LAMPIRAN 8. MEMATIKAN *AIR CONDITIONER* (AC) SELAMA 1 JAM

Skenario mematikan AC selama 1 jam berlaku untuk ruang kelas ketika tidak digunakan untuk kegiatan belajar mengajar.

No	Lokasi	Jenis AC	Jumlah (Unit)	Daya Per Unit (W)	Lama Pemakaian (h)	Daya Total Per Hari (kWh)
Lantai 1						
1	Ruang Kerja	Sharp Split 1,5 HP	6	1.118,55	8	53,69
		Daikin Split 1,5 HP	1	1.118,55		8,95
		Panasonic Split 1 HP	1	745,70		5,97
		Panasonic Split 1,5 HP	1	1.118,55		8,95
		Daikin Split 2 HP	1	1.491,40		11,93
2	Ruang Kelas	Daikin Split 1,5 HP	4	1.118,55	6	26,85
		TCL Split 1 HP	1	745,70		4,47
		Panasonic Split 2 HP	2	1.491,40		17,90
		Panasonic Split 1,5 HP	22	1.118,55		147,65
		Haier Split 2 HP	3	1.491,40		26,85
3	Ruang Lembaga	Panasonic Split 1,5 HP	8	1.118,55	7	62,64
4	Ruang Dosen	Daikin Cassette 2 HP	4	1.491,40	4	23,86
5	Ruang Sidang	Panasonic Split 1 HP	3	745,70	2	4,47
		Daikin Split 1,5 HP	2	1.118,55		4,47
Lantai 2						
6	Ruang Jurusan	LG Split 0,5 HP	4	372,85	8	11,93
		Haier Split 0,5 HP	1	372,85		2,98
		Toshiba Split 1 HP	5	745,70		29,83
		Daikin Split 1,5 HP	7	1.118,55		62,64
		National Split 1 HP	1	745,70		5,97
		Panasonic Split 2 HP	1	1.491,40		11,93
		Sharp Split 1 HP	1	745,70		5,97
		Panasonic Split 1,5 HP	5	1.118,55		44,74
		Daikin Split 2 HP	1	1.491,40		11,93
		Panasonic Split 1 HP	8	745,70		47,72
		Sharp Split 1,5 HP	1	1.118,55		8,95
7	Ruang Dosen	Panasonic Split 1,5 HP	10	1.118,55	4	44,74
8	Ruang Kelas	Panasonic Split 1,5 HP	12	1.118,55	7	93,96
9	Perpustakaan	Panasonic Split 2 HP	4	1.491,40	8	47,72
		Panasonic Split 1,5 HP	2	1.118,55		17,90

No	Lokasi	Jenis AC	Jumlah (Unit)	Daya Per Unit (W)	Lama Pemakaian (h)	Daya Total Per Hari (kWh)
		Panasonic Split 1 HP	2	745,70		11,93
10	Lab. Komp	Toshiba Split 2 HP	2	1.491,40	4	11,93
		Toshiba Split 1 HP	1	745,70		2,98
		Toshiba Split RAS18UKPX4	2	1.491,40		11,93
		Toshiba Split RAS10SKX	1	745,70		2,98
		Panasonic Split 2 HP	5	1.491,40		29,83
		Panasonic Split 1,5 HP	2	1.118,55		8,95
		Sharp Split 2 HP	2	1.491,40		11,93
11	Ruang Sidang	Panasonic Split 1,5 HP	1	1.118,55	2	2,24
Lantai 3						
12	Ruang Dosen	Daikin Split 1,5 HP	8	1.118,55	4	35,79
		Panasonic Split 1 HP	12	745,70		35,79
13	Aula	Panasonic Split 2 HP	3	1.491,40	3	13,42
		Panasonic Cassette 4 HP	5	2.982,80		44,74
14	Ruang Kelas	Panasonic Split 1,5 HP	22	1.118,55	6	147,65
		Sharp Split 2 HP	2	1.491,40		17,90
		Haier Split 2 HP	4	1.491,40		35,79
		Sharp Split 1,5 HP	1	1.118,55		6,71
		Panasonic Split 2 HP	5	1.491,40		44,74
		Haier Split 1,5 HP	1	1.118,55		6,71
		National Cassette 2 HP	2	1.491,40		17,90
15	Perpustakaan	National Cassette 5 HP	4	3.728,50	8	119,31
16	Ruang Kerja	Toshiba Split 1 HP	2	745,70	8	11,93
		National Cassette 2 HP	1	1.491,40		11,93
		Panasonic Split 2 HP	1	1.491,40		11,93
		Daikin Split 1,5 HP	2	1.118,55		17,90
Total Pemakaian Listrik						1.532,41

Contoh perhitungan :

- Ruang kerja lantai 3

  Jenis AC = Toshiba split 1 HP

  1 HP = 745,7 W

  Daya per unit = 745,7 W/unit

  Jumlah unit = 2 unit

Lama pemakaian = 8 jam

$$\text{Daya per hari} = \text{daya per unit} \times \text{jumlah unit} \times \text{lama pemakaian}$$

$$\text{Daya per hari} = \frac{745{,}7\ \text{W}}{\text{unit}} \times 2\ \text{unit} \times \frac{1\ \text{kW}}{1000\ \text{W}} \times 8\ \text{jam}$$

$$\text{Daya per hari} = 11{,}93\ \text{kWh}$$

Daya listrik yang dapat dikurangi per hari = 1.684,54 – 1.532,41 = 152,13 kWh/hari

$$\text{Daya listrik yang dapat dikurangi per 1 tahun} = \frac{152{,}13\ \text{kWh}}{\text{hari}} \times \frac{365\ \text{hari}}{\text{tahun}}$$

$$= \frac{55.527{,}45\ \text{kWh}}{\text{tahun}}$$

$$\text{Pemakaian listrik 1 tahun menjadi} = \frac{782.127\ \text{kWh}}{\text{tahun}} - \frac{55.527{,}45\ \text{kWh}}{\text{tahun}}$$

$$= \frac{726.599{,}55\ \text{kWh}}{\text{tahun}}$$

Emisi CO_2 ($kgCO_2eq$)	**Emisi CH_4($kgCO_2eq$)**	**Emisi N_2O ($kgCO_2eq$)**	**Jumlah Emisi Gas Rumah Kaca ($kgCO_2eq$)**
562.670,62	324,37	1.688,29	564.683,28

- Perhitungan Emisi CO_2

  Konsumsi energi listrik (KE) $= 726.599{,}55\ \text{kWh/tahun}$

  FE $CO_2 = 0{,}774388897\ \text{kg}CO_2/\text{kWh}$

  GWP $CO_2 = 1$

  $E_{CO_2} = \text{KE} \times \text{FE} \times \text{GWP}$

  $E_{CO_2} = 726.599{,}55\ \text{kWh} \times 0{,}774388897\ \text{kg}CO_2/\text{kWh} \times 1$

  $E_{CO_2} = 562.670{,}62\ \text{kg}CO_2\text{eq}$

- Perhitungan Emisi CH_4

  Konsumsi energi listrik (KE) $= 726.599{,}55\ \text{kWh/tahun}$

  FE $CH_4 = 0{,}00001594341\ \text{kg}CH_4/\text{kWh}$

  GWP $CH_4 = 28$

  $E_{CO_2} = \text{KE} \times \text{FE} \times \text{GWP}$

$E_{CO_2} = 726.599{,}55\ \text{kWh} \times 0{,}00001594341\ \text{kg}CH_4/\text{kWh} \times 28$

$E_{CO_2} = 324{,}37\ \text{kg}CO_2\text{eq}$

- Perhitungan Emisi N_2O

Konsumsi energi listrik (KE) $= 726.599{,}55\ \text{kWh/tahun}$

FE $N_2O = 0{,}00000876813\ \text{kg}N_2O/\text{kWh}$

GWP $N_2O = 265$

$E_{N_2O} = \text{KE} \times \text{FE} \times \text{GWP}$

$E_{N_2O} = 726.599{,}55\ \text{kWh} \times 0{,}00000876813\ \text{kg}N_2O/\text{kWh} \times 265$

$E_{N_2O} = 1.688{,}29\ \text{kg}CO_2\text{eq}$

Emisi gas rumah kaca total menjadi :

No	Sumber Emisi GRK	Emisi GRK ($kgCO_2eq$)
1	Listrik	564.683,28
2	LPG	2.334,15
3	Transportasi	4.382,25
Total Emisi GRK		571.399,68

Efisiensi total penurunan emisi gas rumah kaca $= \frac{614.553{,}34 - 571.399{,}68}{614.553{,}34} \times 100\%$

$= 7{,}02\%$