



Tesis
Rekayasa Konversi Energi ITS

APLIKASI GAS HHO PADA SEPEDA MOTOR 150

Disampaikan Oleh
Nofriyandi. R

Pembimbing
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Latar Belakang





Batasan Masalah

1. Bahan Bakar Pertamax (RON 91) + Gas HHO
2. Percobaan New MegaPro 150 cc
3. Unjuk kerja
4. Emisi gas buang



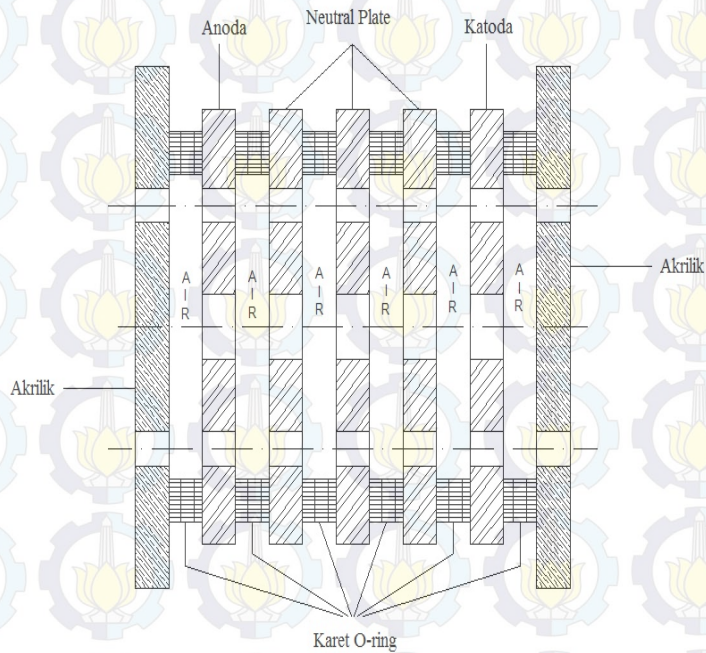
Tujuan Penelitian

- Untuk mengetahui pengaruh penambahan gas HHO tipe *dry* terhadap *performance* mesin
- Untuk mengetahui pengaruh penambahan gas HHO tipe *dry* terhadap kadar emisi gas buang

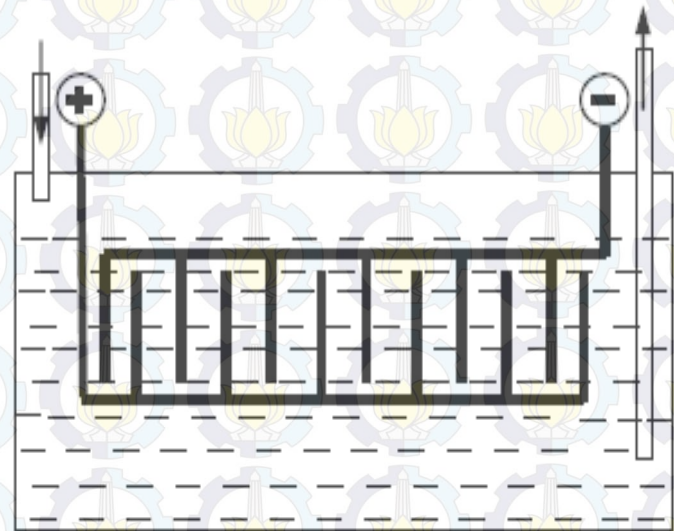


Jenis Generator HHO

HHO generator dry type



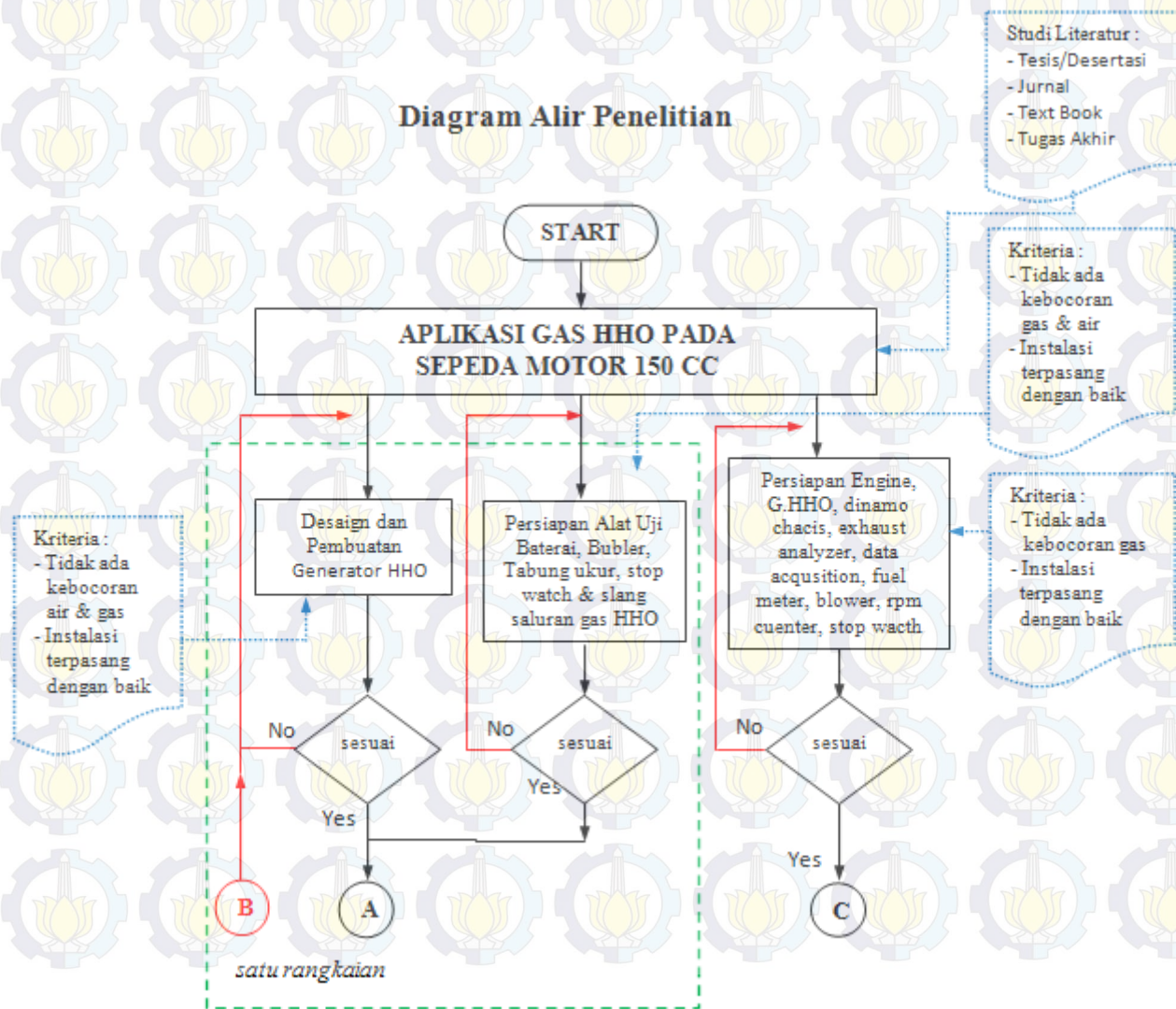
HHO generator dry wet





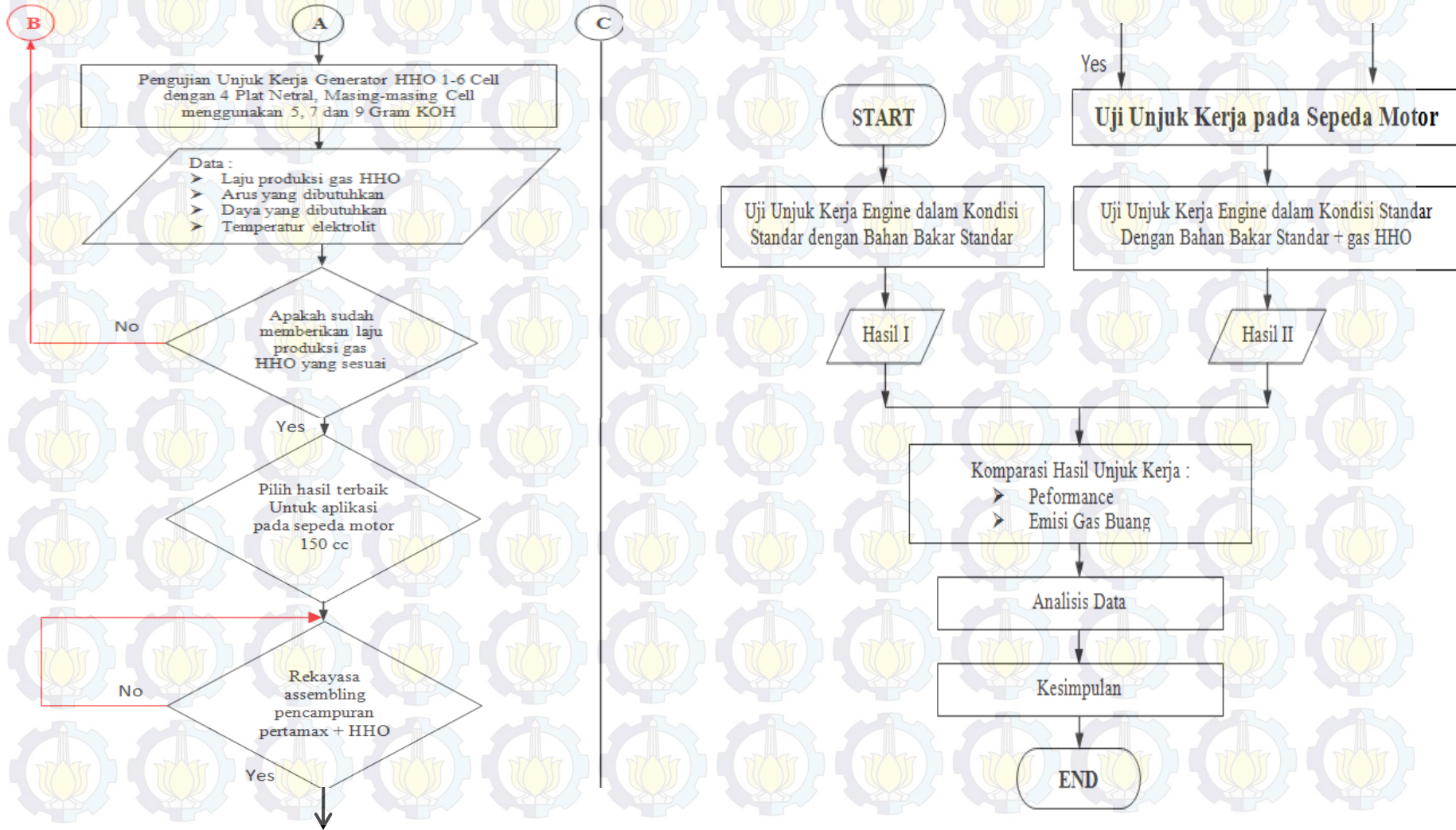
Skema *flow chart* penelitian

Diagram Alir Penelitian



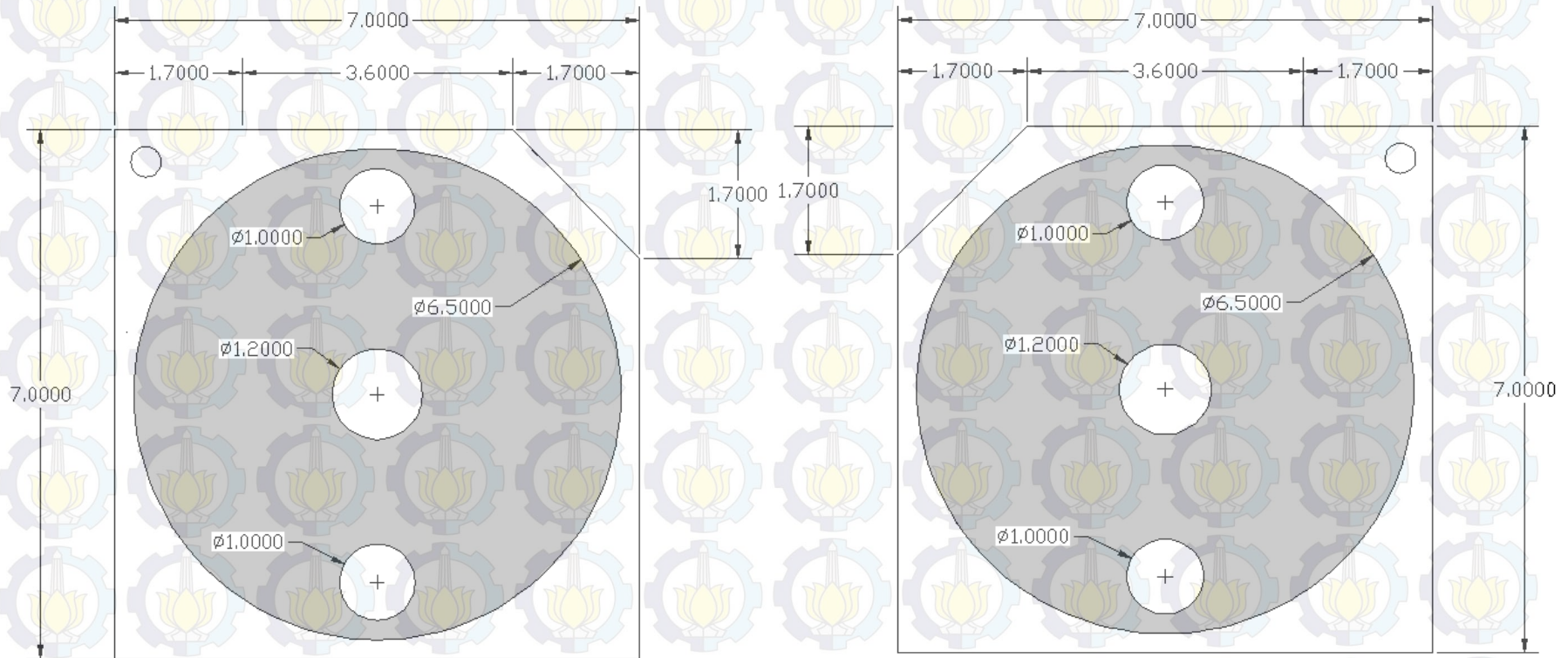


Skema *flow chart* penelitian



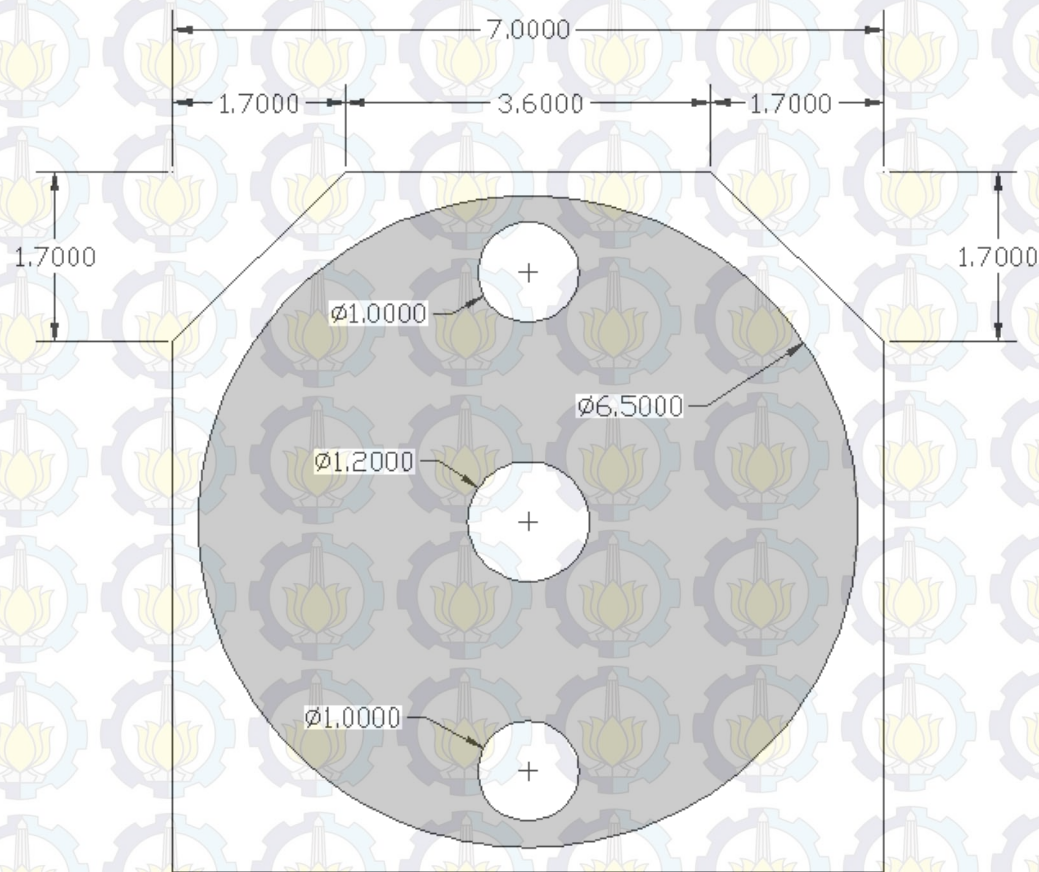


Ukuran Plat Anoda Katoda



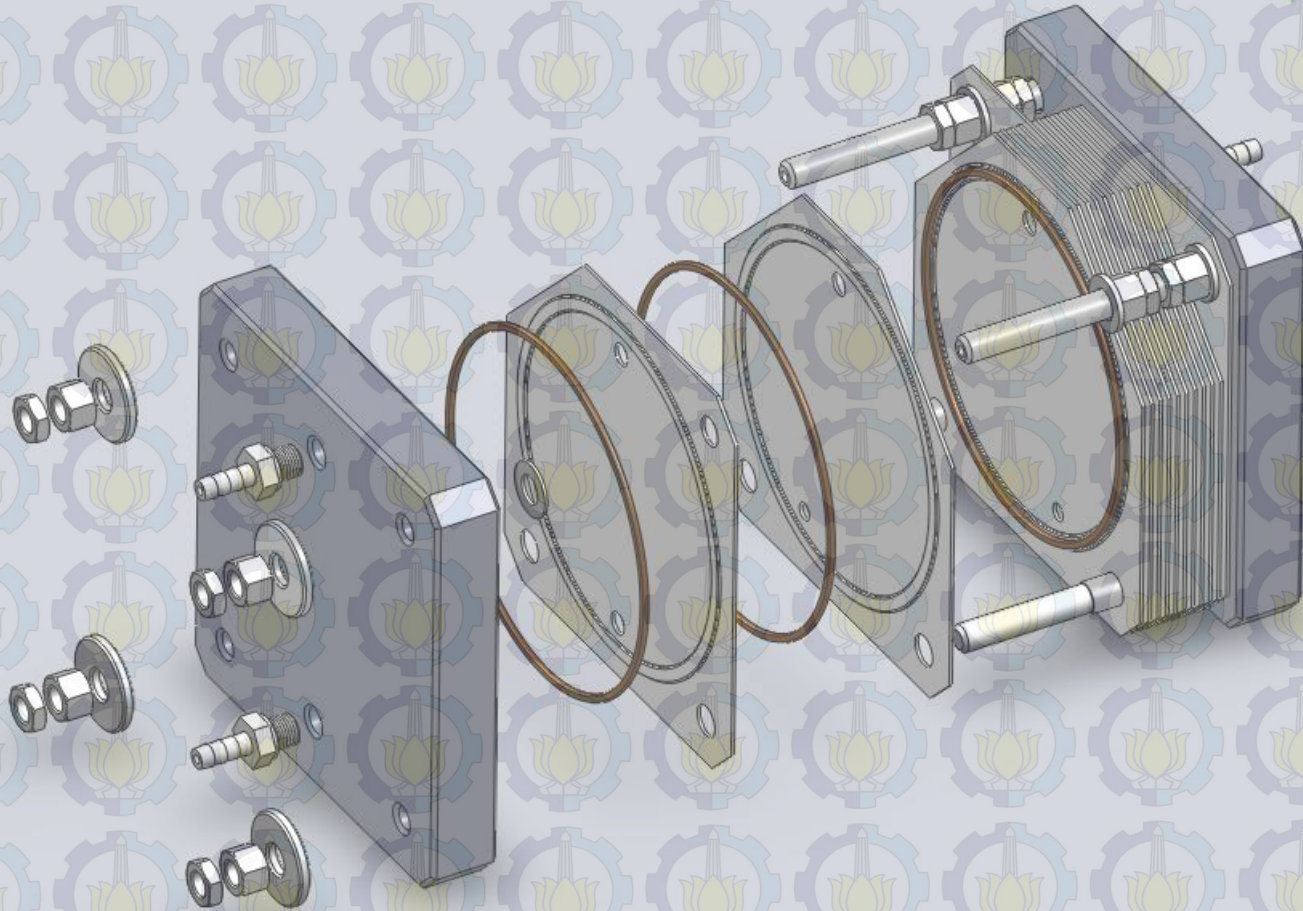


Ukuran Plat Netral





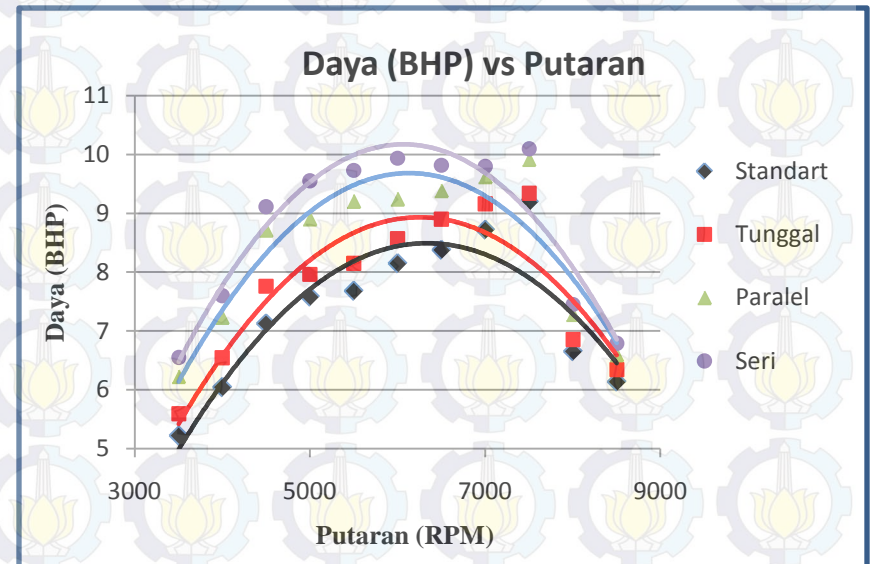
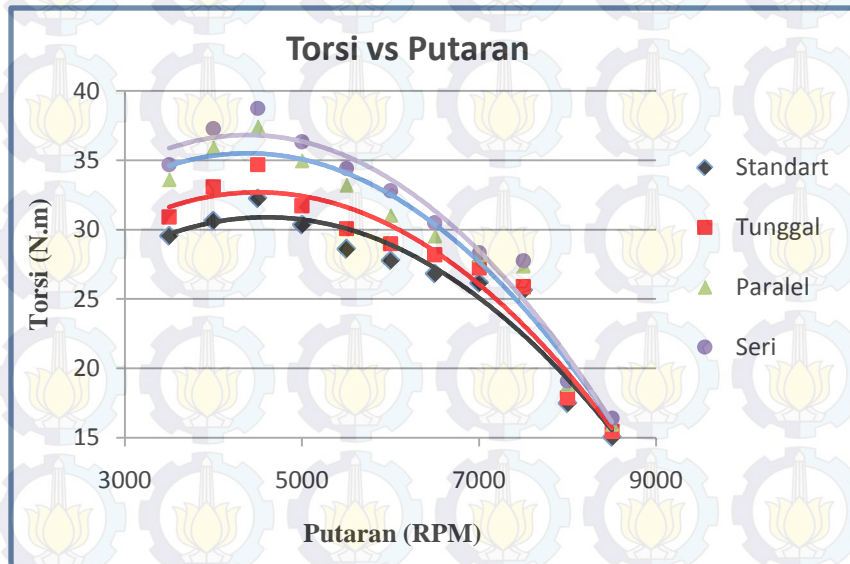
Proses Perangkaian/pemasangan generator HHO dry





Penelitian Terdahulu

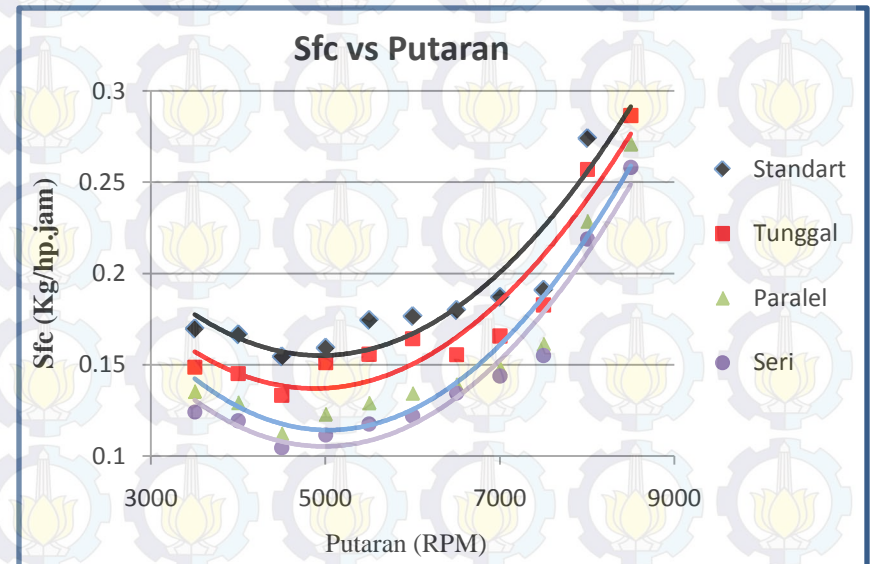
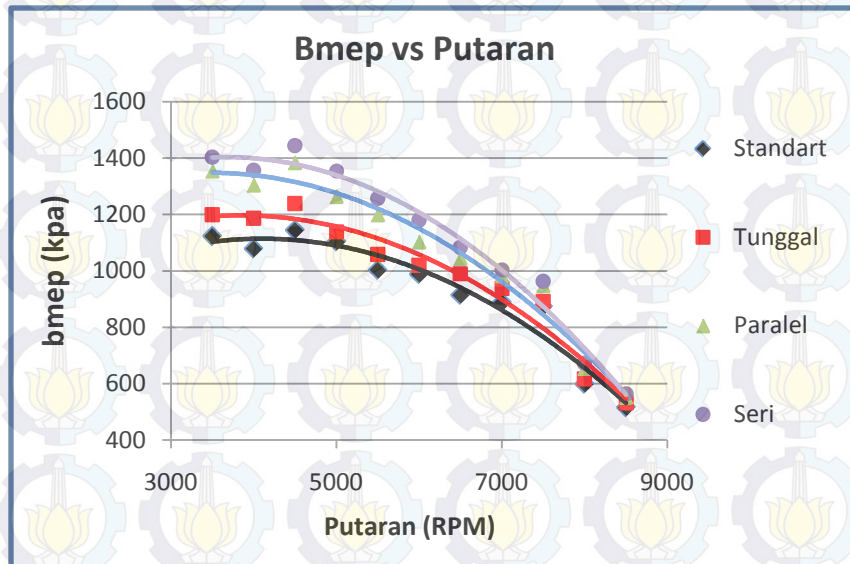
- Penambahan Gas HHO pada Honda Supra X 125PGM-FI
Dendy Widyantara (2011) Teknik Mesin ITS





Penelitian Terdahulu

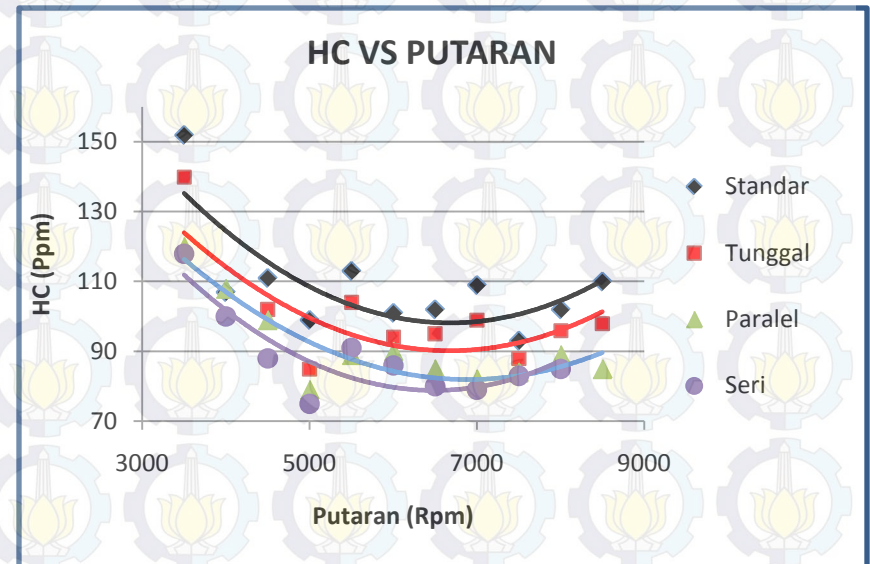
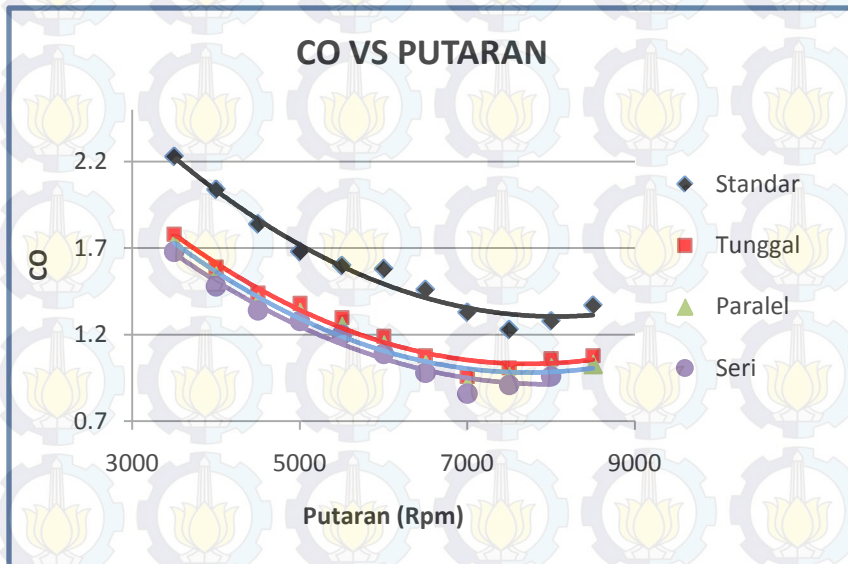
- Penambahan Gas HHO pada Honda Supra X 125PGM-FI
Dendy Widyantara (2011) Teknik Mesin ITS





Penelitian Terdahulu

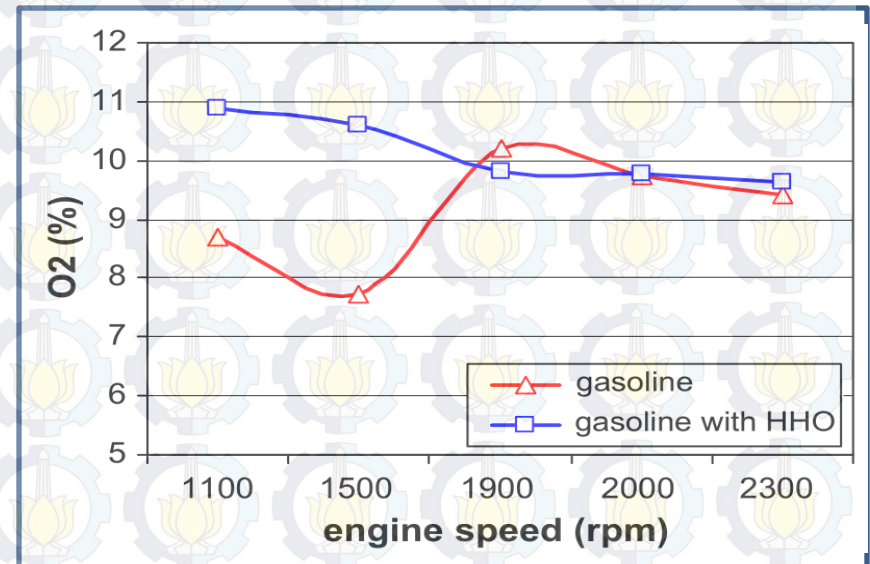
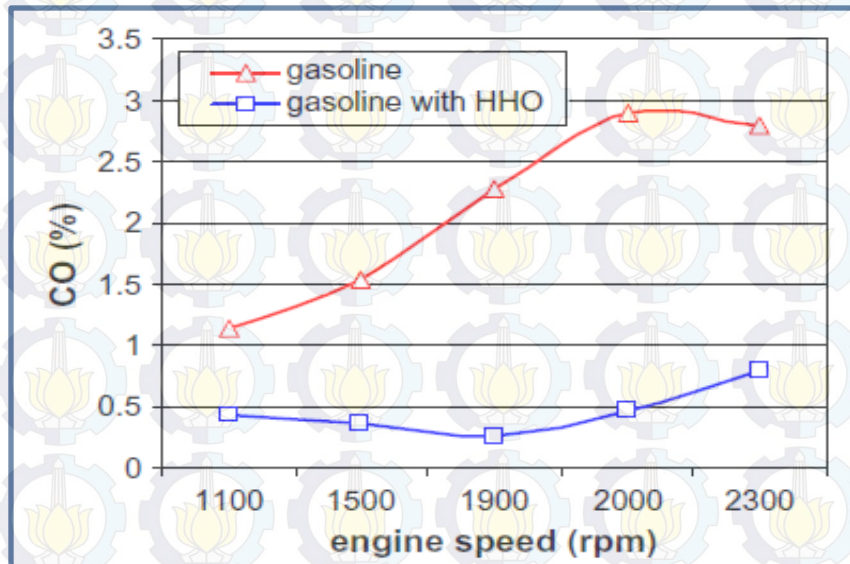
- Penambahan Gas HHO pada Honda Supra X 125PGM-FI
Dendy Widyantara (2011) Teknik Mesin ITS





Penelitian Terdahulu

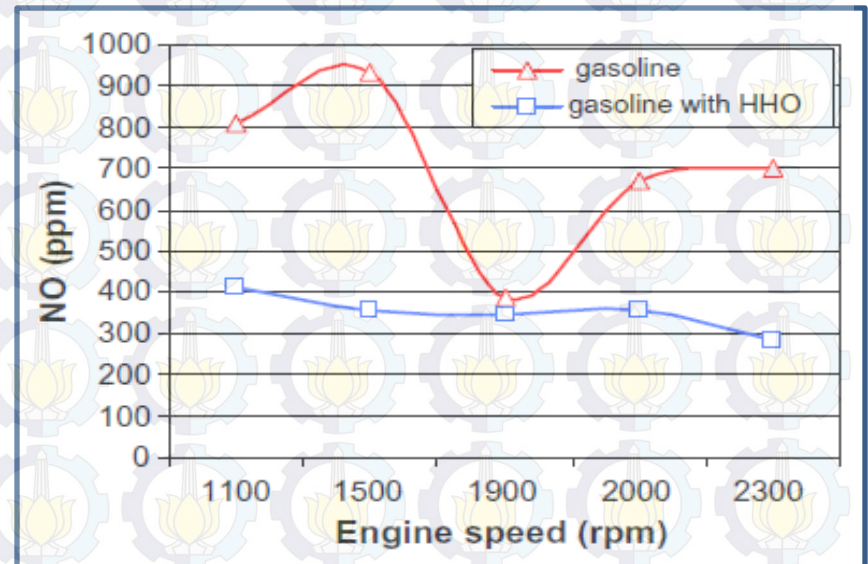
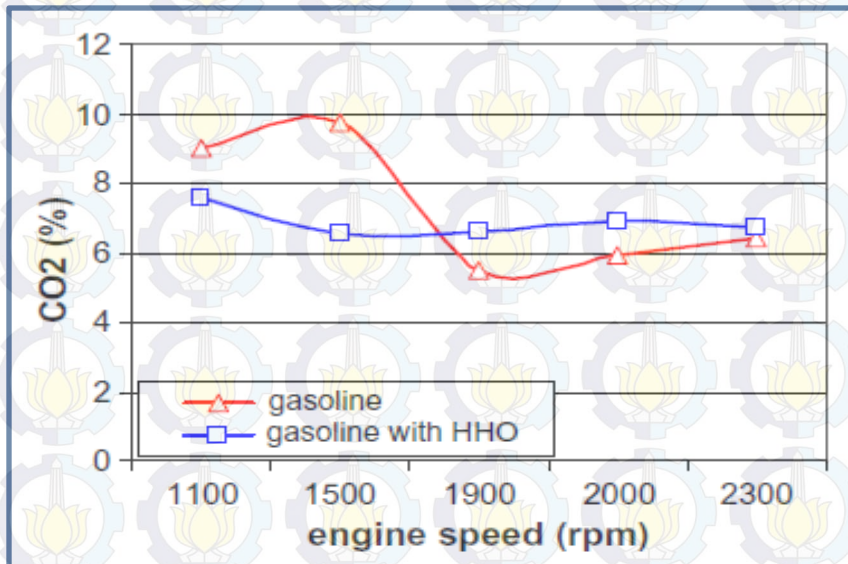
- Penambahan Gas HHO pada *Engine* Honda G 200
Sa'ed A. Musmar dan Ammar A. Al-Rousan (Juni 2011)





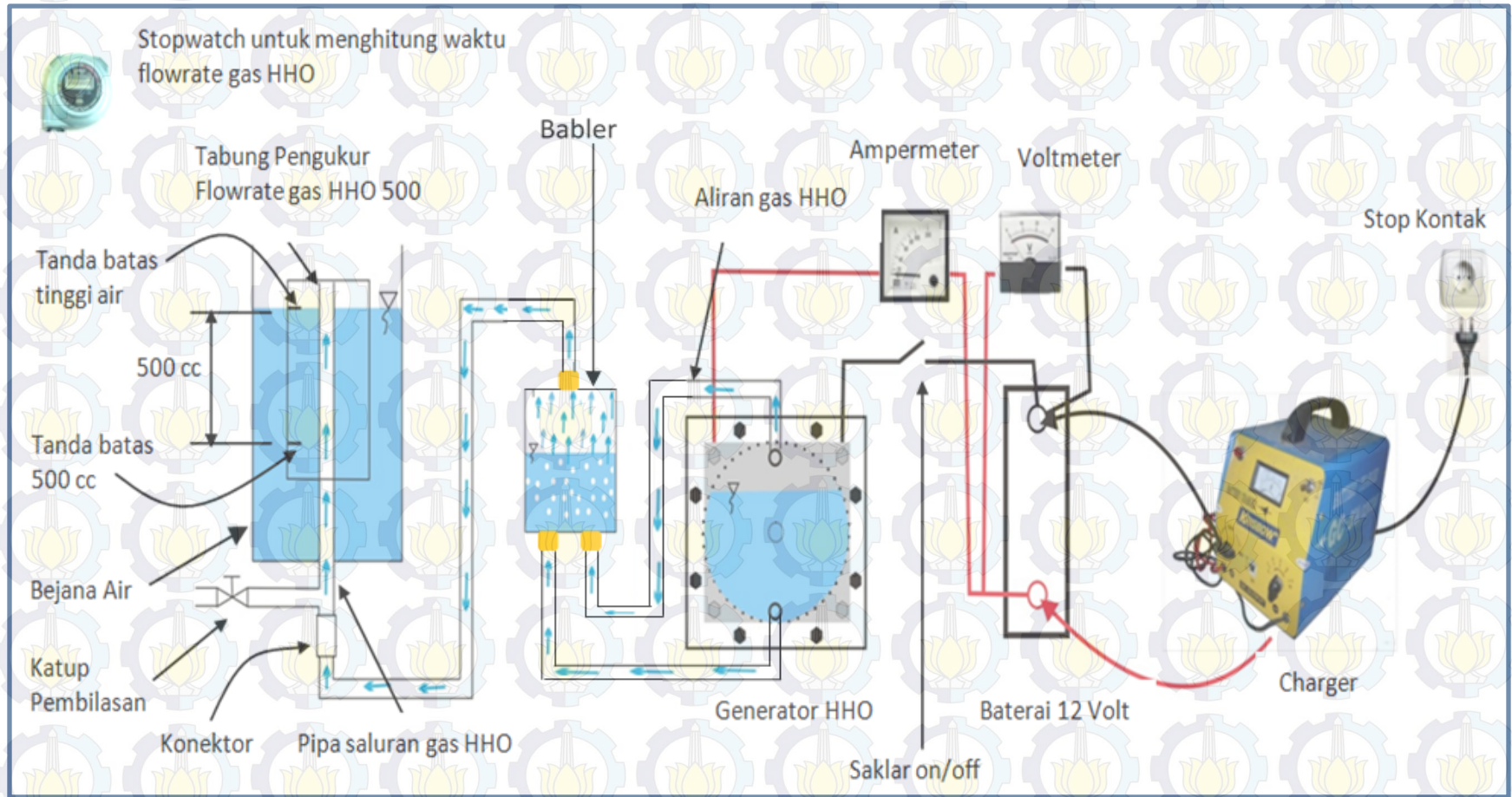
Penelitian Terdahulu

- Penambahan Gas HHO pada *Engine* Honda G 200
Sa'ed A. Musmar dan Ammar A. Al-Rousan (Juni 2011)



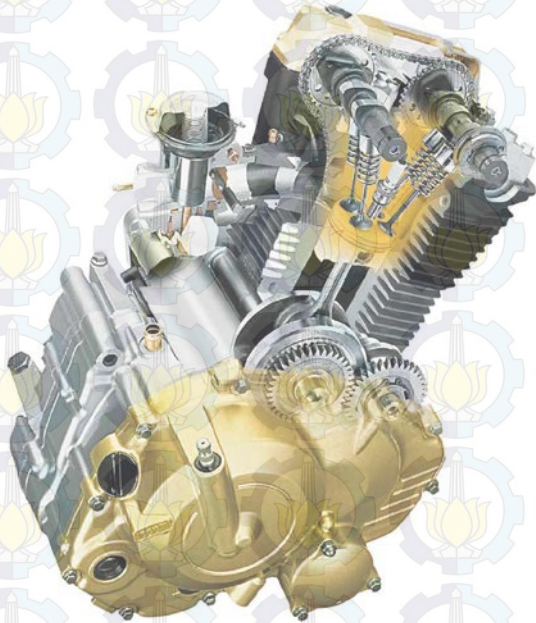


Pengujian *Peformance* Generator HHO





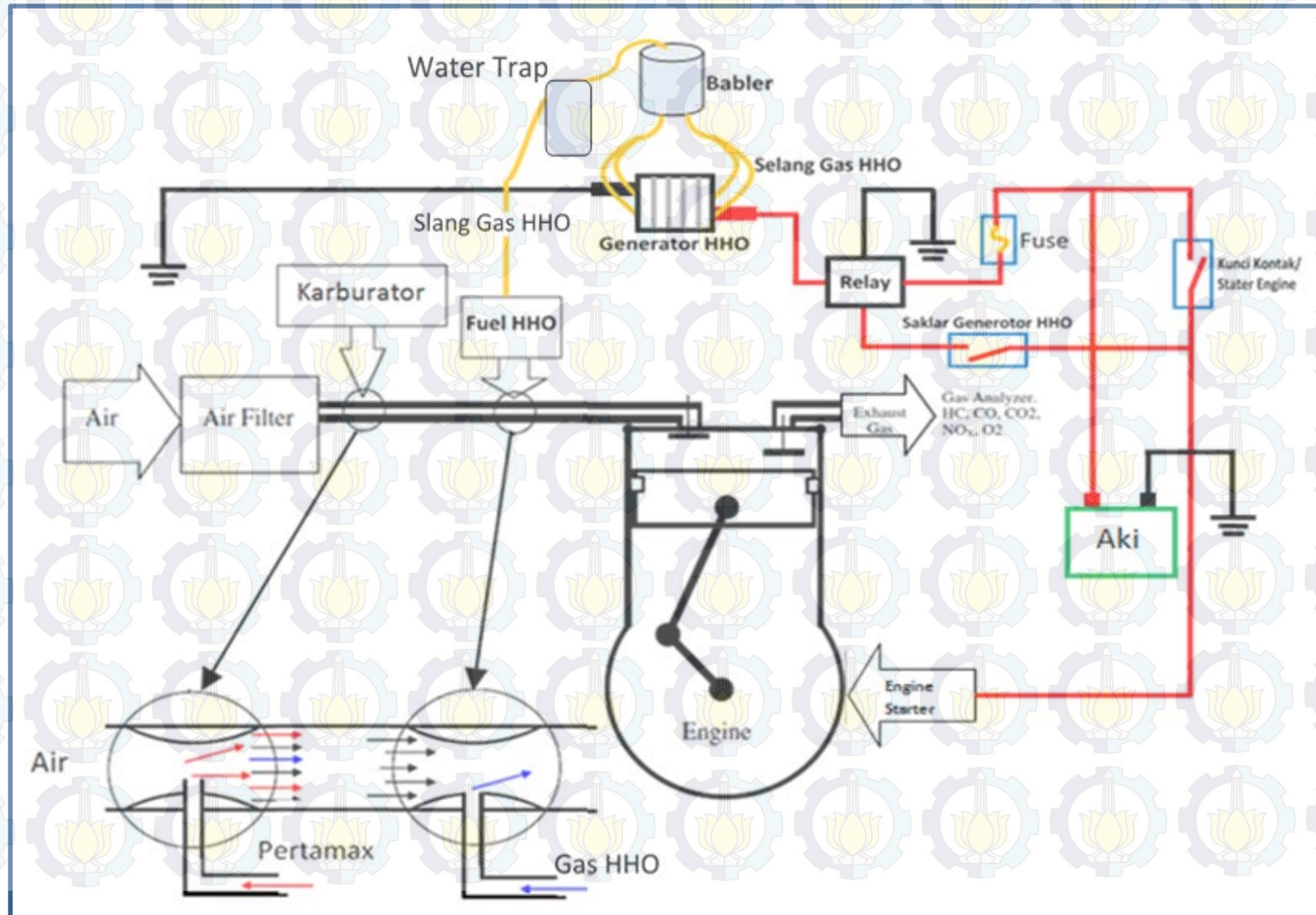
Spesifikasi Engine



- Tipe mesin : 4 Stroke, OHC, 5 Speed
- Volume Silinder : 149,2 cc
- Bore x Stroke : 57,3 mm x 57,8 mm
- Rasio Kompresi : 9,5 : 1
- Klep : IN 22 mm – EX 19 mm
- Karburator : Mikuni BS 26
- Power Maksimal : 10,1kW @ 8.500 RPM
- Torsi Maksimum : 12,8 Nm @ 6.500 RPM
- Pengapian : DC-CDI



Sistem Aplikasi Gas HHO Pada Sepeda Motor Suzuki Satria FU 150 cc





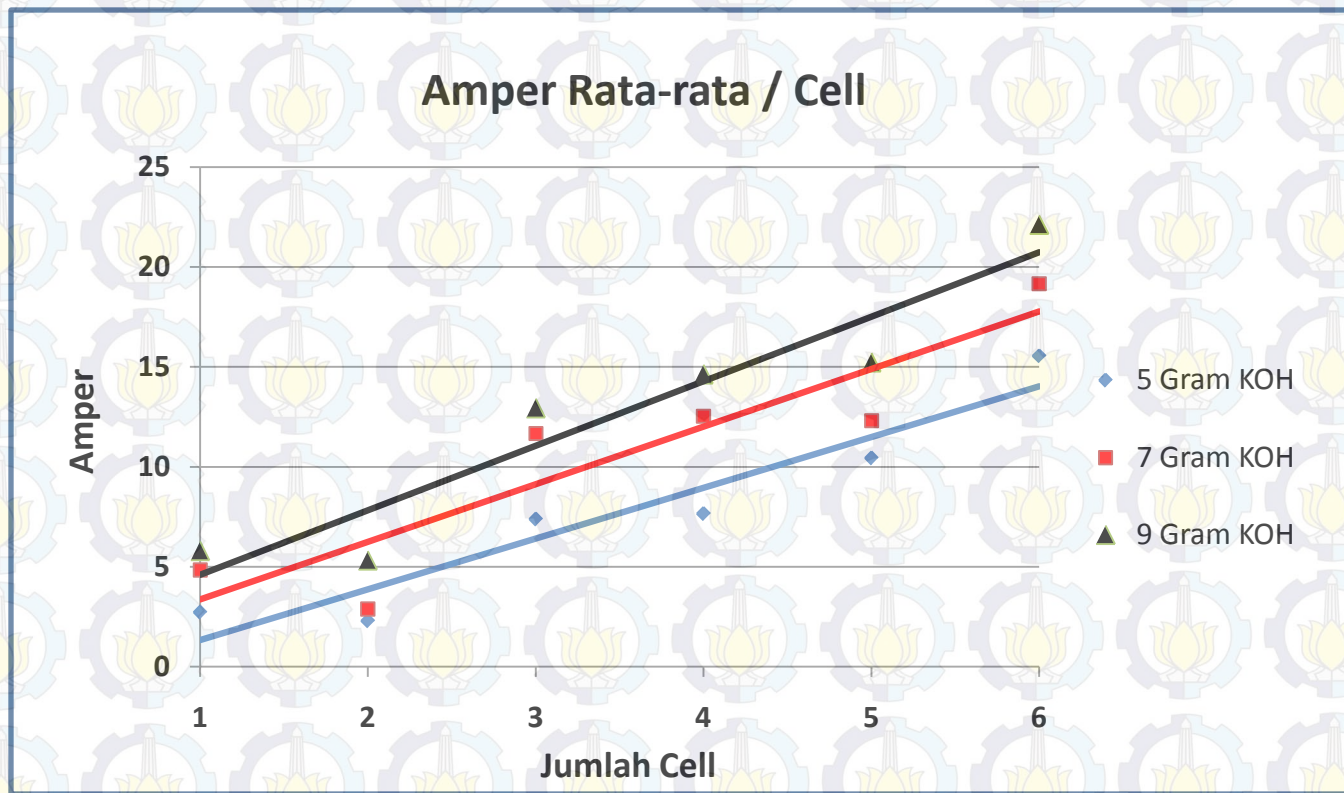
Skema Pengambilan Data (Pengujian)





Performance Generator HHO

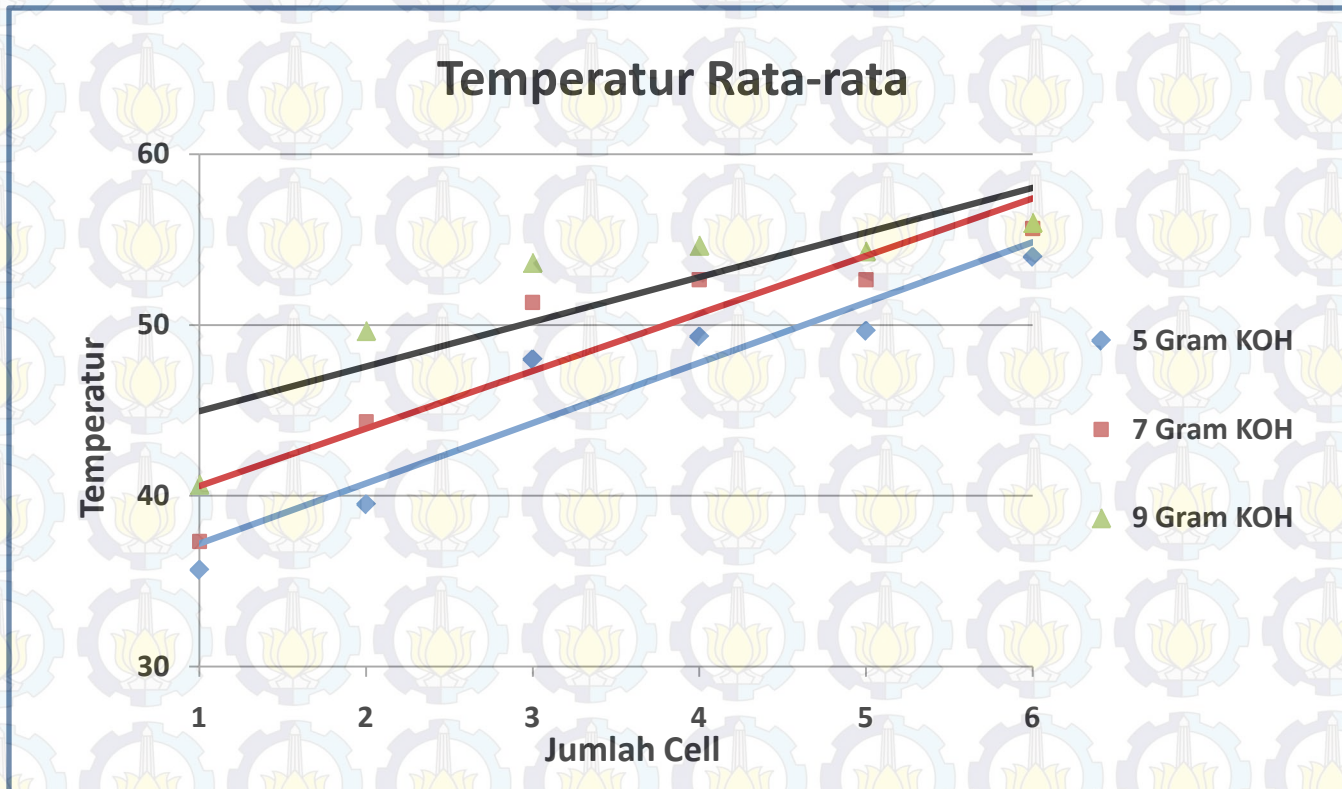
1. Grafik Amper vs Jumlah Cell





Performance Generator HHO

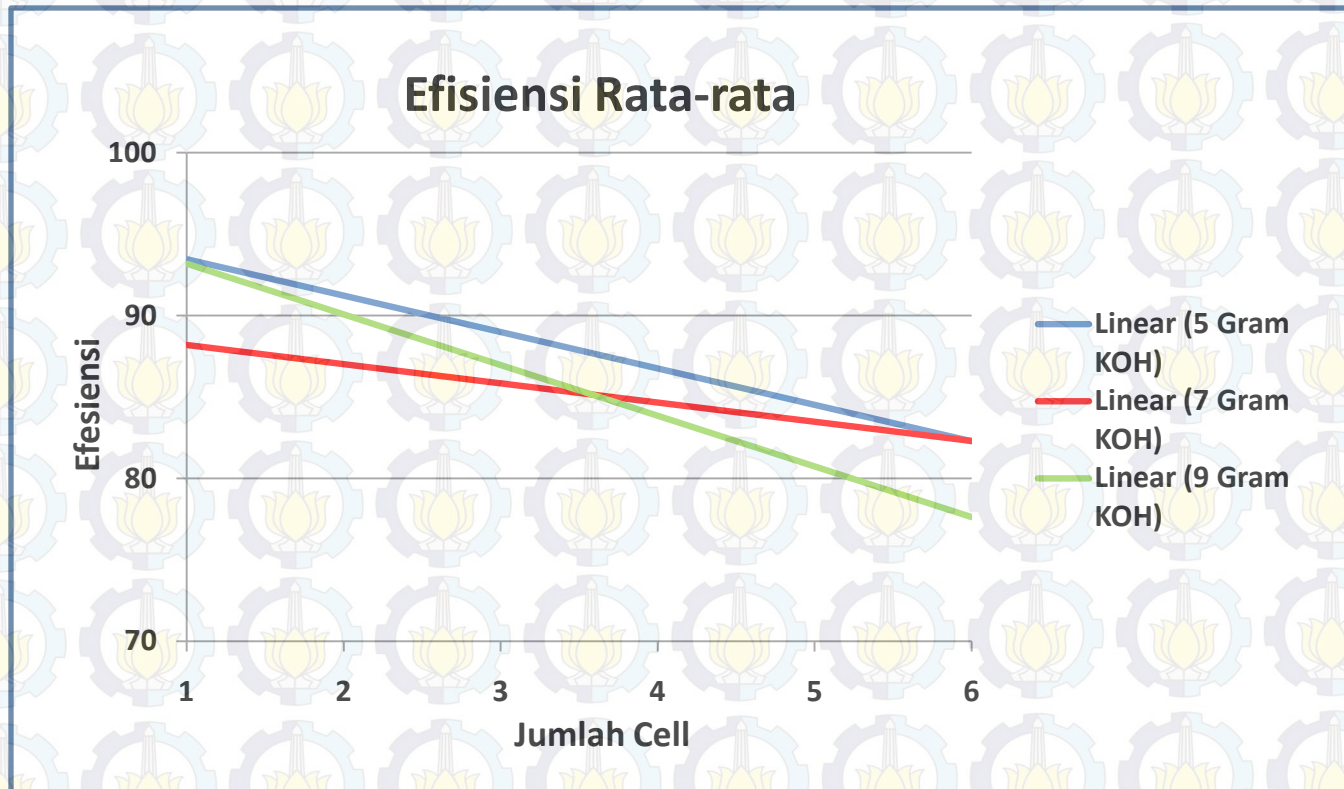
2. Grafik Temperatur vc Jumlah Cell





Performance Generator HHO

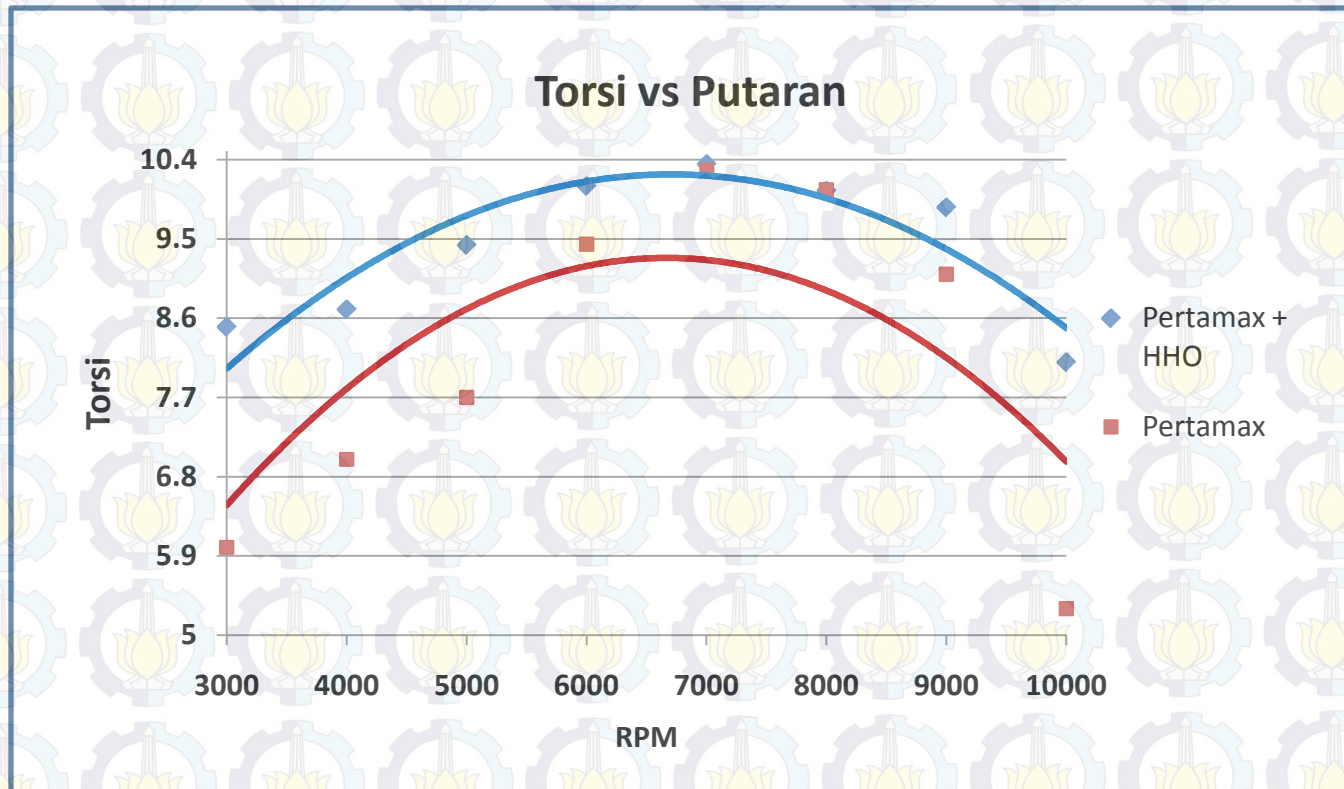
3. Grafik Efisiensi vc Jumlah Cell





Peformance Mesin

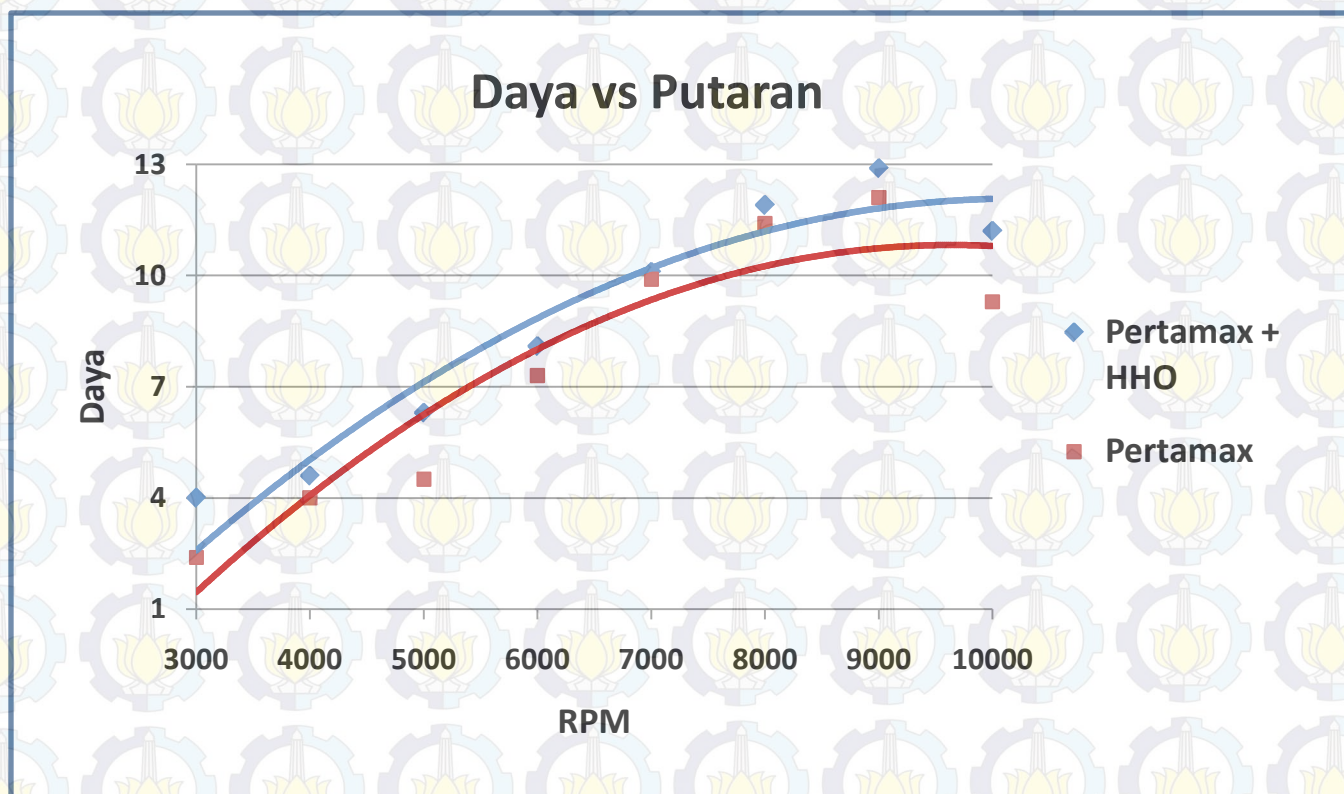
4. Grafik Torsi vs Rpm





Peformance Mesin

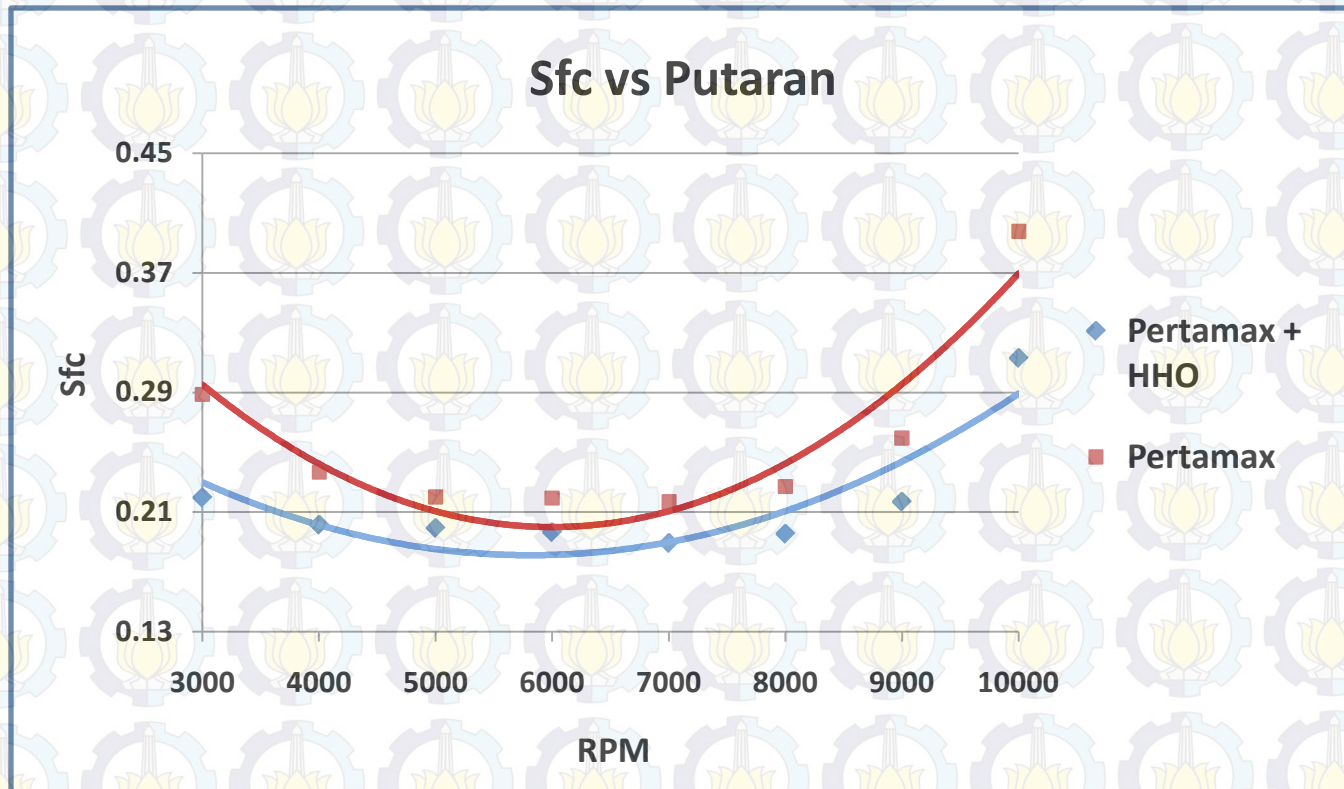
5. Grafik Daya vc Rpm





Peformance Mesin

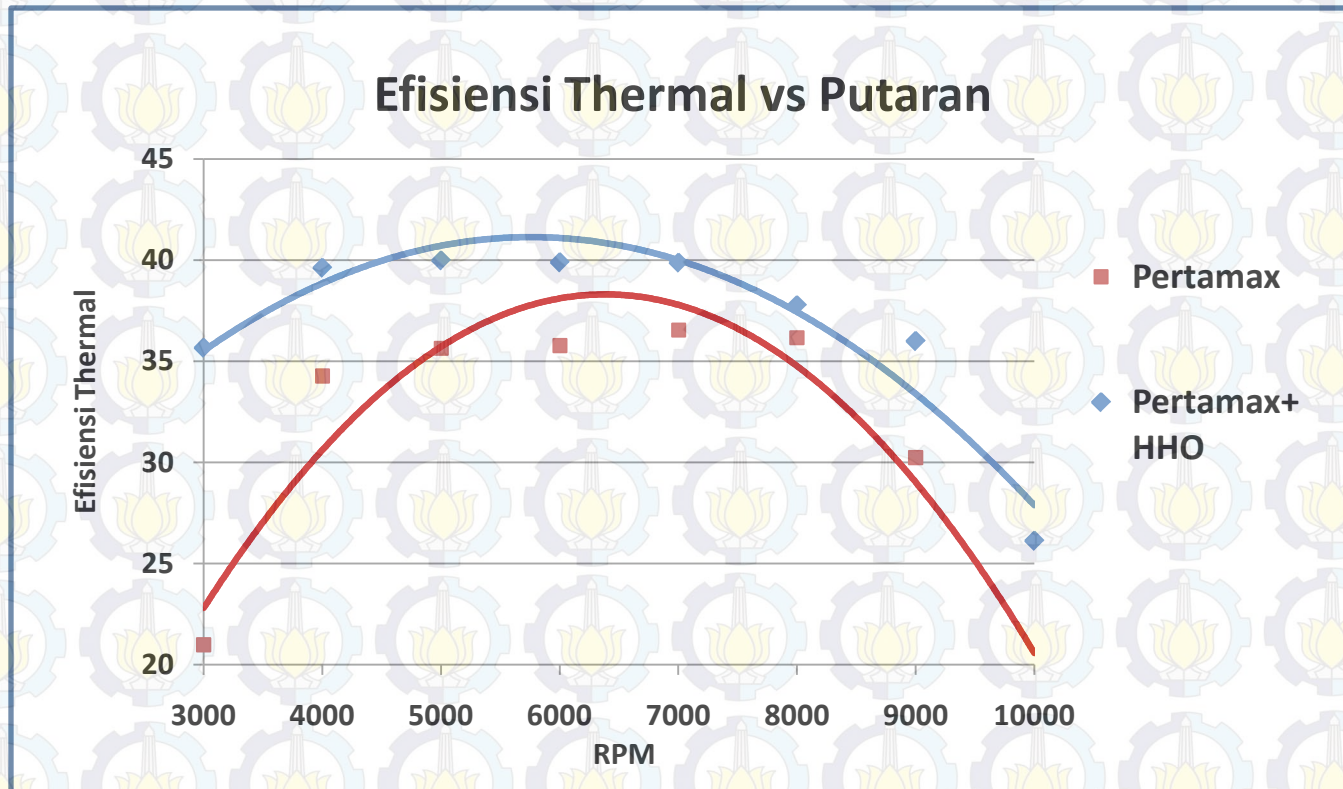
6. Grafik Sfc vs Rpm





Peformance Mesin

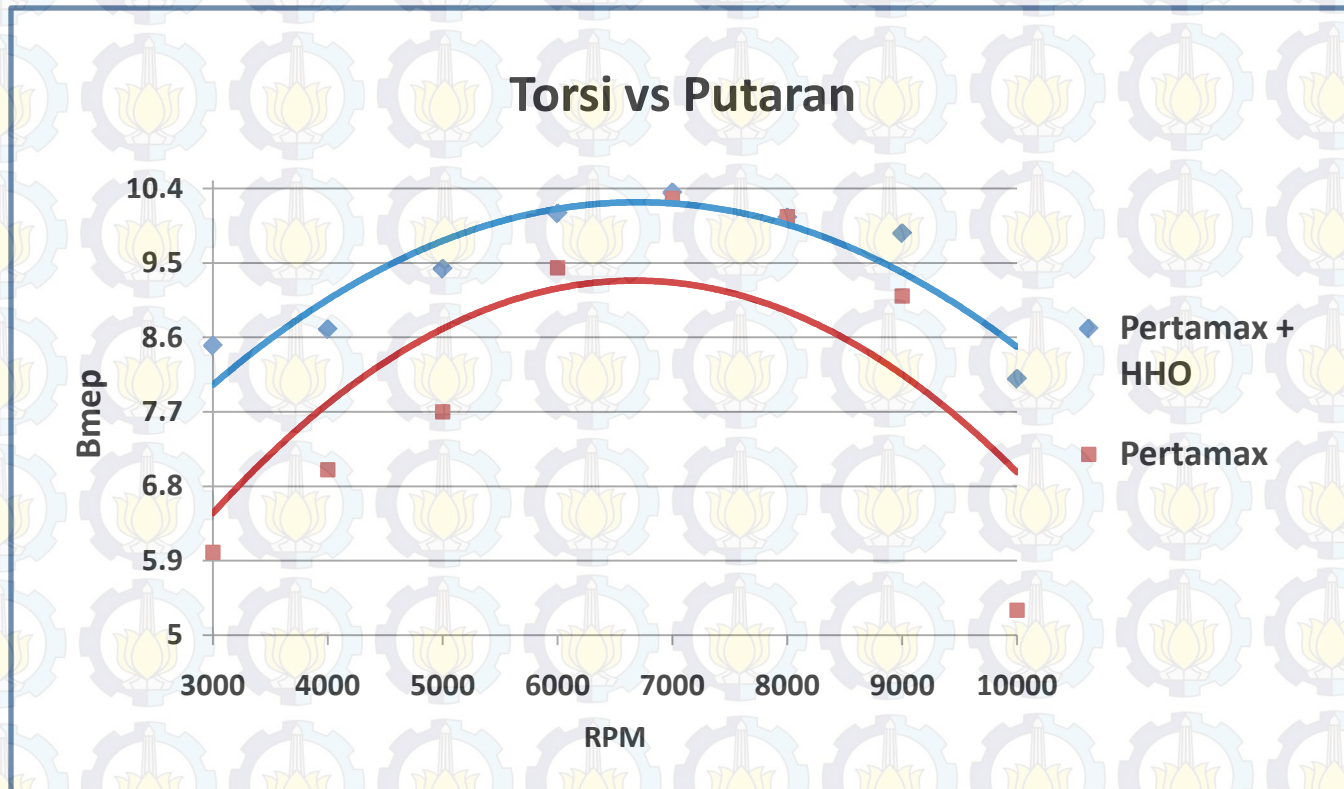
7. Grafik Efisiensi Thermal vs Rpm





Performance Mesin

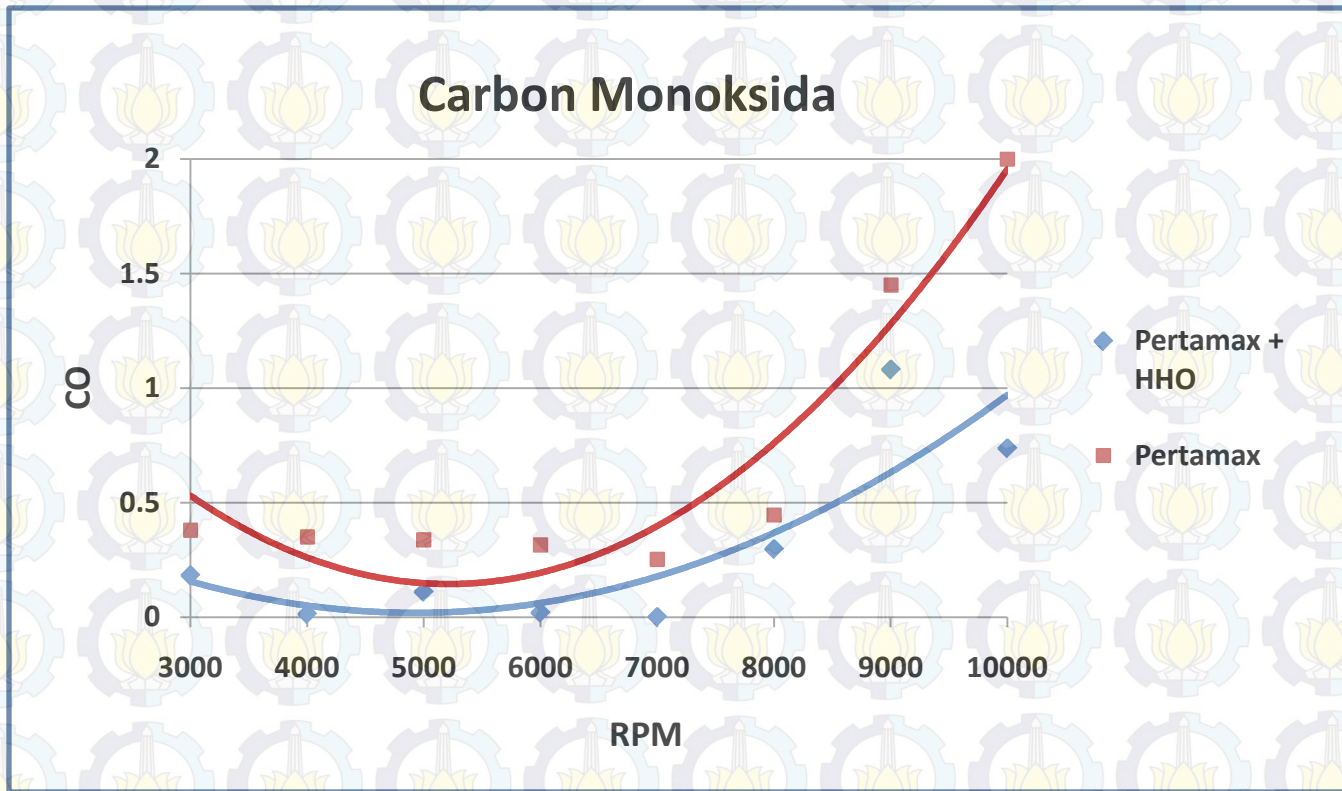
8. Grafik Bmep vs Rpm





Peformance Mesin

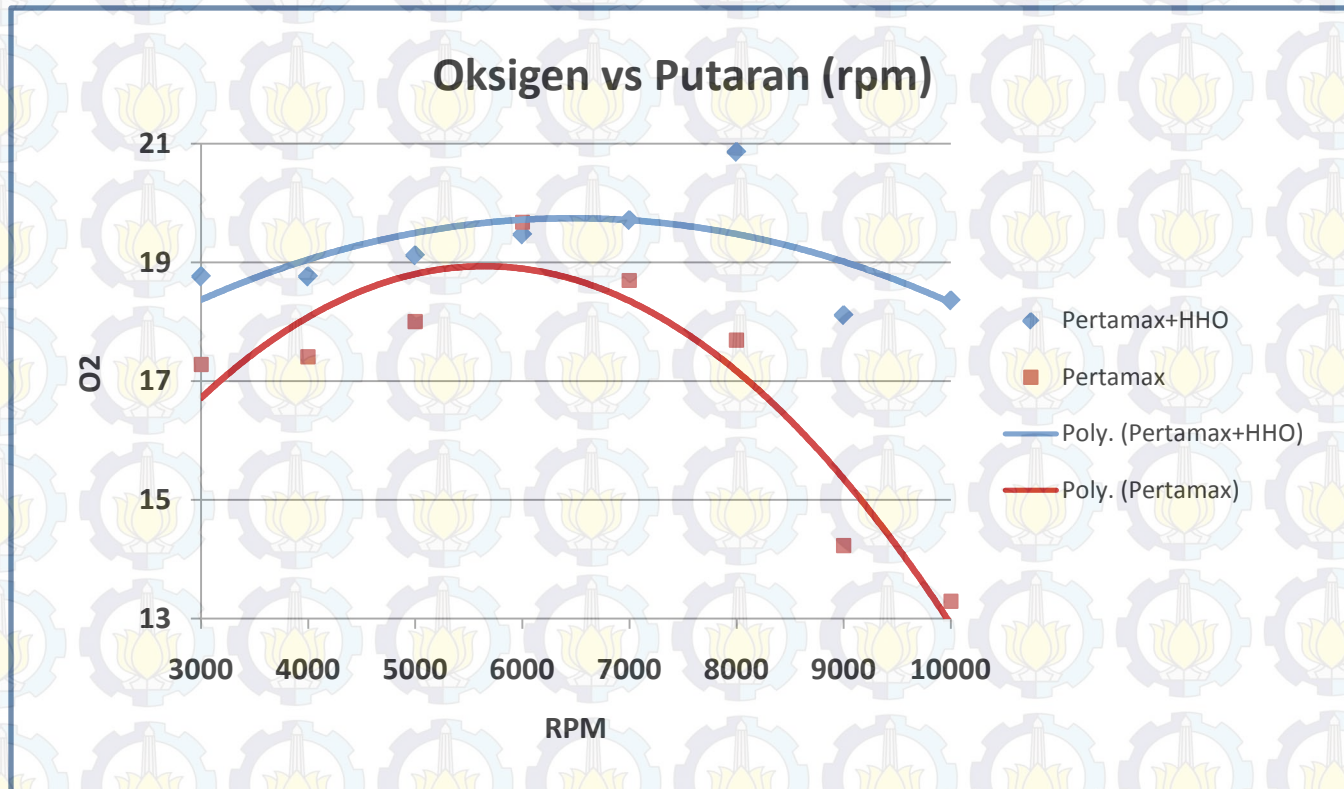
10. Grafik Emisi CO vs Rpm





Peformance Mesin

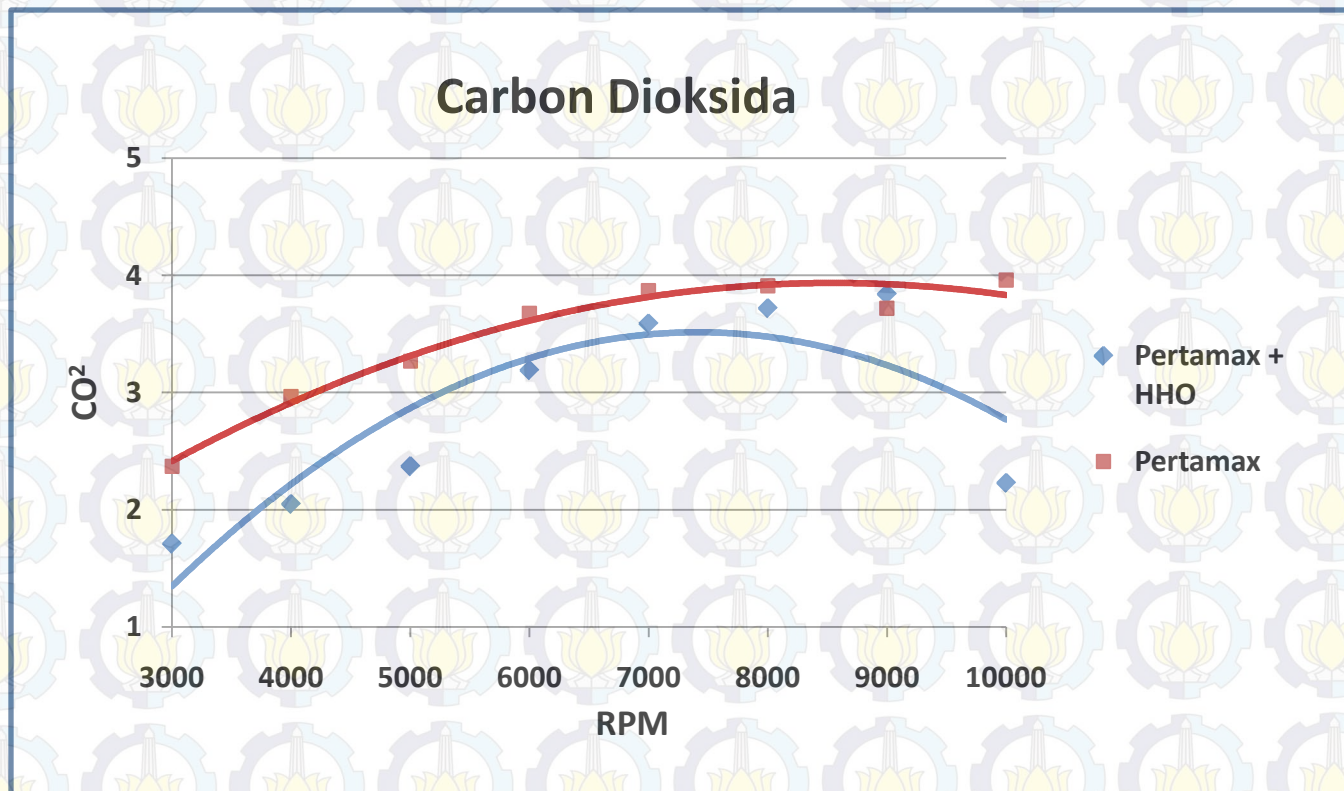
9. Grafik Emisi O₂ vs Rpm





Peformance Mesin

9. Grafik Emisi CO² vs Rpm





Kesimpulan

1. Terjadi peningkatan daya 50 % pada putaran 3000 rpm, pada putaran 10000 rpm meningkat 16,96 % rata-rata peningkatan 14,26 %. Peningkatan torsi pada putaran 3000 rpm 29,41 %, pada putaran 10000 rpm sebesar 34,56 % rata-rata peningkatan 13,59 %. Peningkatan efisiensi thermal pada putaran 3000 rpm 47,51 %, pada putaran 10000 rpm 0,17 % rata-rata peningkatan 20,83 %. Peningkatan tekanan rata-rata pada putaran 3000 rpm 41,46 %, pada putaran 10000 rpm 16,96 % rata-rata peningkatan 15,09 %.
2. Terjadi pengurangan Sfc (*specific fuel consumption*) pada putaran 3000 rpm sfc berkurang 50,63 %, pada putaran 10000 rpm sfc berkurang 6,10 % rata-rata penurunan sfc 19,54 %.
3. Kadar emisi gas buang CO menurun 39,52 %, CO₂ 18,19 % , dan peningkatan oksigen 11,01 %.



Terimakasih