LAMPIRAN I

PERHITUNGAN PENGUJIAN ALAT

Tabel 5. Tabel Hasil Pengamatan

No	Volume Sampel (ml)	Pengadukan (rpm)	Suhu air (ºC)		Suhu Minyak (ºC)		Nilai Kalor (Joule)
			Awal	Akhir	Awal	Akhir	
1.	500	10	30	30	40	43	
2.	500	15	32	32	42	46	
3.	500	20	34	34	44	47	
4.	500	25	36	36	46	49	
5.	500	30	38	38	48	51	

Tabel 6. Tabel Hasil Perhitungan Nilai Kalor

No	Volume Sampel (ml)	Pengadukan (rpm)	Suhu air (ºC)		Suhu Minyak (ºC)		Nilai Kalor (Joule)
			Awal	Akhir	Awal	Akhir	
1.	500	10	30	30	40	43	4.772.250
2.	500	15	32	32	42	46	4.773.002,5
3.	500	20	34	34	44	47	4.772.250
4.	500	25	36	36	46	49	4.772.250
5.	500	30	38	38	48	51	4.772.250

1. Hasil Pengamatan

1.1. Hasil Perhitungan Nilai Kalor

Diketahui :

a) Cp solar = 1.750 J/Kg°K (*Physic Forums Diesel Properties*)

b) Cp air = 4.180 J/Kg°K

c) ρ air = 1 gr/ml

d) Q teoritis = 4.300.000 J/L

- Mencari Densitas Solar

ρ solar = $\frac{\text{massa solar}}{\text{volume solar}}$

= $\frac{\text{massa solar}}{\text{volume solar}}$

= 0,86 gr/ml

- Mencari Massa Air

Massa = ρ x Volume air

= 1 gr/ml x 4.000 ml

= 4000 gram

= 4,0 Kg

- Mencari Massa Solar

Massa = ρ x Volume solar

= 0,86 gr/ml x 500 ml

= 430 gram

= 0,43 Kg

- Perhitungan Nilai Kalor

Percobaan 1

Qair = m x cp x ΔT

= 4,0 Kg x 4.180 J/Kg°K x (30 – 30)°C

= 4,0 Kg x 4.180 J/Kg°K x 273°K

= 4.564.560 Joule

Qsolar= m x cp x ΔT

= 0,43 Kg x 1.750 J/Kg°K x (43 – 40)°C

= 0,43 Kg x 1.750 J/Kg°K x 276°K

= 207.690 Joule

Qreaksi = Qair + Qsolar

= 4.564.560 Joule + 207.690 Joule

= 4.772.250 Joule

Percobaan 2

Qair = m x cp x ΔT

= 4,0 Kg x 4.180 J/Kg°K x (32 – 32)°C

= 4,0 Kg x 4.180 J/Kg°K x 273°K

= 4.564.560 Joule

Qsolar= m x cp x ΔT

= 0,43 Kg x 1.750 J/Kg°K x (46 – 42)°C

= 0,43 Kg x 1.750 J/Kg°K x 277°K

= 208.442,5 Joule

Qreaksi = Qair + Qsolar

= 4.564.560 Joule + 208.442,5 Joule

= 4.773.002,5 Joule

Percobaan 3

Qair = m x cp x ΔT

= 4,0 Kg x 4.180 J/Kg°K x (34 – 34)°C

= 4,0 Kg x 4.180 J/Kg°K x 273°K

= 4.564.560 Joule

Qsolar= m x cp x ΔT

= 0,43 Kg x 1.750 J/Kg°K x (47 – 44)°C

= 0,43 Kg x 1.750 J/Kg°K x 276°K

= 207.690 Joule

Qreaksi = Qair + Qsolar

= 4.564.560 Joule + 207.690 Joule

= 4.772.250 Joule

Percobaan 4

Qair = m x cp x ΔT

= 4,0 Kg x 4.180 J/Kg°K x (36 – 36)°C

= 4,0 Kg x 4.180 J/Kg°K x 273°K

= 4.564.560 Joule

Qsolar= m x cp x ΔT

= 0,43 Kg x 1.750 J/Kg°K x (49 – 46)°C

= 0,43 Kg x 1.750 J/Kg°K x 276°K

= 207.690 Joule

Qreaksi = Qair + Qsolar

= 4.564.560 Joule + 207.690 Joule

= 4.772.250 Joule

Percobaan 5

Qair = m x cp x ΔT

= 4,0 Kg x 4.180 J/Kg°K x (38 – 38)°C

= 4,0 Kg x 4.180 J/Kg°K x 273°K

= 4.564.560 Joule

Qsolar= m x cp x ΔT

= 0,43 Kg x 1.750 J/Kg°K x (51 – 48)°C

= 0,43 Kg x 1.750 J/Kg°K x 276°K

= 207.690 Joule

Qreaksi = Qair + Qsolar

= 4.564.560 Joule + 207.690 Joule

= 4.772.250 Joule

Rata-Rata Nilai Kalor

Q = [illegible]

Q = 4.772.400,5 Joule

Q = 1.136.285,833 Kalori

1.2. Perhitungan Persen Penyimpangan dan Persen Kebenaran

% Penyimpangan = | [illegible] | x 100%

% Kebenaran = 100% - % Kesalahan

Percobaan 1

%Penyimpangan = | [illegible] | x 100%

= 10,98%

%Kebenaran = 100% - 10,98%

= 89,02%

Percobaan 2

%Penyimpangan = | [illegible] | x 100%

= 11%

%Kebenaran = 100% - 11%

= 89%

Percobaan 3

%Penyimpangan $= \left| \frac{[illegible]}{[illegible]} \right|$ x 100%

= 10,98%

%Kebenaran = 100% - 10,98%

= 89,02%

Percobaan 4

%Penyimpangan $= \left| \frac{[illegible]}{[illegible]} \right|$ x 100%

= 10,98%

%Kebenaran = 100% - 10,98%

= 89,02%

Percobaan 5

%Penyimpangan $= \left| \frac{[illegible]}{[illegible]} \right|$ x 100%

= 10,98%

%Kebenaran = 100% - 10,98%

= 89,02%

%Rata-Rata Penyimpangan $= \frac{[illegible]}{[illegible]}$ = 10,984%

%Rata-Rata Kebenaran = 100% - 10,984% = 89,016%

2. Foto