

## LAMPIRAN

## A. Lampiran Perhitungan

### 1. Perhitungan Energi LPG

➤ Laju Aliran 2 L/min

$$MJ = m \times \text{LHV}$$

$$\text{LHV} = 46 \text{ MJ/Kg}$$

○ Percobaan 1

$$m = 0,2 \text{ kg}$$

$$MJ = 0,2 \times 46$$

$$MJ = 9,2 \text{ MJ}$$

○ Percobaan 2

$$m = 0,3 \text{ kg}$$

$$MJ = 0,3 \times 46$$

$$MJ = 13,8 \text{ MJ}$$

○ Percobaan 3

$$m = 0,2 \text{ kg}$$

$$MJ = 0,2 \times 46$$

$$MJ = 9,2 \text{ MJ}$$

○ Percobaan 4

$$m = 0,4 \text{ kg}$$

$$MJ = 0,4 \times 46$$

$$MJ = 18,4 \text{ MJ}$$

○ Percobaan 5

$$m = 0,5 \text{ kg}$$

$$MJ = 0,5 \times 46$$

$$MJ = 23 \text{ MJ}$$

➤ Laju Aliran 1,7 L/min

$$m = 0,04 \text{ kg}$$

$$MJ = 0,04 \times 46$$

$$MJ = 1,84 \text{ MJ}$$

➤ Laju Aliran 1,8 L/min

$$m = 0,06 \text{ kg}$$

$$MJ = 0,06 \times 46$$

$$MJ = 2,76 \text{ MJ}$$

## 2. Perhitungan Daya

$$P = V \times I$$

### ➤ Laju Aliran 2 L/min

#### ○ Percobaan 1

$$V = 229 \text{ Volt}$$

$$I = 1,23 \text{ A}$$

$$P = 229 \times 1,23$$

$$P = 0,282 \text{ kwh}$$

#### ○ Percobaan 2

$$V = 229 \text{ Volt}$$

$$I = 1,25 \text{ A}$$

$$P = 229 \times 1,25$$

$$P = 0,286 \text{ kwh}$$

#### ○ Percobaan 3

$$V = 230 \text{ Volt}$$

$$I = 1,24 \text{ A}$$

$$P = 230 \times 1,24$$

$$P = 0,285 \text{ kwh}$$

#### ○ Percobaan 4

$$V = 229 \text{ Volt}$$

$$I = 1,24 \text{ A}$$

$$P = 229 \times 1,24$$

$$P = 0,284 \text{ kwh}$$

#### ○ Percobaan 5

$$V = 229 \text{ Volt}$$

$$I = 1,24 \text{ A}$$

$$P = 229 \times 1,24$$

$$P = 0,284 \text{ kwh}$$

- Laju Aliran 1,7 L/min

$$V = 230 \text{ Volt}$$

$$I = 1,23 \text{ A}$$

$$P = 230 \times 1,23$$

$$P = 0,283 \text{ kwh}$$

- Laju Aliran 1,8 L/min

$$V = 229 \text{ Volt}$$

$$I = 1,24 \text{ A}$$

$$P = 229 \times 1,24$$

$$P = 0,284 \text{ kwh}$$

### 3. Perhitungan Energi Keluaran Genset

$$\text{Energi Keluaran Genset} = \frac{\text{Daya}}{\text{Jam}} \times 3,6$$

- Laju Aliran 2 L/min

- Percobaan 1

$$P = 0,282 \text{ kwh}$$

$$\text{Energi Keluaran} = \frac{0,282 \text{ kwh}}{\text{jam}} \times 3,6$$

$$\text{Energi Keluaran} = 1,014 \text{ MJ}$$

- Percobaan 2

$$P = 0,286 \text{ kwh}$$

$$\text{Energi Keluaran} = \frac{0,286 \text{ kwh}}{\text{jam}} \times 3,6$$

$$\text{Energi Keluaran} = 1,031 \text{ MJ}$$

- Percobaan 3

$$P = 0,285 \text{ kwh}$$

$$\text{Energi Keluaran} = \frac{0,285 \text{ kwh}}{\text{jam}} \times 3,6$$

$$\text{Energi Keluaran} = 1,027 \text{ MJ}$$

- Percobaan 4

$$P = 0,284 \text{ kwh}$$

$$\text{Energi Keluaran} = \frac{0,284 \text{ kwh}}{\text{jam}} \times 3,6$$

$$\text{Energi Keluaran} = 1,022 \text{ MJ}$$

- Percobaan 5

$$P = 0,284 \text{ kwh}$$

$$\text{Energi Keluaran} = \frac{0,284 \text{ kwh}}{\text{jam}} \times 3,6$$

$$\text{Energi Keluaran} = 1,022 \text{ MJ}$$

- Laju Aliran 1,7 L/min

$$P = 0,283 \text{ kwh}$$

$$\text{Energi Keluaran} = \frac{0,283 \text{ kwh}}{\text{jam}} \times 3,6$$

$$\text{Energi Keluaran} = 1,019 \text{ MJ}$$

- Laju Aliran 1,8 L/min

$$P = 0,284 \text{ kwh}$$

$$\text{Energi Keluaran} = \frac{0,284 \text{ kwh}}{\text{jam}} \times 3,6$$

$$\text{Energi Keluaran} = 1,022 \text{ MJ}$$

#### 4. Efisiensi Genset

$$\eta = \frac{\text{Energi Keluaran Genset}}{\text{Energi Bahan Bakar Genset}} \times 100\%$$

- Laju Aliran 2 L/min

- Percobaan 1

$$\text{Energi Keluaran} = 1,014 \text{ MJ}$$

$$\text{Energi Bahan Bakar} = 9,2 \text{ MJ}$$

$$\eta = \frac{1,014}{9,2} \times 100\%$$

$$\eta = 11,02\%$$

- Percobaan 2

$$\text{Energi Keluaran} = 1,031 \text{ MJ}$$

$$\text{Energi Bahan Bakar} = 13,8 \text{ MJ}$$

$$\eta = \frac{1,031}{9,2} \times 100\%$$

$$\eta = 7,5\%$$

- Percobaan 3

$$\text{Energi Keluaran} = 1,027 \text{ MJ}$$

$$\text{Energi Bahan Bakar} = 9,2 \text{ MJ}$$

$$\eta = \frac{1,027}{9,2} \times 100\%$$

$$\eta = 11,16\%$$

- Percobaan 4

Energi Keluaran = 1,022 MJ

Energi Bahan Bakar = 18,4 MJ

$$\eta = \frac{1,022}{9,2} \times 100\%$$

$$\eta = 5,55\%$$

- Percobaan 5

Energi Keluaran = 1,022 MJ

Energi Bahan Bakar = 23 MJ

$$\eta = \frac{1,022}{9,2} \times 100\%$$

$$\eta = 4,44\%$$

- Laju Aliran 1,7 L/min

Energi Keluaran = 1,019 MJ

Energi Bahan Bakar = 1,84 MJ

$$\eta = \frac{1,019}{1,84} \times 100\%$$

$$\eta = 55,38\%$$

- Laju Aliran 1,8 L/min

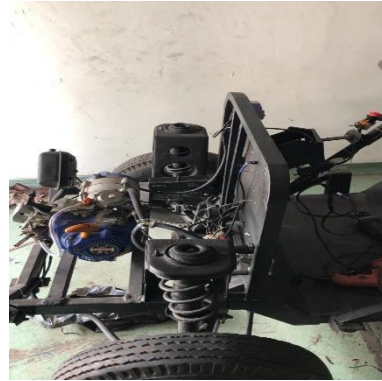
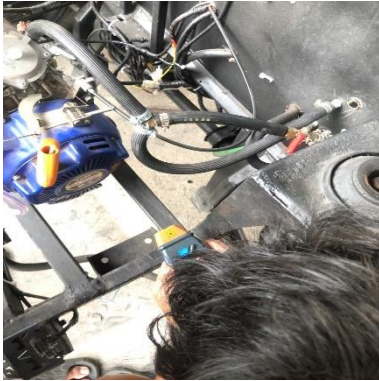
Energi Keluaran = 1,022 MJ

Energi Bahan Bakar = 2,76 MJ

$$\eta = \frac{1,022}{2,76} \times 100\%$$

$$\eta = 37,03\%$$

## B. Dokumentasi Pengambilan Data



### C. Dokumentasi Data





