

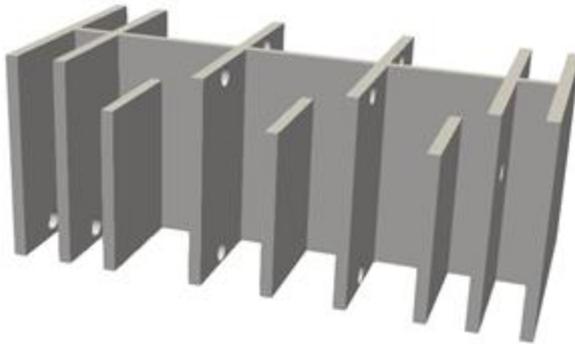


Analisis Performa Desain Penampung Air Ozone dengan Simulasi CFD

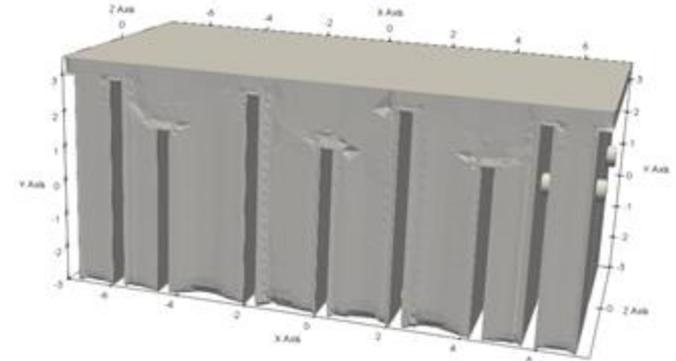


1. Desain Gambar
2. Kondisi Sistem
3. Hasil Analisis
 - a. Debit Air
 - b. Tekanan Air
4. Kesimpulan

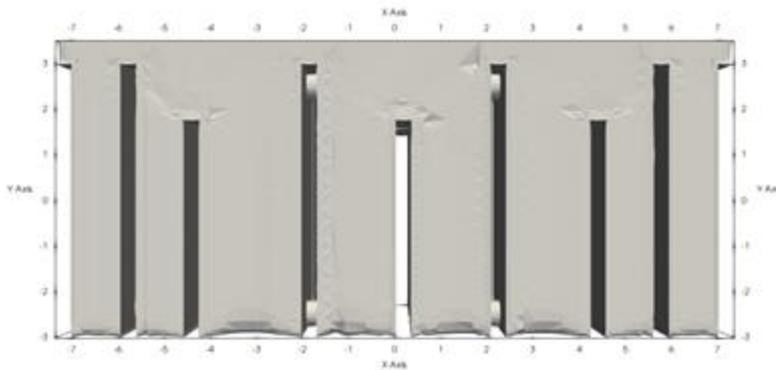
- | |
|---|
| 1. - AERASI TAHAP 1 |
| 2. - BANGUNAN KIMIA TAHAP 1 |
| 3. - KOAGULASI FLOKUASI SEDIMENTASI TAHAP 1 |
| 4. - DUAL FILTER |
| 5. - BANGUNAN OZON |
| 5A. - BANGUNAN GENERATOR OZON |
| 6. - GRANULAR ACTIVATED CARBON(GAC) |
| 7. - TANGKI TRANSFER IPA SEPAKU |
| 7a. - TANGKI TRANSFER SEPAKU SEMOI |
| 8. - BACKWASH RECOVERY TANK |
- | |
|------------------------------|
| A. - KANTOR PENGELOLA & EXPO |
| B. - AREA PARKIR |
| C. - GEDUNG PEMELIHARAAN |
| D. - AREA HUTAN |
| E. - BANGUNAN POWER HOUSE |
| F. - PINTU GERBANG |
| G. - SLUDGE TREATMENT |
| H. - KOLAM RETENSI |
- | |
|--|
| 9. - AERASI TAHAP 2 |
| 10. - BANGUNAN KIMIA TAHAP 2 |
| 11. - KOAGULASI FLOKUASI SEDIMENTASI TAHAP 2 |
| 12. - RAPID SAND FILTER TAHAP 2 |
| 13. - TANGKI TRANSFER TAHAP 2 |
| 14. - PRASEDIMENTASI |
| 15. - RENCANA PENGEMBANGAN IPA 1000 lps |
| 16. - TANGKI TRANSFER TAHAP 3 |



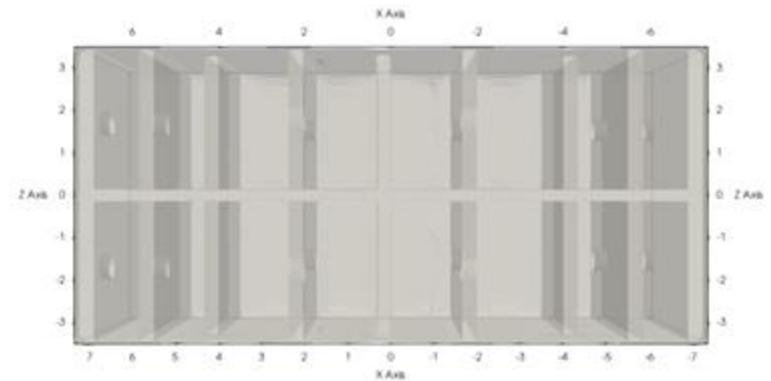
Desain Bangunan Penampung Air



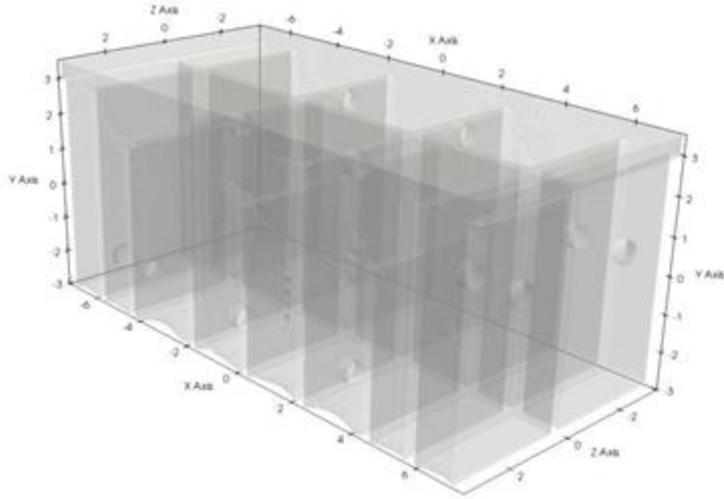
Bentuk 3D Desain Bangunan Penampung Air



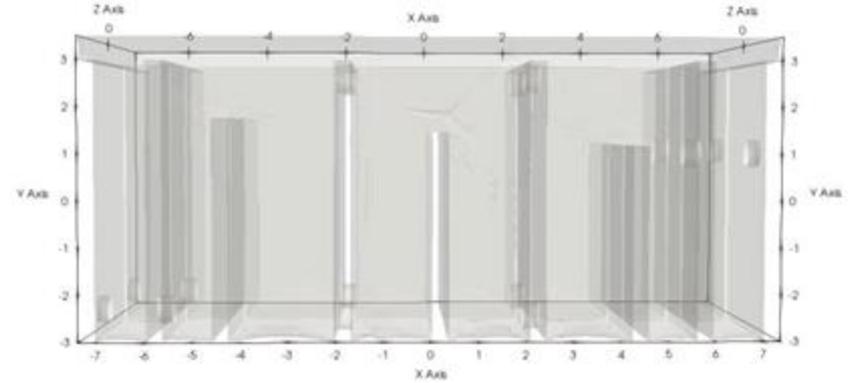
Bentuk 3D Desain Bangunan Penampung Air



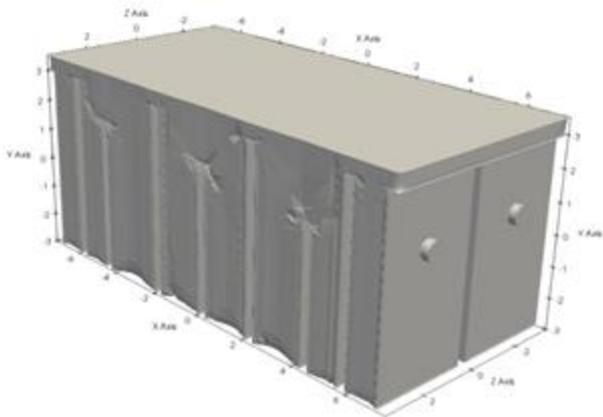
Bentuk 3D Nampak Atas



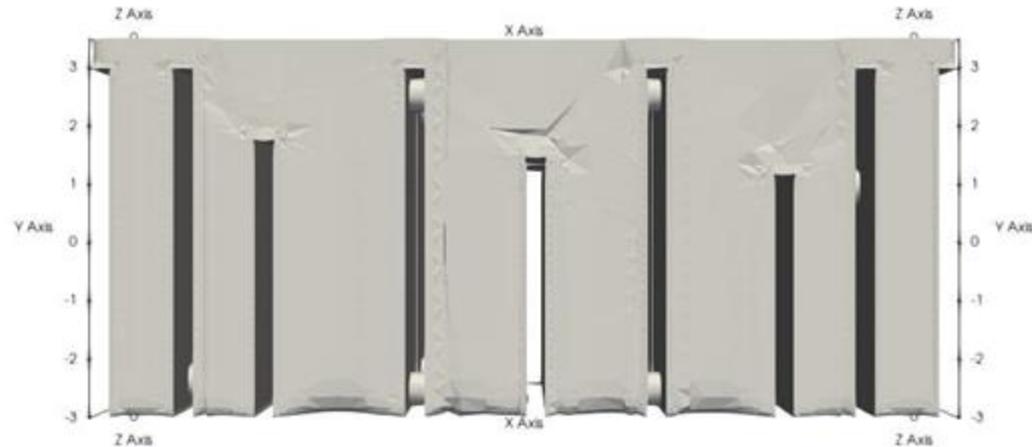
Desain Bangunan Penampung Air



Bentuk 3D Desain Bangunan Penampung Air



Bentuk 3D Desain Bangunan Penampung Air



Bentuk 3D Nampak Atas

- Case Simulasi Dua Fasa (Air dan Udara)

Fluida kerja

- a. Air density = 998.2 Kg/m^3
- b. Udara density = 1.225 Kg/m^3
- c. Gravitasi pada sumbu $-y$ dengan percepatan gravitasi 9.81 m/s^2
- d. Debit pompa kerja
 - i. 300 Lps $\rightarrow 0.3 \text{ m}^3/\text{s}$
 - ii. 472.5 Lps $\rightarrow 0.4725 \text{ m}^3/\text{s}$

e. Nilai viskositas

i. Nu Air :

ii. Nu Udara :

i. Tegangan Permukaan (σ) :

Seperti pada gambar di samping

```
FoamFile
{
  version      2.0;
  format       ascii;
  class        dictionary;
  object       transportProperties;
}
// *****

phases        (water air);

water
{
  transportModel  Newtonian;
  nu              1e-06;
  rho            1000;
}

air
{
  transportModel  Newtonian;
  nu              1.48e-05;
  rho            1;
}

sigma          0.07;
```

- Variasi Debit

300 L/s

472.5 L/S

- Kecepatan
- Pressure
- Tinggi Muka Air

- Variasi Debit

300 L/s

472.5 L/S

- Kecepatan

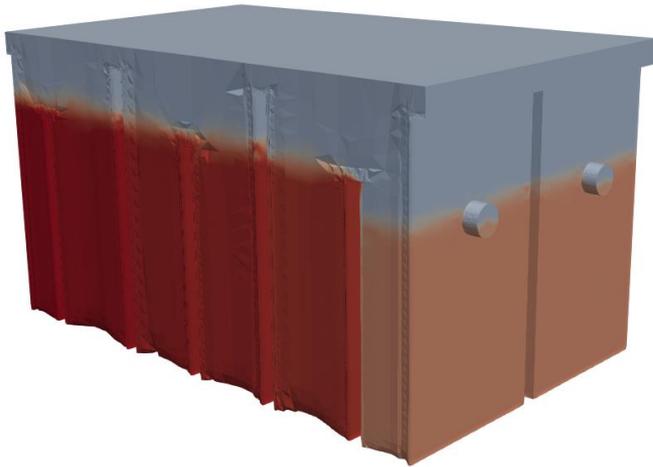
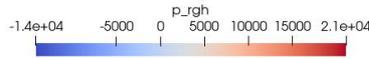
- Pressure

- Tinggi Muka Air

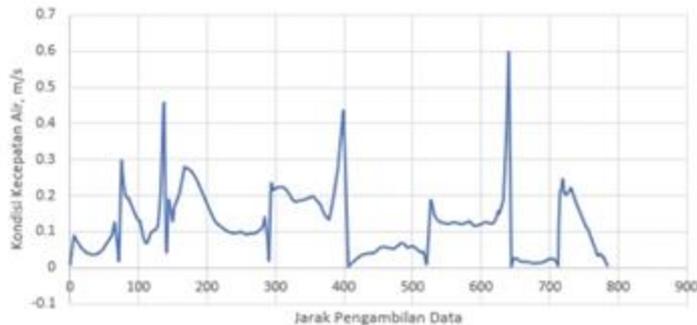
300 Lps

472.5 Lps

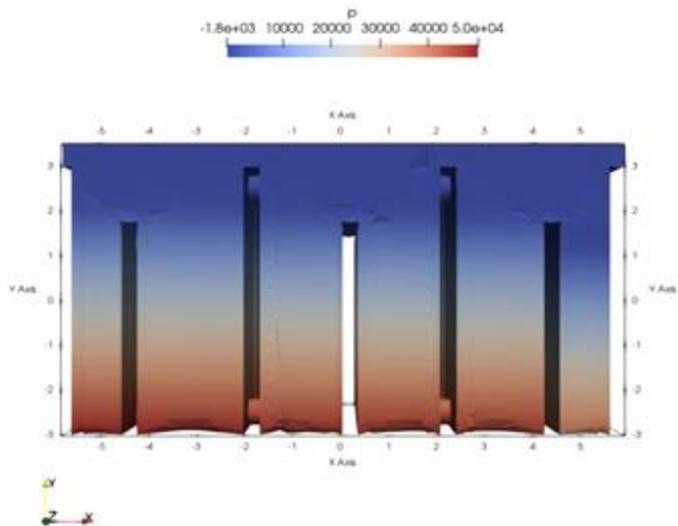
Hasil Simulasi CFD dari Kecepatan



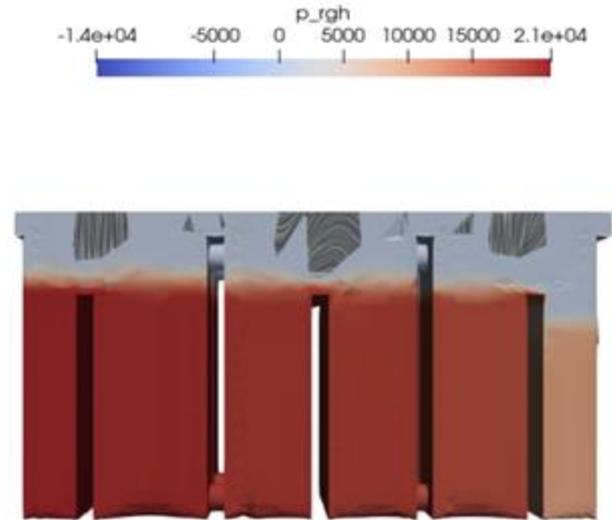
Grafik Kecepatan



Gambar grafik kecepatan dari hasil simulasi CFD



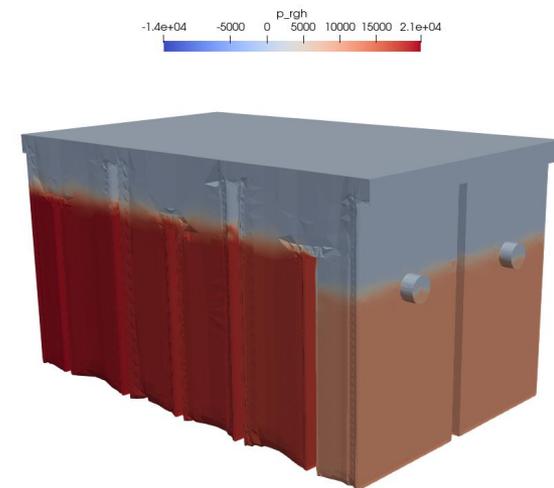
Kontur Tekanan Hasil Simulasi CFD



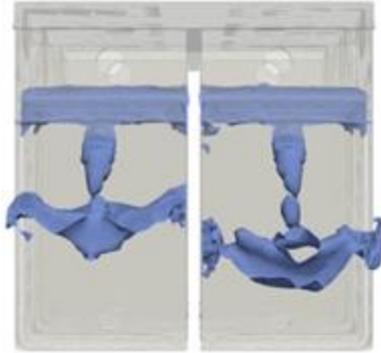
Kontur Tekanan Hasil Simulasi CFD



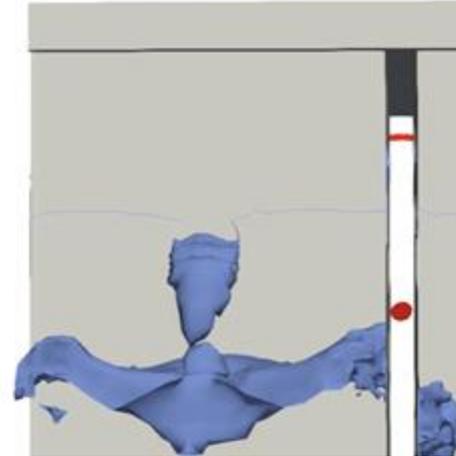
Grafik Tekanan pada Desain dengan Debit 472.5 Ips



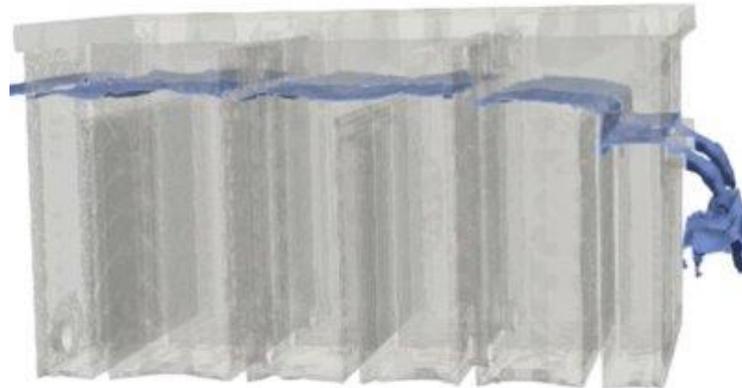
Kontur Tekanan Hasil Simulasi CFD



Ketinggian Muka Air Nampak Depan

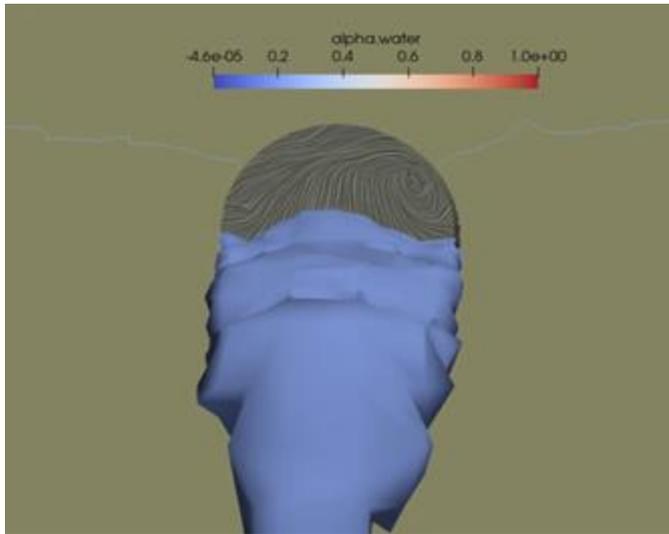


Ketinggian Muka Air Pipa Outlet

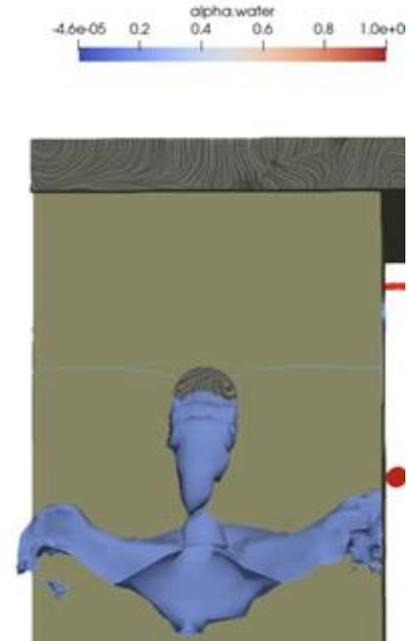


Nampak Samping

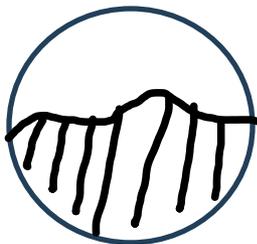
Tinggi Muka Air pada Pipa Outlet



Penampang Outlet



Penampang Outlet



Debit sisa sebesar 270.503 Lps

Tinggi muka air tersisa 57.5 persen
dari total diameter pipa outlet

