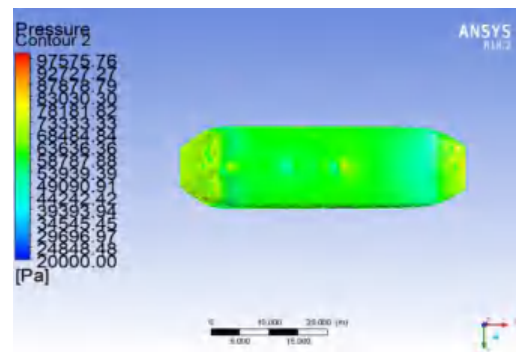
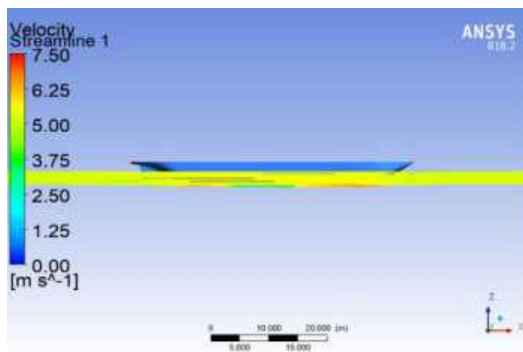


Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 12,864$  knot

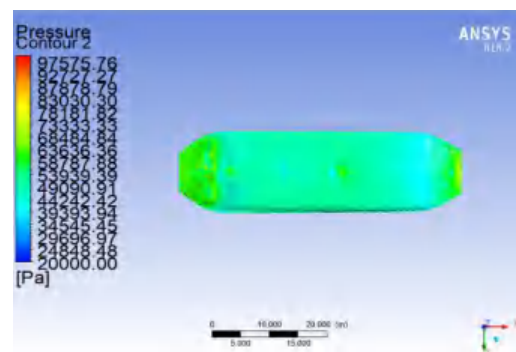
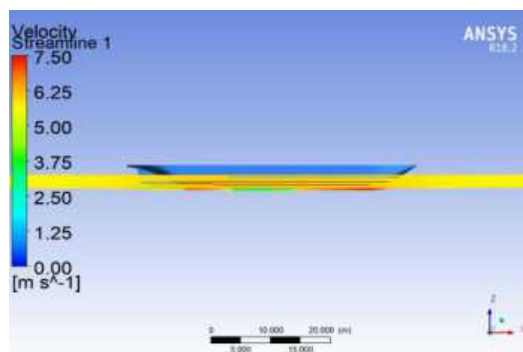


Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 9$  knot

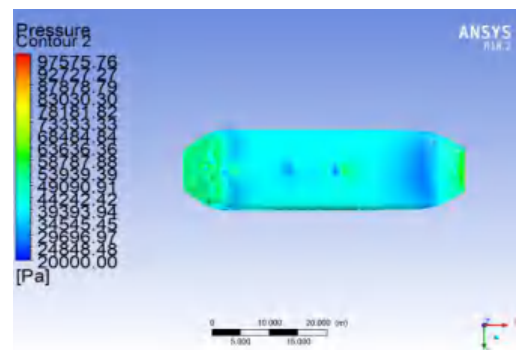
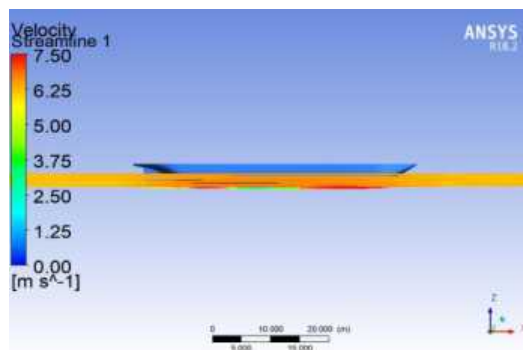




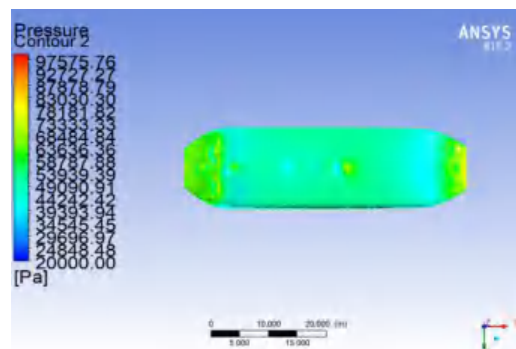
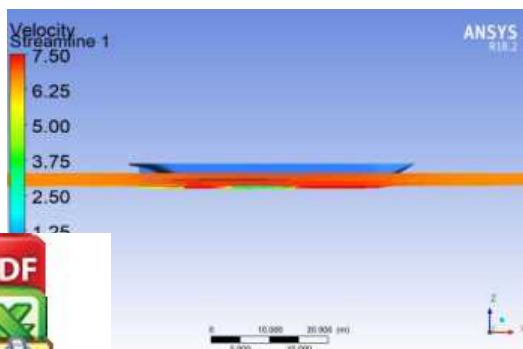
*Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 10$  knot*



*Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 11$  knot*



*Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 12$  knot*

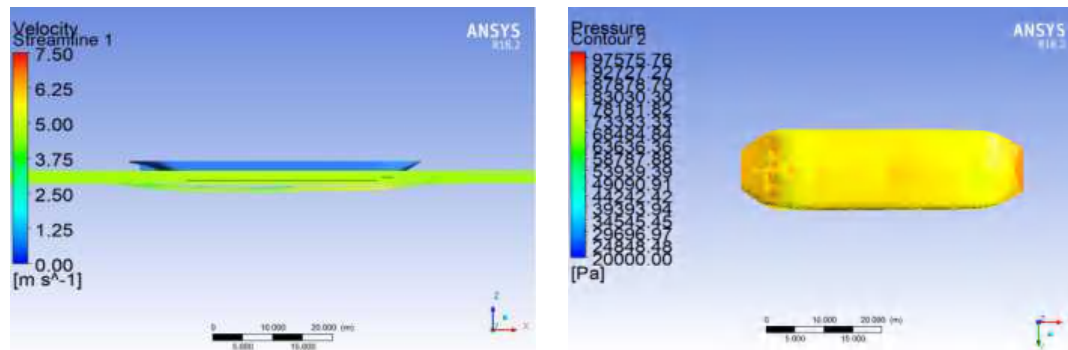
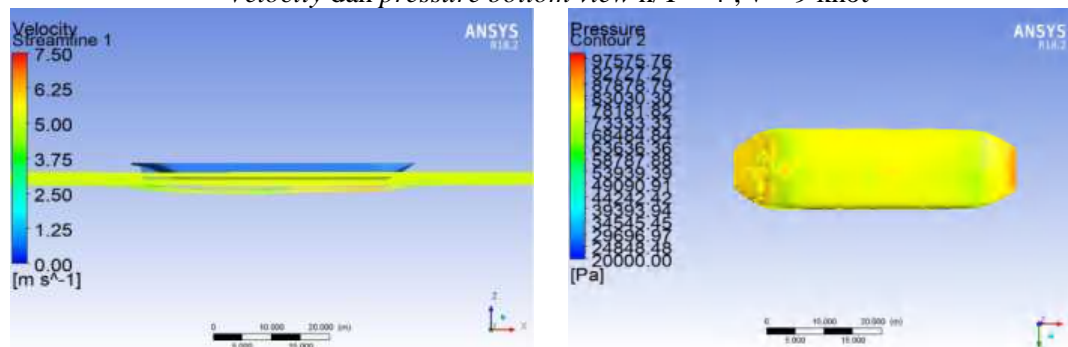
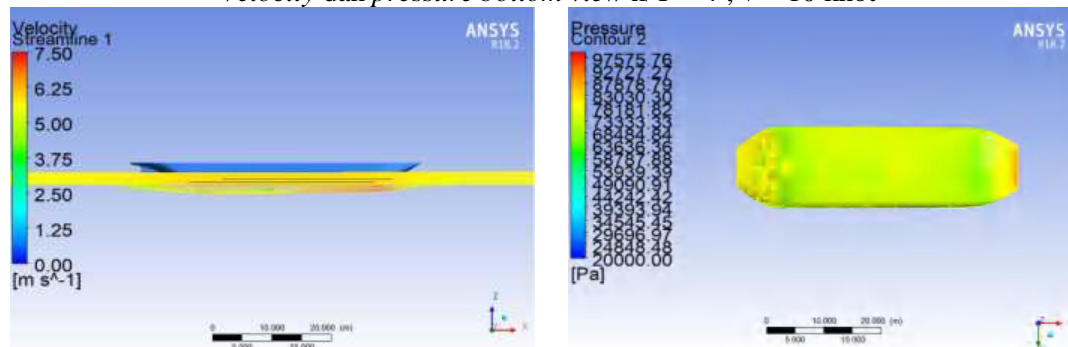
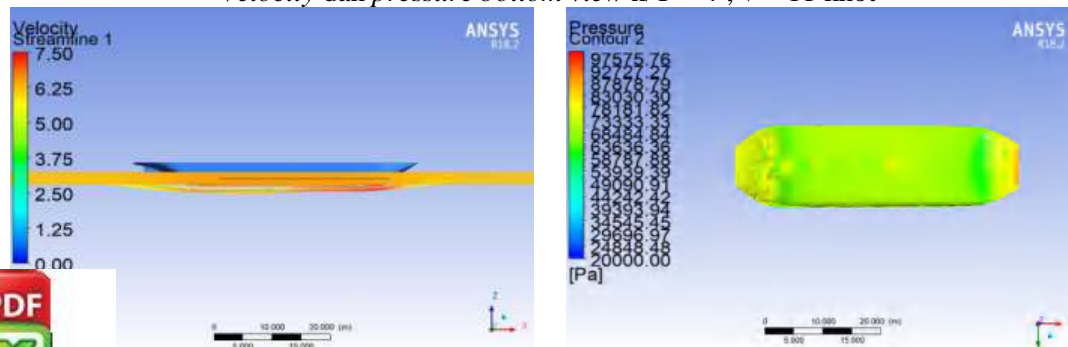


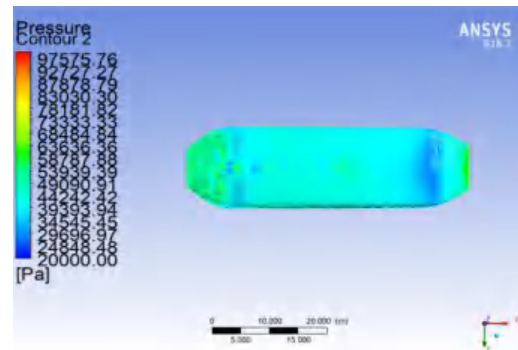
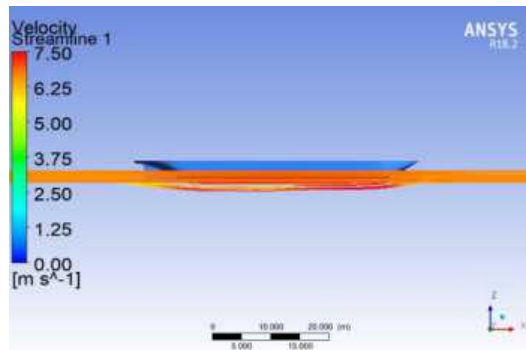
*Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 12,864$  knot*



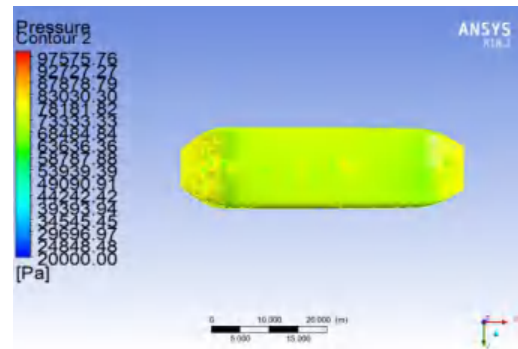
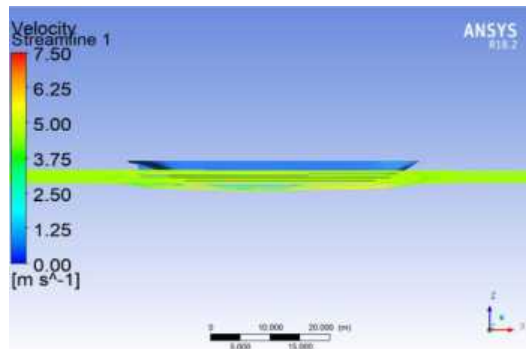


## Lampiran 6. Visualisasi Tahanan Pada Variasi Kedalaman Sarat 2,25m

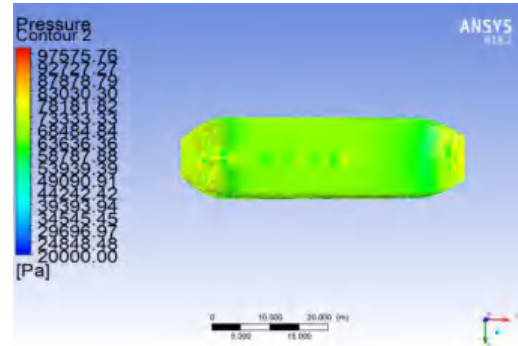
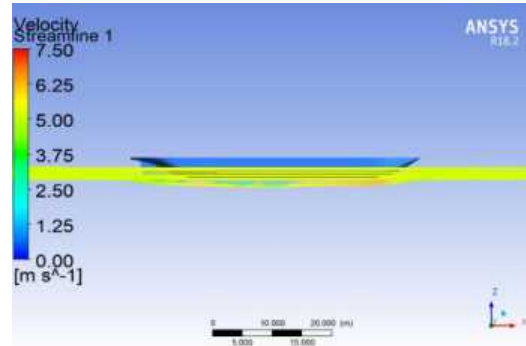
Velocity dan pressure bottom view  $h/T = 4$  ;  $v = 9$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 10$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 11$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 12$  knot



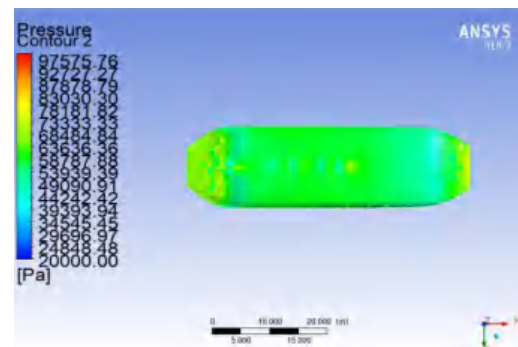
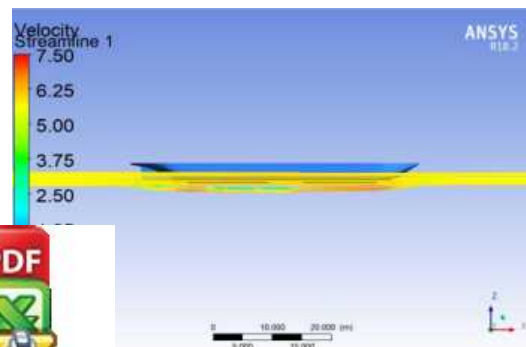
*Velocity dan pressure bottom view  $h/T = 4$  ;  $v = 12,864$  knot*



*Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 9$  knot*

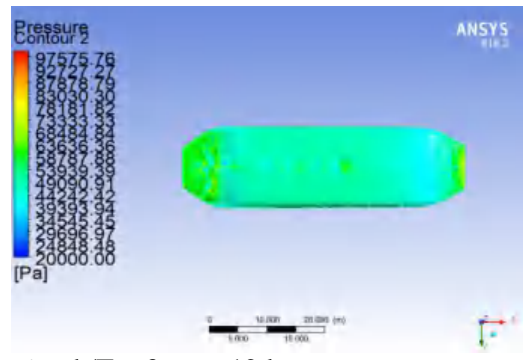
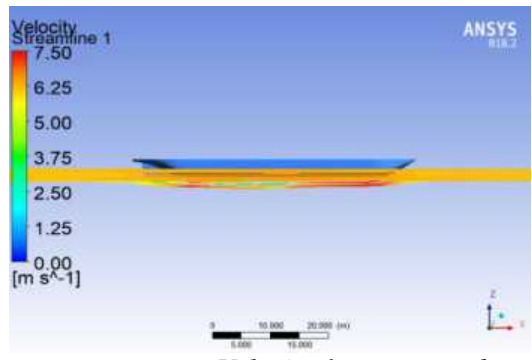


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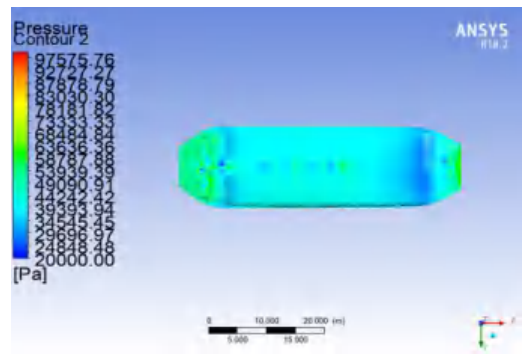
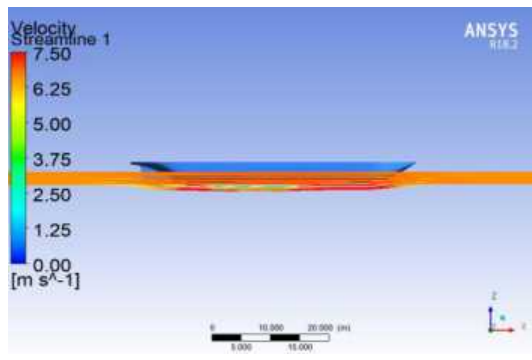


*Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 11$  knot*

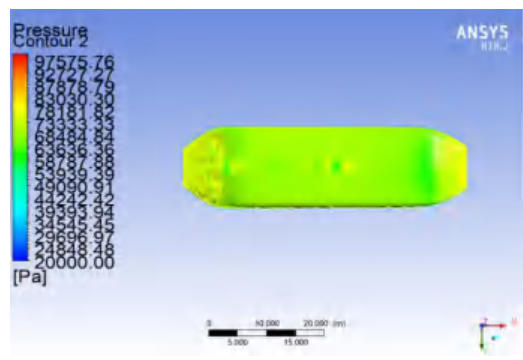
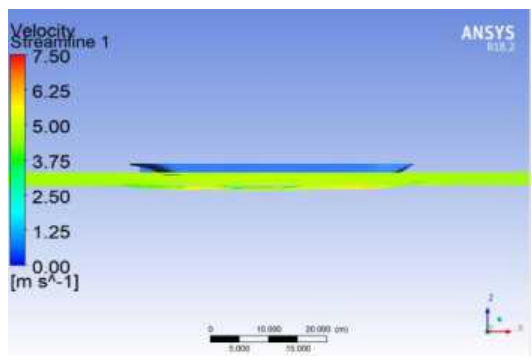




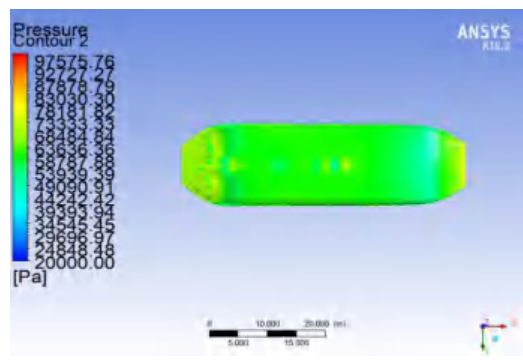
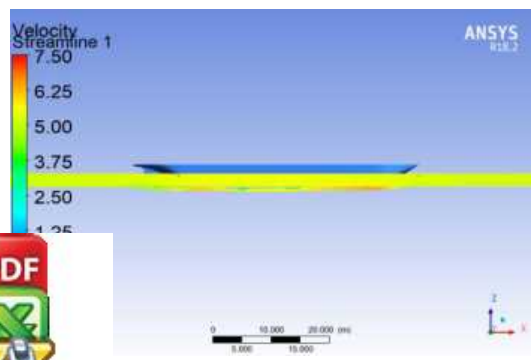
Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 12$  knot



Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 12,864$  knot

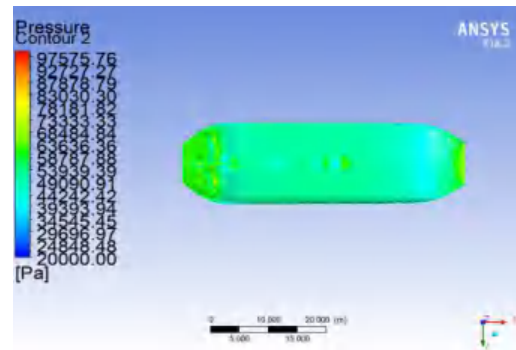
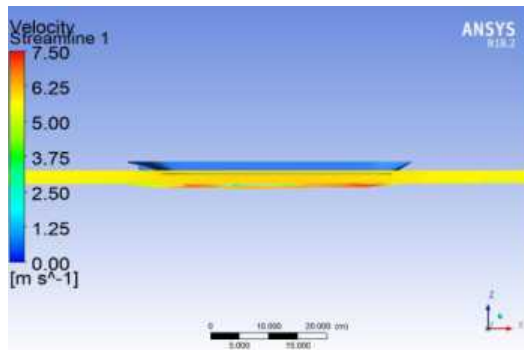


Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 9$  knot

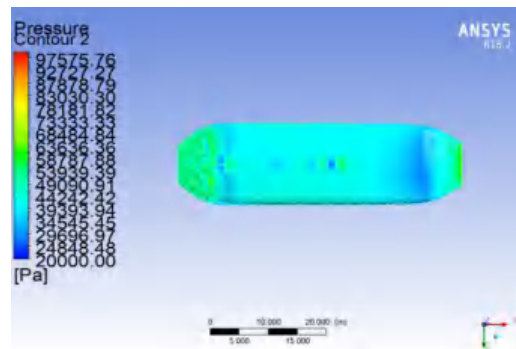
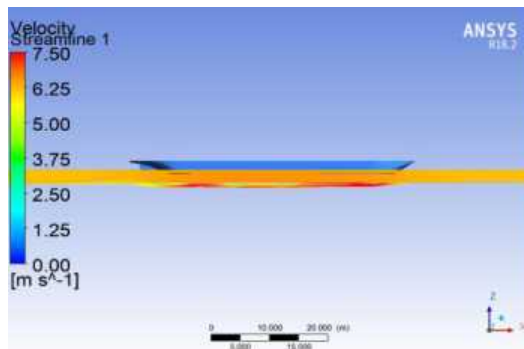


Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 10$  knot

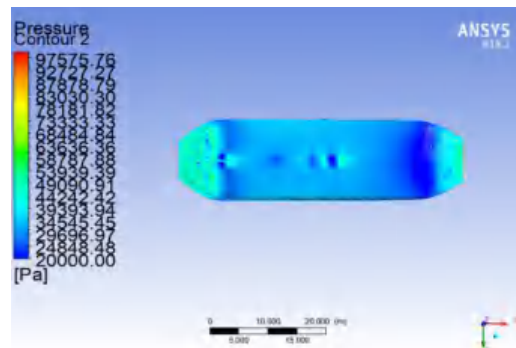
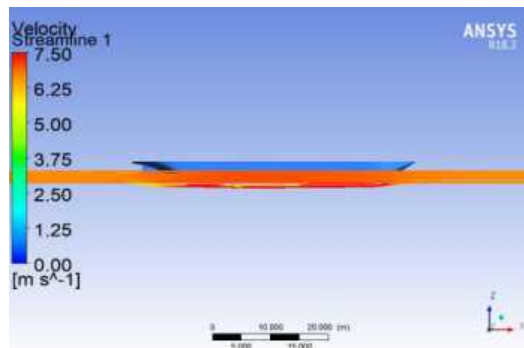




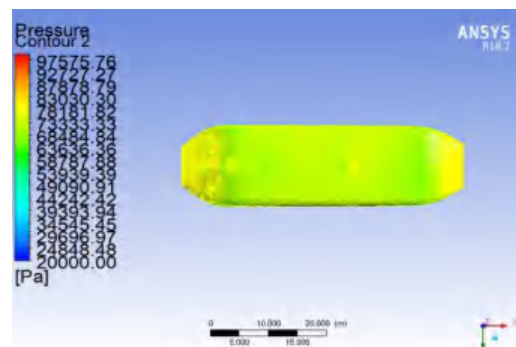
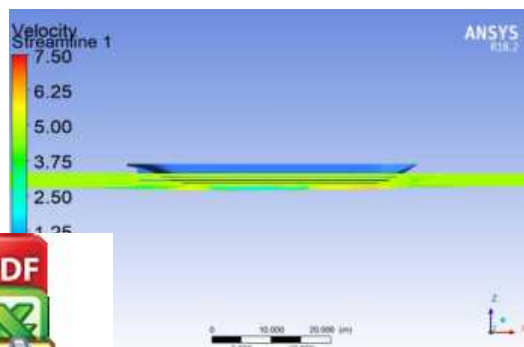
Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 11$  knot



Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 12$  knot



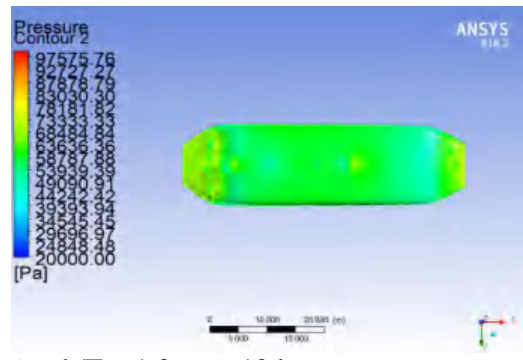
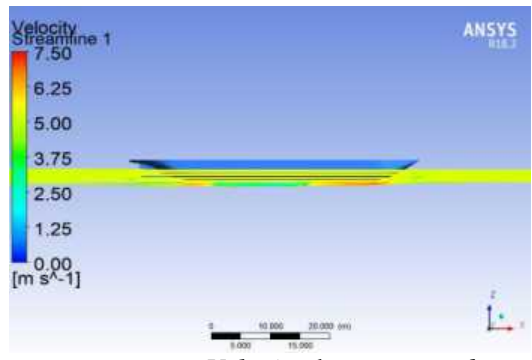
Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 12,864$  knot



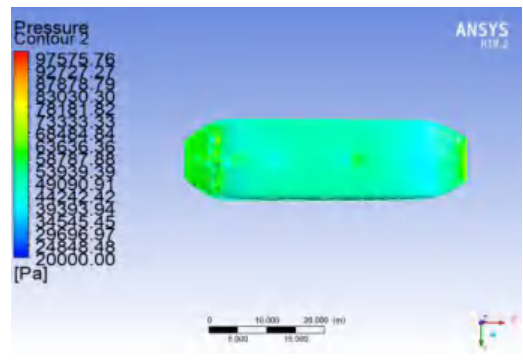
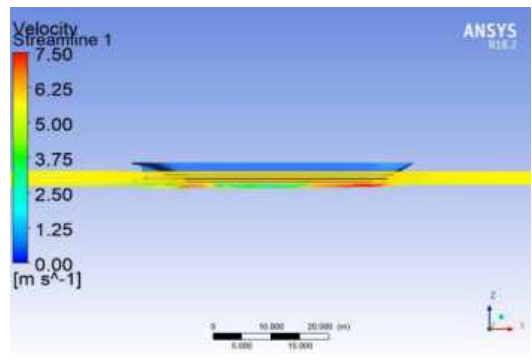
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 9$  knot



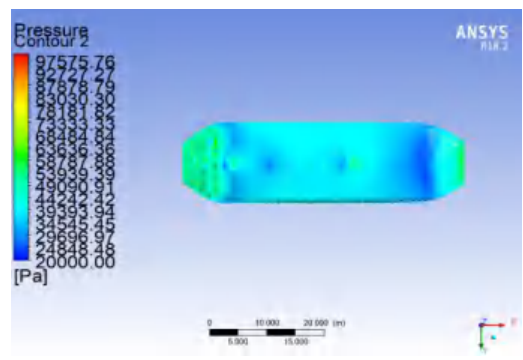
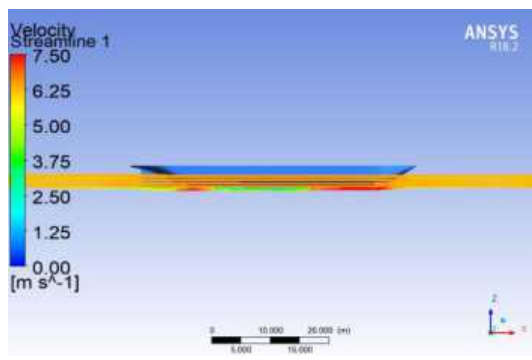




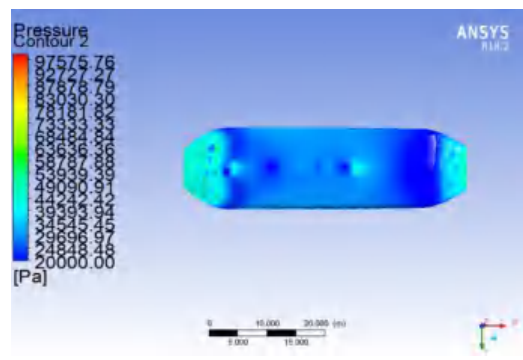
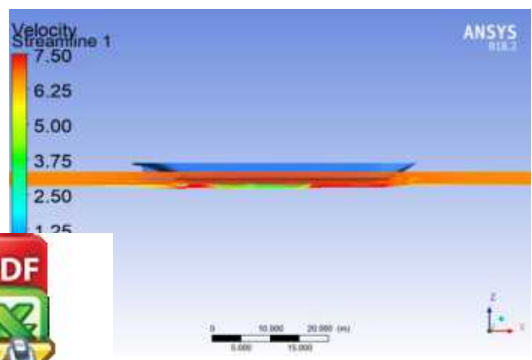
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 10$  knot



Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 11$  knot



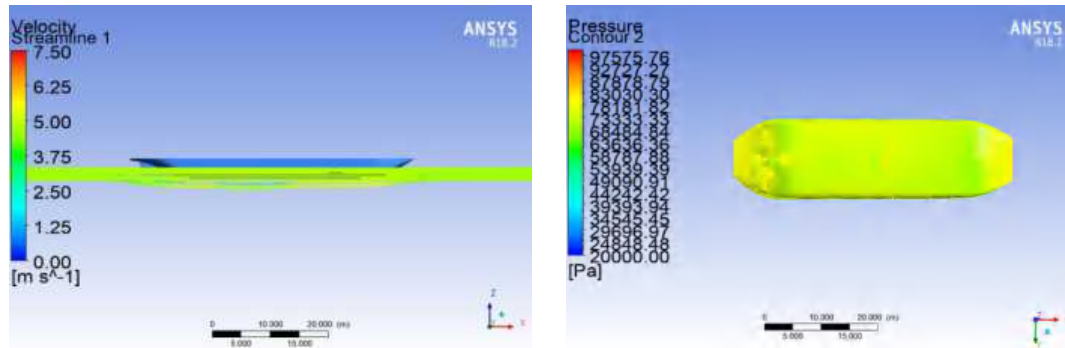
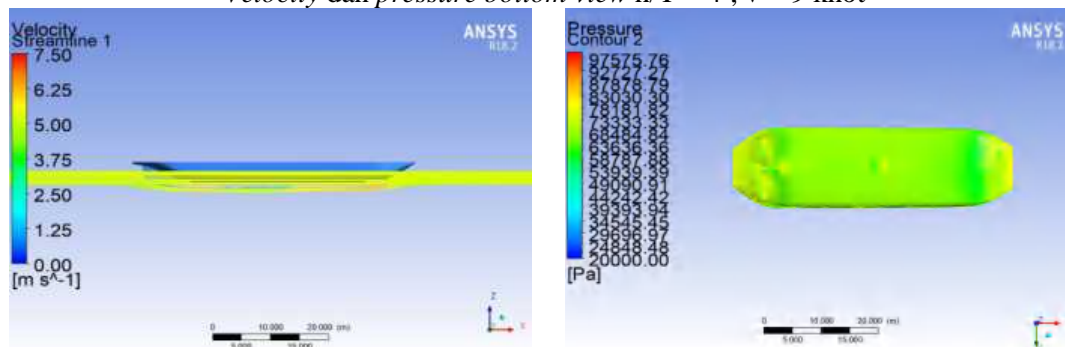
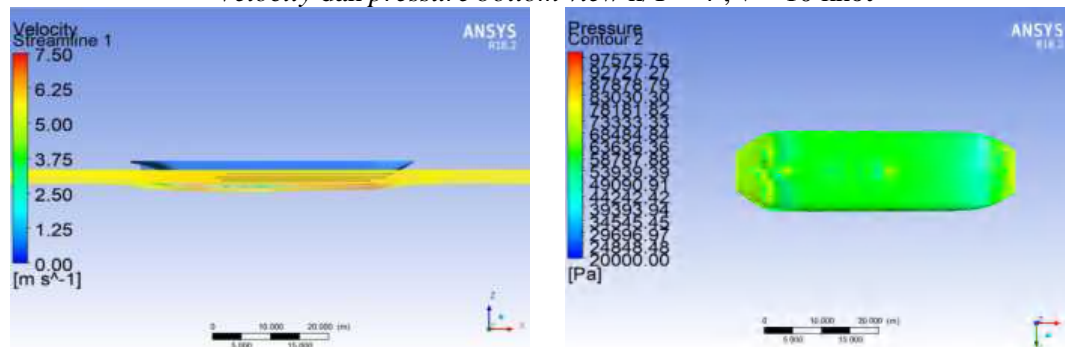
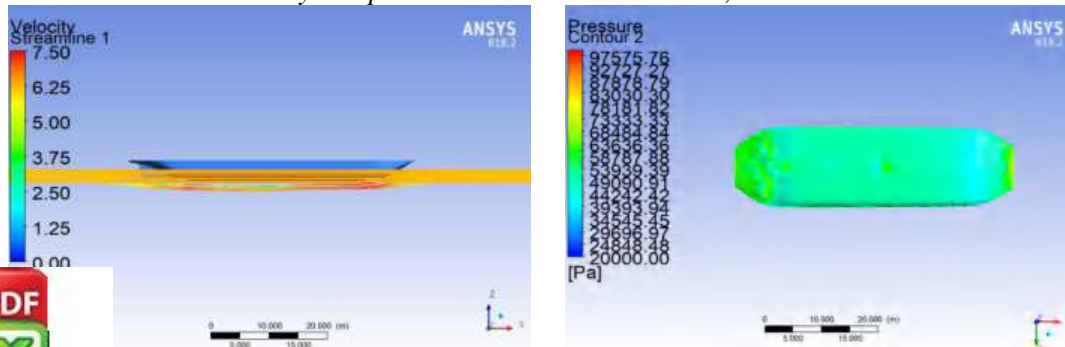
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 12$  knot

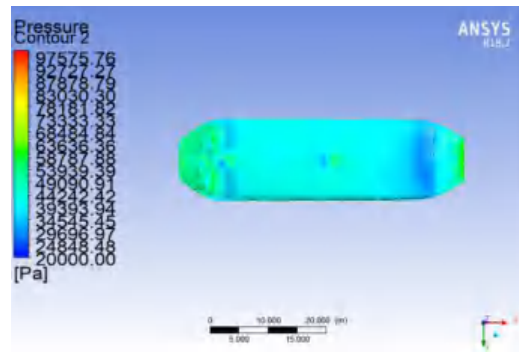
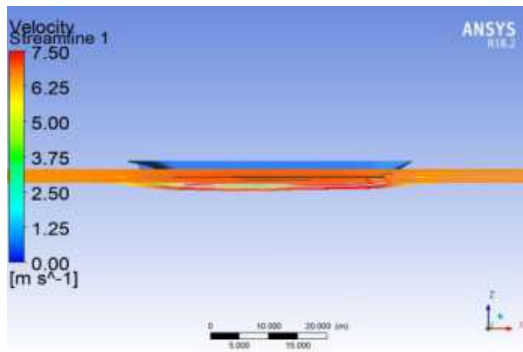


Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 12,864$  knot

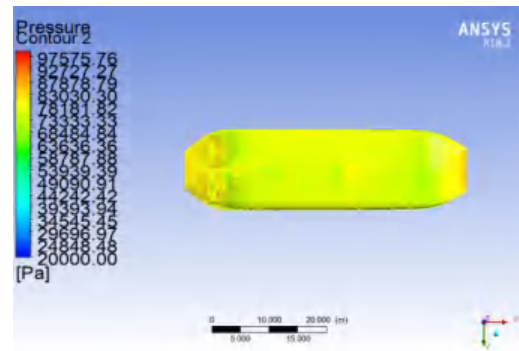
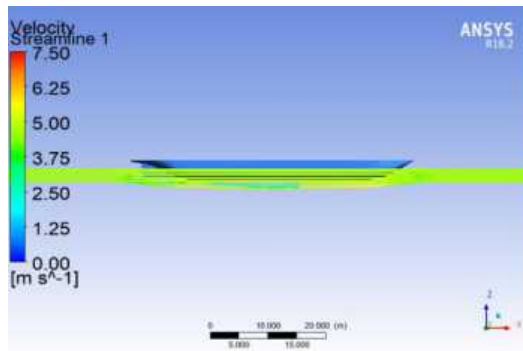


## Lampiran 7. Visualisasi Tahanan Pada Variasi Kedalaman Sarat 2,45m

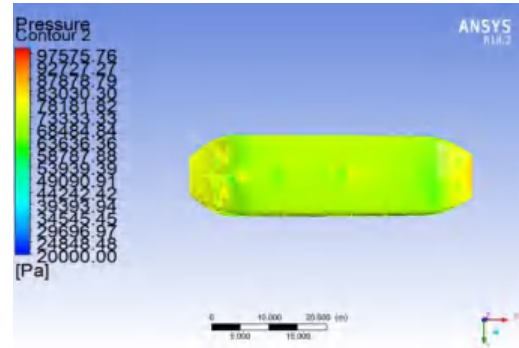
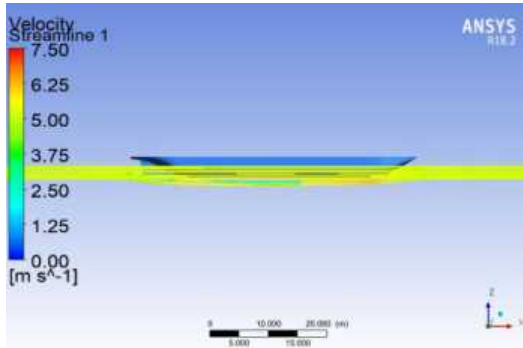
Velocity dan pressure bottom view  $h/T = 4$  ;  $v = 9$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 10$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 11$  knotVelocity dan pressure bottom view  $h/T = 4$  ;  $v = 12$  knot



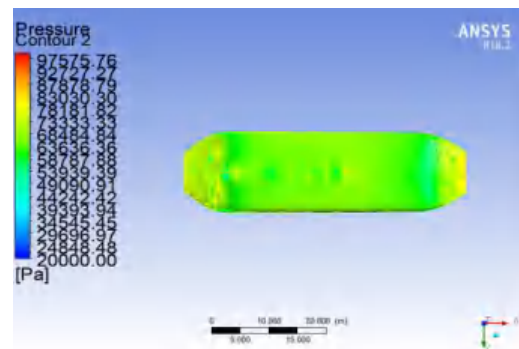
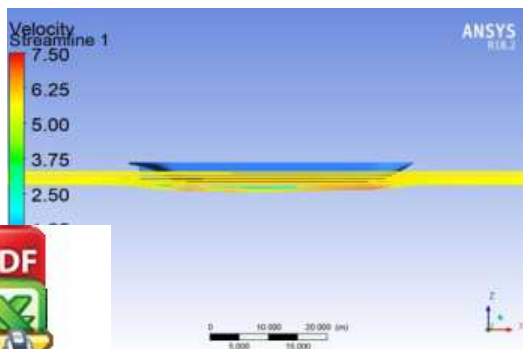
Velocity dan pressure bottom view  $h/T = 4$  ;  $v = 12,864$  knot



Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 9$  knot

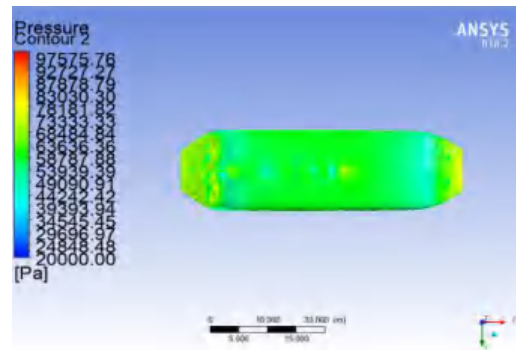
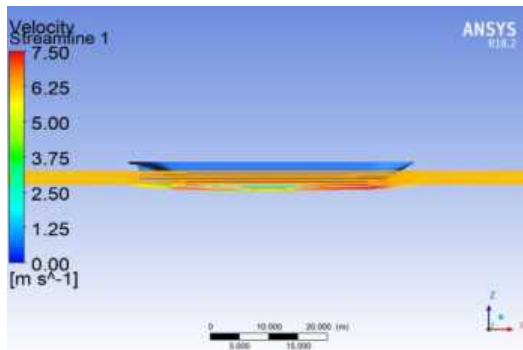


Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 10$  knot

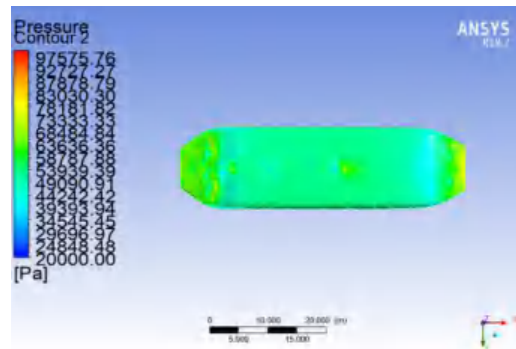
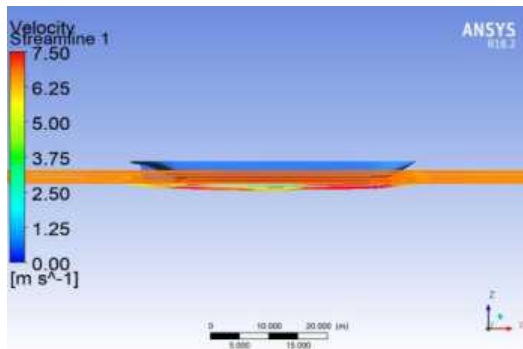


Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 11$  knot

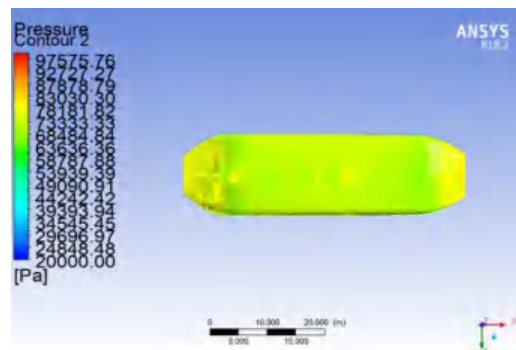
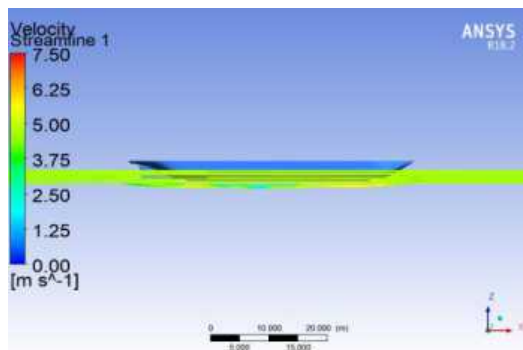




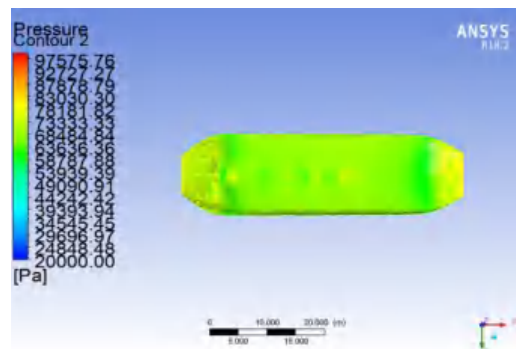
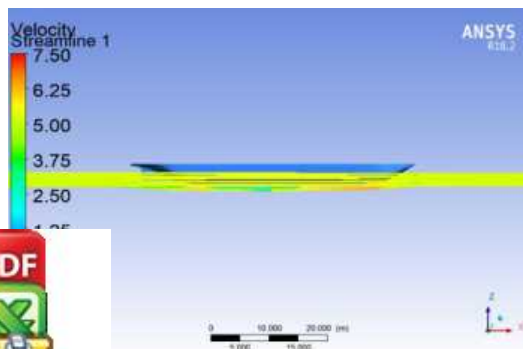
*Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 12$  knot*



*Velocity dan pressure bottom view  $h/T = 3$  ;  $v = 12,864$  knot*



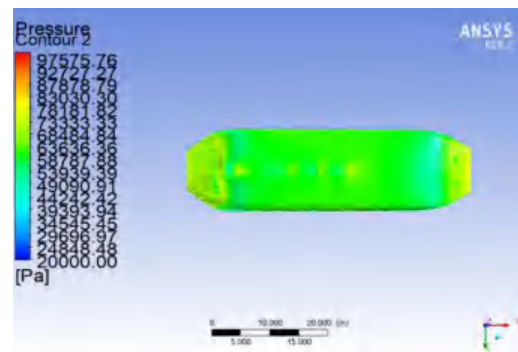
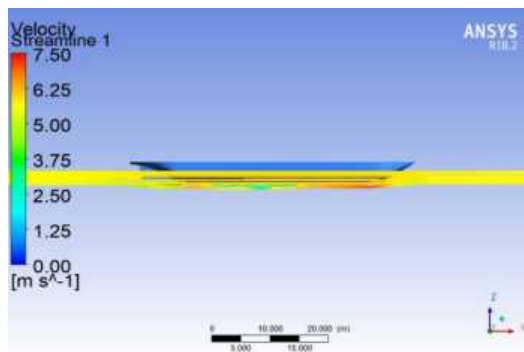
*Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 9$  knot*



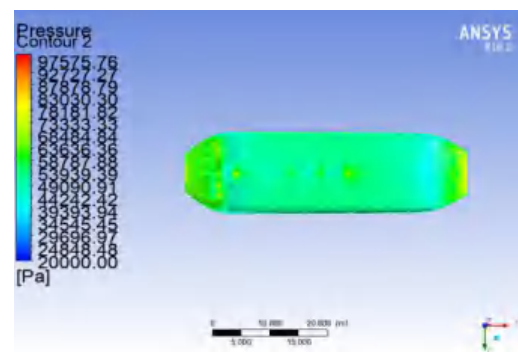
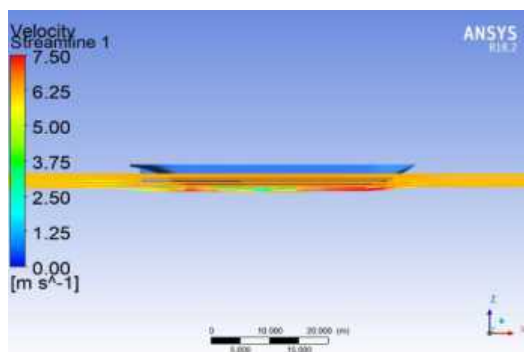
*Velocity dan pressure bottom view  $h/T = 2$  ;  $v = 10$  knot*



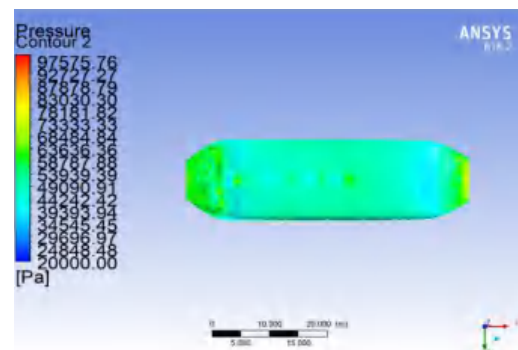
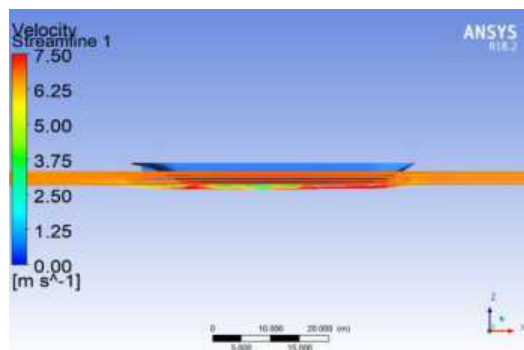




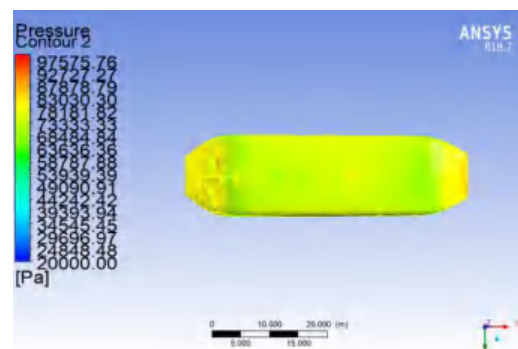
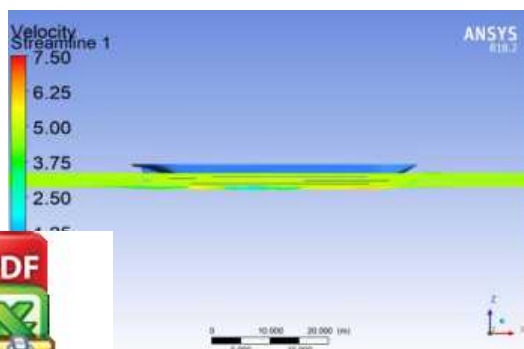
*Velocity dan pressure bottom view h/T = 2 ; v = 11 knot*



*Velocity dan pressure bottom view h/T = 2 ; v = 12 knot*

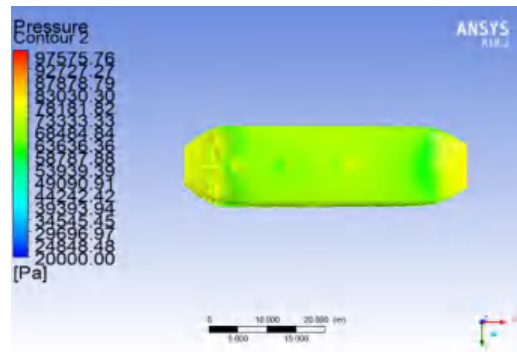
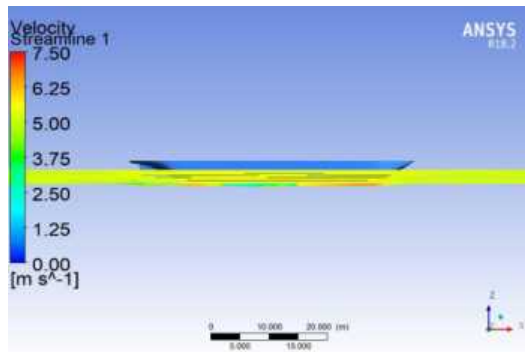


*Velocity dan pressure bottom view h/T = 2 ; v = 12,864 knot*

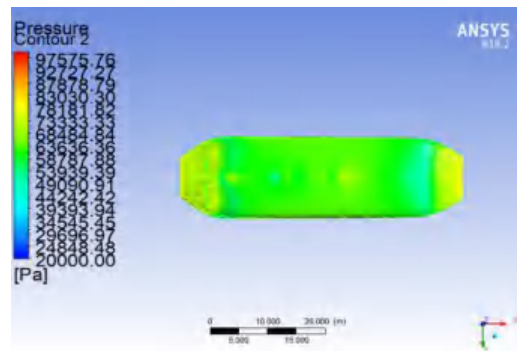
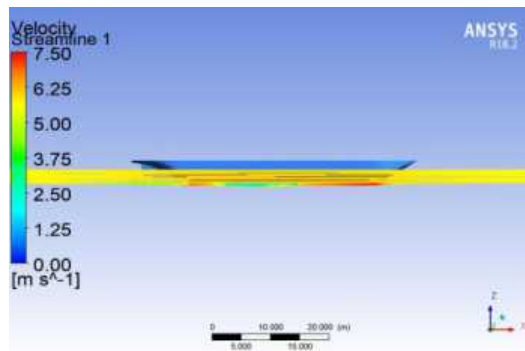


*Velocity dan pressure bottom view h/T = 1,3 ; v = 9 knot*

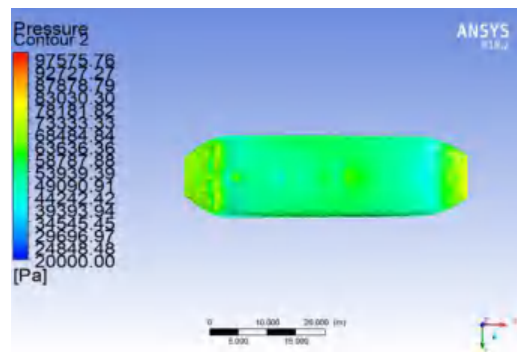
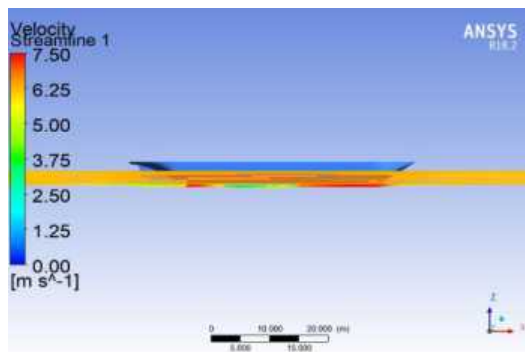




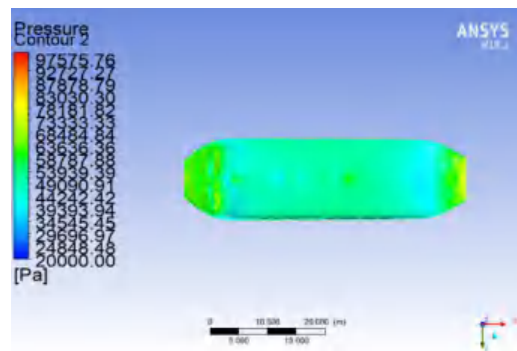
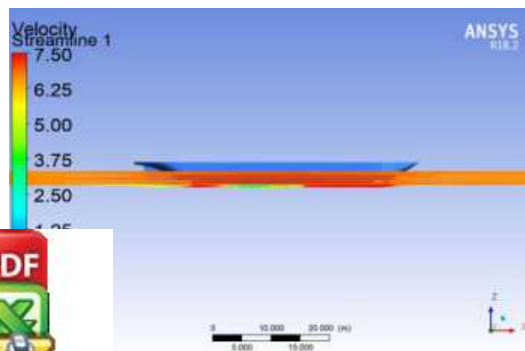
*Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 10$  knot*



*Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 11$  knot*



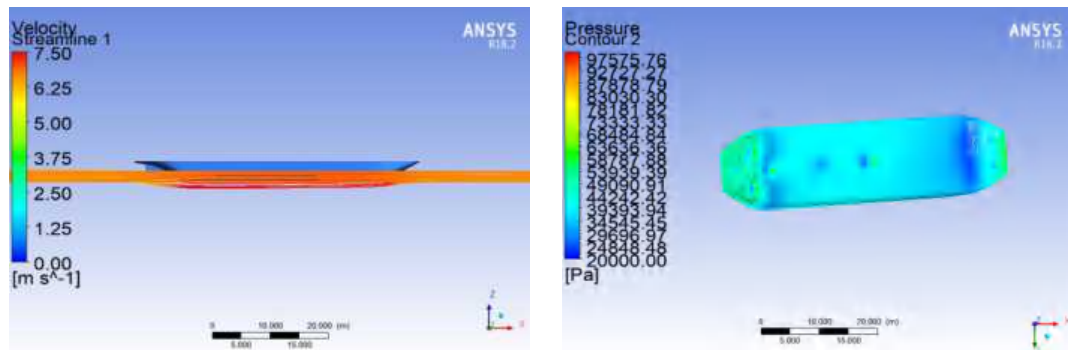
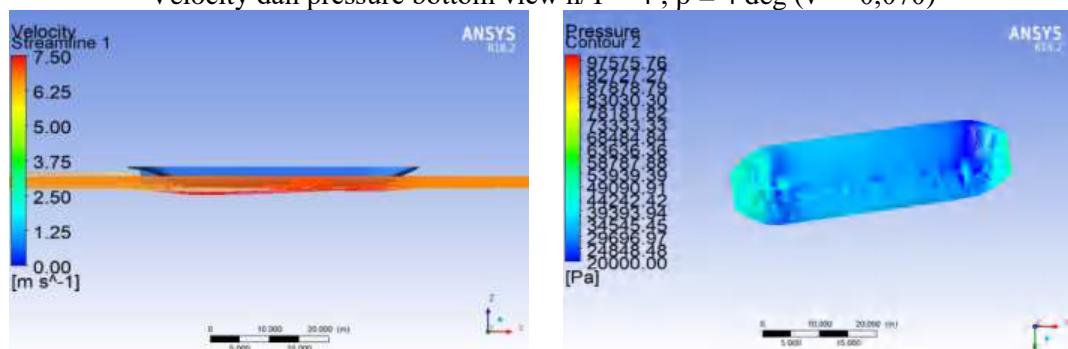
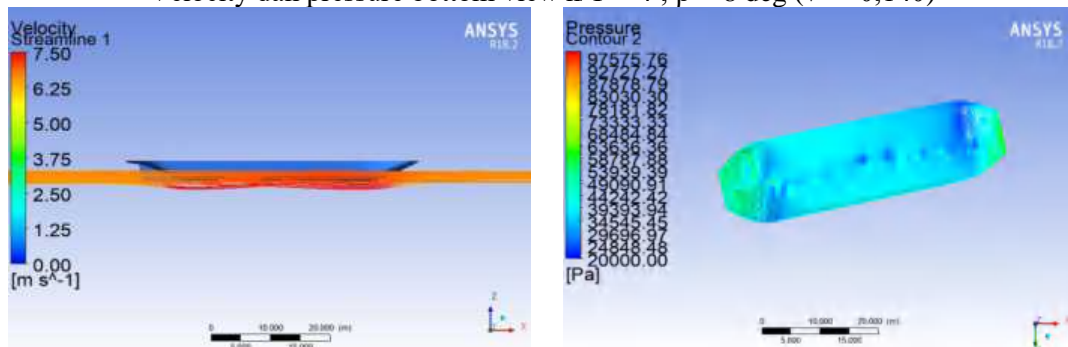
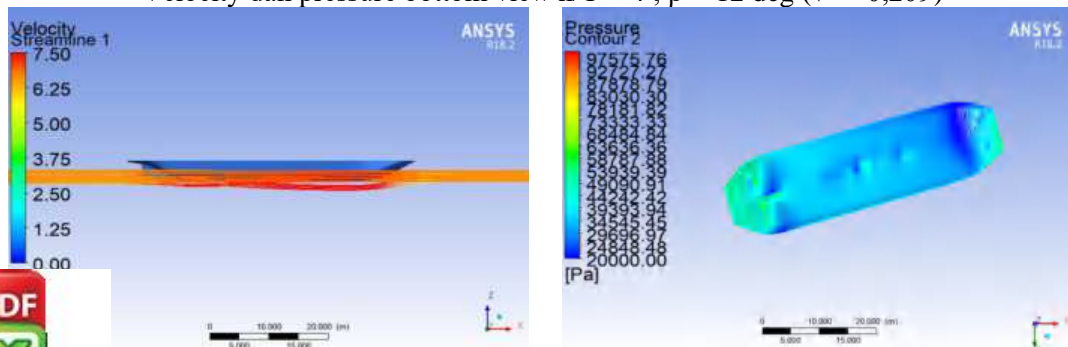
*Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 12$  knot*

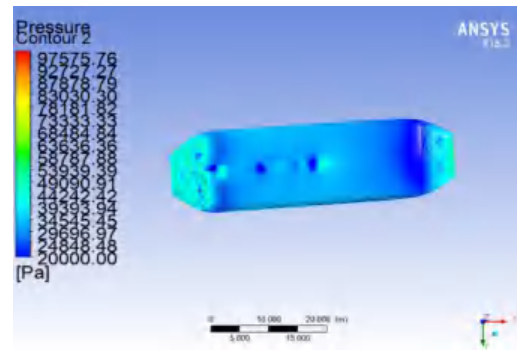
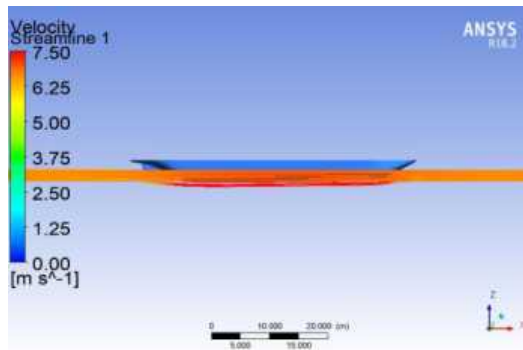


*Velocity dan pressure bottom view  $h/T = 1,3$  ;  $v = 12,864$  knot*

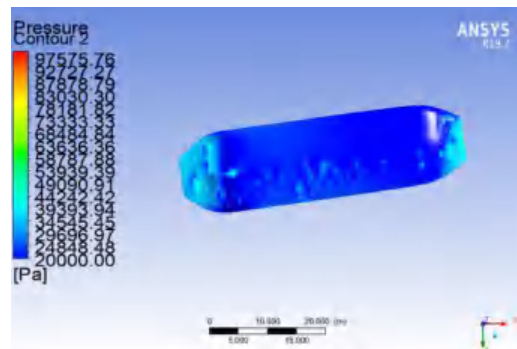
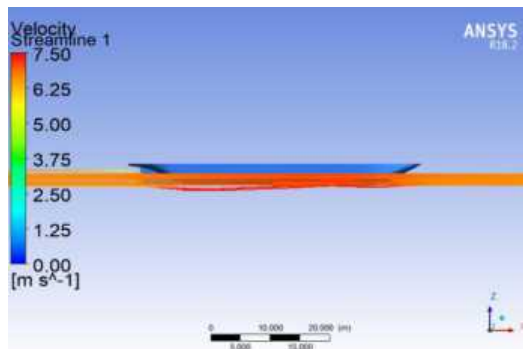


## Lampiran 8. Visualisasi Aliran Drift Test Sarat 2,05m

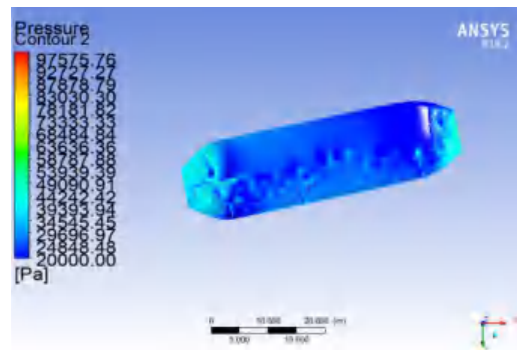
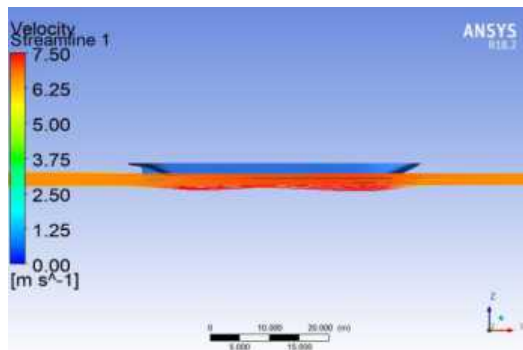
Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 4$  deg ( $v' = 0,070$ )Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 8$  deg ( $v' = 0,140$ )Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 12$  deg ( $v' = 0,209$ )Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 16$  deg ( $v' = 0,279$ )



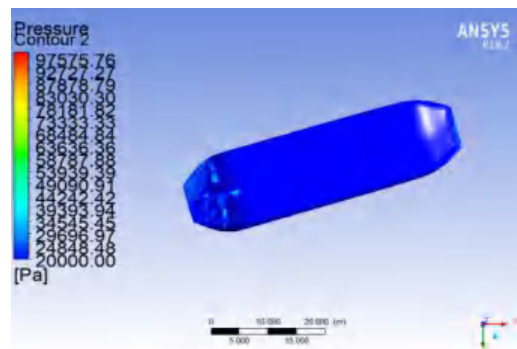
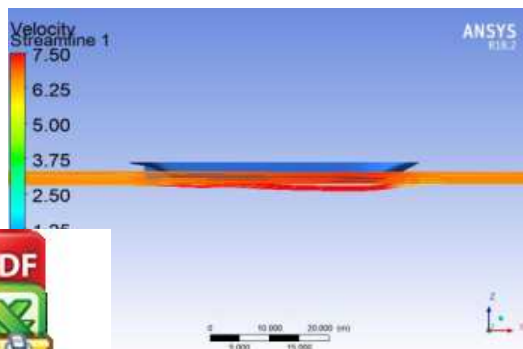
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 8$  deg ( $v' = 0,140$ )



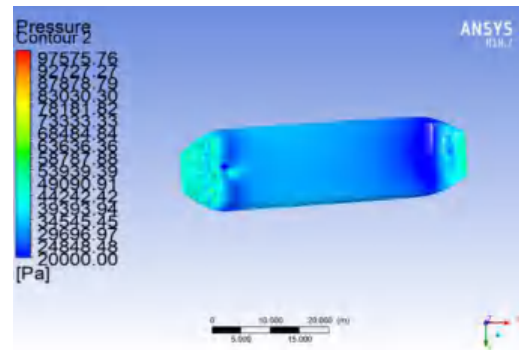
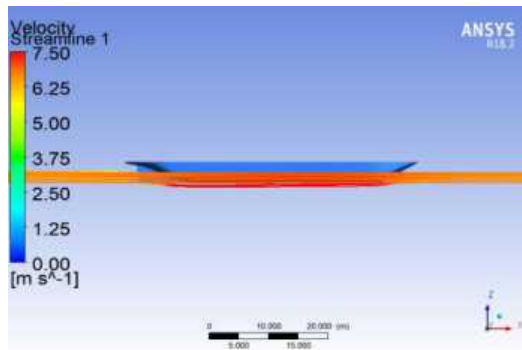
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 12$  deg ( $v' = 0,209$ )



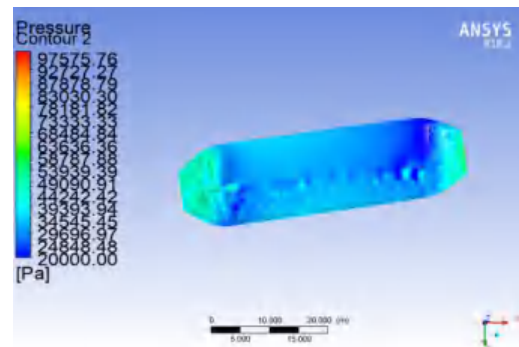
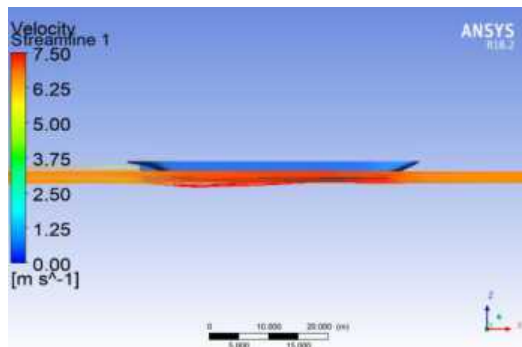
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 16$  deg ( $v' = 0,279$ )



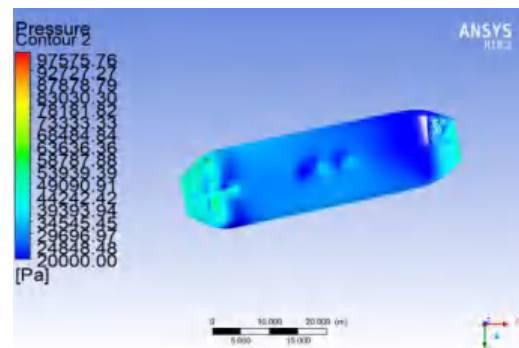
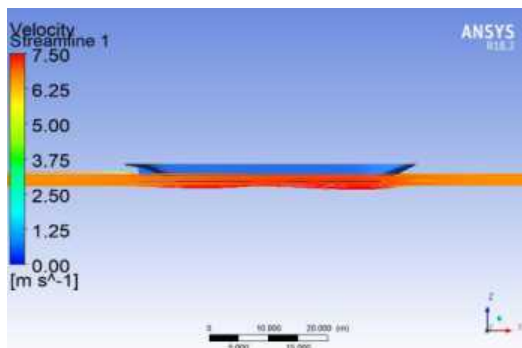




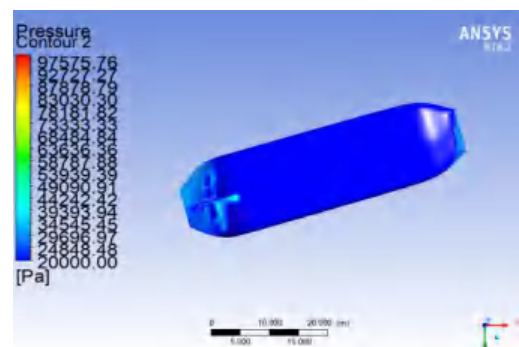
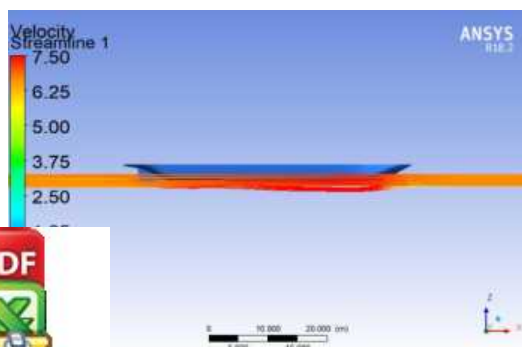
Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 8$  deg ( $v' = 0,140$ )

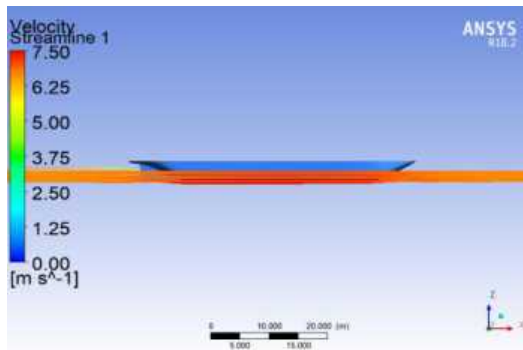


Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 12$  deg ( $v' = 0,209$ )

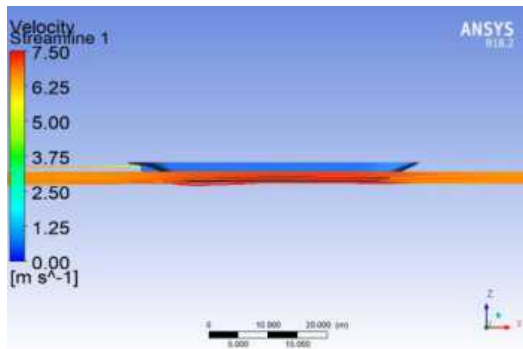
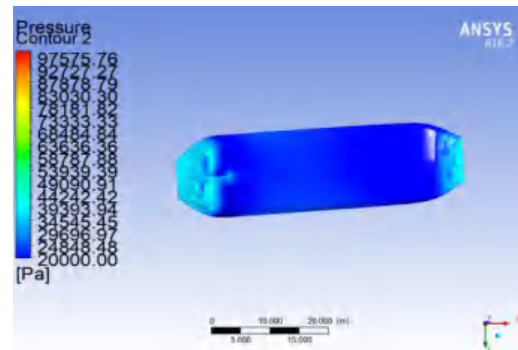


Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 16$  deg ( $v' = 0,279$ )

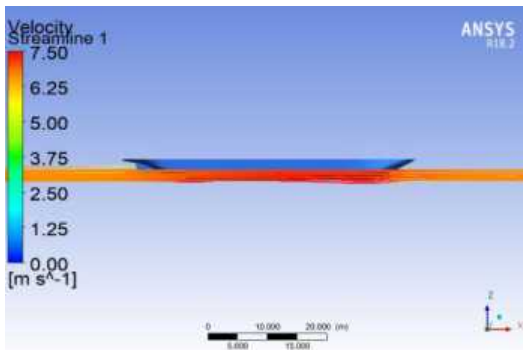
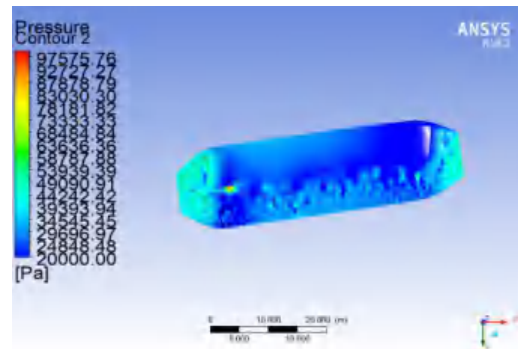




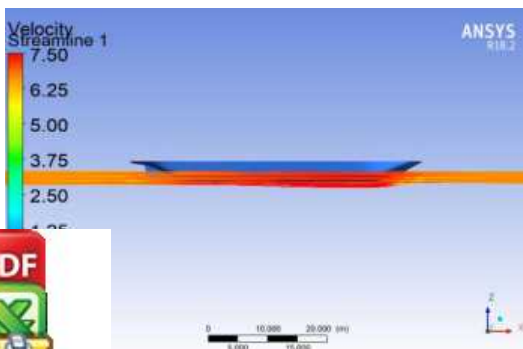
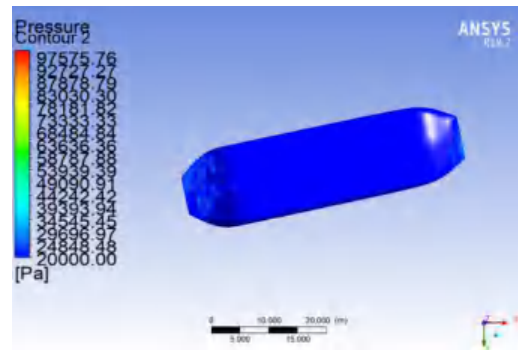
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



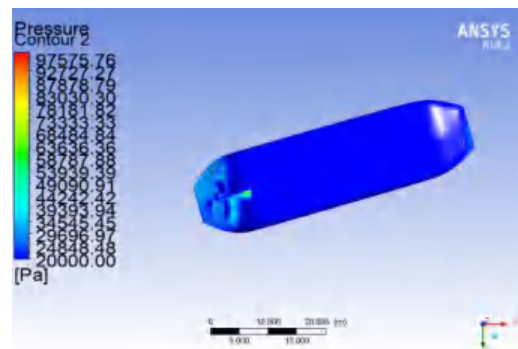
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 8$  deg ( $v' = 0,140$ )



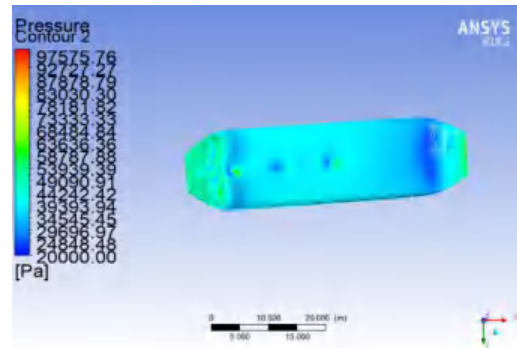
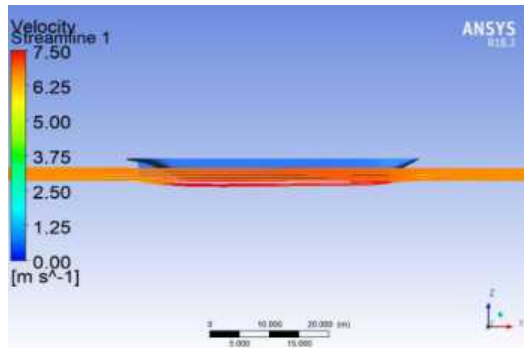
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 12$  deg ( $v' = 0,209$ )



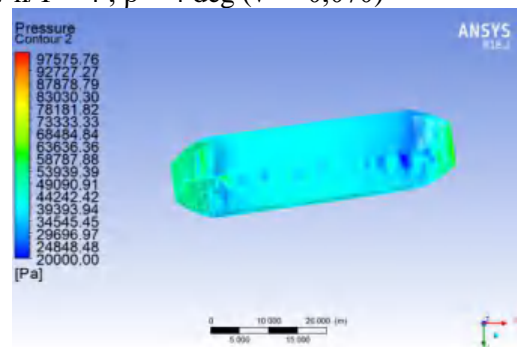
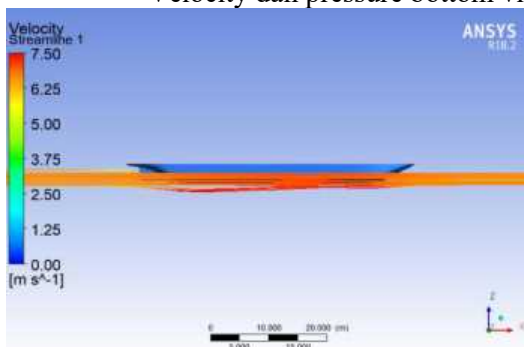
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 16$  deg ( $v' = 0,279$ )



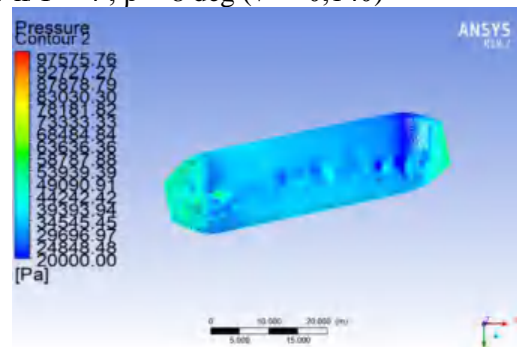
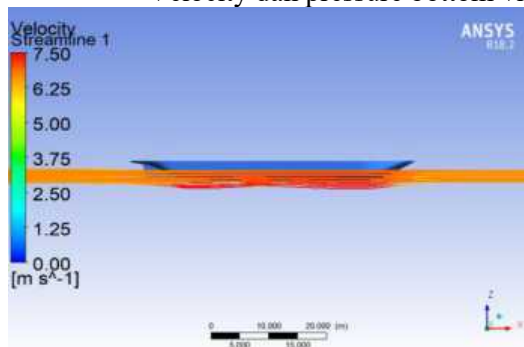
Lampiran 9. Visualisasi Aliran Drift Test Sarat 2,25m



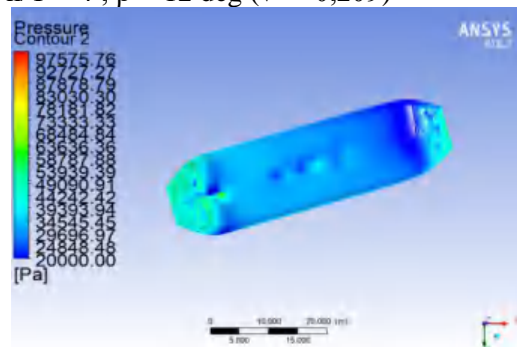
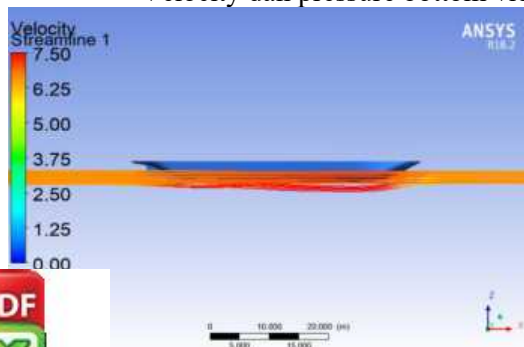
Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 8$  deg ( $v' = 0,140$ )

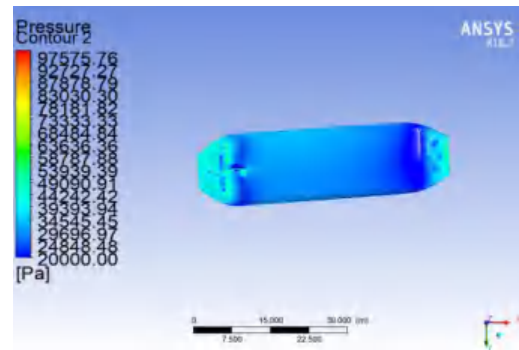
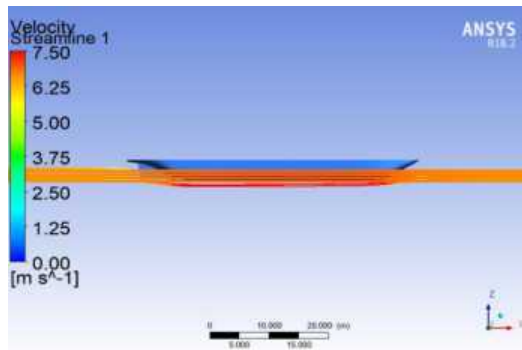


Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 12$  deg ( $v' = 0,209$ )

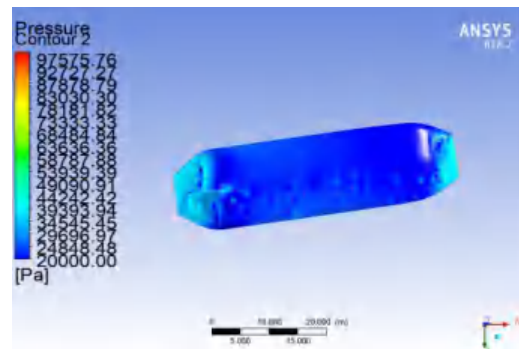
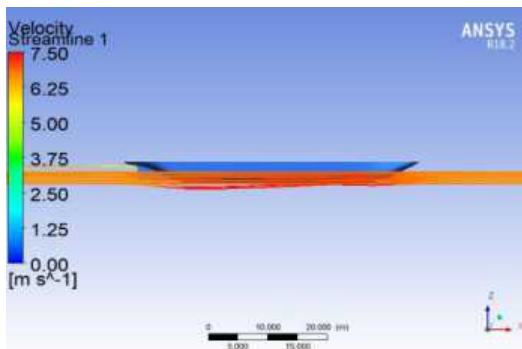


Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 16$  deg ( $v' = 0,279$ )

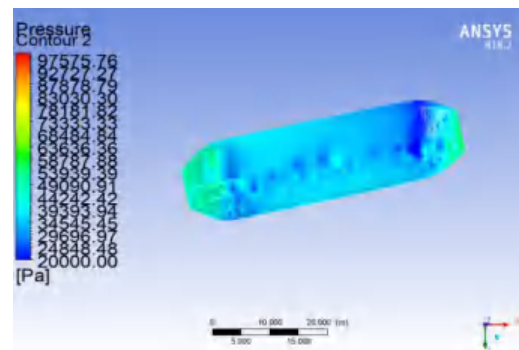
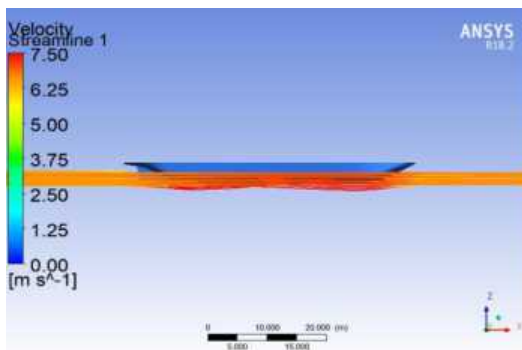




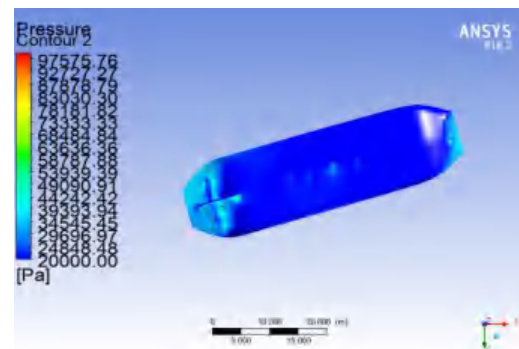
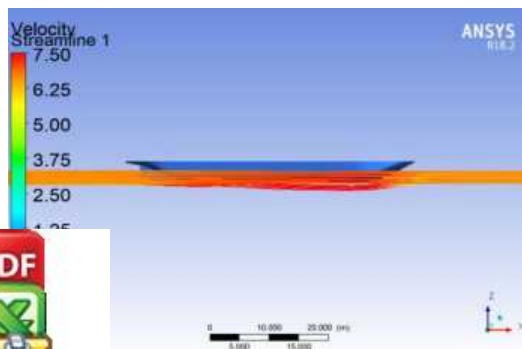
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 8$  deg ( $v' = 0,140$ )



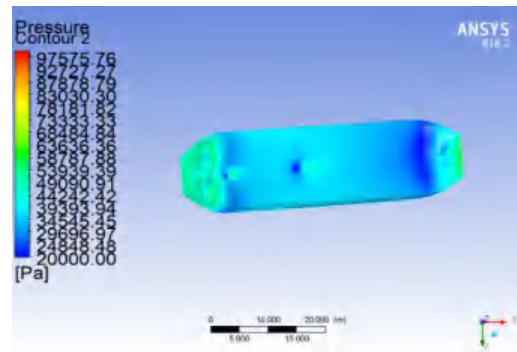
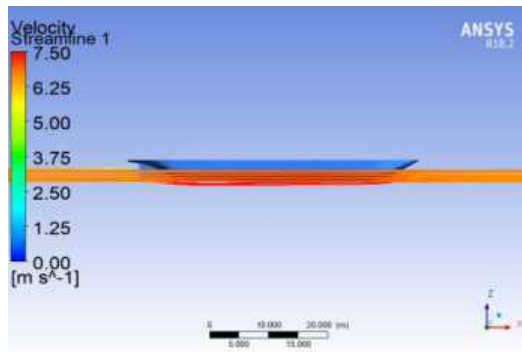
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 12$  deg ( $v' = 0,209$ )



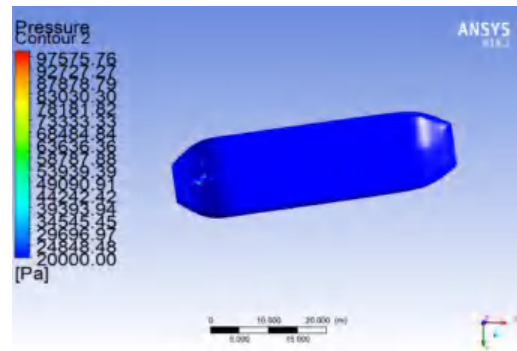
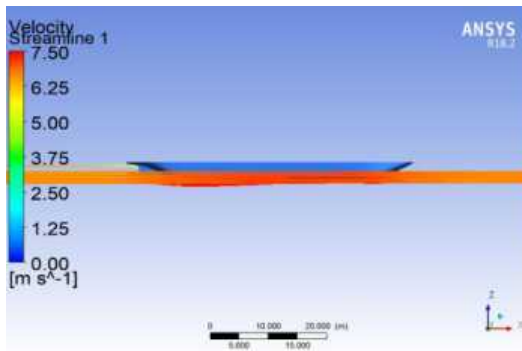
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 16$  deg ( $v' = 0,279$ )



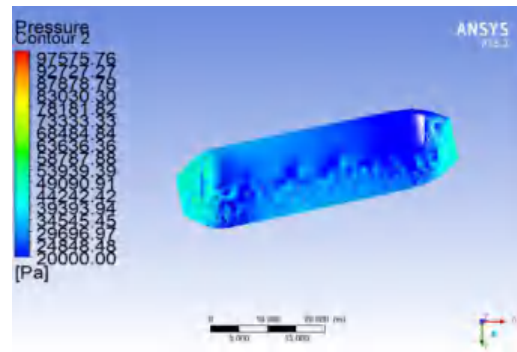
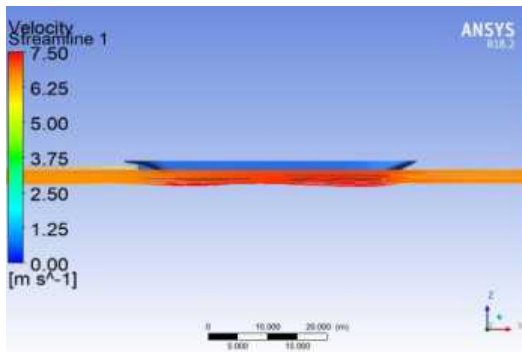




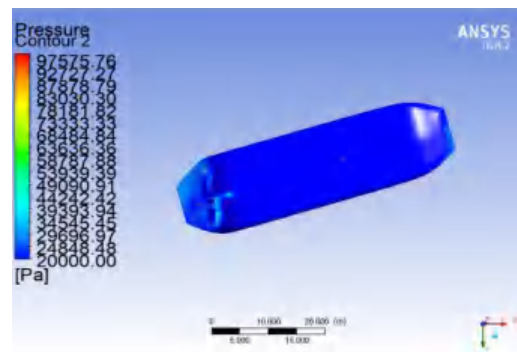
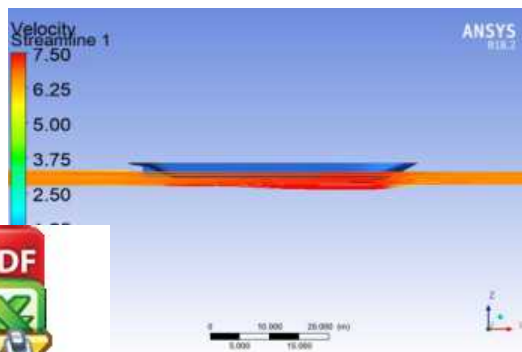
Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 8$  deg ( $v' = 0,140$ )

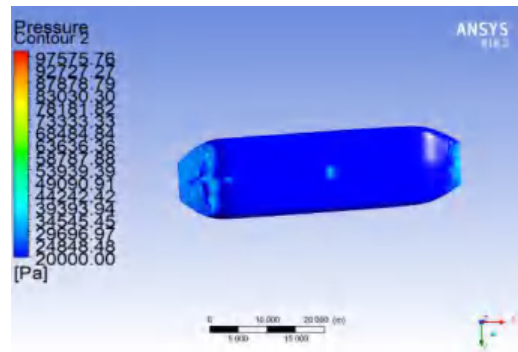
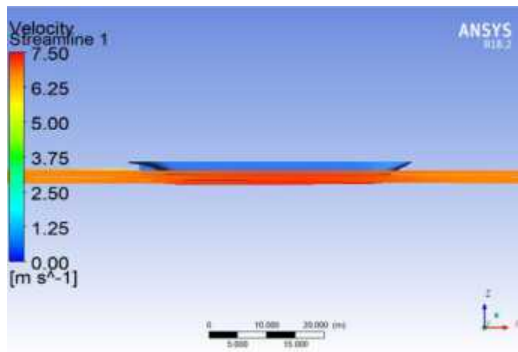


Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 12$  deg ( $v' = 0,209$ )

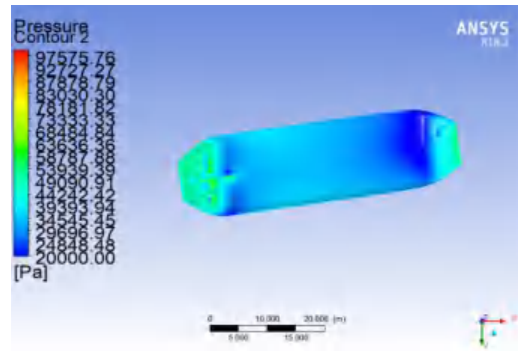
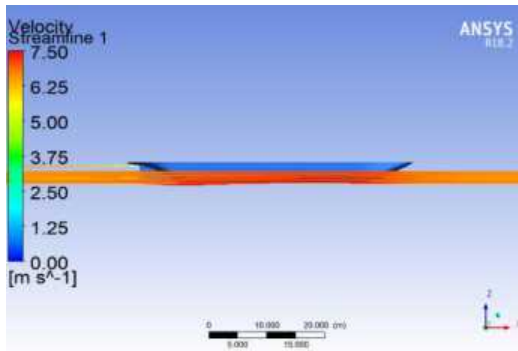


Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 16$  deg ( $v' = 0.279$ )

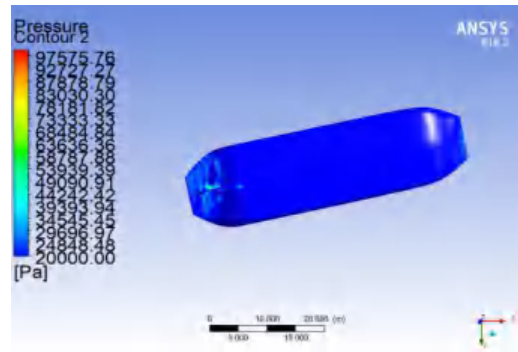
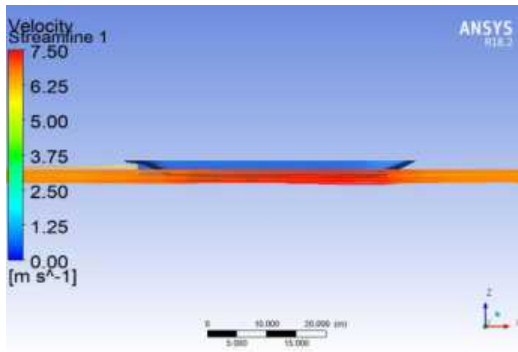




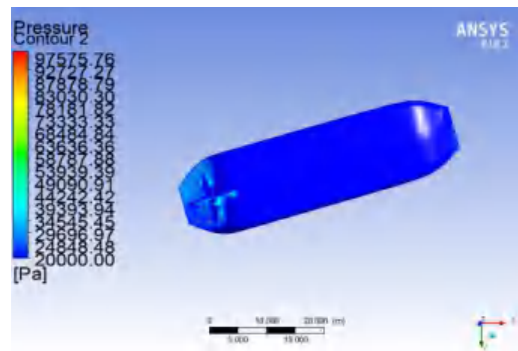
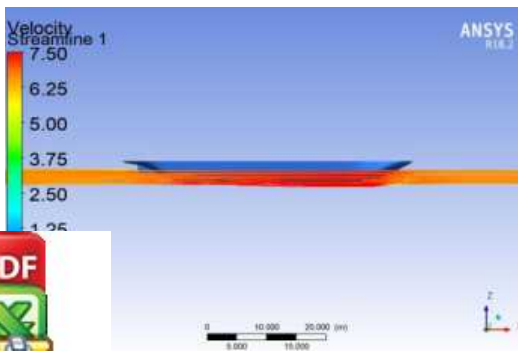
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 8$  deg ( $v' = 0,140$ )



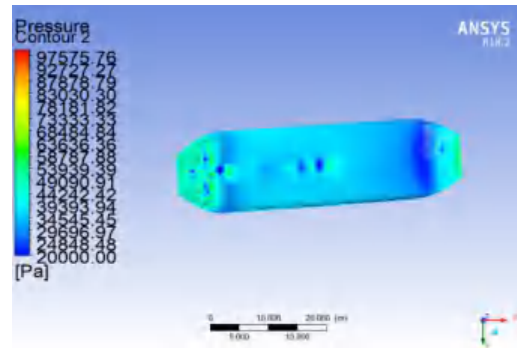
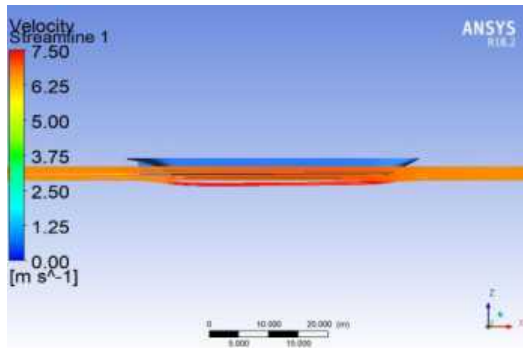
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 12$  deg ( $v' = 0,209$ )



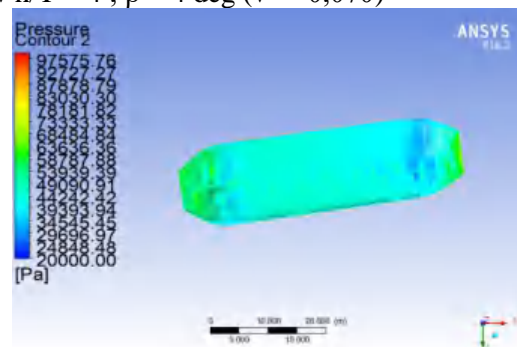
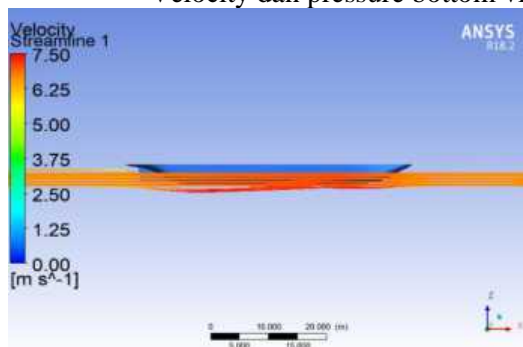
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 16$  deg ( $v' = 0,279$ )



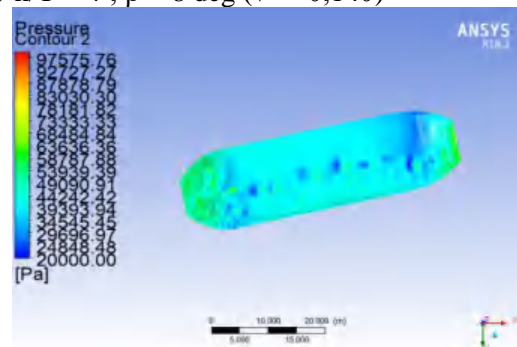
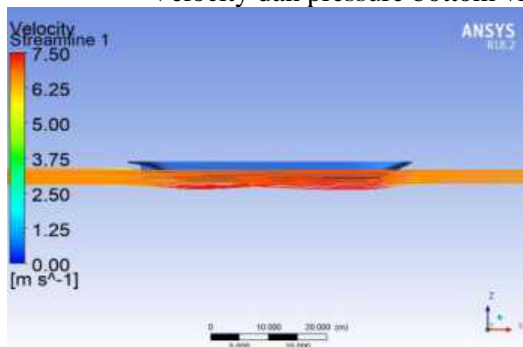
Lampiran 10. Visualisasi Aliran Drift Test Sarat 2,45m



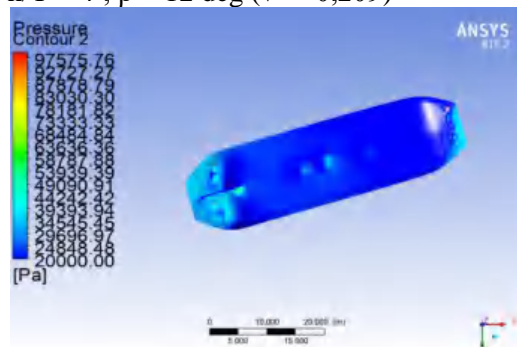
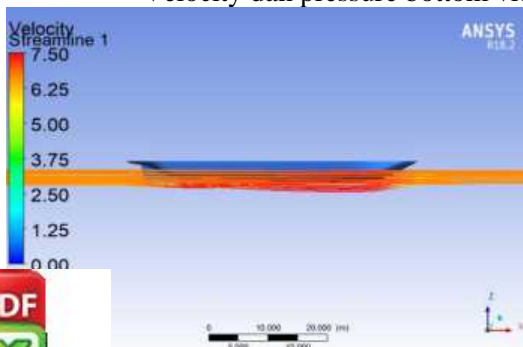
Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 8$  deg ( $v' = 0,140$ )

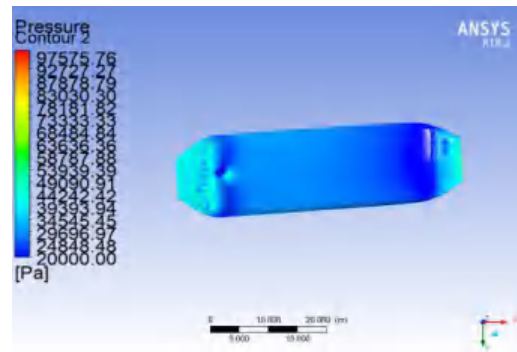
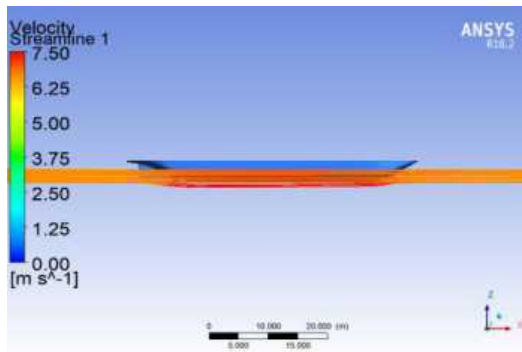


Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 12$  deg ( $v' = 0,209$ )

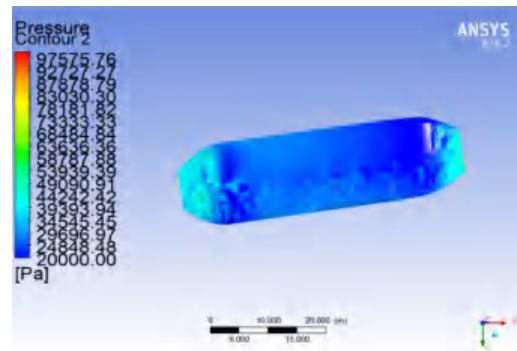
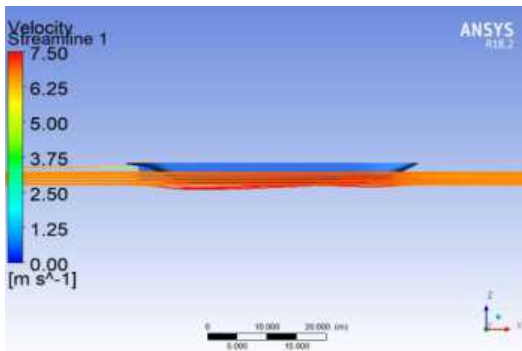


Velocity dan pressure bottom view  $h/T = 4$  ;  $\beta = 16$  deg ( $v' = 0,279$ )

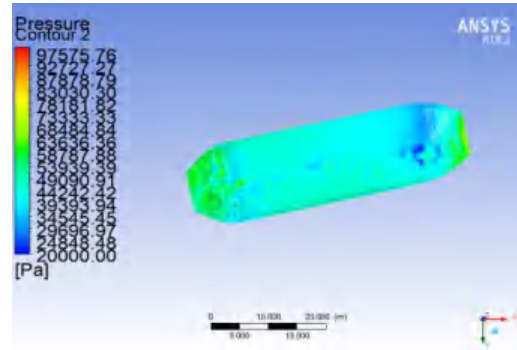
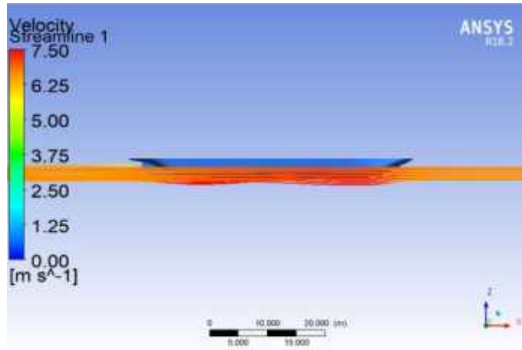




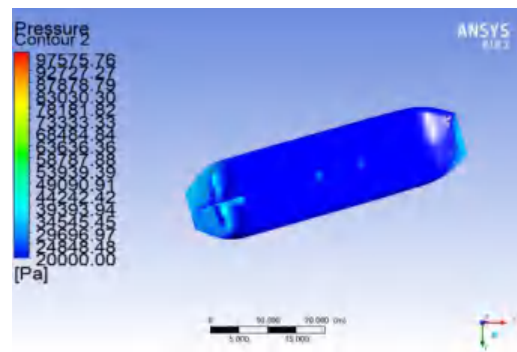
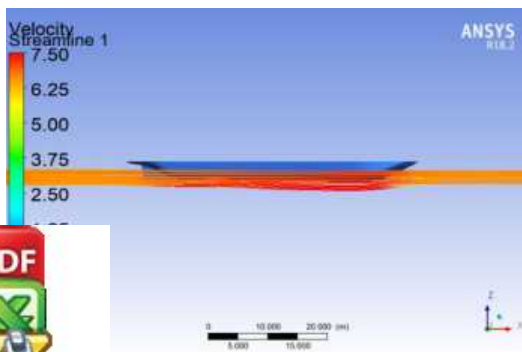
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 8$  deg ( $v' = 0,140$ )



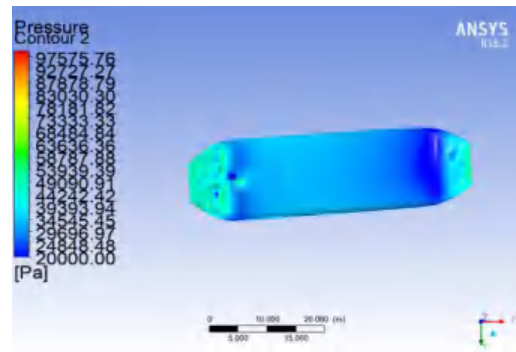
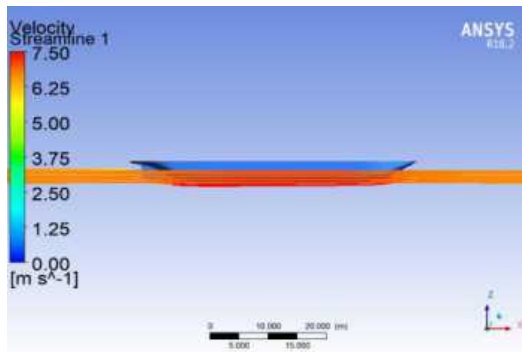
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 12$  deg ( $v' = 0,209$ )



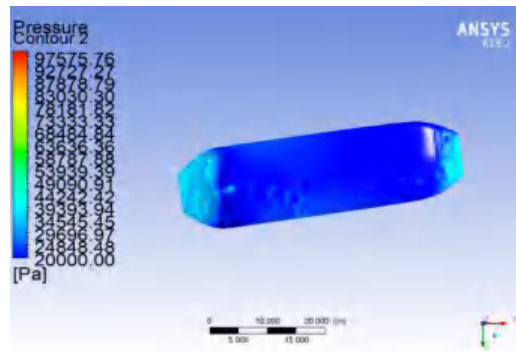
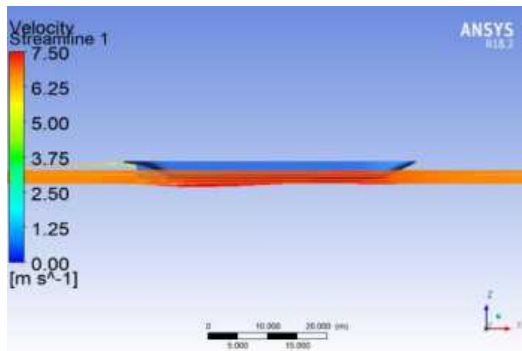
Velocity dan pressure bottom view  $h/T = 3$  ;  $\beta = 16$  deg ( $v' = 0,279$ )



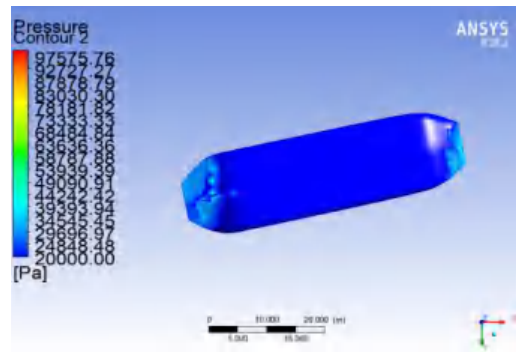
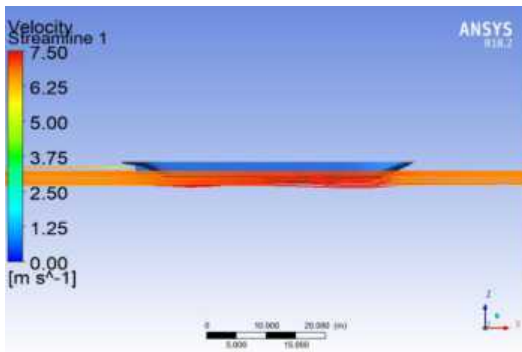




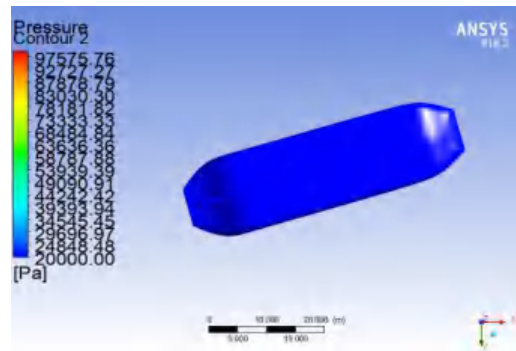
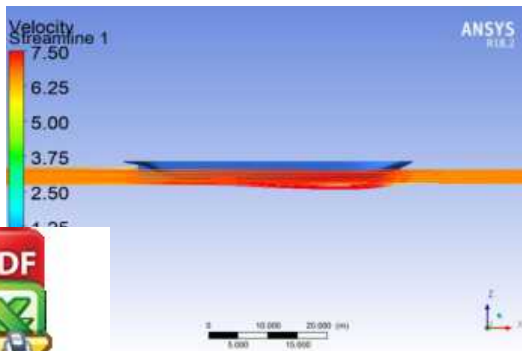
Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 8$  deg ( $v' = 0,140$ )

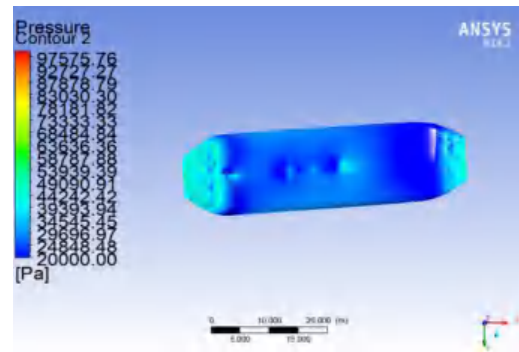
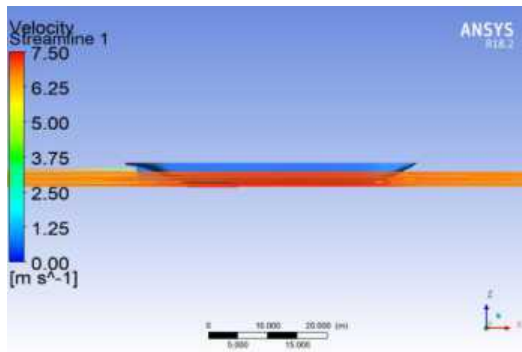


Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 12$  deg ( $v' = 0,209$ )

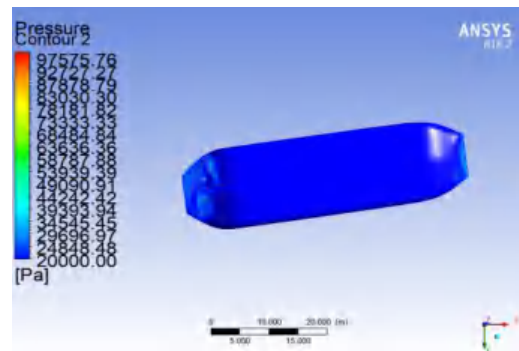
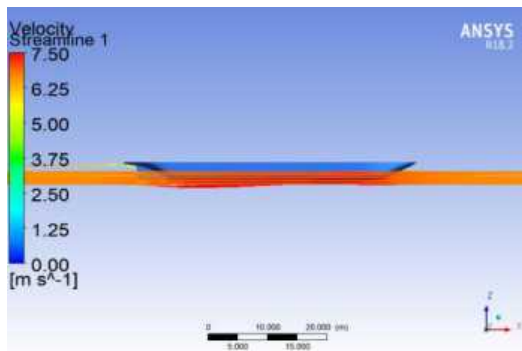


Velocity dan pressure bottom view  $h/T = 2$  ;  $\beta = 16$  deg ( $v' = 0.279$ )

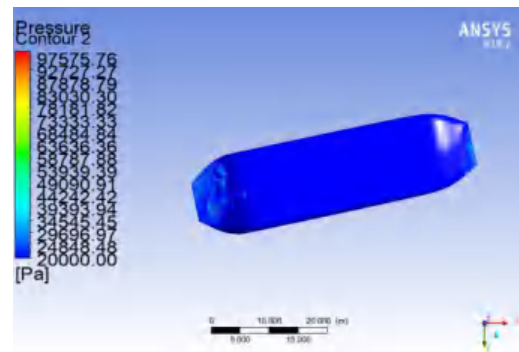
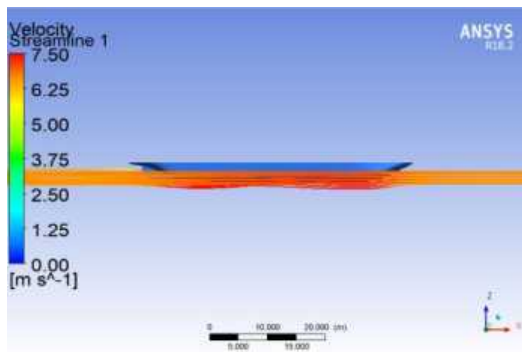




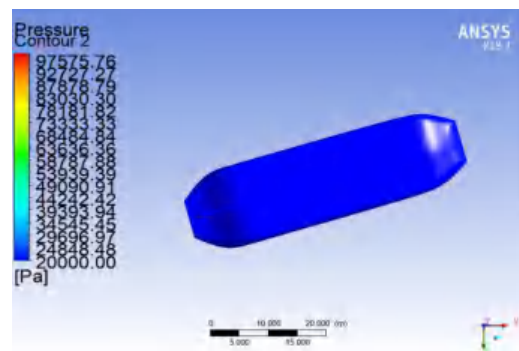
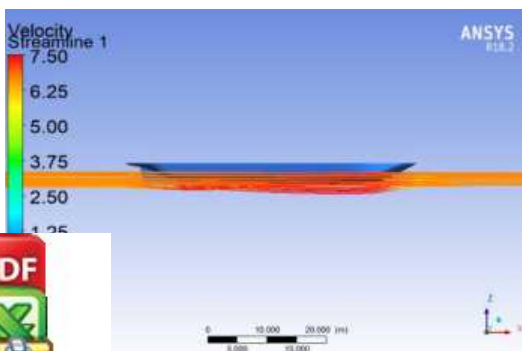
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 4$  deg ( $v' = 0,070$ )



Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 8$  deg ( $v' = 0,140$ )



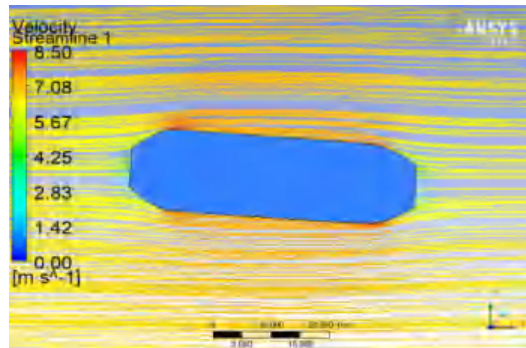
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 12$  deg ( $v' = 0,209$ )



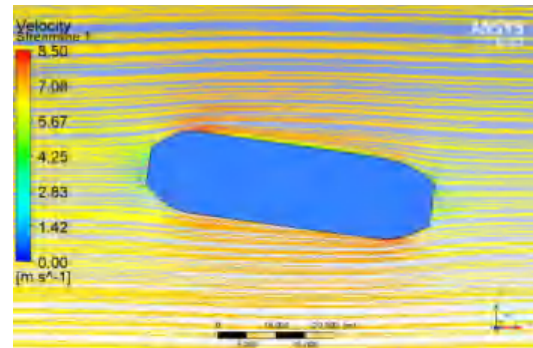
Velocity dan pressure bottom view  $h/T = 1,3$  ;  $\beta = 16$  deg ( $v' = 0,279$ )



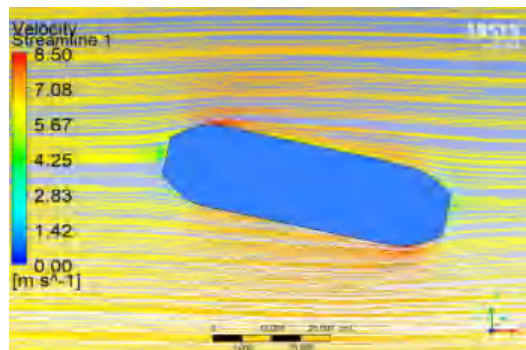
## Lampiran 11. Velocity Streamline Drift Test



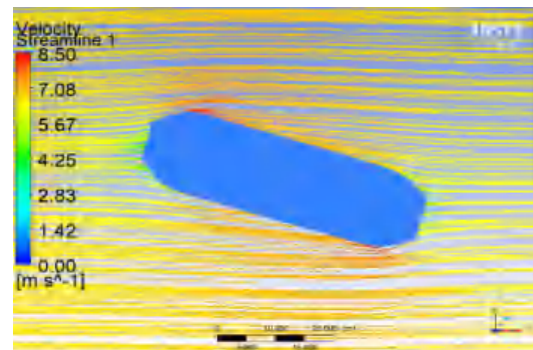
Velocity streamline drift test top view  $\beta = 4 \text{ deg}$  ( $v' = 0,069$ )



Velocity streamline drift test top view  $\beta = 8 \text{ deg}$  ( $v' = 0,139$ )



Velocity streamline drift test top view  $\beta = 12 \text{ deg}$  ( $v' = 0,209$ )



Velocity streamline drift test top view  $\beta = 16 \text{ deg}$  ( $v' = 0,279$ )





KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI

DEPARTEMEN TEKNIK SISTEM PERKAPALAN

FAKULTAS TEKNIK UNIVERSITAS HASANUDDIN

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No. : 26520/UN4.7.7/TD.06/2023  
Lamp : -  
Hal : Penugasan Bimbingan Tugas Akhir

Kepada Yth : **Wakil Dekan Bidang Akademik dan  
Kemahasiswaan Fakultas Teknik Unhas  
di-  
Gowa**

Dengan hormat,  
Kiranya dosen pembimbing tugas akhir (skripsi) dari mahasiswa :

Nama : Ilyas Teguh Kharisma  
Stambuk : D091191026  
Program Studi : Teknik Sistem Perkapalan

Dengan judul Tugas Akhir:

***Pengaruh Perubahan Sarat dan Kedalaman Perairan Terhadap Gaya Hidrodinamika Menggunakan Metode Computational Fluid Dynamic (CFD)***

Dosen Pembimbing :

1. Prof. Ir. Andi Haris Muhammad, S.T., M.T., Ph.D
2. Muhammad Iqbal Nikmatullah, S.T., M.T.

Dapat dibuatkan Surat Penugasan Bimbingan Tugas Akhir

Demikian penyampaian kami, atas perhatian dan kerjasamanya diucapkan terima kasih.

G o w a, 15 November 2023

Ketua Departemen Teknik Sistem Perkapalan



Dr.Eng. Faisal Mahmuddin, S.T, M.Inf.Tech., M.Eng

Nip. 19810211 200501 1 003







## SURAT PENUGASAN

No. 26521/UN4.7.1/TD.06/2023

Dari : Dekan Fakultas Teknik Universitas Hasanuddin

Kepada : 1. **Prof. Ir. Andi Haris Muhammad, S.T., M.T., Ph.D** **Pemb. I**  
2. **Muhammad Iqbal Nikmatullah, S.T., M.T.** **Pemb. II**

Isi : 1. Bahwa berdasarkan peraturan Akademik Universitas Hasanuddin Tahun 2018 Pasal 16 (SK. Rektor Unhas nomor : 2784/UN4.1/KEP/2018), dengan ini menugaskan Saudara sebagai PEMBIMBING MAHASISWA, maka dengan ini kami menugaskan Saudara untuk membimbing penulisan Skripsi/Tugas Akhir mahasiswa Teknik Sistem Perkapalan Fakultas Teknik Universitas Hasanuddin di bawah ini :

Nama : **Ilyas Teguh Kharisma** No. Stambuk : **D091191026**

Judul Skripsi/Tugas Akhir :  
***Pengaruh Perubahan Sarat dan Kedalaman Perairan Terhadap Gaya Hidrodinamika Menggunakan Metode Computational Fluid Dynamic (CFD)***

2. Surat penugasan pembimbing ini mulai berlaku sejak tanggal ditetapkannya dan berakhir sampai selesainya penulisan Skripsi/Tugas Akhir Mahasiswa tersebut.
3. Agar surat penugasan ini dilaksanakan sebaik - baiknya dengan penuh rasa tanggung jawab.

Ditetapkan di Gowa,  
Pada tanggal, 15 November 2023  
a.n Dekan,  
Wakil Dekan Bidang Akademik dan  
Kemahasiswaan,



Dr. Amil Ahmad Ilham, S.T., M.IT.  
Nip. 19731010 199802 1 001

Tembusan :

1. Dekan FT-UH.
2. Ketua Departemen Teknik Sistem Perkapalan FT-UH.
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### SURAT IZIN UJIAN SKRIPSI

Nomor 31702/UN4.1.1.1/PK.03.02/2024

Berdasarkan Peraturan Rektor Universitas Hasanuddin tentang Penyelenggaraan Program Sarjana Nomor 29/UN4.1//2023 tanggal 17 Oktober 2023, dengan ini menerangkan bahwa:

Nama : ILYAS TEGUH KHARISMA  
NIM : D091191026  
Tempat/Tanggal Lahir : SURABAYA/26 FEBRUARI 2001  
Fakultas : TEKNIK  
Program Studi : TEK. SISTEM PERKAPALAN

Telah memenuhi syarat untuk Ujian Skripsi Strata I (S1). Demikian Surat Persetujuan ini dibuat untuk digunakan dalam proses pelaksanaan ujian skripsi, dengan ketentuan dapat mengikuti wisuda jika persyaratan kelulusan/wisuda telah dipenuhi. Terima Kasih.

Makassar, 29 Juli 2024  
a.n. Direktur Pendidikan  
Kepala Subdirektorat Administrasi  
Pendidikan,



Susy Asteria Irafany, S.T., M.Si.  
NIP 197403132009102001

Keterangan online wisuda:

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No. : 20182/UN4.7.7/TD.06/2024  
Lampiran : -  
Hal : Penerbitan Surat Penugasan Panitia  
Ujian Sarjana Strata Satu (S1)  
  
Kepada Yth. : **Wakil Dekan Bidang Akademik  
dan Kemahasiswaan Fakultas Teknik UNHAS  
di-  
Gowa**

Dengan hormat,  
Berdasarkan Persetujuan Pembimbing Mahasiswa, Bersama ini diusulkan susunan Panitia Ujian Sarjana Strata Satu (S1) bagi mahasiswa Departemen Teknik Sistem Perkapalan Fakultas Teknik Universitas Hasanuddin atas nama :

Nama : Ilyas Teguh Kharisma  
Stambuk : D091191026

Maka dengan ini kami sampaikan Susunan Panitia Ujian Sarjana Strata Satu (S1) sebagai berikut :

Ketua : Prof. Ir. Andi Haris Muhammad, S.T., M.T., Ph.D.  
Sekretaris : Muhammad Iqbal Nikmatullah, ST.,MT  
Anggota : 1. Dr.Ir. Ganding Sitepu, Dipl.Ing.  
2. Rahimuddin, S.T., M.T., Ph.D.

Judul Tugas Akhir mahasiswa yang bersangkutan adalah :

***Pengaruh Perubahan Sarat Kapal dan Kedalaman Perairan Terhadap Gaya Hidrodinamika Menggunakan Computational Fluid Dynamic***

Untuk dapat diterbitkan surat penugasannya.

Demikian penyampaian kami, atas perhatian dan kerjasamanya diucapkan terima kasih.

Gowa, 15 Agustus 2024

Ketua Departemen Teknik Sistem Perkapalan



Dr.Eng.Ir.Faisal Mahmudin, S.T,M.Inf.Tech,M.Eng.,IPM  
Nip. 19810211 200501 1 003





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**SURAT PENUGASAN**

No. 20183/UN4.7.1/TD.06/2024

Dari : Dekan Fakultas Teknik Universitas Hasanuddin  
Kepada : Mereka yang tercantum namanya dibawah ini.  
Isi : 1. Bahwa Berdasarkan Peraturan Rektor Universitas Hasanuddin Nomor 29/UN4.1/2023 tentang Penyelenggaraan Program Sarjana Universitas Hasanuddin dengan ini menugaskan Saudara sebagai PANITIA UJIAN SARJANA Program Strata Satu (S1) Teknik Sistem Perkapalan Fakultas Teknik Universitas Hasanuddin dengan susunan sebagai berikut :

Ketua : Prof. Ir. Andi Haris Muhammad, S.T., M.T., Ph.D.  
Sekretaris : Muhammad Iqbal Nikmatullah, ST.,MT  
Anggota : 1. Dr.Ir. Ganding Sitepu, Dipl.Ing.  
2. Rahimuddin, S.T., M.T., Ph.D.

Untuk menguji bagi mahasiswa tersebut dibawah ini :

Nama/NIM : Ilyas Teguh Kharisma / D091191026

Judul Thesis/Skripsi :

***Pengaruh Perubahan Sarat Kapal dan Kedalaman Perairan Terhadap Gaya Hidrodinamika Menggunakan Computational Fluid Dynamic***

2. Waktu ujian ditetapkan oleh Panitia Ujian Akhir Program Strata Satu (S1).
3. Agar surat penugasan ini dilaksanakan sebaik-baiknya dengan penuh rasa tanggung jawab.
4. Surat penugasan ini berlaku sejak tanggal ditetapkan sampai dengan berakhirnya Ujian Sarjana tersebut, dengan ketentuan bahwa segala sesuatunya akan ditinjau dan diperbaiki sebagaimana mestinya apabila dikemudian hari ternyata terdapat kekeliruan dalam keputusan ini.

Ditetapkan di Gowa,  
Pada Tanggal 15 Agustus 2024  
a.n Dekan,  
Wakil Dekan Bidang Akademik dan Kemahasiswaan,



Dr. Amil Ahmad Ilham, S.T., M.IT.  
Nip. 19731010 199802 1 001

Tembusan:

1. Dekan FT-UH
2. Ketua Departemen Teknik Sistem Perkapalan
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**BERITA ACARA UJIAN SEMINAR TUTUP**

Terhadap Mahasiswa

Nama : Ilyas Teguh Kharisma  
Stambuk : D091191026  
Judul : *Pengaruh Perubahan Sarat Kapal dan Kedalaman Perairan Terhadap Gaya Hidrodinamika Menggunakan Computational Fluid Dynamic*  
Hari/Tanggal : Selasa, 20 Agustus 2024  
Waktu : 10:30 - 12:30 WITA  
Tempat : Ruang Sidang Teknik Sistem Perkapalan  
Keputusan Sidang/ Catatan : *Lulus*  
Catatan : *86,5 (A)*

**PANITIA UJIAN**

No.	Susunan Panitia	Nama	Tanda Tangan
1.	Ketua/Anggota	Prof. Ir. Andi Haris Muhammad, S.T., M.T., Ph.D.	1..... 
2.	Sekretaris/Anggota	Muhammad Iqbal Nikmatullah, ST.,MT	2..... 
3.	Anggota	Dr.Ir. Ganding Sitepu, Dipl.Ing.	3..... 
4.	Anggota	Rahimuddin, S.T., M.T., Ph.D.	4..... 

Ketua Sidang

Gowa, Agustus 2024  
Sekretaris Sidang

Prof. Ir. Andi Haris Muhammad, S.T., M.T., Ph.D.  
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