

LAMPIRAN

Pengujian Keluaran Panel 100WP

Rabu 17 Desember 2018

Jam : 09:00

Temperatur : 32

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 19.23 | 12.17 | 0.99 | 12.048 |
| 2 | 70 | 29.73 | 12.98 | 1.05 | 13.629 |
| 3 | 60 | 40.12 | 13.5 | 1.08 | 14.580 |
| 4 | 50 | 48.16 | 13.78 | 1.1 | 15.158 |
| 5 | 40 | 54.53 | 13.98 | 1.11 | 15.518 |
| 6 | 30 | 61.48 | 14.11 | 1.12 | 15.803 |
| 7 | 20 | 65.89 | 14.18 | 1.12 | 15.882 |
| 8 | 10 | 67.51 | 14.16 | 1.11 | 15.718 |
| 9 | 0 | 68.3 | 14.5 | 1.11 | 16.095 |

Jam : 10:00

Temperatur : 32

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 19.43 | 12.01 | 0.9 | 10.809 |
| 2 | 70 | 29.75 | 13.05 | 0.91 | 11.876 |
| 3 | 60 | 39.91 | 13.53 | 1.02 | 13.801 |
| 4 | 50 | 45.24 | 13.83 | 1.03 | 14.245 |
| 5 | 40 | 53.18 | 13.97 | 1.07 | 14.948 |
| 6 | 30 | 60.98 | 14.01 | 1.08 | 15.131 |
| 7 | 20 | 64.74 | 14.17 | 1.08 | 15.304 |
| 8 | 10 | 66.67 | 14.18 | 1.1 | 15.598 |
| 9 | 0 | 68.11 | 13.98 | 1.1 | 15.378 |

Jam : 11:00

Temperatur : 32

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 19.74 | 12.11 | 1.01 | 12.231 |
| 2 | 70 | 30.17 | 12.33 | 1.01 | 12.453 |
| 3 | 60 | 40.37 | 13.01 | 1.02 | 13.270 |
| 4 | 50 | 46.7 | 13.32 | 1.04 | 13.853 |
| 5 | 40 | 54.28 | 13.77 | 1.08 | 14.872 |
| 6 | 30 | 62.33 | 13.79 | 1.1 | 15.169 |
| 7 | 20 | 66.76 | 14.03 | 1.1 | 15.433 |
| 8 | 10 | 69.22 | 14.19 | 1.1 | 15.609 |
| 9 | 0 | 69.91 | 14.3 | 1.14 | 16.302 |

Jam : 12:00

Temperatur : 33

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 21.21 | 12.81 | 0.94 | 12.041 |
| 2 | 70 | 31.36 | 13.01 | 0.97 | 12.620 |
| 3 | 60 | 423 | 13.17 | 0.97 | 12.775 |
| 4 | 50 | 47.1 | 13.22 | 1.01 | 13.352 |
| 5 | 40 | 55.28 | 13.79 | 1.02 | 14.066 |
| 6 | 30 | 61.47 | 14.01 | 1.11 | 15.551 |
| 7 | 20 | 65.24 | 14.3 | 1.1 | 15.730 |
| 8 | 10 | 69.14 | 14.88 | 1.11 | 16.517 |
| 9 | 0 | 69.92 | 14.93 | 1.14 | 17.020 |

Jam : 13:00

Temperatur : 33

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 23.51 | 12.44 | 0.98 | 12.191 |
| 2 | 70 | 28.17 | 12.97 | 1.01 | 13.100 |
| 3 | 60 | 38 | 13.42 | 1.05 | 14.091 |
| 4 | 50 | 44.87 | 13.71 | 1.07 | 14.670 |
| 5 | 40 | 50.64 | 13.88 | 1.08 | 14.990 |
| 6 | 30 | 56.15 | 13.98 | 1.09 | 15.238 |
| 7 | 20 | 59.92 | 14.07 | 1.09 | 15.336 |
| 8 | 10 | 61.88 | 14.08 | 1.09 | 15.347 |
| 9 | 0 | 61.52 | 14.1 | 1.09 | 15.369 |

Jam : 14:00

Temperatur : 31

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 15.51 | 12.65 | 1.01 | 12.777 |
| 2 | 70 | 22.56 | 13.22 | 1.04 | 13.749 |
| 3 | 60 | 28.86 | 13.55 | 1.07 | 14.499 |
| 4 | 50 | 32.98 | 13.75 | 1.08 | 14.850 |
| 5 | 40 | 37.18 | 13.89 | 1.09 | 15.140 |
| 6 | 30 | 39.39 | 13.97 | 1.1 | 15.367 |
| 7 | 20 | 40.44 | 14.01 | 1.1 | 15.411 |
| 8 | 10 | 40.84 | 14.06 | 1.1 | 15.466 |
| 9 | 0 | 40.52 | 14.02 | 1.1 | 15.422 |

Jam : 15:00

Temperatur : 31

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 14.31 | 12.17 | 0.9 | 10.953 |
| 2 | 70 | 20.75 | 12.21 | 0.91 | 11.111 |
| 3 | 60 | 26.65 | 12.66 | 1.07 | 13.546 |
| 4 | 50 | 30.16 | 13.13 | 1.03 | 13.524 |
| 5 | 40 | 32.33 | 13.33 | 1.03 | 13.730 |
| 6 | 30 | 37.88 | 13.75 | 1.13 | 15.538 |
| 7 | 20 | 38.19 | 13.97 | 1.11 | 15.507 |
| 8 | 10 | 39.36 | 14.01 | 1.11 | 15.551 |
| 9 | 0 | 40.16 | 14 | 1.12 | 15.680 |

Jam : 16:00

Temperatur : 31

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 5.64 | 11.44 | 0.9 | 10.296 |
| 2 | 70 | 6.71 | 11.57 | 0.91 | 10.529 |
| 3 | 60 | 9.22 | 11.84 | 0.97 | 11.485 |
| 4 | 50 | 12.4 | 12.17 | 1 | 12.170 |
| 5 | 40 | 15.32 | 12.21 | 1 | 12.210 |
| 6 | 30 | 15.58 | 12.41 | 1 | 12.410 |
| 7 | 20 | 17.88 | 12.59 | 1.01 | 12.716 |
| 8 | 10 | 19.07 | 13.88 | 1.02 | 14.158 |
| 9 | 0 | 19.89 | 13.91 | 1.01 | 14.049 |

Senin 22 Desember 2018

Jam : 09:00

Temperatur : 33

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 13.51 | 11.4 | 0.91 | 10.374 |
| 2 | 70 | 28 | 13 | 0.96 | 12.480 |
| 3 | 60 | 40.16 | 13.41 | 0.99 | 13.276 |
| 4 | 50 | 49 | 13.75 | 1.03 | 14.163 |
| 5 | 40 | 55.36 | 13.96 | 1.03 | 14.379 |
| 6 | 30 | 54.47 | 14.08 | 1.04 | 14.643 |
| 7 | 20 | 58.43 | 14.19 | 1.05 | 14.900 |
| 8 | 10 | 65.44 | 14.29 | 1.05 | 15.005 |
| 9 | 0 | 63.26 | 14.89 | 1.05 | 15.635 |

Jam : 10:00

Temperatur : 34

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 19.76 | 12.4 | 0.92 | 11.408 |
| 2 | 70 | 29.73 | 12.74 | 0.94 | 11.976 |
| 3 | 60 | 41.16 | 13.31 | 0.96 | 12.778 |
| 4 | 50 | 49 | 13.38 | 0.99 | 13.246 |
| 5 | 40 | 56.18 | 13.4 | 1.01 | 13.534 |
| 6 | 30 | 62.79 | 13.5 | 1.03 | 13.905 |
| 7 | 20 | 68.48 | 13.79 | 1.04 | 14.342 |
| 8 | 10 | 71.12 | 13.86 | 1.04 | 14.414 |
| 9 | 0 | 71.63 | 13.83 | 1.05 | 14.522 |

Jam : 11:00

Temperatur : 34

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 20.11 | 12.40 | 0.9 | 11.160 |
| 2 | 70 | 26.3 | 13.09 | 0.91 | 11.912 |
| 3 | 60 | 35.93 | 13.22 | 1.2 | 15.864 |
| 4 | 50 | 42.9 | 13.53 | 1 | 13.530 |
| 5 | 40 | 53.36 | 13.87 | 1.03 | 14.286 |
| 6 | 30 | 53.48 | 13.98 | 1 | 13.980 |

| | | | | | |
|---|----|-------|-------|------|--------|
| 7 | 20 | 53.8 | 14.1 | 0.99 | 13.959 |
| 8 | 10 | 55.61 | 14.25 | 1.03 | 14.678 |
| 9 | 0 | 56.83 | 14.21 | 1.05 | 14.921 |

Jam : 12:00

Temperatur : 34

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 14.72 | 12.43 | 0.91 | 11.311 |
| 2 | 70 | 22.93 | 13.12 | 0.98 | 12.858 |
| 3 | 60 | 30.5 | 13.57 | 0.99 | 13.434 |
| 4 | 50 | 37 | 13.85 | 1.03 | 14.266 |
| 5 | 40 | 40.53 | 12.94 | 1 | 12.940 |
| 6 | 30 | 43.81 | 14.09 | 1.01 | 14.231 |
| 7 | 20 | 39.27 | 13.36 | 1.03 | 13.761 |
| 8 | 10 | 40.27 | 14.31 | 1.04 | 14.882 |
| 9 | 0 | 42 | 14.2 | 1.04 | 14.768 |

Jam : 13:00

Temperatur : 33

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 15.51 | 12.65 | 1 | 12.650 |
| 2 | 70 | 22.53 | 13.22 | 1 | 13.220 |
| 3 | 60 | 28.8 | 13.55 | 1.01 | 13.686 |
| 4 | 50 | 32.97 | 13.75 | 1.04 | 14.300 |
| 5 | 40 | 37.17 | 13.89 | 1.05 | 14.585 |
| 6 | 30 | 39.3 | 13.97 | 1.05 | 14.669 |
| 7 | 20 | 40.48 | 14.01 | 1.07 | 14.991 |
| 8 | 10 | 40.88 | 14.06 | 1.07 | 15.044 |
| 9 | 0 | 40.58 | 14.02 | 1.11 | 15.562 |

Jam : 14:00

Temperatur : 32

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 14.32 | 12.19 | 0.9 | 10.971 |
| 2 | 70 | 20.76 | 12.21 | 0.91 | 11.111 |
| 3 | 60 | 26.68 | 12.66 | 1.2 | 15.192 |
| 4 | 50 | 30.1 | 13.13 | 1.03 | 13.524 |
| 5 | 40 | 32.39 | 13.33 | 1.03 | 13.730 |
| 6 | 30 | 37.8 | 13.75 | 1.04 | 14.300 |
| 7 | 20 | 38.18 | 13.97 | 1.04 | 14.529 |
| 8 | 10 | 39.32 | 14.01 | 1.05 | 14.711 |
| 9 | 0 | 40.11 | 14 | 1.04 | 14.560 |

Jam : 15:00

Temperatur : 31

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 13.32 | 12.17 | 0.9 | 10.953 |
| 2 | 70 | 21.88 | 12.19 | 0.91 | 11.093 |
| 3 | 60 | 23.33 | 12.46 | 0.92 | 11.463 |
| 4 | 50 | 29.46 | 12.98 | 0.94 | 12.201 |
| 5 | 40 | 31.68 | 13.31 | 1 | 13.310 |
| 6 | 30 | 35.99 | 13.33 | 1 | 13.330 |
| 7 | 20 | 37.78 | 13.41 | 1.07 | 14.349 |
| 8 | 10 | 31.13 | 13.97 | 1.03 | 14.389 |
| 9 | 0 | 39.34 | 14.01 | 1.03 | 14.430 |

Jam : 16:00

Temperatur : 31

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 7.41 | 11.39 | 0.9 | 10.251 |
| 2 | 70 | 8.75 | 11.59 | 0.92 | 10.663 |
| 3 | 60 | 9.22 | 12.01 | 0.95 | 11.410 |
| 4 | 50 | 10.01 | 12.33 | 0.99 | 12.207 |
| 5 | 40 | 10.34 | 12.4 | 0.99 | 12.276 |
| 6 | 30 | 13.55 | 12.47 | 1 | 12.470 |
| 7 | 20 | 16.87 | 12.59 | 1 | 12.590 |
| 8 | 10 | 19.31 | 13.32 | 1 | 13.320 |
| 9 | 0 | 19.97 | 13.49 | 1.01 | 13.625 |

Selasa 30 Desember 2018

Jam : 09:00

Temperatur : 33

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 11 | 11.96 | 0.96 | 11.482 |
| 2 | 70 | 19.74 | 12.61 | 1.01 | 12.736 |
| 3 | 60 | 30.15 | 13.18 | 1.05 | 13.839 |
| 4 | 50 | 37.31 | 13.48 | 1.07 | 14.424 |
| 5 | 40 | 42.5 | 13.7 | 1.08 | 14.796 |
| 6 | 30 | 46.93 | 13.9 | 1.09 | 15.151 |
| 7 | 20 | 47.21 | 14.01 | 1.1 | 15.411 |
| 8 | 10 | 42.38 | 14.07 | 1.1 | 15.477 |
| 9 | 0 | 52.52 | 14.08 | 1.1 | 15.488 |

Jam : 10:00

Temperatur : 33

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 13.66 | 11.58 | 0.91 | 10.538 |
| 2 | 70 | 21.93 | 12.26 | 0.96 | 11.770 |
| 3 | 60 | 33.15 | 12.87 | 1 | 12.870 |
| 4 | 50 | 41.62 | 13.2 | 1.02 | 13.464 |
| 5 | 40 | 45.97 | 13.36 | 1.04 | 13.894 |
| 6 | 30 | 51.4 | 13.52 | 1.05 | 14.196 |
| 7 | 20 | 54.64 | 13.61 | 1.05 | 14.291 |
| 8 | 10 | 58.4 | 13.71 | 1.06 | 14.533 |
| 9 | 0 | 60.11 | 13.76 | 1.06 | 14.586 |

Jam : 11:00

Temperatur : 33

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 15.13 | 11.32 | 0.9 | 10.188 |
| 2 | 70 | 26.1 | 11.73 | 0.95 | 11.144 |
| 3 | 60 | 34.66 | 11.44 | 0.98 | 11.211 |
| 4 | 50 | 43.34 | 12.49 | 1.01 | 12.615 |
| 5 | 40 | 48.54 | 12.95 | 1.03 | 13.339 |
| 6 | 30 | 54.47 | 13.1 | 1.04 | 13.624 |
| 7 | 20 | 58.67 | 13.47 | 1.05 | 14.144 |
| 8 | 10 | 61.5 | 13.88 | 1.05 | 14.574 |
| 9 | 0 | 62.32 | 13.94 | 1.05 | 14.637 |

Jam : 12:00

Temperatur : 34

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 16.71 | 11.94 | 0.9 | 10.746 |
| 2 | 70 | 26 | 12.57 | 0.95 | 11.942 |
| 3 | 60 | 36.14 | 13.15 | 0.98 | 12.887 |
| 4 | 50 | 43.65 | 13.5 | 1.01 | 13.635 |
| 5 | 40 | 50.12 | 13.67 | 1.02 | 13.943 |
| 6 | 30 | 56.16 | 13.8 | 1.03 | 14.214 |
| 7 | 20 | 60.99 | 13.88 | 1.03 | 14.296 |
| 8 | 10 | 65.86 | 13.96 | 1.03 | 14.379 |
| 9 | 0 | 67.83 | 14.03 | 1.04 | 14.591 |

Jam : 13:00

Temperatur : 34

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 16.51 | 12.17 | 0.91 | 11.075 |
| 2 | 70 | 26.14 | 12.66 | 0.95 | 12.027 |
| 3 | 60 | 34.66 | 13.1 | 0.98 | 12.838 |
| 4 | 50 | 42.28 | 13.4 | 1 | 13.400 |
| 5 | 40 | 48.72 | 13.59 | 1.02 | 13.862 |
| 6 | 30 | 53.18 | 13.69 | 1.02 | 13.964 |
| 7 | 20 | 56.72 | 13.77 | 1.03 | 14.183 |
| 8 | 10 | 60.46 | 13.84 | 1.03 | 14.255 |
| 9 | 0 | 62.24 | 13.86 | 1.03 | 14.276 |

Jam : 14:00

Temperatur : 32

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 9 | 12.47 | 0.95 | 11.847 |
| 2 | 70 | 12.32 | 12.84 | 0.98 | 12.583 |
| 3 | 60 | 15.71 | 13.17 | 1 | 13.170 |
| 4 | 50 | 19.17 | 13.47 | 1.02 | 13.739 |
| 5 | 40 | 21.64 | 13.63 | 1.04 | 14.175 |
| 6 | 30 | 23.56 | 13.71 | 1.05 | 14.396 |
| 7 | 20 | 25.22 | 13.77 | 1.05 | 14.459 |
| 8 | 10 | 26.55 | 13.8 | 1.05 | 14.490 |
| 9 | 0 | 26.36 | 13.78 | 1.05 | 14.469 |

Jam : 15:00

Temperatur : 32

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 6.49 | 11.59 | 0.96 | 11.126 |
| 2 | 70 | 9.6 | 12.44 | 0.97 | 12.067 |
| 3 | 60 | 13.19 | 12.84 | 1 | 12.840 |
| 4 | 50 | 17.22 | 13.22 | 1.03 | 13.617 |
| 5 | 40 | 20.32 | 13.44 | 1.05 | 14.112 |
| 6 | 30 | 23.84 | 13.71 | 1.07 | 14.670 |
| 7 | 20 | 26.22 | 13.84 | 1.07 | 14.809 |
| 8 | 10 | 28.03 | 13.96 | 1.05 | 14.658 |
| 9 | 0 | 28.55 | 14.02 | 1.09 | 15.282 |

Jam : 16:00

Temperatur : 31

| No. | Sudut Kemiringan Panel | Intensitas cahaya | Tegangan | Arus | Daya |
|-----|------------------------|-------------------|----------|------|--------|
| | | LUX | (V) | (mA) | (Watt) |
| 1 | 80 | 5.73 | 11.44 | 0.9 | 10.296 |
| 2 | 70 | 7.67 | 11.57 | 0.91 | 10.529 |
| 3 | 60 | 10.22 | 11.84 | 0.97 | 11.485 |
| 4 | 50 | 13.39 | 12.41 | 1 | 12.410 |
| 5 | 40 | 15.77 | 12.59 | 1 | 12.590 |
| 6 | 30 | 15.81 | 13.01 | 1 | 13.010 |
| 7 | 20 | 18.1 | 13.41 | 1.01 | 13.544 |
| 8 | 10 | 20.07 | 13.88 | 1.02 | 14.158 |
| 9 | 0 | 20.89 | 13.91 | 1.01 | 14.049 |

Pengujian Panel Dengan Perubahan Sudut Kemiringan

Jam : 09.00

Temperatur Lingkungan : 42.7

| No. | Sudut Kemiringan Panel | Intensitas cahaya (LUX) | Temperatur Panel | Tehubung MPPT | | | Tanpa MPPT | | | Peningkatan Kapasitas Daya (%) |
|-----|------------------------|-------------------------|------------------|-----------------|--------------|-------------|-----------------|--------------|-------------|--------------------------------|
| | | | | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | |
| 1 | 0 | 37100 | 42.7 | 12.6 | 1.56 | 19.7 | 11.91 | 0.57 | 6.8 | 65.5 |
| 2 | 10 | 38500 | 42.4 | 12.4 | 1.7 | 21.1 | 11.90 | 0.57 | 6.8 | 67.8 |
| 3 | 20 | 39200 | 42.2 | 12.6 | 1.84 | 23.3 | 11.93 | 0.58 | 6.9 | 70.2 |
| 4 | 30 | 38900 | 42.2 | 12.6 | 1.94 | 24.5 | 11.96 | 0.74 | 8.9 | 63.9 |
| 5 | 40 | 37800 | 42.1 | 12.6 | 1.37 | 17.3 | 12.00 | 0.85 | 10.2 | 41.1 |
| 6 | 50 | 35400 | 42.1 | 12.6 | 1.42 | 17.9 | 11.95 | 0.51 | 6.1 | 66.0 |
| 7 | 60 | 32900 | 41.1 | 12.7 | 1.65 | 20.9 | 11.92 | 0.50 | 6.0 | 71.5 |
| 8 | 70 | 32100 | 40.1 | 12.7 | 1.81 | 23.0 | 11.81 | 0.44 | 5.2 | 77.4 |
| 9 | 80 | 29700 | 40.3 | 12.7 | 1.7 | 21.6 | 11.80 | 0.20 | 2.4 | 89.1 |

Jam : 10.00

Temperatur Lingkungan : 43.6

| No. | Sudut Kemiringan Panel | Intensitas cahaya (LUX) | Temperatur Panel | Tehubung MPPT | | | Tanpa MPPT | | | Peningkatan Kapasitas Daya (%) |
|-----|------------------------|-------------------------|------------------|-----------------|--------------|-------------|-----------------|--------------|-------------|--------------------------------|
| | | | | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | |
| 1 | 0 | 42600 | 43.6 | 13.1 | 2.09 | 27.3 | 12.15 | 2.1 | 25.6 | 6.2 |
| 2 | 10 | 41200 | 43.2 | 13.2 | 2.4 | 31.6 | 12.34 | 2 | 24.9 | 21.1 |
| 3 | 20 | 37800 | 43.2 | 13.2 | 2.43 | 32.0 | 12.33 | 1.9 | 22.8 | 28.7 |
| 4 | 30 | 33000 | 43.2 | 13.2 | 2.48 | 32.7 | 12.24 | 1.5 | 18.5 | 43.5 |
| 5 | 40 | 25800 | 43.2 | 13.3 | 2.52 | 33.4 | 12.34 | 1.1 | 13.8 | 58.6 |
| 6 | 50 | 20900 | 43.2 | 13 | 1.95 | 25.4 | 12.06 | 0.8 | 9.8 | 61.6 |
| 7 | 60 | 14700 | 42.4 | 12.9 | 1.57 | 20.3 | 12 | 0.6 | 6.6 | 67.4 |
| 8 | 70 | 9000 | 42.3 | 12.8 | 1.07 | 13.7 | 11.93 | 0.3 | 4.1 | 70.4 |

| | | | | | | | | | | |
|---|----|------|------|------|---|------|-------|-----|-----|------|
| 9 | 80 | 3539 | 41.3 | 12.8 | 1 | 12.8 | 11.86 | 0.2 | 1.9 | 85.1 |
|---|----|------|------|------|---|------|-------|-----|-----|------|

Jam : 11.00

Temperatur Lingkungan : 43.6

| No. | Sudut Kemiringan Panel | Intensitas cahaya (LUX) | Temperatur Panel | Tehubung MPPT | | | Tanpa MPPT | | | Peningkatan Kapasitas Daya (%) |
|-----|------------------------|-------------------------|------------------|-----------------|--------------|-------------|-----------------|--------------|-------------|--------------------------------|
| | | | | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | |
| 1 | 0 | 69500 | 43.6 | 12.55 | 3.80 | 47.7 | 14.10 | 2.40 | 33.8 | 29.0 |
| 2 | 10 | 68500 | 43.2 | 12.60 | 4.10 | 51.7 | 14.05 | 2.28 | 32.0 | 38.0 |
| 3 | 20 | 64300 | 43.2 | 12.51 | 4.04 | 50.5 | 14.00 | 2.20 | 30.8 | 39.1 |
| 4 | 30 | 59600 | 43.2 | 12.50 | 3.58 | 44.8 | 13.89 | 2.03 | 28.2 | 37.0 |
| 5 | 40 | 54600 | 43.1 | 12.45 | 3.20 | 39.8 | 13.82 | 1.85 | 25.6 | 35.8 |
| 6 | 50 | 41000 | 43.1 | 12.34 | 2.70 | 33.3 | 13.60 | 1.55 | 21.1 | 36.7 |
| 7 | 60 | 36600 | 41.8 | 12.39 | 2.10 | 26.0 | 13.39 | 1.27 | 17.0 | 34.6 |
| 8 | 70 | 30900 | 41.4 | 12.11 | 1.90 | 23.0 | 12.74 | 0.99 | 12.6 | 45.2 |
| 9 | 80 | 21700 | 42 | 11.98 | 1.43 | 17.1 | 12.31 | 0.75 | 9.2 | 46.1 |

Jam : 12.00

Temperatur Lingkungan : 45.7

| No. | Sudut Kemiringan Panel | Intensitas cahaya (LUX) | Temperatur Panel | Tehubung MPPT | | | Tanpa MPPT | | | Peningkatan Kapasitas Daya (%) |
|-----|------------------------|-------------------------|------------------|-----------------|--------------|-------------|-----------------|--------------|-------------|--------------------------------|
| | | | | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | |
| 1 | 0 | 70.700 | 45.7 | 13.7 | 5.31 | 72.7 | 14.36 | 2.4 | 34.0 | 53.2 |
| 2 | 10 | 67.600 | 45.6 | 13.4 | 5.19 | 69.3 | 14.31 | 2.3 | 32.3 | 53.3 |
| 3 | 20 | 57.700 | 45.1 | 13.1 | 4.96 | 65.0 | 14.26 | 2 | 29.1 | 55.2 |
| 4 | 30 | 50.500 | 45 | 13 | 4.62 | 60.2 | 14.21 | 2 | 29.0 | 51.8 |
| 5 | 40 | 53.600 | 45.3 | 13 | 4.53 | 58.8 | 14.13 | 1.9 | 26.6 | 54.8 |
| 6 | 50 | 48.100 | 45.2 | 12.9 | 3.41 | 43.9 | 13.95 | 1.6 | 21.6 | 50.7 |
| 7 | 60 | 38.500 | 45.2 | 12.8 | 2.87 | 36.6 | 13.74 | 1.2 | 16.6 | 54.6 |

| | | | | | | | | | | |
|---|----|--------|------|------|------|------|-------|-----|------|------|
| 8 | 70 | 33.400 | 43.2 | 12.1 | 1.94 | 23.5 | 13.31 | 0.8 | 10.6 | 54.8 |
| 9 | 80 | 22.000 | 42.1 | 11.9 | 1.24 | 14.7 | 12.5 | 0.5 | 5.8 | 61.0 |

Jam : 13.00

Temperatur Lingkungan : 46.7

| No. | Sudut Kemiringan Panel | Intensitas cahaya (LUX) | Temperatur Panel | Tehubung MPPT | | | Tanpa MPPT | | | Peningkatan Kapasitas Daya (%) |
|-----|------------------------|-------------------------|------------------|-----------------|--------------|-------------|-----------------|--------------|-------------|--------------------------------|
| | | | | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | |
| 1 | 0 | 67.500 | 46.7 | 12.6 | 3.8 | 47.7 | 14.37 | 2.6 | 36.6 | 23.2 |
| 2 | 10 | 66.900 | 46.9 | 12.6 | 4.1 | 51.7 | 14.34 | 2.5 | 36.3 | 29.8 |
| 3 | 20 | 64.000 | 46.7 | 12.5 | 4.04 | 50.5 | 14.31 | 2.3 | 33.3 | 34.0 |
| 4 | 30 | 61.300 | 46.6 | 12.5 | 3.58 | 44.8 | 14.26 | 2.2 | 31.1 | 30.5 |
| 5 | 40 | 56.100 | 46.3 | 12.5 | 3.2 | 39.8 | 14.1 | 2 | 28.6 | 28.2 |
| 6 | 50 | 50.500 | 46.1 | 12.3 | 2.7 | 33.3 | 14.01 | 1.8 | 24.5 | 26.4 |
| 7 | 60 | 44.800 | 46.1 | 12.4 | 2.1 | 26.0 | 13.78 | 1.5 | 20.9 | 19.5 |
| 8 | 70 | 35.800 | 42.7 | 12.1 | 1.9 | 23.0 | 13.44 | 1.1 | 14.6 | 36.3 |
| 9 | 80 | 29.300 | 42.3 | 12 | 1.43 | 17.1 | 12.61 | 0.7 | 8.3 | 51.4 |

Jam : 14.00

Temperatur Lingkungan : 43.6

| No. | Sudut Kemiringan Panel | Intensitas cahaya (LUX) | Temperatur Panel | Tehubung MPPT | | | Tanpa MPPT | | | Peningkatan Kapasitas Daya (%) |
|-----|------------------------|-------------------------|------------------|-----------------|--------------|-------------|-----------------|--------------|-------------|--------------------------------|
| | | | | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | Tegangan (Volt) | Arus (Amper) | Daya (Watt) | |
| 1 | 0 | 63700 | 43.6 | 13.48 | 2.26 | 30.5 | 14.19 | 1.67 | 23.7 | 22.2 |
| 2 | 10 | 57400 | 42.6 | 13.28 | 1.63 | 21.6 | 13.71 | 1.18 | 16.2 | 25.3 |
| 3 | 20 | 58800 | 42.3 | 13.26 | 1.54 | 20.4 | 13.77 | 0.99 | 13.6 | 33.2 |
| 4 | 30 | 57200 | 42.2 | 13.10 | 1.38 | 18.1 | 13.70 | 0.94 | 12.9 | 28.8 |
| 5 | 40 | 53500 | 42.2 | 13.13 | 1.31 | 17.2 | 13.75 | 1.02 | 14.0 | 18.5 |
| 6 | 50 | 47700 | 42.2 | 13.15 | 1.37 | 18.0 | 13.84 | 1.18 | 16.3 | 9.3 |

| | | | | | | | | | | |
|---|----|-----------|------|-------|------|----------|-------|------|----------|------|
| 7 | 60 | 4230 0 | 42.2 | 13.20 | 1.46 | 19. 3 | 13.82 | 1.10 | 15. 2 | 21.1 |
| 8 | 70 | 3370 0 | 41.2 | 13.15 | 1.28 | 16. 8 | 13.55 | 0.75 | 10. 2 | 39.6 |
| 9 | 80 | 2500 0 | 40.2 | 12.80 | 0.80 | 10. 2 | 12.70 | 0.40 | 5.1 | 50.4 |

Jam : 15.00

Temperatur Lingkungan : 43.6

| N o. | Sudut Kemirin gan Panel | Intensi tas cahaya (LUX) | Temper atur Panel | Tehubung MPPT | | | Tanpa MPPT | | | Peningk atan Kapasita s Daya (%) |
|---------|----------------------------------|-----------------------------------|-------------------------|------------------------|----------------------|--------------------|------------------------|----------------------|--------------------|--|
| | | | | Tegan gan (Volt) | Arus (Ampe re) | Day a (Watt) | Tegan gan (Volt) | Arus (Ampe re) | Day a (Watt) | |
| 1 | 0 | 4080 0 | 43.6 | 12.9 | 2.4 | 31. 0 | 12 | 0.9 | 10. 6 | 65.9 |
| 2 | 10 | 3680 0 | 42.6 | 12.6 | 1.3 | 16. 4 | 11.92 | 0.6 | 7.0 | 57.1 |
| 3 | 20 | 3170 0 | 42.2 | 12.4 | 1.3 | 16. 1 | 11.93 | 0.6 | 7.2 | 55.5 |
| 4 | 30 | 2910 0 | 42.2 | 12.4 | 1.12 | 13. 9 | 11.91 | 0.6 | 6.7 | 51.9 |
| 5 | 40 | 2220 0 | 42.1 | 12.4 | 1.07 | 13. 2 | 11.94 | 0.5 | 6.1 | 54.0 |
| 6 | 50 | 1140 0 | 41.8 | 12.3 | 0.84 | 10. 4 | 11.92 | 0.5 | 6.0 | 42.5 |
| 7 | 60 | 4600 | 40.7 | 12.3 | 0.53 | 6.5 | 11.88 | 0.4 | 5.1 | 21.8 |
| 8 | 70 | 3400 | 40.2 | 12.3 | 0.42 | 5.2 | 11.87 | 0.4 | 4.5 | 12.8 |
| 9 | 80 | 3100 | 37.5 | 12.3 | 0.27 | 3.3 | 11.15 | 0.2 | 2.2 | 32.9 |








Jam : 16.00

Temperatur Lingkungan : 42

| N o. | Sudut Kemirin gan Panel | Intensi tas cahaya (LUX) | Temper atur Panel | Tehubung MPPT | | | Tanpa MPPT | | | Peningk atan Kapasita s Daya (%) |
|---------|----------------------------------|-----------------------------------|-------------------------|------------------------|----------------------|--------------------|------------------------|----------------------|--------------------|--|
| | | | | Tegan gan (Volt) | Arus (Ampe re) | Day a (Watt) | Tegan gan (Volt) | Arus (Ampe re) | Day a (Watt) | |
| 1 | 0 | 3550 0 | 42 | 12.7 | 1.06 | 13. 4 | 11.89 | 0.4 | 4.5 | 66.4 |
| 2 | 10 | 3730 0 | 41.4 | 12.6 | 1.13 | 14. 3 | 11.92 | 0.4 | 5.0 | 64.9 |
| 3 | 20 | 3830 0 | 41.1 | 12.9 | 1.4 | 18. 1 | 11.91 | 0.5 | 5.8 | 67.8 |
| 4 | 30 | 3810 0 | 41.1 | 12.7 | 1.6 | 20. 3 | 11.92 | 0.5 | 6.3 | 68.8 |
| 5 | 40 | 3780 0 | 41.1 | 12.6 | 2.02 | 25. 5 | 11.93 | 0.6 | 6.7 | 73.8 |
| 6 | 50 | 3560 0 | 40.1 | 12.7 | 2.26 | 28. 6 | 11.92 | 0.6 | 7.2 | 75.0 |

| | | | | | | | | | | |
|----------|----|-----------|------|------|------|----------|-------|-----|-----|------|
| 7 | 60 | 3290 0 | 40 | 12.7 | 2.16 | 27. 3 | 11.88 | 0.3 | 4.0 | 85.2 |
| 8 | 70 | 3010 0 | 39.5 | 12.9 | 1.92 | 24. 7 | 11.86 | 0.3 | 3.3 | 86.6 |
| 9 | 80 | 2880 0 | 36.7 | 12.6 | 0.57 | 7.2 | 11.85 | 0.2 | 2.4 | 67.1 |

LEMBAR ASISTENSI TUGAS AKHIR

| NO. | Tanggal | Catatan | Paraf Dosen |
|-----|---------------------|---|---|
| 1. | 28/12 ¹⁸ | - Latar Belakang - Rumusan Masalah - Batasan Masalah. |  |
| 2. | 29/12 ¹⁸ | - Penambahan Latar belakang dengan MPPT |  |
| 3. | 17/1 ¹⁹ | - BAB II - Sitasi Jurnal - Penulisan Persamaan. |  |
| 4. | 25/1 ¹⁹ | - Metodologi Penelitian |  |
| 5. | 6/1 ¹⁹ | - Penambahan grafik efisiensi daya keluaran MPPT |  |
| 6. | 7/2 ¹⁹ | - Kesimpulan disesuaikan dengan rumusan masalah. |  |
| 7. | 9/2 ²⁰¹⁹ | ACC Seminar |  |

Dosen Pembimbing I



Dedi Nugroho, ST, MT

LEMBAR ASISTENSI TUGAS AKHIR

| NO. | Tanggal | Catatan | Paraf Dosen |
|-----|---------------|--------------------|-------------|
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Dosen Pembimbing II

Ir. H. Sukarno Budi Utomo, MT



LEMBAR REVISI SEMINAR TUGAS AKHIR

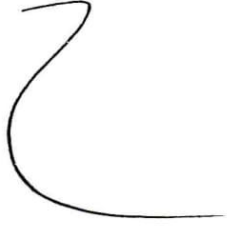

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Hari : Selasa
Tanggal : 5 Maret 2019
Tempat : R. 202

Memutuskan bahwa mahasiswa :

Nama : Arvin Rama rivaldi
NIM : 30601401536
Konsentrasi : Teknik Sistem Tenaga
Judul TA : Anaisa Pengaruh Sudut Kemiringan Panel Surya
100WP

wajib melakukan perbaikan seperti tercantum dibawah ini:

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|-----|--|---|
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Semarang, 5 Maret 2019

Penilai

Dedi Nugroho, ST, MT



LEMBAR REVISI SEMINAR TUGAS AKHIR

Berdasarkan Rapat Tim Penilai Seminar Tugas Akhir :

Hari : Selasa
Tanggal : 5 Maret 2019
Tempat : R. 202

Memutuskan bahwa mahasiswa :

Nama : Arvin Rama rivaldi
NIM : 30601401536
Konsentrasi : Teknik Sistem Tenaga
Judul TA : Anaisa Pengaruh Sudut Kemiringan Panel Surya
100WP

wajib melakukan perbaikan seperti tercantum dibawah ini:

| NO. | REVISI | BATAS REVISI |
|-----|--------------------------------|--------------------------------------|
| 1. | Abstrak ✓ | Segea! Acc Jhp 8 Maret '19. |
| 2. | Grafik ✓ | |
| 3. | Batasan masalah ✓ | |
| 4. | Wording perhitungan & tabel. ✓ | |
| 5. | penulisan ✓ | |

Semarang, 5 Maret 2019

Penilai,

Jenny Putri Hapsari, ST, MT



LEMBAR REVISI dan TUGAS UJIAN SARJANA



Berdasarkan Rapat Tim Penguji Ujian Sarjana

Hari : Rabu
Tanggal : 27 Maret 2019
Tempat : R Sidang

Memutuskan bahwa mahasiswa :

Nama : Arvin Rama rivaldi
NIM : 030601401536
Judul TA : Anaisa Pengaruh Sudut Kemiringan Panel Surya 100WP

wajib melakukan perbaikan dan membuat tugas seperti tercantum dibawah ini:

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|----------|--|---|
| 1. 2. | Perbaikan.  | Agc 1/4/19  |

| NO | TUGAS |
|----|-------|
| | |

Mengetahui,
Ketua Tim Penguji

Jenny Putri Hapsari, ST, MT
NIDN. 0607018501

Semarang, 27 Maret 2019
Penguji, I

Jenny Putri Hapsari, ST, MT
NIDN. 0607018501



LEMBAR REVISI dan TUGAS UJIAN SARJANA

Berdasarkan Rapat Tim Penguji Ujian Sarjana

Hari : Rabu
Tanggal : 27 Maret 2019
Tempat : R Sidang

Memutuskan bahwa mahasiswa :

Nama : Arvin Rama rivaldi
NIM : 030601401536
Judul TA : Anaisa Pengaruh Sudut Kemiringan Panel Surya 100WP

wajib melakukan perbaikan dan membuat tugas seperti tercantum dibawah ini:

| NO | REVISI | BATAS REVISI |
|----|-----------------------------|-------------------------------------|
| - | Pengaruh tegangan thd Arus. | <i>nce</i> <i>2/4</i> <i>Car</i> |

| NO | TUGAS |
|----|------------------------------------|
| - | kesimpulan 1. , 2. , 3. |
| - | |

Mengetahui,
Ketua Tim Penguji

Jenny Putri Hapsari, ST, MT
NIDN. 0607018501

Semarang, 27 Maret 2019
Penguji, II

Ir. Ida Widiastuti, MT
NIDN. 0005036501



LEMBAR REVISI dan TUGAS UJIAN SARJANA

Berdasarkan Rapat Tim Penguji Ujian Sarjana

Hari : Rabu
 Tanggal : 27 Maret 2019
 Tempat : R Sidang

Memutuskan bahwa mahasiswa :

Nama : Arvin Rama rivaldi
 NIM : 030601401536
 Judul TA : Anaisa Pengaruh Sudut Kemiringan Panel Surya 100WP

wajib melakukan perbaikan dan membuat tugas seperti tercantum dibawah ini:

| NO | REVISI | BATAS REVISI |
|----|--|---------------------|
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| 2 | Hitung ulang mengenai "efisiensi" (?) | |
| 3 | Tambahkan kemiringan sudut arah matahari di lokasi | |

| NO | TUGAS |
|----|-------|
| | |

Mengetahui,
 Ketua Tim Penguji

Jenny Putri Hapsari, ST, MT
 NIDN. 0607018501

Semarang, 27 Maret 2019
 Penguji III

Gunawan, ST, MT
 NIDN. 0618066301

ANALISA PENGARUH SUDUT KEMIRINGAN
PADA PANEL SURYA 100WP
by Arvin Rama

Dosen Pembimbing I



(Dedi Nugroho, S.T., M.T.)

Dosen Pembimbing II



(Ir. H. Sukarno Budi Utomo, M.T.)

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