

LAMPIRAN

Lampiran 1 : Surat Izin Penelitian



UNIVERSITAS 17 AGUSTUS 1945 (UNTAG) SURABAYA
PROGRAM STUDI TEKNIK MESIN
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Nomor : 186/TM-K/ X/2022 Surabaya, 05 Oktober 2022
Lampiran : -
Perihal : **Permohonan Pelaksanaan Pengujian Performa Mesin**

Kepada Yth : Kepala Lab. Performa
Jurusan Teknik Mesin
Universitas Negeri Surabaya (UNESA)
Di -
Tempat

Dengan hormat,

Sebagai salah satu persyaratan untuk menyelesaikan studi pada program Srata 1, maka mahasiswa diwajibkan untuk melakukan Penelitian Tugas Akhir di Program Studi Teknik Mesin Universitas 17 Agustus 1945 Surabaya, sebagai penerapan teori dan praktek yang diperoleh selama masa studinya.

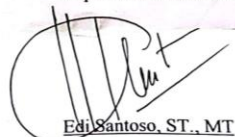
Sehubungan dengan hal tersebut, maka dengan ini kami mohon bantuannya untuk melakukan Pengujian Performa Mesin, dengan rincian Torsi, Daya, dan Konsumsi Bahan Bakar (SFC) di Lab. Performa Teknik Mesin Universitas Negeri Surabaya (UNESA).

Adapun nama mahasiswa tersebut antara lain :

| No | N a m a | N B I |
|----|------------------------|------------|
| 1 | Achmad Zidan Firman A. | 1421800127 |

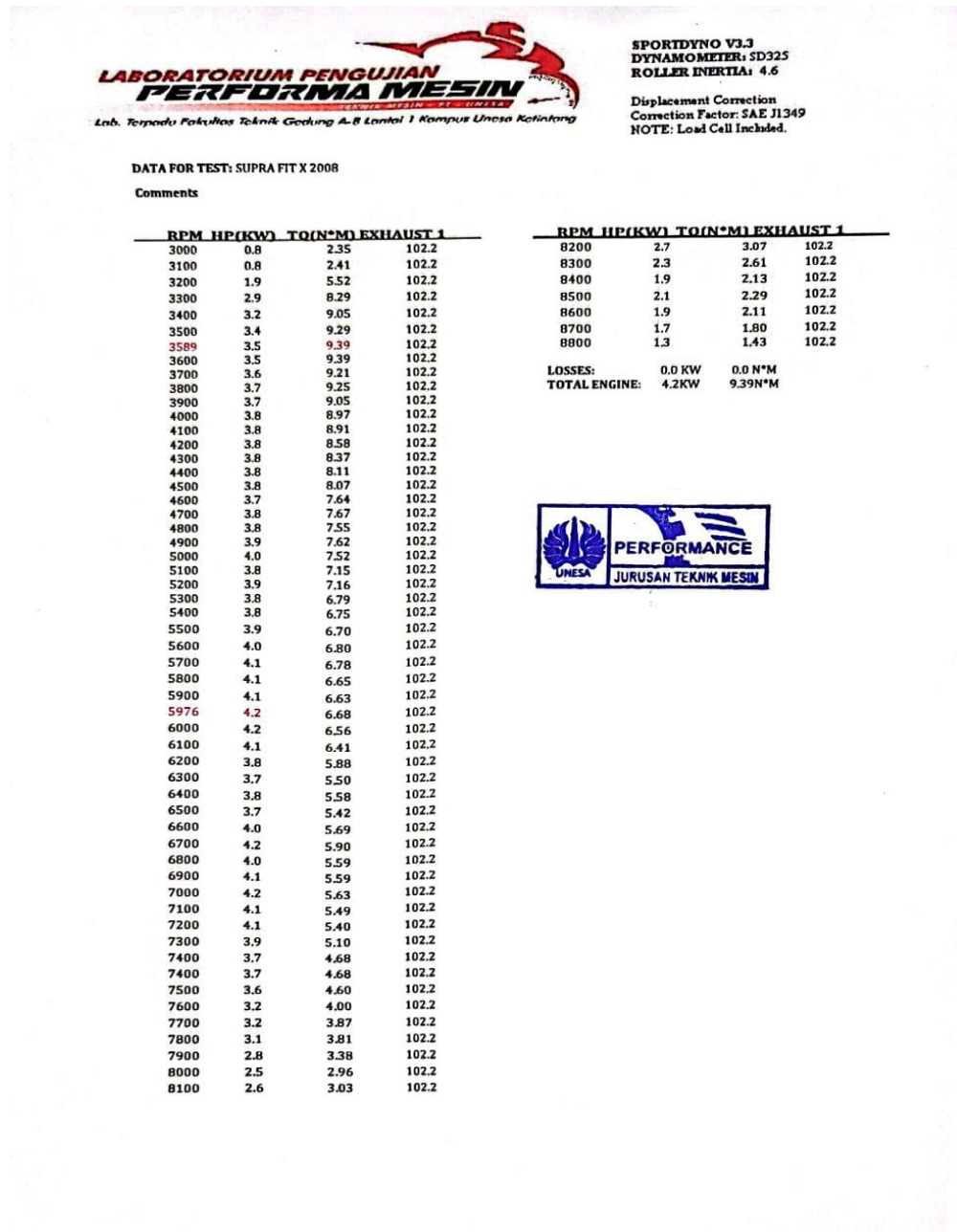
Demikian permohonan kami, atas perhatian dan kerjasamanya kami ucapkan terima kasih.

Surabaya, 05 Oktober 2022
Kaprodi Teknik Mesin


Edji Santoso, ST., MT
NPP. 20420960485

Tembusan :
- Arsip.

Lampiran 2 : Hasil Torsi dan Daya pada uji dynotest piston Diameter 50 mm





SPORIDYNO V3.3
DYNAMOMETER: SD325
ROLLER INERTIA: 4.6

Displacement Correction
Correction Factor: SAE J1349
NOTE: Load Cell Included.

DATA FOR TEST: SUPRA FIT X 2008

Comments

| RPM | HP(KW) | TO(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|
| 3000 | 0.3 | 0.98 | 102.2 |
| 3100 | 0.3 | 0.78 | 102.2 |
| 3200 | 1.6 | 4.88 | 102.2 |
| 3300 | 2.9 | 8.32 | 102.2 |
| 3400 | 3.5 | 9.78 | 102.2 |
| 3500 | 3.8 | 10.30 | 102.2 |
| 3566 | 3.9 | 10.45 | 102.2 |
| 3600 | 3.9 | 10.40 | 102.2 |
| 3700 | 4.0 | 10.31 | 102.2 |
| 3800 | 4.1 | 10.33 | 102.2 |
| 3900 | 4.1 | 10.12 | 102.2 |
| 4000 | 4.2 | 10.03 | 102.2 |
| 4095 | 4.3 | 10.00 | 102.2 |
| 4100 | 4.3 | 9.94 | 102.2 |
| 4200 | 4.2 | 9.55 | 102.2 |
| 4300 | 4.1 | 9.13 | 102.2 |
| 4400 | 4.2 | 9.08 | 102.2 |
| 4500 | 4.2 | 8.86 | 102.2 |
| 4600 | 4.2 | 8.72 | 102.2 |
| 4700 | 4.2 | 8.44 | 102.2 |
| 4800 | 4.1 | 8.14 | 102.2 |
| 4900 | 4.1 | 8.01 | 102.2 |
| 5000 | 4.1 | 7.84 | 102.2 |
| 5100 | 4.1 | 7.67 | 102.2 |
| 5200 | 4.1 | 7.48 | 102.2 |
| 5300 | 4.1 | 7.32 | 102.2 |
| 5400 | 4.0 | 6.98 | 102.2 |
| 5500 | 4.0 | 6.88 | 102.2 |
| 5600 | 4.0 | 6.79 | 102.2 |
| 5700 | 4.0 | 6.64 | 102.2 |
| 5800 | 3.8 | 6.19 | 102.2 |
| 5900 | 3.9 | 6.24 | 102.2 |
| 6000 | 3.4 | 5.39 | 102.2 |
| 6100 | 3.3 | 5.13 | 102.2 |
| 6200 | 3.5 | 5.36 | 102.2 |
| 6300 | 3.4 | 5.08 | 102.2 |
| 6400 | 3.7 | 5.50 | 102.2 |
| 6500 | 4.1 | 5.94 | 102.2 |
| 6600 | 4.1 | 5.89 | 102.2 |
| 6700 | 3.9 | 5.51 | 102.2 |
| 6800 | 3.9 | 5.39 | 102.2 |
| 6900 | 4.0 | 5.43 | 102.2 |
| 7000 | 3.9 | 5.26 | 102.2 |
| 7100 | 3.9 | 5.20 | 102.2 |
| 7200 | 4.0 | 5.30 | 102.2 |
| 7300 | 3.8 | 4.91 | 102.2 |
| 7400 | 3.8 | 4.84 | 102.2 |
| 7500 | 3.5 | 4.40 | 102.2 |
| 7600 | 3.5 | 4.33 | 102.2 |
| 7700 | 3.4 | 4.23 | 102.2 |
| 7800 | 3.1 | 3.72 | 102.2 |
| 7900 | 2.8 | 3.39 | 102.2 |
| 8000 | 2.8 | 3.30 | 102.2 |
| 8100 | 2.5 | 2.91 | 102.2 |

| RPM | HP(KW) | TO(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|
| 8200 | 2.4 | 2.74 | 102.2 |
| 8300 | 2.2 | 2.51 | 102.2 |
| 8400 | 1.9 | 2.18 | 102.2 |
| 8500 | 2.0 | 2.23 | 102.2 |
| 8600 | 1.9 | 2.14 | 102.2 |
| 8700 | 1.5 | 1.65 | 102.2 |
| 8800 | 1.3 | 1.44 | 102.2 |

LOSSES: 0.0 KW -0.1N*M
TOTAL ENGINE: 4.3 KW 10.53N*M





SPORTDYNO V3.3
DYNAMOMETER: SD325
ROLLER INERTIA: 4.6

Displacement Correction
Correction Factor: SAE J1349
NOTE: Load Cell Included.

DATA FOR TEST: SUPRA FIT X 2008

Comments

| RPM | HP(KW) | TO(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|
| 3000 | 0.4 | 1.22 | 102.2 |
| 3100 | 0.6 | 1.73 | 102.2 |
| 3200 | 1.6 | 4.37 | 102.2 |
| 3300 | 2.8 | 8.06 | 102.2 |
| 3400 | 3.3 | 9.16 | 102.2 |
| 3500 | 3.5 | 9.44 | 102.2 |
| 3581 | 3.5 | 9.44 | 102.2 |
| 3600 | 3.6 | 9.44 | 102.2 |
| 3700 | 3.6 | 9.35 | 102.2 |
| 3800 | 3.7 | 9.20 | 102.2 |
| 3900 | 3.7 | 8.99 | 102.2 |
| 4000 | 3.8 | 8.95 | 102.2 |
| 4100 | 3.8 | 8.73 | 102.2 |
| 4200 | 3.8 | 8.54 | 102.2 |
| 4300 | 3.7 | 8.27 | 102.2 |
| 4400 | 3.7 | 8.03 | 102.2 |
| 4500 | 3.7 | 7.84 | 102.2 |
| 4600 | 3.6 | 7.36 | 102.2 |
| 4700 | 3.6 | 7.38 | 102.2 |
| 4800 | 3.6 | 7.17 | 102.2 |
| 4900 | 3.5 | 6.80 | 102.2 |
| 5000 | 3.4 | 6.48 | 102.2 |
| 5100 | 3.3 | 6.20 | 102.2 |
| 5200 | 3.4 | 6.23 | 102.2 |
| 5300 | 3.3 | 5.99 | 102.2 |
| 5400 | 3.4 | 5.95 | 102.2 |
| 5500 | 3.6 | 6.19 | 102.2 |
| 5600 | 3.6 | 6.14 | 102.2 |
| 5700 | 3.6 | 5.94 | 102.2 |
| 5800 | 3.6 | 5.89 | 102.2 |
| 5900 | 3.7 | 5.92 | 102.2 |
| 6000 | 3.8 | 5.95 | 102.2 |
| 6100 | 4.1 | 6.45 | 102.2 |
| 6171 | 4.3 | 6.56 | 102.2 |
| 6200 | 4.2 | 6.49 | 102.2 |
| 6300 | 4.2 | 6.36 | 102.2 |
| 6400 | 4.1 | 6.10 | 102.2 |
| 6500 | 4.2 | 6.07 | 102.2 |
| 6700 | 4.1 | 5.76 | 102.2 |
| 6800 | 4.0 | 5.51 | 102.2 |
| 6900 | 4.1 | 5.57 | 102.2 |
| 7000 | 4.0 | 5.37 | 102.2 |
| 7100 | 3.8 | 5.11 | 102.2 |
| 7200 | 3.6 | 4.71 | 102.2 |
| 7300 | 3.7 | 4.75 | 102.2 |
| 7400 | 3.6 | 4.57 | 102.2 |
| 7500 | 3.4 | 4.34 | 102.2 |
| 7600 | 3.3 | 4.07 | 102.2 |
| 7700 | 3.0 | 3.69 | 102.2 |
| 7800 | 2.9 | 3.46 | 102.2 |
| 7900 | 2.6 | 3.12 | 102.2 |
| 8000 | 2.6 | 3.08 | 102.2 |

| RPM | HP(KW) | TO(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|
| 8100 | 2.2 | 2.58 | 102.2 |
| 8200 | 1.7 | 2.00 | 102.2 |
| 8300 | 2.0 | 2.26 | 102.2 |
| 8400 | 1.6 | 1.77 | 102.2 |
| 8500 | 1.3 | 1.42 | 102.2 |
| 8600 | 1.4 | 1.53 | 102.2 |
| 8700 | 1.5 | 1.61 | 102.2 |
| 8800 | 1.2 | 1.31 | 102.2 |

LOSSES: 0.0 KW 0.0 N*M
TOTAL ENGINE: 4.3 KW 9.44 N*M



Lampiran 3 : Hasil Torsi dan Daya pada uji dynotest piston diameter 53 mm



SPORTDYNO V3.3
DYNAMOMETER: SD325
ROLLER INERTIA: 4.6

Displacement Correction
Correction Factor: SAE J1349
NOTE: Load Cell Included.

DATA FOR TEST: SUPRA FIT X 2008

Comments

| RPM | HP(KW) | TO(N*M) | EXHAUST 1 | RPM | HP(KW) | TO(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|---------------|--------|----------|-----------|
| 3000 | 0.4 | 1.25 | 102.2 | 8400 | 4.5 | 5.08 | 102.2 |
| 3100 | 0.8 | 2.56 | 102.2 | 8500 | 4.3 | 4.87 | 102.2 |
| 3200 | 1.7 | 5.17 | 102.2 | 8600 | 4.2 | 4.65 | 102.2 |
| 3300 | 2.6 | 7.56 | 102.2 | 8700 | 3.9 | 4.27 | 102.2 |
| 3400 | 3.1 | 8.78 | 102.2 | 8800 | 3.8 | 4.15 | 102.2 |
| 3500 | 3.2 | 8.83 | 102.2 | 8900 | 3.5 | 3.78 | 102.2 |
| 3600 | 3.4 | 8.98 | 102.2 | 9000 | 3.4 | 3.56 | 102.2 |
| 3700 | 3.5 | 9.17 | 102.2 | 9100 | 3.0 | 3.17 | 102.2 |
| 3800 | 3.9 | 9.75 | 102.2 | 9200 | 2.9 | 3.05 | 102.2 |
| 3900 | 4.0 | 9.86 | 102.2 | 9300 | 2.5 | 2.67 | 102.2 |
| 4000 | 4.2 | 9.97 | 102.2 | 9400 | 2.5 | 2.53 | 102.2 |
| 4100 | 4.3 | 10.15 | 102.2 | | | | |
| 4200 | 4.6 | 10.45 | 102.2 | LOSSES: | 0.0 KW | 0.0N*M | |
| 4300 | 4.7 | 10.51 | 102.2 | TOTAL ENGINE: | 5.7 KW | 10.53N*M | |
| 4378 | 4.8 | 10.53 | 102.2 | | | | |
| 4400 | 4.8 | 10.52 | 102.2 | | | | |
| 4500 | 4.9 | 10.49 | 102.2 | | | | |
| 4600 | 4.9 | 10.28 | 102.2 | | | | |
| 4700 | 5.0 | 10.18 | 102.2 | | | | |
| 4800 | 5.1 | 10.09 | 102.2 | | | | |
| 4900 | 5.1 | 10.03 | 102.2 | | | | |
| 5000 | 5.2 | 9.96 | 102.2 | | | | |
| 5100 | 5.3 | 9.89 | 102.2 | | | | |
| 5200 | 5.3 | 9.78 | 102.2 | | | | |
| 5300 | 5.4 | 9.67 | 102.2 | | | | |
| 5400 | 5.4 | 9.59 | 102.2 | | | | |
| 5500 | 5.4 | 9.45 | 102.2 | | | | |
| 5600 | 5.5 | 9.37 | 102.2 | | | | |
| 5700 | 5.5 | 9.25 | 102.2 | | | | |
| 5800 | 5.6 | 9.17 | 102.2 | | | | |
| 5900 | 5.6 | 9.08 | 102.2 | | | | |
| 5926 | 5.7 | 9.02 | 102.2 | | | | |
| 6000 | 5.7 | 9.01 | 102.2 | | | | |
| 6100 | 5.7 | 8.89 | 102.2 | | | | |
| 6200 | 5.7 | 8.79 | 102.2 | | | | |
| 6300 | 5.6 | 8.56 | 102.2 | | | | |
| 6400 | 5.6 | 8.42 | 102.2 | | | | |
| 6500 | 5.5 | 8.16 | 102.2 | | | | |
| 6700 | 5.6 | 8.02 | 102.2 | | | | |
| 6800 | 5.5 | 7.76 | 102.2 | | | | |
| 6900 | 5.5 | 7.59 | 102.2 | | | | |
| 7000 | 5.4 | 7.35 | 102.2 | | | | |
| 7100 | 5.4 | 7.22 | 102.2 | | | | |
| 7200 | 5.4 | 7.13 | 102.2 | | | | |
| 7300 | 5.4 | 7.06 | 102.2 | | | | |
| 7400 | 5.4 | 6.98 | 102.2 | | | | |
| 7500 | 5.3 | 6.75 | 102.2 | | | | |
| 7600 | 5.3 | 6.69 | 102.2 | | | | |
| 7700 | 5.2 | 6.51 | 102.2 | | | | |
| 7800 | 5.2 | 6.32 | 102.2 | | | | |
| 7900 | 5.1 | 6.21 | 102.2 | | | | |
| 8000 | 5.0 | 5.99 | 102.2 | | | | |
| 8100 | 4.8 | 5.67 | 102.2 | | | | |
| 8200 | 4.5 | 5.27 | 102.2 | | | | |
| 8300 | 4.4 | 5.16 | 102.2 | | | | |





SPORTDYNO V3.3
DYNAMOMETER: SD325
ROLLER INERTIA: 4.6

Displacement Correction
Correction Factor: SAE J1349
NOTE: Load Cell Included.

DATA FOR TEST: SUPRA FIT X 2008

Comments

| RPM | HP(KW) | TQ(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|
| 3000 | 0.4 | 1.35 | 102.2 |
| 3100 | 0.5 | 1.59 | 102.2 |
| 3200 | 0.9 | 2.89 | 102.2 |
| 3300 | 1.7 | 5.08 | 102.2 |
| 3400 | 2.1 | 6.04 | 102.2 |
| 3500 | 3.4 | 9.50 | 102.2 |
| 3600 | 3.7 | 9.97 | 102.2 |
| 3700 | 3.7 | 9.76 | 102.2 |
| 3800 | 4.1 | 10.25 | 102.2 |
| 3900 | 4.2 | 10.36 | 102.2 |
| 4000 | 4.3 | 10.37 | 102.2 |
| 4100 | 4.5 | 10.46 | 102.2 |
| 4200 | 4.6 | 10.48 | 102.2 |
| 4300 | 4.7 | 10.51 | 102.2 |
| 4400 | 4.9 | 10.63 | 102.2 |
| 4500 | 5.0 | 10.69 | 102.2 |
| 4571 | 5.1 | 10.75 | 102.2 |
| 4600 | 5.1 | 10.65 | 102.2 |
| 4700 | 5.2 | 10.54 | 102.2 |
| 4800 | 5.3 | 10.53 | 102.2 |
| 4900 | 5.3 | 10.35 | 102.2 |
| 5000 | 5.3 | 10.12 | 102.2 |
| 5100 | 5.3 | 10.01 | 102.2 |
| 5200 | 5.7 | 10.47 | 102.2 |
| 5300 | 5.8 | 10.36 | 102.2 |
| 5400 | 5.8 | 10.28 | 102.2 |
| 5500 | 5.6 | 9.78 | 102.2 |
| 5600 | 5.7 | 9.67 | 102.2 |
| 5689 | 5.8 | 9.65 | 102.2 |
| 5700 | 5.6 | 9.35 | 102.2 |
| 5800 | 5.5 | 9.13 | 102.2 |
| 5900 | 5.6 | 9.03 | 102.2 |
| 6000 | 5.6 | 8.97 | 102.2 |
| 6100 | 5.7 | 8.87 | 102.2 |
| 6200 | 5.6 | 8.67 | 102.2 |
| 6300 | 5.7 | 8.59 | 102.2 |
| 6400 | 5.9 | 8.65 | 102.2 |
| 6500 | 5.6 | 8.27 | 102.2 |
| 6600 | 5.6 | 8.13 | 102.2 |
| 6700 | 5.7 | 8.08 | 102.2 |
| 6800 | 5.6 | 7.89 | 102.2 |
| 6900 | 5.6 | 7.76 | 102.2 |
| 7000 | 5.5 | 7.54 | 102.2 |
| 7100 | 5.4 | 7.38 | 102.2 |
| 7200 | 5.4 | 7.27 | 102.2 |
| 7300 | 5.4 | 7.08 | 102.2 |
| 7400 | 5.4 | 6.97 | 102.2 |
| 7500 | 5.4 | 6.88 | 102.2 |
| 7600 | 5.2 | 6.59 | 102.2 |
| 7700 | 5.1 | 6.37 | 102.2 |
| 7800 | 4.9 | 6.08 | 102.2 |
| 7900 | 4.9 | 5.98 | 102.2 |
| 8000 | 4.8 | 5.79 | 102.2 |
| 8100 | 4.6 | 5.69 | 102.2 |
| 8200 | 4.6 | 5.37 | 102.2 |
| 8300 | 4.6 | 5.27 | 102.2 |

| RPM | HP(KW) | TQ(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|
| 8400 | 4.5 | 5.09 | 102.2 |
| 8500 | 4.4 | 4.97 | 102.2 |
| 8600 | 4.3 | 4.78 | 102.2 |
| 8700 | 4.1 | 4.57 | 102.2 |
| 8900 | 3.7 | 4.06 | 102.2 |
| 9000 | 3.6 | 3.89 | 102.2 |
| 9100 | 3.2 | 3.36 | 102.2 |
| 9200 | 3.0 | 3.12 | 102.2 |
| 9300 | 2.7 | 2.78 | 102.2 |
| 9400 | 2.5 | 2.61 | 102.2 |

LOSSES: 0.0 KW 0.0N*M
TOTAL ENGINE: 5.8 KW 10.75 N*M





SPORIDYNO V3.3
DYNAMOMETER: SD325
ROLLER INERTIA: 4.6

Displacement Correction
Correction Factor: SAE J1349
NOTE: Load Cell included.

DATA FOR TEST: SUPRA FIT X 2008

Comments


| RPM | HP(KW) | TQ(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|
| 3000 | 0.8 | 2.58 | 102.2 |
| 3100 | 1.0 | 3.15 | 102.2 |
| 3200 | 1.5 | 4.75 | 102.2 |
| 3300 | 1.7 | 5.08 | 102.2 |
| 3400 | 2.9 | 8.23 | 102.2 |
| 3500 | 3.3 | 8.98 | 102.2 |
| 3600 | 3.4 | 9.07 | 102.2 |
| 3700 | 3.5 | 9.17 | 102.2 |
| 3800 | 3.8 | 9.56 | 102.2 |
| 3900 | 3.9 | 9.78 | 102.2 |
| 4000 | 4.2 | 10.07 | 102.2 |
| 4100 | 4.4 | 10.17 | 102.2 |
| 4200 | 4.5 | 10.37 | 102.2 |
| 4300 | 4.7 | 10.45 | 102.2 |
| 4400 | 4.9 | 10.56 | 102.2 |
| 4426 | 4.9 | 10.62 | 102.2 |
| 4500 | 4.9 | 10.57 | 102.2 |
| 4600 | 5.0 | 10.45 | 102.2 |
| 4700 | 5.1 | 10.39 | 102.2 |
| 4800 | 5.1 | 10.22 | 102.2 |
| 4900 | 5.1 | 10.05 | 102.2 |
| 4900 | 5.0 | 9.79 | 102.2 |
| 5000 | 5.1 | 9.67 | 102.2 |
| 5100 | 5.2 | 9.65 | 102.2 |
| 5200 | 5.2 | 9.56 | 102.2 |
| 5300 | 5.2 | 9.35 | 102.2 |
| 5400 | 5.2 | 9.23 | 102.2 |
| 5500 | 5.3 | 9.21 | 102.2 |
| 5600 | 5.3 | 9.11 | 102.2 |
| 5700 | 5.4 | 9.04 | 102.2 |
| 5800 | 5.4 | 8.87 | 102.2 |
| 5900 | 5.4 | 8.67 | 102.2 |
| 6000 | 5.4 | 8.56 | 102.2 |
| 6100 | 5.4 | 8.52 | 102.2 |
| 6200 | 5.5 | 8.45 | 102.2 |
| 6300 | 5.6 | 8.43 | 102.2 |
| 6400 | 5.5 | 8.23 | 102.2 |
| 6500 | 5.5 | 8.09 | 102.2 |
| 6600 | 5.5 | 8.01 | 102.2 |
| 6700 | 5.6 | 7.96 | 102.2 |
| 6800 | 5.7 | 7.95 | 102.2 |
| 6900 | 5.7 | 7.86 | 102.2 |
| 7000 | 5.7 | 7.75 | 102.2 |
| 7100 | 5.7 | 7.73 | 102.2 |
| 7153 | 5.8 | 7.65 | 102.2 |
| 7200 | 5.7 | 7.55 | 102.2 |
| 7300 | 5.7 | 7.45 | 102.2 |
| 7400 | 5.6 | 7.25 | 102.2 |
| 7500 | 5.6 | 7.15 | 102.2 |
| 7600 | 5.6 | 7.01 | 102.2 |
| 7700 | 5.6 | 6.98 | 102.2 |
| 7800 | 5.4 | 6.56 | 102.2 |
| 7900 | 5.2 | 6.23 | 102.2 |
| 8000 | 5.2 | 6.15 | 102.2 |
| 8100 | 5.2 | 6.09 | 102.2 |
| 8200 | 5.1 | 5.97 | 102.2 |
| 8300 | 4.8 | 5.56 | 102.2 |

| RPM | HP(KW) | TQ(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|
| 8400 | 4.5 | 5.12 | 102.2 |
| 8500 | 4.5 | 5.05 | 102.2 |
| 8600 | 4.1 | 4.56 | 102.2 |
| 8700 | 3.9 | 4.32 | 102.2 |
| 8800 | 3.7 | 4.01 | 102.2 |
| 8900 | 3.3 | 3.58 | 102.2 |
| 9000 | 3.0 | 3.19 | 102.2 |
| 9100 | 2.9 | 3.02 | 102.2 |
| 9200 | 2.4 | 2.48 | 102.2 |
| 9300 | 2.1 | 2.12 | 102.2 |

LOSSES: 0.0 KW 0.0N*M
TOTAL ENGINE: 5.8KW 10.62 N*M



Lampiran 4 : Hasil Torsi dan Daya pada uji dynotest piston Diameter 56 mm



**LABORATORIUM PENGUJIAN
PERFORMA MESIN**

Lab. Terpadu Fakultas Teknik Gedung A-B Lantai 1 Kampus Unesa Kotiroring

**SPORTDYNO V3.3
DYNAMOMETER: SD325
ROLLER INERTIA: 4.6**

Displacement Correction
Correction Factor: SAE J1349
NOTE: Load Cell Included.


DATA FOR TEST: SUPRA FIT X 2008

Comments

| RPM | HP(KW) | TQ(N*M) | EXHAUST 1 | RPM | HP(KW) | TQ(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|------|--------|---------|-----------|
| 3000 | 0.5 | 1.45 | 102.2 | 8300 | 6.3 | 7.15 | 102.2 |
| 3100 | 0.5 | 1.55 | 102.2 | 8400 | 6.2 | 7.03 | 102.2 |
| 3200 | 0.8 | 2.45 | 102.2 | 8500 | 6.2 | 6.88 | 102.2 |
| 3300 | 1.8 | 5.08 | 102.2 | 8600 | 6.2 | 6.88 | 102.2 |
| 3400 | 2.9 | 8.04 | 102.2 | 8700 | 6.2 | 6.77 | 102.2 |
| 3500 | 3.5 | 9.48 | 102.2 | 8800 | 5.9 | 6.31 | 102.2 |
| 3600 | 3.8 | 9.97 | 102.2 | 8900 | 5.8 | 6.20 | 102.2 |
| 3700 | 3.9 | 10.15 | 102.2 | 9000 | 5.9 | 6.16 | 102.2 |
| 3800 | 4.2 | 10.48 | 102.2 | 9100 | 5.7 | 5.97 | 102.2 |
| 3900 | 4.4 | 10.69 | 102.2 | 9200 | 5.6 | 5.81 | 102.2 |
| 4000 | 4.5 | 10.68 | 102.2 | 9300 | 5.5 | 5.56 | 102.2 |
| 4100 | 4.7 | 10.86 | 102.2 | 9400 | 5.5 | 5.52 | 102.2 |
| 4200 | 4.8 | 10.95 | 102.2 | 9500 | 5.1 | 5.07 | 102.2 |
| 4300 | 5.0 | 11.13 | 102.2 | 9600 | 4.7 | 4.66 | 102.2 |
| 4400 | 5.2 | 11.29 | 102.2 | 9700 | 4.5 | 4.36 | 102.2 |
| 4500 | 5.3 | 11.28 | 102.2 | 9800 | 4.4 | 4.27 | 102.2 |
| 4600 | 5.5 | 11.37 | 102.2 | 9900 | 4.0 | 3.81 | 102.2 |
| 4700 | 5.6 | 11.35 | 102.2 | | | | |
| 4800 | 5.7 | 11.24 | 102.2 | | | | |
| 4900 | 5.8 | 11.28 | 102.2 | | | | |
| 5000 | 6.0 | 11.44 | 102.2 | | | | |
| 5100 | 6.1 | 11.48 | 102.2 | | | | |
| 5179 | 6.2 | 11.49 | 102.2 | | | | |
| 5200 | 6.3 | 11.46 | 102.2 | | | | |
| 5300 | 6.4 | 11.45 | 102.2 | | | | |
| 5400 | 6.4 | 11.30 | 102.2 | | | | |
| 5500 | 6.5 | 11.24 | 102.2 | | | | |
| 5600 | 6.6 | 11.25 | 102.2 | | | | |
| 5700 | 6.7 | 11.18 | 102.2 | | | | |
| 5800 | 6.7 | 11.01 | 102.2 | | | | |
| 5900 | 6.8 | 10.89 | 102.2 | | | | |
| 6000 | 6.7 | 10.66 | 102.2 | | | | |
| 6100 | 6.8 | 10.65 | 102.2 | | | | |
| 6200 | 7.0 | 10.67 | 102.2 | | | | |
| 6300 | 6.9 | 10.45 | 102.2 | | | | |
| 6400 | 7.0 | 10.34 | 102.2 | | | | |
| 6500 | 6.9 | 10.14 | 102.2 | | | | |
| 6600 | 7.0 | 10.11 | 102.2 | | | | |
| 6700 | 7.0 | 9.93 | 102.2 | | | | |
| 6800 | 7.0 | 9.79 | 102.2 | | | | |
| 6900 | 7.1 | 9.74 | 102.2 | | | | |
| 6962 | 7.1 | 9.68 | 102.2 | | | | |
| 7000 | 7.1 | 9.62 | 102.2 | | | | |
| 7100 | 7.0 | 9.39 | 102.2 | | | | |
| 7200 | 6.9 | 9.07 | 102.2 | | | | |
| 7300 | 7.0 | 9.11 | 102.2 | | | | |
| 7400 | 6.9 | 8.80 | 102.2 | | | | |
| 7500 | 6.8 | 8.62 | 102.2 | | | | |
| 7600 | 6.7 | 8.36 | 102.2 | | | | |
| 7700 | 6.9 | 8.47 | 102.2 | | | | |
| 7800 | 6.9 | 8.36 | 102.2 | | | | |
| 7900 | 6.7 | 7.98 | 102.2 | | | | |
| 8000 | 6.6 | 7.77 | 102.2 | | | | |
| 8100 | 6.6 | 7.70 | 102.2 | | | | |
| 8200 | 6.5 | 7.46 | 102.2 | | | | |

LOSSES: 0.0 KW 0.0N*M

TOTAL ENGINE: 7.1 KW 11.49 N*M





SPORTDYNO V3.3
DYNAMOMETER: SD325
ROLLER INERTIA: 4.6

Displacement Correction
Correction Factor: SAE J1349
NOTE: Load Cell Included.

DATA FOR TEST: SUPRA FIT X 2008

Comments

| RPM | HP(KW) | TO(N*M) | EXHAUST 1 | RPM | HP(KW) | TO(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|---------------|---------|-----------|-----------|
| 3000 | 1.9 | 3.89 | 102.2 | 8300 | 6.3 | 7.22 | 102.2 |
| 3100 | 2.0 | 4.57 | 102.2 | 8400 | 6.4 | 7.18 | 102.2 |
| 3200 | 2.0 | 5.45 | 102.2 | 8500 | 6.2 | 6.92 | 102.2 |
| 3300 | 2.0 | 5.66 | 102.2 | 8600 | 6.1 | 6.78 | 102.2 |
| 3400 | 3.0 | 8.28 | 102.2 | 8700 | 5.9 | 6.44 | 102.2 |
| 3500 | 3.5 | 9.56 | 102.2 | 8800 | 5.9 | 6.36 | 102.2 |
| 3600 | 3.8 | 10.09 | 102.2 | 8900 | 5.6 | 5.97 | 102.2 |
| 3700 | 4.0 | 10.25 | 102.2 | 9000 | 5.7 | 5.97 | 102.2 |
| 3800 | 4.0 | 10.14 | 102.2 | 9100 | 5.7 | 5.94 | 102.2 |
| 3900 | 4.2 | 10.28 | 102.2 | 9200 | 5.5 | 5.65 | 102.2 |
| 4000 | 4.4 | 10.51 | 102.2 | 9300 | 5.3 | 5.35 | 102.2 |
| 4100 | 4.6 | 10.69 | 102.2 | 9400 | 5.0 | 5.04 | 102.2 |
| 4200 | 4.8 | 10.91 | 102.2 | 9500 | 4.9 | 4.93 | 102.2 |
| 4300 | 5.0 | 11.02 | 102.2 | 9600 | 4.8 | 4.69 | 102.2 |
| 4400 | 5.2 | 11.28 | 102.2 | 9700 | 4.6 | 4.47 | 102.2 |
| 4500 | 5.3 | 11.20 | 102.2 | 9800 | 4.4 | 4.25 | 102.2 |
| 4600 | 5.5 | 11.41 | 102.2 | 9900 | 3.8 | 3.62 | 102.2 |
| 4700 | 5.7 | 11.44 | 102.2 | | | | |
| 4800 | 5.6 | 11.22 | 102.2 | LOSSES: | -0.0 KW | 0.0N*M | |
| 4900 | 5.8 | 11.21 | 102.2 | TOTAL ENGINE: | 7.1 KW | 11.55 N*M | |
| 5000 | 5.9 | 11.26 | 102.2 | | | | |
| 5100 | 6.1 | 11.31 | 102.2 | | | | |
| 5200 | 6.2 | 11.42 | 102.2 | | | | |
| 5283 | 6.4 | 11.55 | 102.2 | | | | |
| 5300 | 6.4 | 11.52 | 102.2 | | | | |
| 5400 | 6.4 | 11.22 | 102.2 | | | | |
| 5500 | 6.3 | 11.01 | 102.2 | | | | |
| 5600 | 6.6 | 11.17 | 102.2 | | | | |
| 5700 | 6.7 | 11.24 | 102.2 | | | | |
| 5800 | 6.8 | 11.08 | 102.2 | | | | |
| 5900 | 6.7 | 10.76 | 102.2 | | | | |
| 6000 | 6.7 | 10.58 | 102.2 | | | | |
| 6100 | 6.8 | 10.67 | 102.2 | | | | |
| 6200 | 6.9 | 10.55 | 102.2 | | | | |
| 6300 | 6.8 | 10.31 | 102.2 | | | | |
| 6400 | 6.8 | 10.10 | 102.2 | | | | |
| 6500 | 6.8 | 10.00 | 102.2 | | | | |
| 6600 | 7.0 | 10.05 | 102.2 | | | | |
| 6700 | 7.0 | 9.92 | 102.2 | | | | |
| 6800 | 7.0 | 9.83 | 102.2 | | | | |
| 6900 | 6.9 | 9.46 | 102.2 | | | | |
| 7000 | 7.0 | 9.45 | 102.2 | | | | |
| 7092 | 7.1 | 9.51 | 102.2 | | | | |
| 7100 | 7.1 | 9.47 | 102.2 | | | | |
| 7200 | 7.0 | 9.21 | 102.2 | | | | |
| 7300 | 7.0 | 9.03 | 102.2 | | | | |
| 7400 | 6.8 | 8.73 | 102.2 | | | | |
| 7500 | 6.7 | 8.53 | 102.2 | | | | |
| 7600 | 6.8 | 8.44 | 102.2 | | | | |
| 7700 | 6.6 | 8.17 | 102.2 | | | | |
| 7800 | 6.6 | 8.04 | 102.2 | | | | |
| 7900 | 6.6 | 7.95 | 102.2 | | | | |
| 8000 | 6.6 | 7.85 | 102.2 | | | | |
| 8100 | 6.5 | 7.59 | 102.2 | | | | |
| 8200 | 6.3 | 7.26 | 102.2 | | | | |





SPORTDYNO V3.3
DYNAMOMETER: SD325
ROLLER INERTIA: 4.6

Displacement Correction
Correction Factor: SAE J1349
NOTE: Load Cell Included.

DATA FOR TEST: SUPRA FIT X 2008

Comments

| RPM | HP(KW) | TQ(N*M) | EXHAUST 1 | RPM | HP(KW) | TQ(N*M) | EXHAUST 1 |
|------|--------|---------|-----------|---------------|--------|---------|-----------|
| 3000 | 0.6 | 1.83 | 102.2 | 8300 | 6.2 | 7.14 | 102.2 |
| 3100 | 0.6 | 1.96 | 102.2 | 8400 | 6.2 | 7.01 | 102.2 |
| 3200 | 0.7 | 2.03 | 102.2 | 8500 | 6.0 | 6.72 | 102.2 |
| 3300 | 0.7 | 2.06 | 102.2 | 8600 | 6.0 | 6.61 | 102.2 |
| 3400 | 1.7 | 4.65 | 102.2 | 8700 | 6.0 | 6.59 | 102.2 |
| 3500 | 2.8 | 7.67 | 102.2 | 8800 | 5.7 | 6.18 | 102.2 |
| 3600 | 3.5 | 9.36 | 102.2 | 8900 | 5.7 | 6.03 | 102.2 |
| 3700 | 3.9 | 10.09 | 102.2 | 9000 | 5.6 | 5.28 | 102.2 |
| 3800 | 4.2 | 10.48 | 102.2 | 9100 | 5.4 | 5.66 | 102.2 |
| 3900 | 4.3 | 10.58 | 102.2 | 9200 | 5.4 | 5.54 | 102.2 |
| 4000 | 4.4 | 10.26 | 102.2 | 9300 | 5.2 | 5.32 | 102.2 |
| 4100 | 4.7 | 11.03 | 102.2 | 9400 | 5.2 | 5.19 | 102.2 |
| 4200 | 4.9 | 11.15 | 102.2 | 9500 | 5.0 | 4.98 | 102.2 |
| 4300 | 5.0 | 11.12 | 102.2 | 9600 | 4.6 | 4.49 | 102.2 |
| 4400 | 5.1 | 11.11 | 102.2 | 9700 | 4.5 | 4.43 | 102.2 |
| 4500 | 5.3 | 11.31 | 102.2 | 9800 | 4.1 | 3.97 | 102.2 |
| 4600 | 5.4 | 11.22 | 102.2 | 9900 | 4.0 | 3.79 | 102.2 |
| 4700 | 5.6 | 11.28 | 102.2 | 10000 | 3.6 | 3.41 | 102.2 |
| 4800 | 5.7 | 11.36 | 102.2 | | | | |
| 4885 | 5.9 | 11.48 | 102.2 | LOSSES: | 4.5 KW | 4.4N*M | |
| 4900 | 5.9 | 11.48 | 102.2 | TOTAL ENGINE: | 2.5 KW | 7.07N*M | |
| 5000 | 6.0 | 11.41 | 102.2 | | | | |
| 5100 | 6.0 | 11.25 | 102.2 | | | | |
| 5200 | 6.0 | 10.98 | 102.2 | | | | |
| 5300 | 6.1 | 10.97 | 102.2 | | | | |
| 5400 | 6.3 | 11.18 | 102.2 | | | | |
| 5500 | 6.4 | 11.13 | 102.2 | | | | |
| 5600 | 6.4 | 10.95 | 102.2 | | | | |
| 5700 | 6.5 | 10.22 | 102.2 | | | | |
| 5800 | 6.5 | 10.70 | 102.2 | | | | |
| 5900 | 6.6 | 10.62 | 102.2 | | | | |
| 6000 | 6.7 | 10.66 | 102.2 | | | | |
| 6100 | 6.6 | 10.33 | 102.2 | | | | |
| 6200 | 6.7 | 10.24 | 102.2 | | | | |
| 6300 | 6.7 | 10.17 | 102.2 | | | | |
| 6400 | 6.8 | 10.12 | 102.2 | | | | |
| 6500 | 6.8 | 9.89 | 102.2 | | | | |
| 6600 | 6.9 | 9.27 | 102.2 | | | | |
| 6700 | 6.9 | 9.78 | 102.2 | | | | |
| 6800 | 6.9 | 9.61 | 102.2 | | | | |
| 6900 | 7.0 | 9.65 | 102.2 | | | | |
| 6910 | 7.0 | 9.65 | 102.2 | | | | |
| 7000 | 7.0 | 9.44 | 102.2 | | | | |
| 7100 | 7.0 | 9.31 | 102.2 | | | | |
| 7200 | 7.0 | 9.19 | 102.2 | | | | |
| 7300 | 6.9 | 8.94 | 102.2 | | | | |
| 7400 | 6.8 | 8.66 | 102.2 | | | | |
| 7500 | 6.8 | 8.66 | 102.2 | | | | |
| 7600 | 6.8 | 8.48 | 102.2 | | | | |
| 7700 | 6.6 | 8.19 | 102.2 | | | | |
| 7800 | 6.5 | 7.89 | 102.2 | | | | |
| 7900 | 6.5 | 7.80 | 102.2 | | | | |
| 8000 | 6.4 | 7.62 | 102.2 | | | | |
| 8100 | 6.4 | 7.50 | 102.2 | | | | |
| 8200 | 6.5 | 7.47 | 102.2 | | | | |



Lampiran 5 : Hasil Pengujian Konsumsi Bahan bakar 5 ml/s

Data Pengujian Konsumsi Bahan Bakar Piston Diameter 50 mm (Standar)

| Rpm | Waktu (Sekon) | | | Rata – rata |
|------|---------------|-------------|-------------|-------------|
| | Pengujian 1 | Pengujian 2 | Pengujian 3 | |
| 3000 | 59 | 51 | 53 | 54 |
| 4000 | 47 | 49 | 49 | 48 |
| 5000 | 41 | 45 | 44 | 43 |
| 6000 | 32 | 38 | 38 | 36 |
| 7000 | 27 | 35 | 36 | 32 |
| 8000 | 28 | 28 | 28 | 28 |

Data Pengujian Konsumsi Bahan Bakar Piston Diameter 53 mm (Modif 1)

| Rpm | Waktu (Sekon) | | | Rata – rata |
|------|---------------|-------------|-------------|-------------|
| | Pengujian 1 | Pengujian 2 | Pengujian 3 | |
| 3000 | 57 | 46 | 48 | 50 |
| 4000 | 36 | 47 | 52 | 45 |
| 5000 | 30 | 41 | 39 | 37 |
| 6000 | 29 | 30 | 36 | 32 |
| 7000 | 27 | 30 | 27 | 28 |
| 8000 | 25 | 26 | 26 | 26 |

Data Pengujian Konsumsi Bahan Bakar Piston Diameter 56 mm (Modif 2)

| Rpm | Waktu (Sekon) | | | Rata-rata |
|------|---------------|----|----|-----------|
| | | | | |
| 3000 | 44 | 46 | 44 | 45 |
| 4000 | 34 | 34 | 34 | 34 |
| 5000 | 27 | 29 | 30 | 29 |
| 6000 | 27 | 26 | 26 | 26 |
| 7000 | 26 | 28 | 27 | 27 |
| 8000 | 22 | 23 | 24 | 23 |



Lampiran 6 : Dokumentasi Pengujian



