



LAMPIRAN-LAMPIRAN

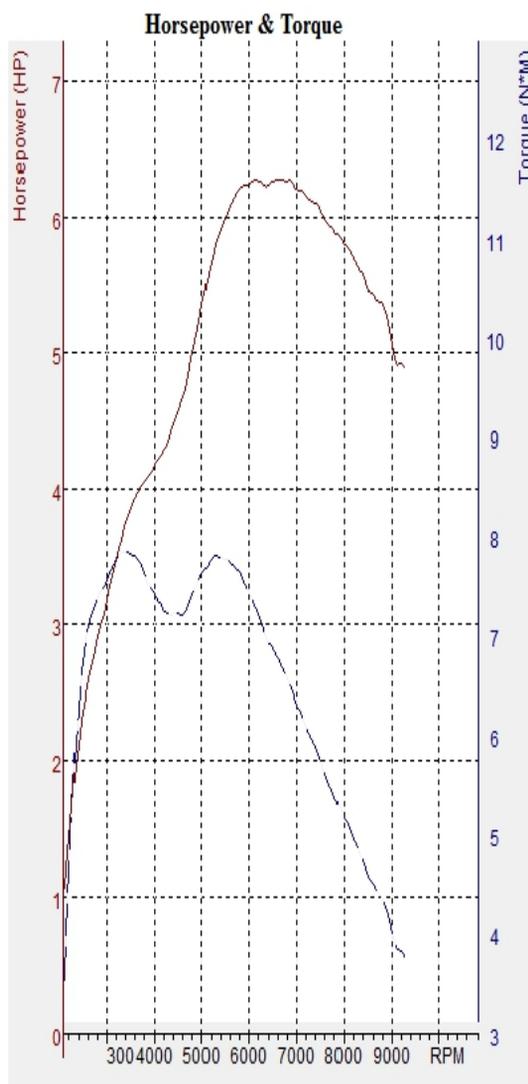
Pengujian torsi dan daya pada pertalite murni (standar)



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|--------------|------------|-------------|------|------------|--------------|-----------------|--------------------|
| UNDIKSHA_165 | 6.3 / 6616 | 7.85 / 3317 | 84.6 | 25.0 | 60 | 1000.0 | 09/04/2021 0:16:07 |



DATA FOR TEST: UNDIKSHA_165

| RPM | HP (HP) | TQ (N*M) | Tempol (T C-A) (°C) |
|-------------|------------|-------------|---------------------|
| 2250 | 1.6 | 5.16 | 1000.0 |
| 2500 | 2.4 | 6.82 | 1000.0 |
| 2750 | 2.8 | 7.33 | 1000.0 |
| 3000 | 3.2 | 7.57 | 1000.0 |
| 3250 | 3.6 | 7.82 | 1000.0 |
| 3317 | 3.7 | 7.85 | 1000.0 |
| 3500 | 3.9 | 7.82 | 1000.0 |
| 3750 | 4.1 | 7.64 | 1000.0 |
| 4000 | 4.2 | 7.40 | 1000.0 |
| 4250 | 4.3 | 7.22 | 1000.0 |
| 4500 | 4.6 | 7.21 | 1000.0 |
| 4750 | 4.9 | 7.35 | 1000.0 |
| 5000 | 5.4 | 7.62 | 1000.0 |
| 5250 | 5.8 | 7.80 | 1000.0 |
| 5500 | 6.0 | 7.77 | 1000.0 |
| 5750 | 6.2 | 7.65 | 1000.0 |
| 6000 | 6.3 | 7.40 | 1000.0 |
| 6250 | 6.3 | 7.12 | 1000.0 |
| 6500 | 6.3 | 6.85 | 1000.0 |
| 6616 | 6.3 | 6.72 | 1000.0 |
| 6750 | 6.3 | 6.60 | 1000.0 |
| 7000 | 6.2 | 6.29 | 1000.0 |
| 7250 | 6.1 | 6.01 | 1000.0 |
| 7500 | 6.1 | 5.75 | 1000.0 |
| 7750 | 5.9 | 5.42 | 1000.0 |
| 8000 | 5.8 | 5.15 | 1000.0 |
| 8250 | 5.6 | 4.86 | 1000.0 |
| 8500 | 5.5 | 4.57 | 1000.0 |
| 8750 | 5.4 | 4.37 | 1000.0 |
| 9000 | 5.1 | 4.00 | 1000.0 |
| 9250 | 4.9 | 3.75 | 1000.0 |
| 9500 | 4.9 | 3.75 | 1000.0 |

Wheel 6.3 HP 7.8 N*M
 LOSSES 0.0 HP 0.0N*M
 TOTAL ENGINE: 6.3HP 7.85N*M



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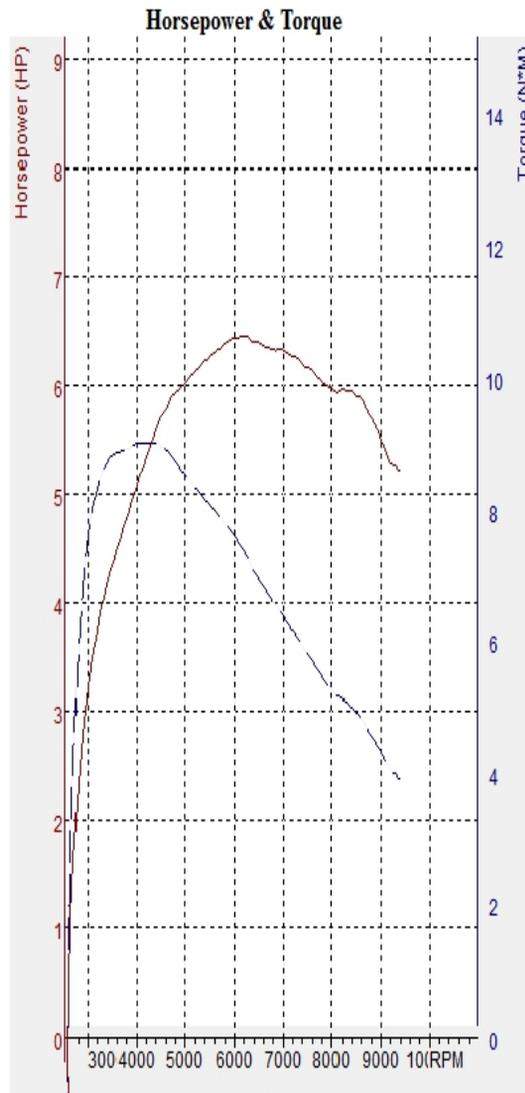
SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)

DYNAMOMETER: SMK PGRI 2 BADUNG

Correction Factor: EC95 -1

Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|-------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_254 | 6.4 / 6172 | 9.06 / 4285 | 83.4 | 25.0 | 60 | 1000.0 | 25/05/2021 2:15:59 |



DATA FOR TEST: VARIO 16 ETANOL_254

| RPM | HP (HP) | TQ Termol (N*M) | (T C-A) (°C) |
|-------------|------------|-----------------|--------------|
| 2750 | 2.0 | 5.13 | 1000.0 |
| 3000 | 3.3 | 7.80 | 1000.0 |
| 3250 | 4.0 | 8.60 | 1000.0 |
| 3500 | 4.4 | 8.87 | 1000.0 |
| 3750 | 4.8 | 8.97 | 1000.0 |
| 4000 | 5.1 | 9.05 | 1000.0 |
| 4250 | 5.4 | 9.06 | 1000.0 |
| 4285 | 5.5 | 9.06 | 1000.0 |
| 4500 | 5.7 | 8.99 | 1000.0 |
| 4750 | 5.9 | 8.83 | 1000.0 |
| 5000 | 6.0 | 8.56 | 1000.0 |
| 5250 | 6.2 | 8.30 | 1000.0 |
| 5500 | 6.3 | 8.08 | 1000.0 |
| 5750 | 6.4 | 7.84 | 1000.0 |
| 6000 | 6.4 | 7.61 | 1000.0 |
| 6172 | 6.4 | 7.42 | 1000.0 |
| 6250 | 6.4 | 7.31 | 1000.0 |
| 6500 | 6.4 | 6.96 | 1000.0 |
| 6750 | 6.3 | 6.66 | 1000.0 |
| 7000 | 6.3 | 6.39 | 1000.0 |
| 7250 | 6.2 | 6.12 | 1000.0 |
| 7500 | 6.2 | 5.82 | 1000.0 |
| 7750 | 6.0 | 5.53 | 1000.0 |
| 8000 | 6.0 | 5.28 | 1000.0 |
| 8250 | 5.9 | 5.12 | 1000.0 |
| 8500 | 5.9 | 4.93 | 1000.0 |
| 8750 | 5.7 | 4.66 | 1000.0 |
| 9000 | 5.5 | 4.33 | 1000.0 |
| 9250 | 5.3 | 4.05 | 1000.0 |
| 9500 | 5.2 | 3.89 | 1000.0 |
| 9750 | 5.2 | 3.91 | 1000.0 |

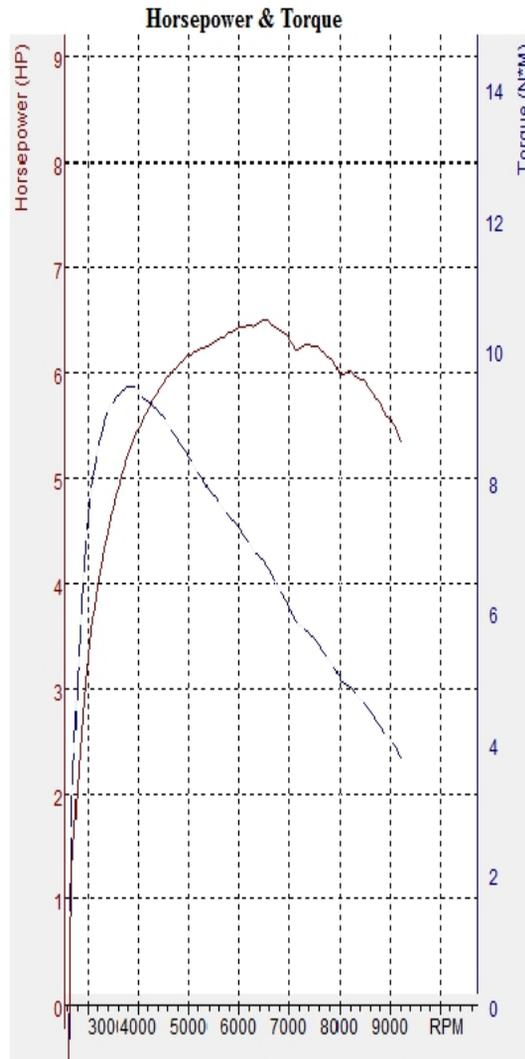
Wheel 6.4 HP 9.1 N*M
LOSSES 0.0 HP 0.0 N*M
TOTAL ENGINE: 6.4HP 9.06N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|-------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_256 | 6.5 / 6508 | 9.80 / 3822 | 81.8 | 25.0 | 60 | 1000.0 | 25/05/2021 2:16:21 |



DATA FOR TEST: VARIO 16 ETANOL_256

| RPM | HP (HP) | TQ (N*M) | Temp (C-A) (°C) |
|------|---------|----------|-----------------|
| 2750 | 1.8 | 4.77 | 1000.0 |
| 3000 | 3.3 | 7.83 | 1000.0 |
| 3250 | 4.2 | 9.08 | 1000.0 |
| 3500 | 4.7 | 9.55 | 1000.0 |
| 3750 | 5.2 | 9.78 | 1000.0 |
| 3822 | 5.3 | 9.80 | 1000.0 |
| 4000 | 5.5 | 9.70 | 1000.0 |
| 4250 | 5.7 | 9.51 | 1000.0 |
| 4500 | 5.9 | 9.32 | 1000.0 |
| 4750 | 6.0 | 9.02 | 1000.0 |
| 5000 | 6.2 | 8.73 | 1000.0 |
| 5250 | 6.2 | 8.41 | 1000.0 |
| 5500 | 6.3 | 8.09 | 1000.0 |
| 5750 | 6.4 | 7.86 | 1000.0 |
| 6000 | 6.4 | 7.61 | 1000.0 |
| 6250 | 6.4 | 7.30 | 1000.0 |
| 6500 | 6.5 | 7.11 | 1000.0 |
| 6508 | 6.5 | 7.09 | 1000.0 |
| 6750 | 6.4 | 6.76 | 1000.0 |
| 7000 | 6.3 | 6.41 | 1000.0 |
| 7250 | 6.2 | 6.12 | 1000.0 |
| 7500 | 6.3 | 5.93 | 1000.0 |
| 7750 | 6.1 | 5.63 | 1000.0 |
| 8000 | 6.0 | 5.31 | 1000.0 |
| 8250 | 6.0 | 5.16 | 1000.0 |
| 8500 | 5.9 | 4.93 | 1000.0 |
| 8750 | 5.7 | 4.64 | 1000.0 |
| 9000 | 5.5 | 4.38 | 1000.0 |
| 9250 | 5.3 | 4.08 | 1000.0 |
| 9500 | 5.3 | 4.11 | 1000.0 |

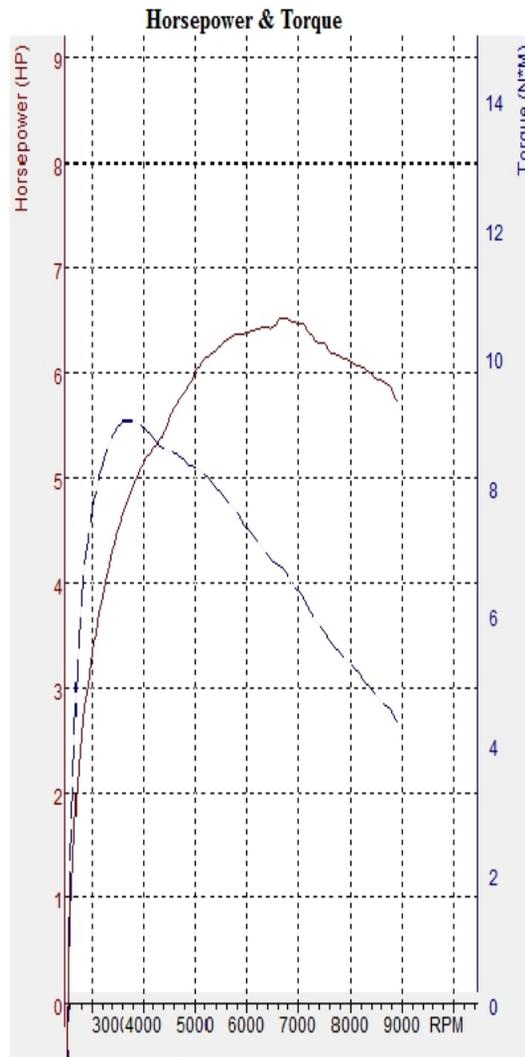
Wheel: 6.5 HP 9.8 N*M
 LOSSES: 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.5HP 9.80N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|-------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_257 | 6.5 / 6671 | 9.23 / 3721 | 79.4 | 25.0 | 60 | 1000.0 | 25/05/2021 2:16:40 |



DATA FOR TEST: VARIO 16 ETANOL_257

| RPM | HP (HP) | TQ (N*M) | Tempol (T C-A) (°C) |
|-------------|------------|-------------|---------------------|
| 2750 | 2.2 | 5.80 | 1000.0 |
| 3000 | 3.3 | 7.86 | 1000.0 |
| 3250 | 4.0 | 8.73 | 1000.0 |
| 3500 | 4.5 | 9.13 | 1000.0 |
| 3721 | 4.8 | 9.23 | 1000.0 |
| 3750 | 4.9 | 9.23 | 1000.0 |
| 4000 | 5.1 | 9.14 | 1000.0 |
| 4250 | 5.3 | 8.90 | 1000.0 |
| 4500 | 5.6 | 8.76 | 1000.0 |
| 4750 | 5.8 | 8.63 | 1000.0 |
| 5000 | 6.0 | 8.50 | 1000.0 |
| 5250 | 6.2 | 8.33 | 1000.0 |
| 5500 | 6.3 | 8.08 | 1000.0 |
| 5750 | 6.4 | 7.86 | 1000.0 |
| 6000 | 6.4 | 7.55 | 1000.0 |
| 6250 | 6.4 | 7.29 | 1000.0 |
| 6500 | 6.4 | 7.03 | 1000.0 |
| 6671 | 6.5 | 6.91 | 1000.0 |
| 6750 | 6.5 | 6.86 | 1000.0 |
| 7000 | 6.5 | 6.55 | 1000.0 |
| 7250 | 6.3 | 6.21 | 1000.0 |
| 7500 | 6.3 | 5.95 | 1000.0 |
| 7750 | 6.2 | 5.65 | 1000.0 |
| 8000 | 6.1 | 5.41 | 1000.0 |
| 8250 | 6.0 | 5.20 | 1000.0 |
| 8500 | 5.9 | 4.95 | 1000.0 |
| 8750 | 5.9 | 4.76 | 1000.0 |
| 9000 | 5.6 | 4.46 | 1000.0 |
| 9250 | 5.7 | 4.52 | 1000.0 |

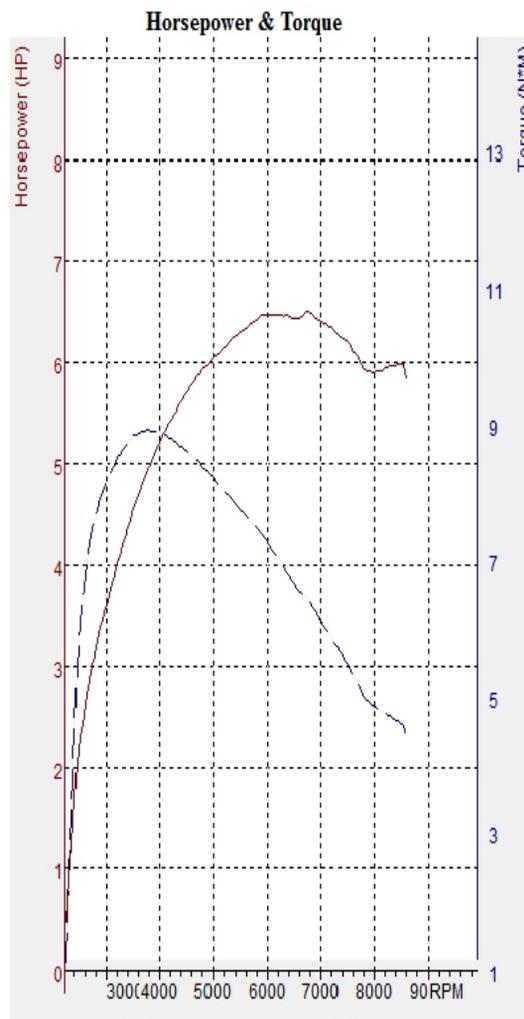
Wheel 6.5 HP 9.2 N*M
 LOSSES 0.0 HP 0.0N*M
 TOTAL ENGINE: 6.5HP 9.23N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|-------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_259 | 6.5 / 6731 | 9.31 / 3752 | 75.4 | 25.0 | 60 | 1000.0 | 25/05/2021 2:17:31 |



DATA FOR TEST: VARIO 16 ETANOL_259

| RPM | HP (HP) | TQ (N*M) | Temp (C-A) (°C) |
|-------------|------------|-------------|-----------------|
| 2500 | 2.3 | 6.49 | 1000.0 |
| 2750 | 3.1 | 7.97 | 1000.0 |
| 3000 | 3.6 | 8.58 | 1000.0 |
| 3250 | 4.1 | 9.00 | 1000.0 |
| 3500 | 4.6 | 9.24 | 1000.0 |
| 3750 | 4.9 | 9.31 | 1000.0 |
| 3752 | 4.9 | 9.31 | 1000.0 |
| 4000 | 5.2 | 9.27 | 1000.0 |
| 4250 | 5.5 | 9.14 | 1000.0 |
| 4500 | 5.7 | 9.00 | 1000.0 |
| 4750 | 5.9 | 8.81 | 1000.0 |
| 5000 | 6.1 | 8.59 | 1000.0 |
| 5250 | 6.2 | 8.36 | 1000.0 |
| 5500 | 6.3 | 8.13 | 1000.0 |
| 5750 | 6.4 | 7.89 | 1000.0 |
| 6000 | 6.5 | 7.66 | 1000.0 |
| 6250 | 6.5 | 7.33 | 1000.0 |
| 6500 | 6.4 | 7.01 | 1000.0 |
| 6731 | 6.5 | 6.84 | 1000.0 |
| 6750 | 6.5 | 6.82 | 1000.0 |
| 7000 | 6.4 | 6.48 | 1000.0 |
| 7250 | 6.3 | 6.19 | 1000.0 |
| 7500 | 6.2 | 5.84 | 1000.0 |
| 7750 | 6.0 | 5.46 | 1000.0 |
| 8000 | 5.9 | 5.24 | 1000.0 |
| 8250 | 6.0 | 5.13 | 1000.0 |
| 8500 | 6.0 | 5.00 | 1000.0 |
| 8750 | 6.0 | 5.05 | 1000.0 |

Wheel 6.5 HP 9.3 N*M
 LOSSES 0.0 HP 0.0N*M
 TOTAL ENGINE: 6.5HP 9.31N*M

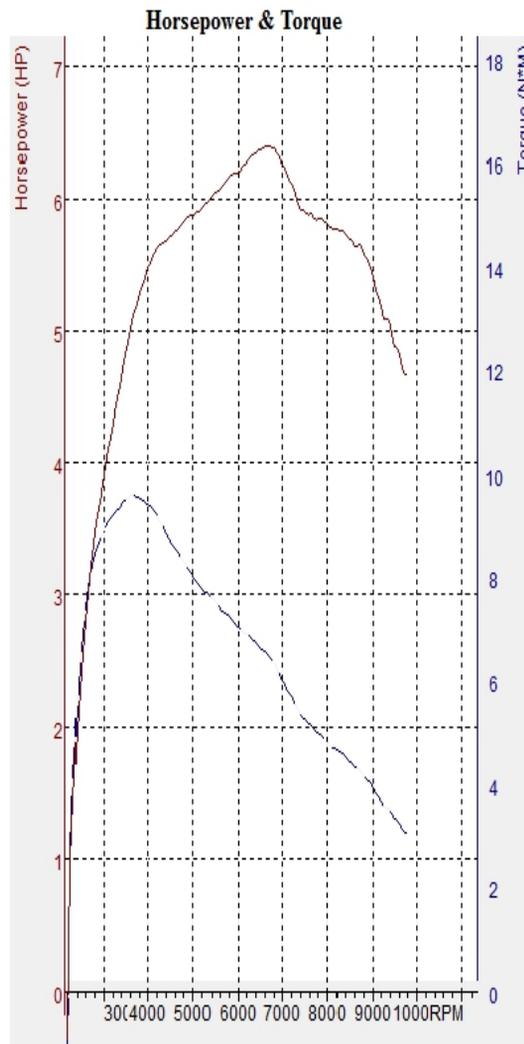
Pengujian torsi dan daya pada variasi etanol 16%



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|-------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_235 | 6.4 / 6613 | 9.93 / 3623 | 85.8 | 25.0 | 60 | 1000.0 | 02/05/2021 1:31:08 |



DATA FOR TEST: VARIO 16 ETANOL_235

| RPM | HP (HP) | TQ (N*M) | Tempol (C-A) (°C) |
|-------------|------------|-------------|-------------------|
| 2250 | 1.0 | 3.05 | 1000.0 |
| 2500 | 2.6 | 7.24 | 1000.0 |
| 2750 | 3.4 | 8.70 | 1000.0 |
| 3000 | 3.9 | 9.27 | 1000.0 |
| 3250 | 4.4 | 9.64 | 1000.0 |
| 3500 | 4.9 | 9.87 | 1000.0 |
| 3623 | 5.1 | 9.93 | 1000.0 |
| 3750 | 5.3 | 9.90 | 1000.0 |
| 4000 | 5.5 | 9.72 | 1000.0 |
| 4250 | 5.7 | 9.44 | 1000.0 |
| 4500 | 5.7 | 9.00 | 1000.0 |
| 4750 | 5.8 | 8.70 | 1000.0 |
| 5000 | 5.9 | 8.32 | 1000.0 |
| 5250 | 6.0 | 8.05 | 1000.0 |
| 5500 | 6.1 | 7.81 | 1000.0 |
| 5750 | 6.2 | 7.59 | 1000.0 |
| 6000 | 6.2 | 7.35 | 1000.0 |
| 6250 | 6.3 | 7.16 | 1000.0 |
| 6500 | 6.4 | 6.95 | 1000.0 |
| 6613 | 6.4 | 6.85 | 1000.0 |
| 6750 | 6.4 | 6.71 | 1000.0 |
| 7000 | 6.2 | 6.33 | 1000.0 |
| 7250 | 6.1 | 5.94 | 1000.0 |
| 7500 | 5.9 | 5.60 | 1000.0 |
| 7750 | 5.8 | 5.36 | 1000.0 |
| 8000 | 5.8 | 5.16 | 1000.0 |
| 8250 | 5.8 | 4.96 | 1000.0 |
| 8500 | 5.7 | 4.75 | 1000.0 |
| 8750 | 5.6 | 4.55 | 1000.0 |
| 9000 | 5.4 | 4.24 | 1000.0 |
| 9250 | 5.1 | 3.90 | 1000.0 |
| 9500 | 4.9 | 3.64 | 1000.0 |
| 9750 | 4.7 | 3.40 | 1000.0 |
| 10000 | 4.6 | 3.35 | 1000.0 |

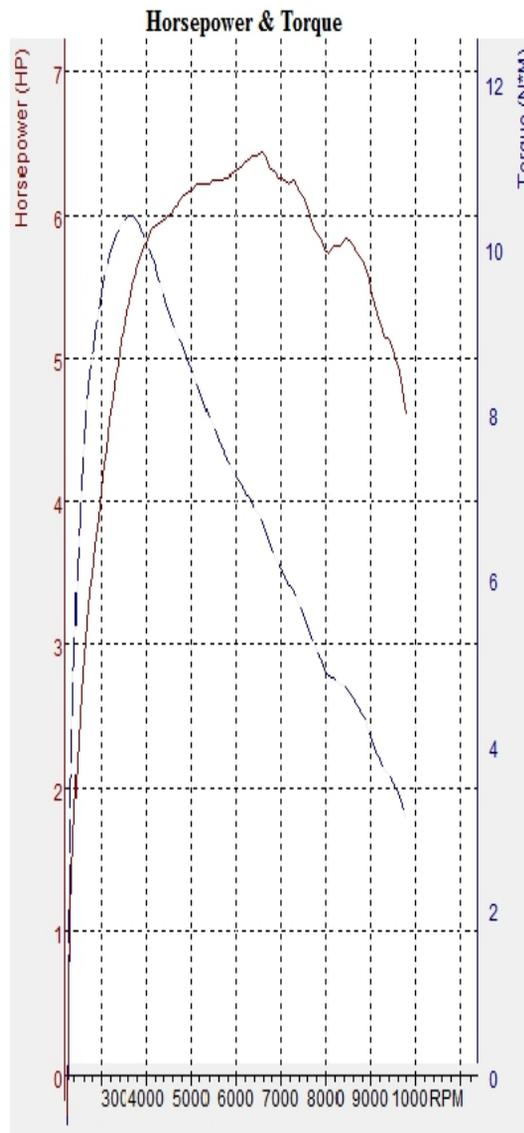
Wheel 6.4 HP 9.9 N*M
 LOSSES 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.4HP 9.93N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|--------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_236 | 6.4 / 6560 | 10.64 / 3603 | 85.7 | 25.0 | 60 | 1000.0 | 02/05/2021 1:31:32 |



DATA FOR TEST: VARIO 16 ETANOL_236

| RPM | HP (HP) | TQ Termol (N*M) | (T C-A) (°C) |
|-------------|------------|-----------------|--------------|
| 2250 | 0.8 | 2.51 | 1000.0 |
| 2500 | 2.5 | 7.07 | 1000.0 |
| 2750 | 3.5 | 8.90 | 1000.0 |
| 3000 | 4.2 | 9.82 | 1000.0 |
| 3250 | 4.7 | 10.31 | 1000.0 |
| 3500 | 5.3 | 10.61 | 1000.0 |
| 3603 | 5.5 | 10.64 | 1000.0 |
| 3750 | 5.6 | 10.61 | 1000.0 |
| 4000 | 5.8 | 10.31 | 1000.0 |
| 4250 | 5.9 | 9.88 | 1000.0 |
| 4500 | 6.0 | 9.46 | 1000.0 |
| 4750 | 6.1 | 9.14 | 1000.0 |
| 5000 | 6.2 | 8.78 | 1000.0 |
| 5250 | 6.2 | 8.42 | 1000.0 |
| 5500 | 6.2 | 8.05 | 1000.0 |
| 5750 | 6.3 | 7.74 | 1000.0 |
| 6000 | 6.3 | 7.47 | 1000.0 |
| 6250 | 6.4 | 7.25 | 1000.0 |
| 6500 | 6.4 | 7.01 | 1000.0 |
| 6560 | 6.4 | 6.97 | 1000.0 |
| 6750 | 6.3 | 6.64 | 1000.0 |
| 7000 | 6.3 | 6.35 | 1000.0 |
| 7250 | 6.2 | 6.12 | 1000.0 |
| 7500 | 6.1 | 5.81 | 1000.0 |
| 7750 | 5.9 | 5.40 | 1000.0 |
| 8000 | 5.7 | 5.10 | 1000.0 |
| 8250 | 5.8 | 4.98 | 1000.0 |
| 8500 | 5.8 | 4.86 | 1000.0 |
| 8750 | 5.7 | 4.62 | 1000.0 |
| 9000 | 5.4 | 4.30 | 1000.0 |
| 9250 | 5.2 | 3.98 | 1000.0 |
| 9500 | 5.0 | 3.75 | 1000.0 |
| 9750 | 4.7 | 3.40 | 1000.0 |
| 10000 | 4.6 | 3.35 | 1000.0 |

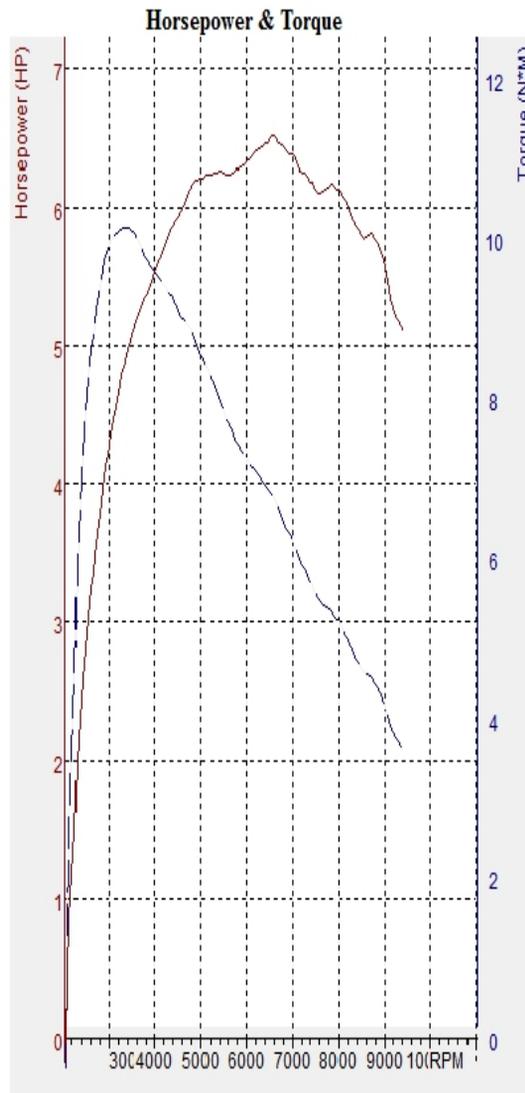
Wheel 6.4 HP 10.6 N*M
 LOSSES 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.4 HP 10.64 N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|--------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_237 | 6.5 / 6545 | 10.40 / 3333 | 83.9 | 25.0 | 60 | 1000.0 | 02/05/2021 1:31:55 |



DATA FOR TEST: VARIO 16 ETANOL_237

| RPM | HP (HP) | TQ Termol (N*M) | (T C-A) (°C) |
|------|---------|-----------------|--------------|
| 2250 | 1.7 | 5.24 | 1000.0 |
| 2500 | 2.9 | 8.30 | 1000.0 |
| 2750 | 3.7 | 9.50 | 1000.0 |
| 3000 | 4.4 | 10.23 | 1000.0 |
| 3250 | 4.8 | 10.38 | 1000.0 |
| 3333 | 4.9 | 10.40 | 1000.0 |
| 3500 | 5.1 | 10.35 | 1000.0 |
| 3750 | 5.3 | 10.07 | 1000.0 |
| 4000 | 5.5 | 9.84 | 1000.0 |
| 4250 | 5.8 | 9.61 | 1000.0 |
| 4500 | 5.9 | 9.36 | 1000.0 |
| 4750 | 6.1 | 9.13 | 1000.0 |
| 5000 | 6.2 | 8.80 | 1000.0 |
| 5250 | 6.2 | 8.44 | 1000.0 |
| 5500 | 6.2 | 8.03 | 1000.0 |
| 5750 | 6.3 | 7.73 | 1000.0 |
| 6000 | 6.3 | 7.49 | 1000.0 |
| 6250 | 6.4 | 7.28 | 1000.0 |
| 6500 | 6.5 | 7.08 | 1000.0 |
| 6545 | 6.5 | 7.04 | 1000.0 |
| 6750 | 6.4 | 6.77 | 1000.0 |
| 7000 | 6.4 | 6.47 | 1000.0 |
| 7250 | 6.2 | 6.11 | 1000.0 |
| 7500 | 6.1 | 5.79 | 1000.0 |
| 7750 | 6.1 | 5.63 | 1000.0 |
| 8000 | 6.1 | 5.45 | 1000.0 |
| 8250 | 5.9 | 5.10 | 1000.0 |
| 8500 | 5.8 | 4.84 | 1000.0 |
| 8750 | 5.8 | 4.69 | 1000.0 |
| 9000 | 5.6 | 4.41 | 1000.0 |
| 9250 | 5.2 | 4.00 | 1000.0 |
| 9500 | 5.1 | 3.79 | 1000.0 |

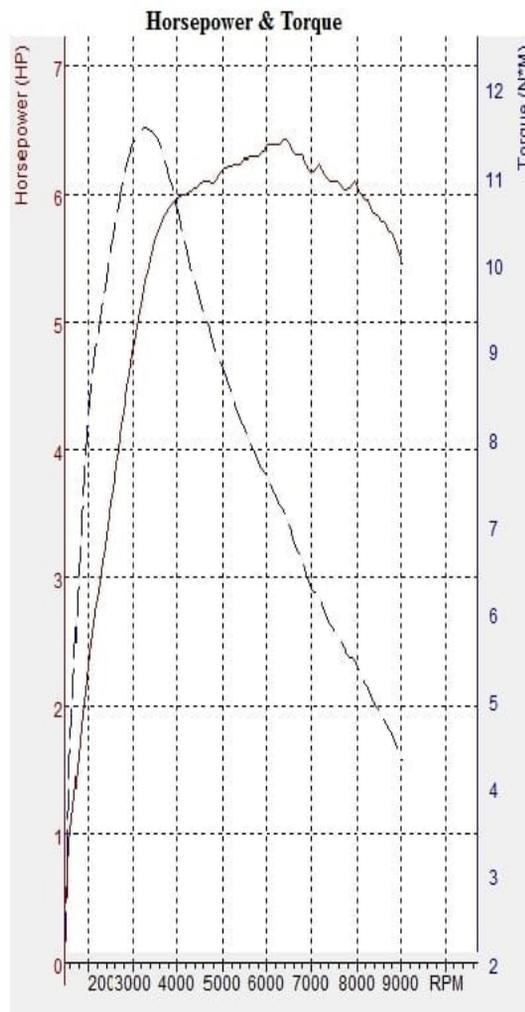
Wheel 6.5 HP 10.4 N*M
 LOSSES 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.5 HP 10.40 N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|--------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_238 | 6.4 / 6373 | 11.53 / 3259 | 80.8 | 25.0 | 60 | 1000.0 | 02/05/2021 1:32:29 |



DATA FOR TEST: VARIO 16 ETANOL_238

| RPM | HP (HP) | TQ (N*M) | Tempol (C-A) (°C) |
|-------------|------------|--------------|-------------------|
| 1750 | 1.5 | 6.10 | 1000.0 |
| 2000 | 2.4 | 8.42 | 1000.0 |
| 2250 | 3.0 | 9.35 | 1000.0 |
| 2500 | 3.6 | 10.18 | 1000.0 |
| 2750 | 4.3 | 10.97 | 1000.0 |
| 3000 | 4.8 | 11.10 | 1000.0 |
| 3250 | 5.3 | 11.53 | 1000.0 |
| 3259 | 5.3 | 11.53 | 1000.0 |
| 3500 | 5.7 | 11.42 | 1000.0 |
| 3750 | 5.9 | 11.07 | 1000.0 |
| 4000 | 6.0 | 10.61 | 1000.0 |
| 4250 | 6.0 | 10.04 | 1000.0 |
| 4500 | 6.1 | 9.55 | 1000.0 |
| 4750 | 6.1 | 9.10 | 1000.0 |
| 5000 | 6.2 | 8.79 | 1000.0 |
| 5250 | 6.2 | 8.39 | 1000.0 |
| 5500 | 6.3 | 8.09 | 1000.0 |
| 5750 | 6.3 | 7.76 | 1000.0 |
| 6000 | 6.4 | 7.54 | 1000.0 |
| 6250 | 6.4 | 7.25 | 1000.0 |
| 6373 | 6.4 | 7.14 | 1000.0 |
| 6500 | 6.4 | 6.98 | 1000.0 |
| 6750 | 6.3 | 6.64 | 1000.0 |
| 7000 | 6.2 | 6.27 | 1000.0 |
| 7250 | 6.2 | 6.06 | 1000.0 |
| 7500 | 6.1 | 5.78 | 1000.0 |
| 7750 | 6.0 | 5.53 | 1000.0 |
| 8000 | 6.1 | 5.39 | 1000.0 |
| 8250 | 5.9 | 5.13 | 1000.0 |
| 8500 | 5.8 | 4.85 | 1000.0 |
| 8750 | 5.7 | 4.63 | 1000.0 |
| 9000 | 5.5 | 4.32 | 1000.0 |
| 9250 | 5.5 | 4.40 | 1000.0 |

Wheel 6.4 HP 11.5 N*M
 LOSSES 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.4 HP 11.53 N*M



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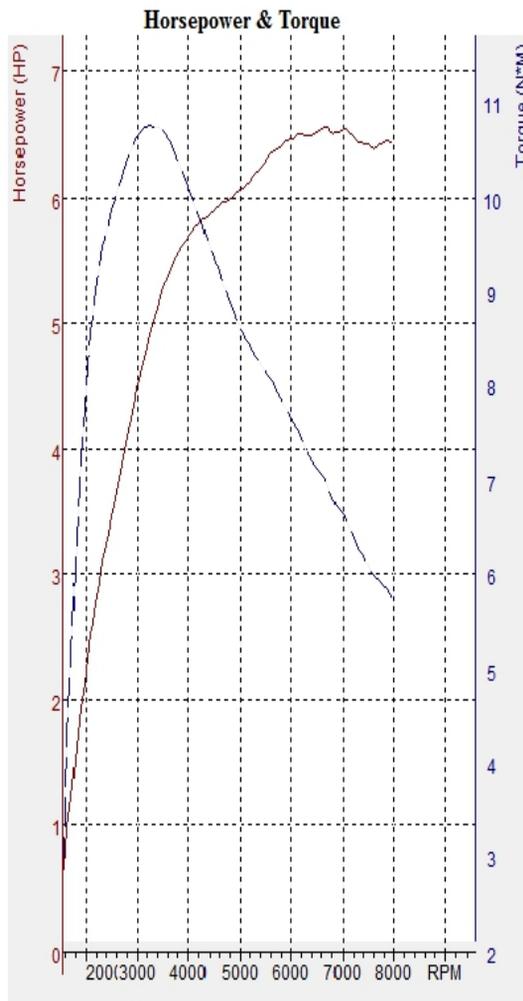
SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)

DYNAMOMETER: SMK PGRI 2 BADUNG

Correction Factor: EC95 -1

Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|--------------|------------|--------------|------|------------|--------------|-----------------|---------------------|
| UNDIKSHA_217 | 6.6 / 6659 | 10.75 / 3189 | 72.2 | 25.0 | 60 | 1000.0 | 29/04/2021 14:06:32 |



DATA FOR TEST: UNDIKSHA_217

| RPM | HP (HP) | TQ (N*M) | Termol (T C-A) (°C) |
|------|---------|----------|---------------------|
| 1750 | 1.4 | 5.75 | 1000.0 |
| 2000 | 2.3 | 8.20 | 1000.0 |
| 2250 | 2.9 | 9.27 | 1000.0 |
| 2500 | 3.5 | 9.88 | 1000.0 |
| 2750 | 4.0 | 10.36 | 1000.0 |
| 3000 | 4.6 | 10.67 | 1000.0 |
| 3189 | 4.9 | 10.75 | 1000.0 |
| 3250 | 5.0 | 10.75 | 1000.0 |
| 3500 | 5.3 | 10.70 | 1000.0 |
| 3750 | 5.5 | 10.42 | 1000.0 |
| 4000 | 5.7 | 10.07 | 1000.0 |
| 4250 | 5.8 | 9.70 | 1000.0 |
| 4500 | 5.9 | 9.31 | 1000.0 |
| 4750 | 6.0 | 8.92 | 1000.0 |
| 5000 | 6.1 | 8.59 | 1000.0 |
| 5250 | 6.2 | 8.34 | 1000.0 |
| 5500 | 6.3 | 8.14 | 1000.0 |
| 5750 | 6.4 | 7.90 | 1000.0 |
| 6000 | 6.5 | 7.64 | 1000.0 |
| 6250 | 6.5 | 7.35 | 1000.0 |
| 6500 | 6.5 | 7.12 | 1000.0 |
| 6659 | 6.6 | 6.98 | 1000.0 |
| 6750 | 6.5 | 6.87 | 1000.0 |
| 7000 | 6.5 | 6.63 | 1000.0 |
| 7250 | 6.4 | 6.30 | 1000.0 |
| 7500 | 6.4 | 6.07 | 1000.0 |
| 7750 | 6.4 | 5.88 | 1000.0 |
| 8000 | 6.4 | 5.65 | 1000.0 |
| 8250 | 6.4 | 5.82 | 1000.0 |

Wheel 6.6 HP 10.8 N*M
 LOSSES 0.0 HP 0.0N*M
 TOTAL ENGINE: 6.6HP 10.75N*M

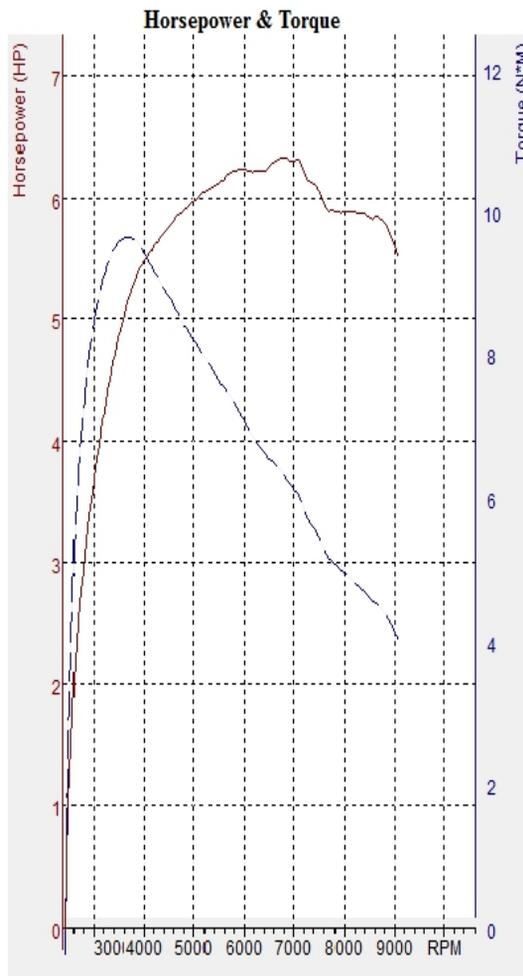
Pengujian torsi dan daya pada variasi etanol 19%



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|-------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_247 | 6.3 / 6746 | 9.95 / 3651 | 80.4 | 25.0 | 60 | 1000.0 | 25/05/2021 2:01:03 |



DATA FOR TEST: VARIO 16 ETANOL_247

| RPM | HP (HP) | TQ (N*M) | Termol (T C-A) (°C) |
|-------------|------------|-------------|---------------------|
| 2500 | 1.2 | 3.35 | 1000.0 |
| 2750 | 2.9 | 7.51 | 1000.0 |
| 3000 | 3.8 | 8.89 | 1000.0 |
| 3250 | 4.4 | 9.59 | 1000.0 |
| 3500 | 4.9 | 9.91 | 1000.0 |
| 3651 | 5.1 | 9.95 | 1000.0 |
| 3750 | 5.3 | 9.93 | 1000.0 |
| 4000 | 5.5 | 9.72 | 1000.0 |
| 4250 | 5.6 | 9.40 | 1000.0 |
| 4500 | 5.8 | 9.08 | 1000.0 |
| 4750 | 5.9 | 8.79 | 1000.0 |
| 5000 | 6.0 | 8.49 | 1000.0 |
| 5250 | 6.1 | 8.19 | 1000.0 |
| 5500 | 6.1 | 7.91 | 1000.0 |
| 5750 | 6.2 | 7.68 | 1000.0 |
| 6000 | 6.2 | 7.39 | 1000.0 |
| 6250 | 6.2 | 7.06 | 1000.0 |
| 6500 | 6.3 | 6.84 | 1000.0 |
| 6750 | 6.3 | 6.67 | 1000.0 |
| 6746 | 6.3 | 6.67 | 1000.0 |
| 7000 | 6.3 | 6.39 | 1000.0 |
| 7250 | 6.2 | 6.03 | 1000.0 |
| 7500 | 6.0 | 5.72 | 1000.0 |
| 7750 | 5.9 | 5.41 | 1000.0 |
| 8000 | 5.9 | 5.23 | 1000.0 |
| 8250 | 5.9 | 5.06 | 1000.0 |
| 8500 | 5.8 | 4.88 | 1000.0 |
| 8750 | 5.8 | 4.72 | 1000.0 |
| 9000 | 5.6 | 4.42 | 1000.0 |
| 9250 | 5.7 | 4.49 | 1000.0 |

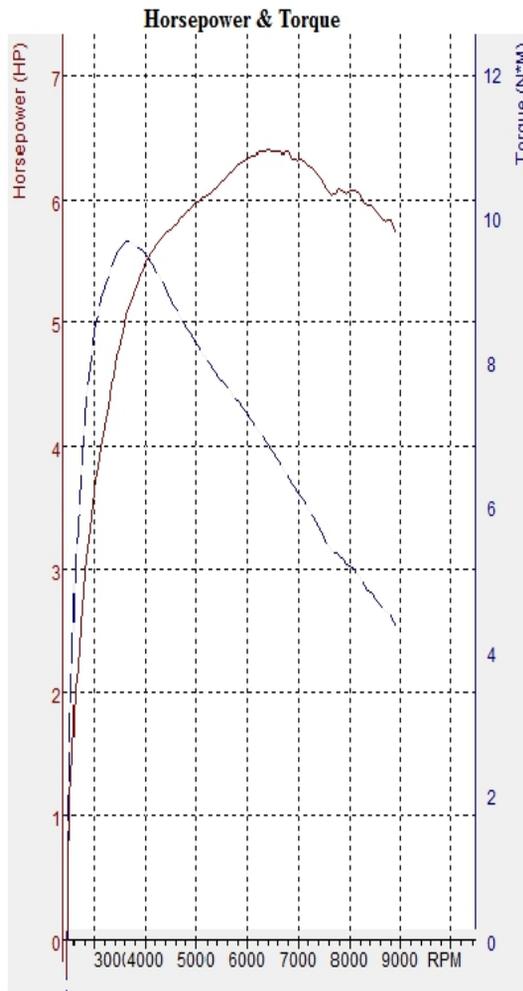
Wheel 6.3 HP 10.0 N*M
 LOSSES 0.0 HP 0.0 N*M
TOTAL ENGINE: 6.3HP 9.95N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|-------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_248 | 6.4 / 6355 | 9.91 / 3615 | 79.2 | 25.0 | 60 | 1000.0 | 25/05/2021 2:01:21 |



DATA FOR TEST: VARIO 16 ETANOL_248

| RPM | HP (HP) | TQ (N*M) | Temp (C-A) (°C) |
|------|---------|----------|-----------------|
| 2500 | 1.0 | 2.81 | 1000.0 |
| 2750 | 2.8 | 7.24 | 1000.0 |
| 3000 | 3.7 | 8.77 | 1000.0 |
| 3250 | 4.3 | 9.44 | 1000.0 |
| 3500 | 4.9 | 9.84 | 1000.0 |
| 3615 | 5.1 | 9.91 | 1000.0 |
| 3750 | 5.2 | 9.87 | 1000.0 |
| 4000 | 5.5 | 9.73 | 1000.0 |
| 4250 | 5.7 | 9.45 | 1000.0 |
| 4500 | 5.8 | 9.07 | 1000.0 |
| 4750 | 5.9 | 8.78 | 1000.0 |
| 5000 | 6.0 | 8.50 | 1000.0 |
| 5250 | 6.1 | 8.20 | 1000.0 |
| 5500 | 6.2 | 7.95 | 1000.0 |
| 5750 | 6.3 | 7.73 | 1000.0 |
| 6000 | 6.3 | 7.50 | 1000.0 |
| 6250 | 6.4 | 7.26 | 1000.0 |
| 6355 | 6.4 | 7.10 | 1000.0 |
| 6500 | 6.4 | 6.98 | 1000.0 |
| 6750 | 6.4 | 6.72 | 1000.0 |
| 7000 | 6.3 | 6.41 | 1000.0 |
| 7250 | 6.3 | 6.13 | 1000.0 |
| 7500 | 6.1 | 5.82 | 1000.0 |
| 7750 | 6.1 | 5.58 | 1000.0 |
| 8000 | 6.1 | 5.40 | 1000.0 |
| 8250 | 6.0 | 5.17 | 1000.0 |
| 8500 | 5.9 | 4.94 | 1000.0 |
| 8750 | 5.8 | 4.74 | 1000.0 |
| 9000 | 5.6 | 4.45 | 1000.0 |
| 9250 | 5.7 | 4.55 | 1000.0 |

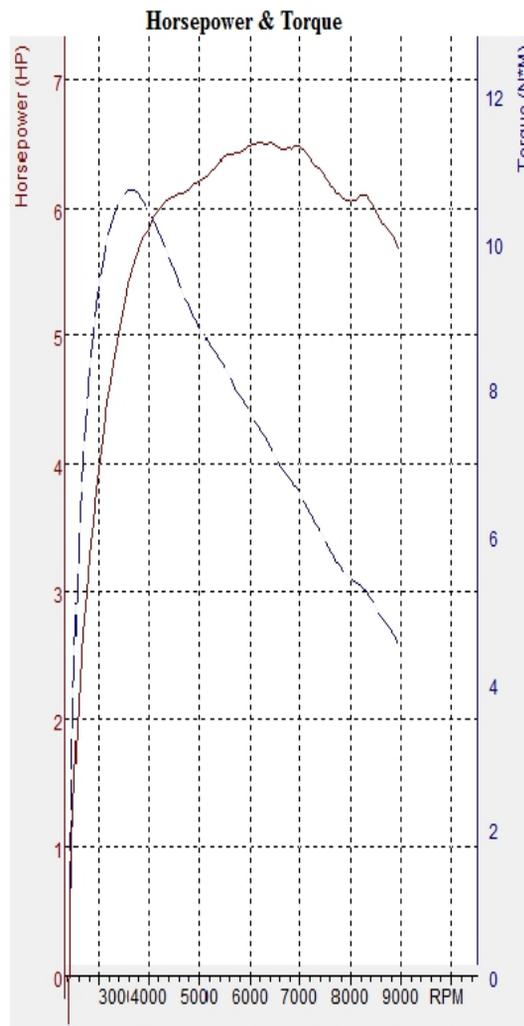
Wheel 6.4 HP 9.9 N*M
 LOSSES 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.4 HP 9.91 N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|--------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_249 | 6.5 / 6138 | 10.73 / 3627 | 79.6 | 25.0 | 60 | 1000.0 | 25/05/2021 2:01:39 |



DATA FOR TEST: VARIO 16 ETANOL_249

| RPM | HP (HP) | TQ (N*M) | Tempol (C-A) (°C) |
|-------------|------------|--------------|-------------------|
| 2500 | 1.4 | 3.88 | 1000.0 |
| 2750 | 3.1 | 8.04 | 1000.0 |
| 3000 | 4.0 | 9.51 | 1000.0 |
| 3250 | 4.8 | 10.35 | 1000.0 |
| 3500 | 5.3 | 10.67 | 1000.0 |
| 3627 | 5.5 | 10.73 | 1000.0 |
| 3750 | 5.7 | 10.68 | 1000.0 |
| 4000 | 5.9 | 10.41 | 1000.0 |
| 4250 | 6.0 | 10.06 | 1000.0 |
| 4500 | 6.1 | 9.62 | 1000.0 |
| 4750 | 6.2 | 9.15 | 1000.0 |
| 5000 | 6.2 | 8.83 | 1000.0 |
| 5250 | 6.3 | 8.53 | 1000.0 |
| 5500 | 6.4 | 8.27 | 1000.0 |
| 5750 | 6.4 | 7.94 | 1000.0 |
| 6000 | 6.5 | 7.67 | 1000.0 |
| 6138 | 6.5 | 7.50 | 1000.0 |
| 6250 | 6.5 | 7.38 | 1000.0 |
| 6500 | 6.5 | 7.07 | 1000.0 |
| 6750 | 6.5 | 6.79 | 1000.0 |
| 7000 | 6.5 | 6.56 | 1000.0 |
| 7250 | 6.4 | 6.22 | 1000.0 |
| 7500 | 6.2 | 5.90 | 1000.0 |
| 7750 | 6.1 | 5.61 | 1000.0 |
| 8000 | 6.1 | 5.38 | 1000.0 |
| 8250 | 6.1 | 5.26 | 1000.0 |
| 8500 | 6.0 | 5.00 | 1000.0 |
| 8750 | 5.8 | 4.73 | 1000.0 |
| 9000 | 5.6 | 4.43 | 1000.0 |
| 9250 | 5.7 | 4.51 | 1000.0 |

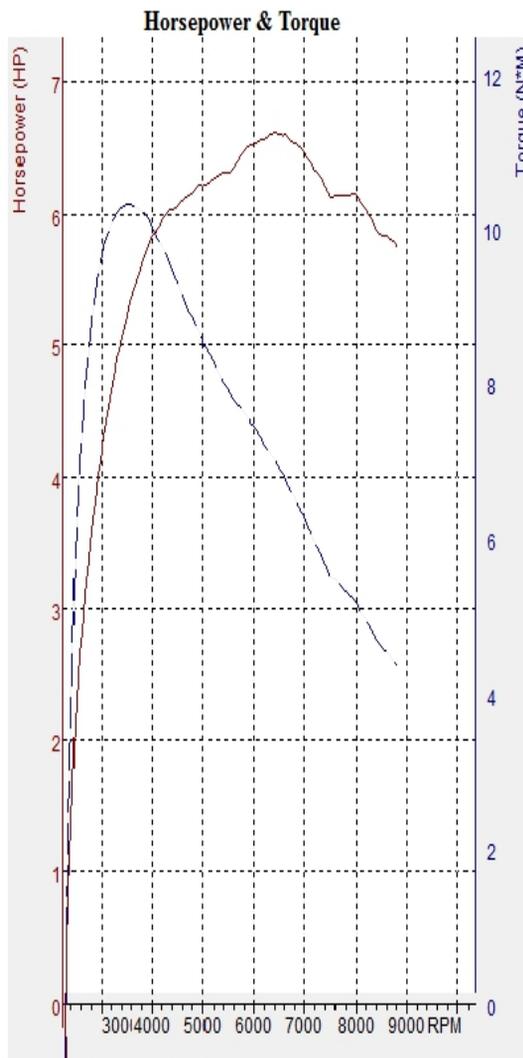
Wheel 6.5 HP 10.7 N*M
 LOSSES 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.5 HP 10.73 N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|--------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_250 | 6.6 / 6387 | 10.63 / 3506 | 80.3 | 25.0 | 60 | 1000.0 | 25/05/2021 2:01:58 |



DATA FOR TEST: VARIO 16 ETANOL_250

| RPM | HP (HP) | TQ (N*M) | Tempol (T C-A) (°C) |
|-------------|------------|--------------|---------------------|
| 2500 | 2.3 | 6.51 | 1000.0 |
| 2750 | 3.5 | 8.95 | 1000.0 |
| 3000 | 4.2 | 9.98 | 1000.0 |
| 3250 | 4.8 | 10.48 | 1000.0 |
| 3500 | 5.3 | 10.63 | 1000.0 |
| 3506 | 5.3 | 10.63 | 1000.0 |
| 3750 | 5.6 | 10.56 | 1000.0 |
| 4000 | 5.8 | 10.32 | 1000.0 |
| 4250 | 6.0 | 10.01 | 1000.0 |
| 4500 | 6.1 | 9.57 | 1000.0 |
| 4750 | 6.2 | 9.17 | 1000.0 |
| 5000 | 6.2 | 8.80 | 1000.0 |
| 5250 | 6.3 | 8.49 | 1000.0 |
| 5500 | 6.3 | 8.16 | 1000.0 |
| 5750 | 6.5 | 7.96 | 1000.0 |
| 6000 | 6.5 | 7.73 | 1000.0 |
| 6250 | 6.6 | 7.47 | 1000.0 |
| 6387 | 6.6 | 7.30 | 1000.0 |
| 6500 | 6.6 | 7.20 | 1000.0 |
| 6750 | 6.5 | 6.90 | 1000.0 |
| 7000 | 6.5 | 6.56 | 1000.0 |
| 7250 | 6.3 | 6.18 | 1000.0 |
| 7500 | 6.1 | 5.80 | 1000.0 |
| 7750 | 6.1 | 5.63 | 1000.0 |
| 8000 | 6.1 | 5.45 | 1000.0 |
| 8250 | 6.0 | 5.16 | 1000.0 |
| 8500 | 5.8 | 4.88 | 1000.0 |
| 8750 | 5.8 | 4.70 | 1000.0 |
| 9000 | 5.8 | 4.75 | 1000.0 |

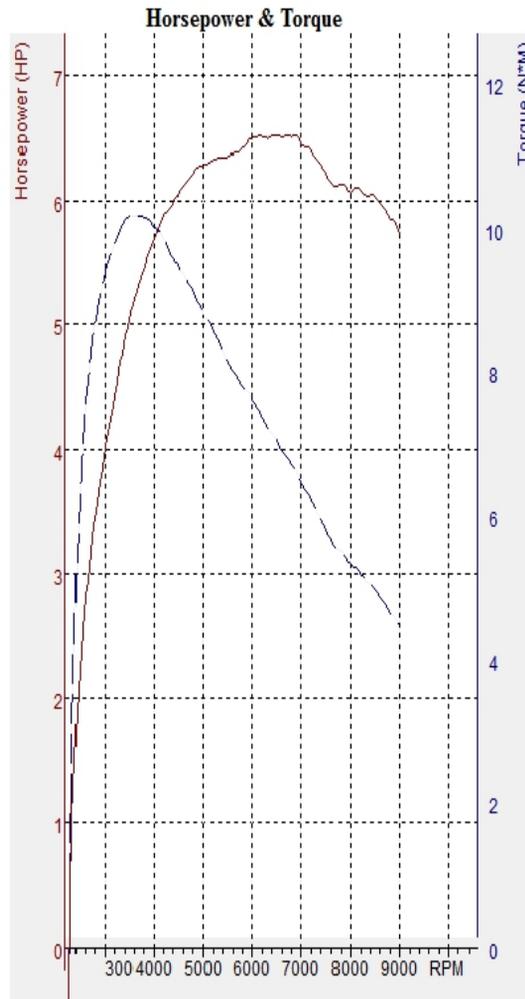
Wheel: 6.6 HP 10.6 N*M
 LOSSES: 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.6 HP 10.63 N*M



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SportDyno-Ver date: 28-JUN-2019 (4.0.35.1)
 DYNAMOMETER: SMK PGRI 2 BADUNG
 Correction Factor: EC95 -1
 Power: HP (mechanic)

| Name | HP/RPM | N*M/RPM | KMH | Temp. (°C) | Humidity (%) | Pressure (mbar) | Date/Time |
|---------------------|------------|--------------|------|------------|--------------|-----------------|-----------------------|
| VARIO 16 ETANOL_251 | 6.5 / 6395 | 10.27 / 3570 | 79.9 | 25.0 | 60 | 1000.0 | 25/05/2021 2:02:24 |



DATA FOR TEST: VARIO 16 ETANOL_251

| RPM | HP (HP) | TQ Termol (N*M) | (T C-A) (°C) |
|-------------|------------|-----------------|--------------|
| 2500 | 2.4 | 6.76 | 1000.0 |
| 2750 | 3.4 | 8.70 | 1000.0 |
| 3000 | 4.0 | 9.50 | 1000.0 |
| 3250 | 4.6 | 10.03 | 1000.0 |
| 3500 | 5.1 | 10.27 | 1000.0 |
| 3570 | 5.2 | 10.27 | 1000.0 |
| 3750 | 5.4 | 10.25 | 1000.0 |
| 4000 | 5.7 | 10.10 | 1000.0 |
| 4250 | 5.9 | 9.84 | 1000.0 |
| 4500 | 6.1 | 9.55 | 1000.0 |
| 4750 | 6.2 | 9.27 | 1000.0 |
| 5000 | 6.3 | 8.92 | 1000.0 |
| 5250 | 6.3 | 8.57 | 1000.0 |
| 5500 | 6.4 | 8.22 | 1000.0 |
| 5750 | 6.4 | 7.90 | 1000.0 |
| 6000 | 6.5 | 7.69 | 1000.0 |
| 6250 | 6.5 | 7.39 | 1000.0 |
| 6395 | 6.5 | 7.21 | 1000.0 |
| 6500 | 6.5 | 7.11 | 1000.0 |
| 6750 | 6.5 | 6.84 | 1000.0 |
| 7000 | 6.5 | 6.55 | 1000.0 |
| 7250 | 6.4 | 6.24 | 1000.0 |
| 7500 | 6.2 | 5.91 | 1000.0 |
| 7750 | 6.1 | 5.61 | 1000.0 |
| 8000 | 6.1 | 5.40 | 1000.0 |
| 8250 | 6.1 | 5.22 | 1000.0 |
| 8500 | 6.0 | 5.03 | 1000.0 |
| 8750 | 5.9 | 4.77 | 1000.0 |
| 9000 | 5.7 | 4.51 | 1000.0 |
| 9250 | 5.8 | 4.61 | 1000.0 |

Wheel: 6.5 HP 10.3 N*M
 LOSSES: 0.0 HP 0.0 N*M
 TOTAL ENGINE: 6.5 HP 10.27 N*M

Hasil data pengujian emisi gas buang

Data Pengujian Emisi Gas Buang

| Putaran Mesin | A1 (Standar) | | | | | A2 (Variasi etanol 16%) | | | | | A3 (Variasi etanol 19%) | | | | |
|---------------|--------------|-------|-----------------|----------------|--|-------------------------|-------|-----------------|----------------|--|-------------------------|-------|-----------------|----------------|--|
| | HC | CO | CO ₂ | O ₂ | | HC | CO | CO ₂ | O ₂ | | HC | CO | CO ₂ | O ₂ | |
| 4000 | 190 | 5,33 | 7,9 | 0 | | 60 | 3,84 | 4,6 | 0 | | 34 | 6,18 | 5,3 | 0 | |
| | 192 | 5,35 | 7,8 | 0 | | 67 | 3,86 | 4,6 | 0 | | 33 | 6,84 | 5,2 | 0 | |
| | 191 | 5,38 | 7,8 | 0 | | 60 | 3,82 | 4,7 | 0 | | 34 | 6,93 | 5,2 | 0 | |
| | 183 | 5,16 | 8,0 | 0 | | 61 | 3,75 | 4,6 | 0 | | 32 | 6,95 | 5,3 | 0 | |
| | 185 | 5,27 | 7,9 | 0 | | 63 | 3,66 | 4,7 | 0 | | 33 | 6,93 | 5,2 | 0 | |
| | 184 | 5,29 | 8,3 | 0 | | 65 | 3,60 | 4,7 | 0 | | 33 | 6,97 | 5,3 | 0 | |
| | 182 | 5,36 | 8,3 | 0 | | 66 | 3,62 | 4,6 | 0 | | 35 | 6,93 | 5,2 | 0 | |
| | 181 | 5,37 | 8,1 | 0 | | 67 | 3,72 | 4,7 | 0 | | 34 | 6,98 | 5,2 | 0 | |
| | 179 | 5,44 | 8,0 | 0 | | 72 | 3,67 | 4,6 | 0 | | 35 | 1,03 | 5,3 | 0 | |
| | 178 | 5,53 | 8,3 | 0 | | 73 | 3,60 | 4,6 | 0 | | 33 | 1,05 | 5,3 | 0 | |
| Rata-rata | 184,15 | 5,348 | 8,04 | 0 | | 65,14 | 3,714 | 4,64 | 0 | | 33,6 | 6,941 | 5,25 | 0 | |

Variasi etanol 16% pada gelas ukur



Penuangan pertalite ke gelas ukur 500ml dengan campuran etanol



Variasi etanol 19% pada gelas ukur



Penuangan pertalite ke gelas ukur 500ml dengan campuran etanol



RIWAYAT HIDUP



Putu Wahyu Dalem Wiratama Budiarta, Lahir di Denpasar 25 Juni 1999. Peneliti lahir dari pasangan suami istri, Bapak Putu Supartha dan Ibu Nyoman Budiani. Peneliti berkebangsaan indonesia dan beragama hindu. Peneliti tinggal bersama orang tua di Desa Tanguwisia, Dusun Tanguwisia, Kecamatan Seririt, Kabupaten Buleleng, Provinsi Bali. Peneliti mengenyam pendidikan Sekolah Dasar di SDN 1 Tanguwisia dari tahun 2005-2011, kemudian berlanjut kejenjang Sekolah Menengah Pertama di SMP Saraswati Seririt dari tahun 2011-2014, pada jenjang selanjutnya peneliti melanjutkan pendidikan di SMK N 3 Bangli pada tahun 2014-2017, dan saat ini melanjutkan pendidikan perguruan tinggi di Universitas Pendidikan Ganesha pada tahun 2017 dengan mengambil Program Studi S1 Pendidikan Teknik Mesin, Jurusan Teknologi Industri, Fakultas Teknik dan Kejuruan