

BAB VI

KESIMPULAN DAN SARAN

6.1. Kesimpulan

Kesimpulan yang dapat diambil berdasarkan hasil dari pengolahan data dan analisa yang dilakukan pada hasil pengolahan tersebut, adalah sebagai berikut :

1. Peramalan pada tingkat permintaan ataupun penjualan perlu dilakukan seteliti mungkin sebagai dasar untuk perencanaan berikutnya. Termasuk dalam hal ini adalah penentuan atau pemilihan metode peramalan yang paling tepat dengan kecenderungan data di masa lampau. Untuk menentukan peramalan apa yang akan digunakan dapat dilakukan dengan memilih nilai tingkat kesalahan (MAD) yang terkecil. Hasil dari pengolahan data hampir semuanya menunjukkan bahwa metode peramalan yang digunakan adalah rata - rata bergerak atau moving average. Untuk lebih jelasnya dapat dilihat pada tabel dibawah ini :

MODEL PERAMALAN	TIPE LAMPU LISTRIK				
	EDC25W	KRF10W	KRF15W	KRF25W	KRF40W
Linear	5,805	5,833	5,856	8,213	4,879
Single Moving Average	8,316	5,920	5,455	7,260	5,198
Double Moving Average	9,613	5,596	5,861	8,184	4,731
Single Eksponential Smoothing	7,741	5,994	6,523	9,086	5,011
Double Eksponential Smoothing	7,936	6,680	6,688	8,890	5,572
MAD TERKECIL	5,805	5,596	5,455	7,260	4,731

2. Metode MRP yang diterapkan pada pembahasan ini menghasilkan informasi yang dapat membantu perusahaan dalam menentukan perencanaan pengadaan material yang dibutuhkan. Hasil dari perhitungan ini adalah informasi mengenai berapa jumlah kebutuhan kotor material, persediaan yang masih ada, jadwal pemesanan dan kuantitasnya. Untuk lebih jelasnya dapat dilihat pada tabel berikut ini :

	<i>Komponen</i>	<i>Total Pesanan</i>	<i>Order</i>	<i>Sisa</i>
<i>KRF10W</i>	<i>Filamen</i>	1,602,998	0	66,226
	<i>Glass Bulb</i>	864,802	12	
	<i>Cap</i>	818,002	12	
	<i>Elektroda</i>	1,788,679	0	135,152
	<i>Exhaust Tube</i>	485,572	9	
	<i>Flare</i>	414,293	8	
<i>KRF15W</i>	<i>Filamen</i>	190,035	7	
	<i>Glass Bulb</i>	475,596	9	
	<i>Cap</i>	421,596	9	
	<i>Elektroda</i>	2,499,358	0	250,210
	<i>Exhaust Tube</i>	197,560	7	
	<i>Flare</i>	147,460	6	
<i>KRF25W</i>	<i>Filamen</i>	5,843,528	0	419,234
	<i>Glass Bulb</i>	436,488	8	
	<i>Cap</i>	6,898,640	0	507,160
	<i>Elektroda</i>	3,715,265	0	380,519
	<i>Exhaust Tube</i>	367,792	7	
	<i>Flare</i>	311,120	7	
<i>KRF40W</i>	<i>Filamen</i>	918,765	0	12,230
	<i>Glass Bulb</i>	810,255	12	
	<i>Cap</i>	810,255	12	
	<i>Elektroda</i>	726,206	8	
	<i>Exhaust Tube</i>	810,255	12	
	<i>Flare</i>	367,735	8	
<i>EDC25W</i>	<i>Filamen</i>	123,244	3	
	<i>Glass Bulb</i>	1,293,975	10	
	<i>Cap</i>	1,336,650	11	
	<i>Elektroda</i>	174,269	2	
	<i>Exhaust Tube</i>	1,311,075	11	
	<i>Flare</i>	1,228,965	10	

3. Model lot sizing Silver Meal digunakan untuk menentukan jumlah pemesanan material atau bahan baku, sehingga perusahaan dapat memperkirakan waktu yang diperlukan untuk pemesanannya. Dengan demikian, dapat pula diperkirakan total biaya yang dibutuhkan untuk pemesanan atau order material tersebut.

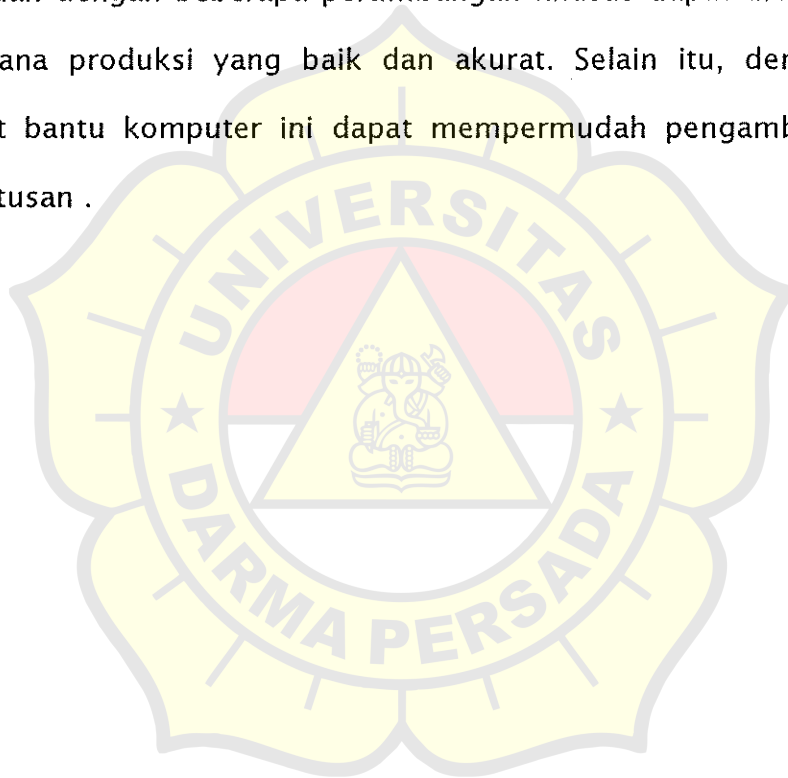
6.2. Saran – Saran

Dari hasil penelitian dalam tugas akhir ini, yaitu pengumpulan dan pengolahan data serta analisa yang telah dilakukan, maka penulis bermaksud untuk memberikan saran – saran sehubungan dengan perencanaan pengadaan kebutuhan bahan baku atau material, yaitu :

1. Pembuatan jadwal induk produksi (JIP) yang akurat sangat dibutuhkan dalam rangka membuat suatu rencana produksi. Data yang digunakan tidak hanya data hasil dari pengolahan peramalan saja. Tetapi untuk membuat suatu JIP yang baik juga diperlukan data mengenai kapasitas mesin, SDM, work hour atau jam kerjanya dan sebagainya.
2. pengarsipan data atau record data yang telah dilakukan perusahaan sudah cukup baik. Dengan adanya arsip data tersebut, perusahaan dapat menentukan suatu perencanaan yang benar – benar berdasarkan data yang aktual dan memang jelas sumbernya. Oleh karena itu, sebaiknya pada masing – masing departemen atau divisi

dapat membuat suatu record data atau arsip data dengan baik dan teliti.

3. Perusahaan sudah selayaknya menggunakan suatu pemograman komputer yang terintegrasi dengan seluruh departemen atau divisi. Dengan demikian, masukan dari semua bidang dapat langsung diolah komputer dan dengan beberapa pertimbangan khusus dapat dibuat suatu rencana produksi yang baik dan akurat. Selain itu, dengan adanya alat bantu komputer ini dapat mempermudah pengambilan suatu keputusan .



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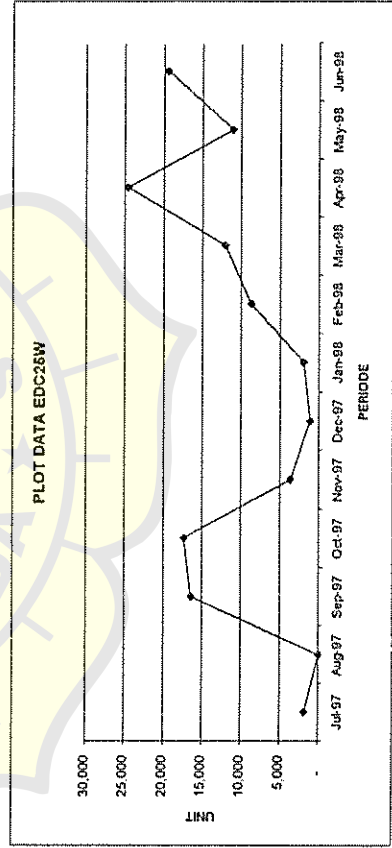
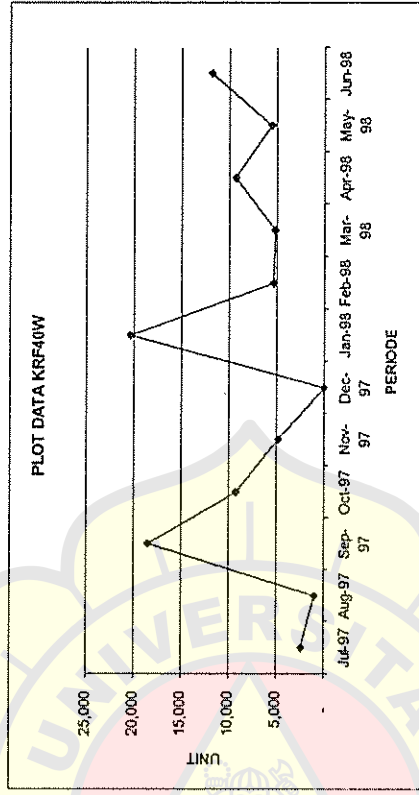
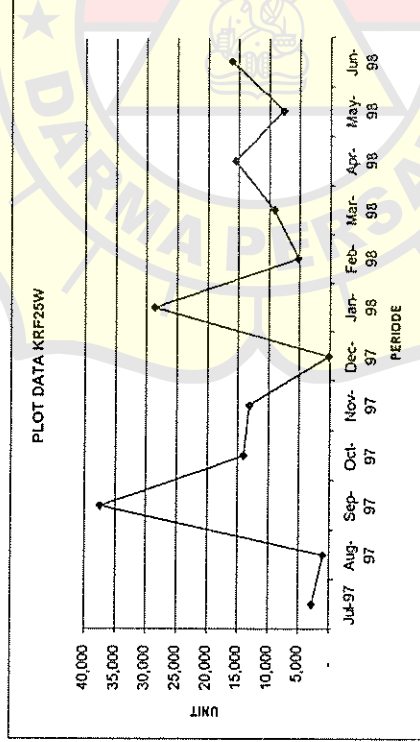
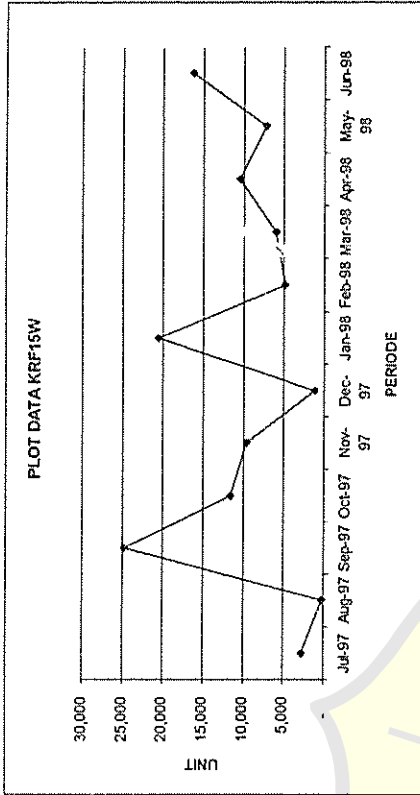
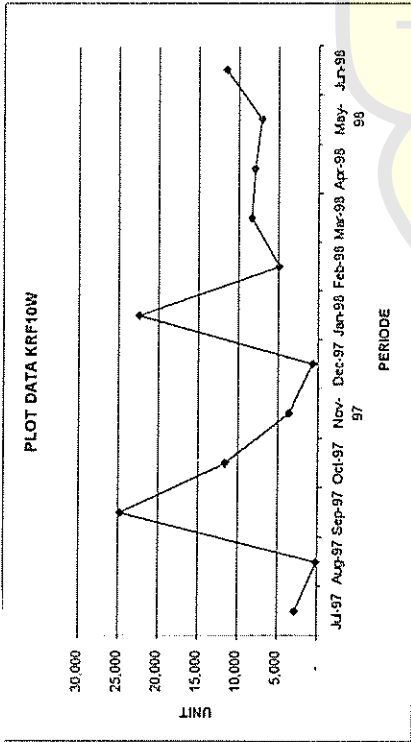
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LAMPIRAN A

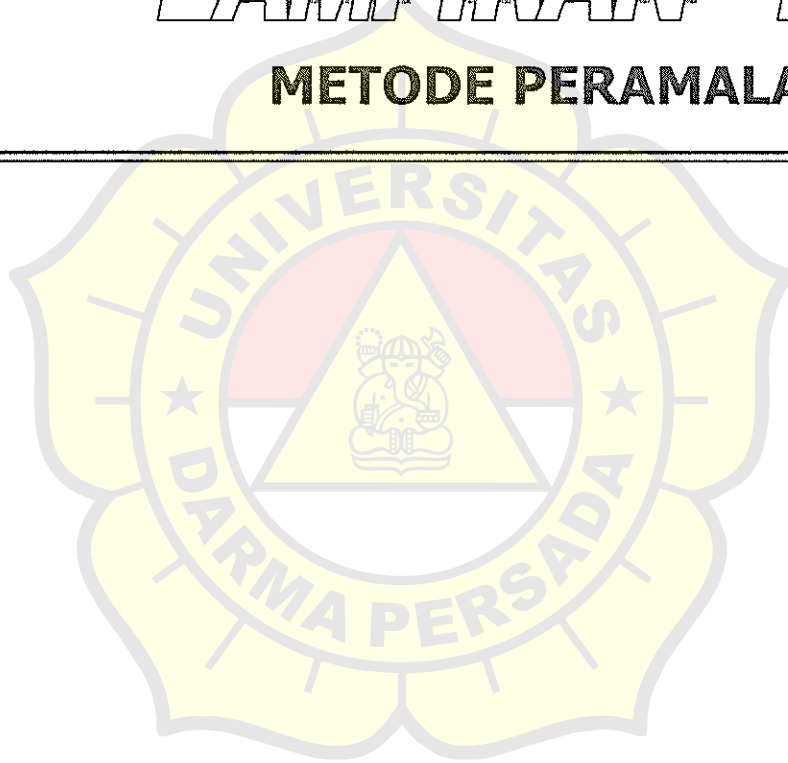
PLOT DATA PENJUALAN LAMPU





LAMPIRAN B

METODE PERAMALAN



LAMPU LISTRIK TIPE

KRF10W



METODE PERAMALAN LINEAR

BULAN	t	Y(t)	Y(t) . T	t ²	Forecast
JAN	1	2,826	2,826	1	10,000
FEB	2	200	400	4	10,176
MAR	3	24,805	74,415	9	10,353
APR	4	11,625	46,500	16	10,530
MAY	5	3,632	18,160	25	10,706
JUN	6	700	4,200	36	10,883
JUL	7	22,400	156,800	49	11,060
AUG	8	4,900	39,200	64	11,236
SEP	9	8,400	75,600	81	11,413
OCT	10	8,000	80,000	100	11,590
NOV	11	7,150	78,650	121	11,766
DEC	12	11,575	138,900	144	11,943
TOTAL	78	106,213	715,651	650	7,703

Maka,

$$b = \frac{177}{7,703} \quad a = \frac{7,703}{177}$$

Menghitung Tingkat Kesalahan

No.	Bulan	Pemakaian	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,826	7,879	-5,053	5,053	25,535,789
14	Feb	200	8,056	-7,856	7,856	61,716,480
15	Mar	24,805	8,233	16,572	16,572	274,642,039
16	Apr	11,625	8,409	3,216	3,216	10,340,332
17	May	3,632	8,586	-4,954	4,954	24,542,613
18	Jun	700	8,763	-8,063	8,063	65,007,759
19	Jul	22,400	8,939	13,461	13,461	181,187,006
20	Aug	4,900	9,116	-4,216	4,216	17,775,639
21	Sep	8,400	9,293	-893	893	797,101
22	Oct	8,000	9,469	-1,469	1,469	2,159,413
23	Nov	7,150	9,646	-2,496	2,496	6,230,929
24	Dec	11,575	9,823	1,752	1,752	3,069,953
	JUMLAH	106,213	106,213	0	70,001	673,005,053

$$MAD = \frac{70,001}{12} = 5,833$$

$$MSE = \frac{673,005,053}{12} = 56,083,754$$

ODE SINGLE MOVING AVERAGE

kode (bulan)	PENJUALAN	3 Bulan Moving Average Pertama
1	2,826	-
2	200	-
3	24,805	-
4	11,625	9,277
5	3,632	12,210
6	700	13,354
7	22,400	5,319
8	4,900	8,911
9	8,400	9,333
10	8,000	11,900
11	7,150	7,100
12	11,575	7,850
JAL	106,213	85,254

Langkah 3: Menghitung Tingkat Kesalahan

	Bulan	Y(t)	Peramalan 3 Bln	Error	Abs. Error	Squared Error
13	Jan	2,826				
14	Feb	200				
15	Mar	24,805				
16	Apr	11,625	9,277	2,348	2,348	5,513,104
17	May	3,632	12,210	-8,578	8,578	73,582,084
18	Jun	700	13,354	-12,654	12,654	160,123,716
19	Jul	22,400	5,319	17,081	17,081	291,760,561
20	Aug	4,900	8,911	-4,011	4,011	16,085,447
21	Sep	8,400	9,333	-933	933	871,111
22	Oct	8,000	11,900	-3,900	3,900	15,210,000
23	Nov	7,150	7,100	50	50	2,500
24	Dec	11,575	7,850	3,725	3,725	13,875,625
	JUMLAH	106,213	85,254	-6,872	53,280	577,024,148

$$\begin{aligned}
 \text{MAD} &= \frac{53,280}{12} = 4,440 \\
 \text{MSE} &= \frac{577,024,148}{12} = 48,085,348 \\
 \text{MAPE} &= \frac{2,315}{12} = 193 \\
 \text{MFE} &= \frac{-6,872}{12} = -573
 \end{aligned}$$

MODEL DOUBLE MOVING AVERAGE

Periode (Bulan)	Penjualan	3 Bulan Moving Average Pertama	3 Bulan Moving Average Kedua	Peramalan Berikutnya
1	2,826	-	-	10,024
2	200	-	-	10,314
3	24,805	-	-	10,604
4	11,625	9,277	-	10,894
5	3,632	12,210	-	11,184
6	700	13,354	-	11,474
7	22,400	5,319	11,614	11,764
8	4,900	8,911	10,294	12,054
9	8,400	9,333	9,195	12,343
10	8,000	11,900	7,854	12,633
11	7,150	7,100	10,048	12,923
12	11,575	7,850	9,444	13,213
TOTAL	106,213	85,254	58,449	139,424

$$a = 6,256$$

$$b = -290$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,826	6,545	(3,719)	3,719	13,834,342
14	Feb	200	6,835	(6,635)	6,635	44,027,917
15	Mar	24,805	7,125	17,680	17,680	312,573,471
16	Apr	11,625	7,415	4,210	4,210	17,722,824
17	May	3,632	7,705	(4,073)	4,073	16,589,740
18	Jun	700	7,995	(7,295)	7,295	53,216,288
19	Jul	22,400	8,285	14,115	14,115	199,237,502
20	Aug	4,900	8,575	(3,675)	3,675	13,503,769
21	Sep	8,400	8,865	(465)	465	215,896
22	Oct	8,000	9,155	(1,155)	1,155	1,332,975
23	Nov	7,150	9,444	(2,294)	2,294	5,264,475
24	Dec	11,575	9,734	1,841	1,841	3,388,017
	JUMLAH	106,213	97,679	8,534	67,157	680,907,217

$$MAD = \frac{67,157}{12} = 5,596$$

$$MSE = \frac{680,907,217}{12} = 56,742,268$$

METODE SINGLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	PERAMALAN
			ALFA = 0.1
1	Jan	2,826	0
2	Feb	200	2,826
3	Mar	24,805	2,563
4	Apr	11,625	4,788
5	May	3,632	5,471
6	Jun	700	5,287
7	Jul	22,400	4,829
8	Aug	4,900	6,586
9	Sep	8,400	6,417
10	Oct	8,000	6,615
11	Nov	7,150	6,754
12	Dec	11,575	6,794
	JUMLAH	106,213	58,930

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,826	0		0	0
14	Feb	200	2,826	-2,626	2,626	6,895,876
15	Mar	24,805	2,563	22,242	22,242	494,688,771
16	Apr	11,625	4,788	6,837	6,837	46,750,586
17	May	3,632	5,471	-1,839	1,839	3,383,039
18	Jun	700	5,287	-4,587	4,587	21,043,997
19	Jul	22,400	4,829	17,571	17,571	308,752,824
20	Aug	4,900	6,586	-1,686	1,686	2,841,829
21	Sep	8,400	6,417	1,983	1,983	3,931,514
22	Oct	8,000	6,615	1,385	1,385	1,916,907
23	Nov	7,150	6,754	396	396	156,873
24	Dec	11,575	6,794	4,781	4,781	22,862,404
	JUMLAH	106,213	58,930	44,457	65,934	913,224,620

$$\text{MAD} = \frac{65,934}{12} = 5,994$$

$$\text{MSE} = \frac{913,224,620}{12} = 76,102,052$$

METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			S't	S''t	
1	Jan	2,826	2,826	2,826	12,618
2	Feb	200	2,563	2,800	12,861
3	Mar	24,805	4,788	2,999	13,104
4	Apr	11,625	5,471	3,246	13,347
5	May	3,632	5,287	3,450	13,590
6	Jun	700	4,829	3,588	13,833
7	Jul	22,400	6,586	3,888	14,076
8	Aug	4,900	6,417	4,141	14,319
9	Sep	8,400	6,615	4,388	14,562
10	Oct	8,000	6,754	4,625	14,805
11	Nov	7,150	6,794	4,842	15,048
12	Dec	11,575	7,272	5,085	15,291
	JUMLAH	106,213	66,202	45,875	167,455

$$a = 2S't - S''t = 9,459$$

$$b = 243$$

Penhitungan Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,826	9,702		0	0
14	Feb	200	9,945	-9,745	9,745	94,961,829
15	Mar	24,805	10,188	14,617	14,617	213,661,073
16	Apr	11,625	10,431	1,194	1,194	1,425,961
17	May	3,632	10,674	-7,042	7,042	49,588,047
18	Jun	700	10,917	-10,217	10,217	104,384,884
19	Jul	22,400	11,160	11,240	11,240	126,339,711
20	Aug	4,900	11,403	-6,503	6,503	42,287,970
21	Sep	8,400	11,646	-3,246	3,246	10,536,088
22	Oct	8,000	11,889	-3,889	3,889	15,123,918
23	Nov	7,150	12,132	-4,982	4,982	24,819,947
24	Dec	11,575	12,375	-800	800	639,962
	JUMLAH	106,213	132,461	-19,372	73,475	683,769,389

$$MAD = \frac{73,475}{12} = 6,680$$

$$MSE = \frac{683,769,389}{12} = 56,980,782$$

LAMPU LISTRIK TIPE

KRF15W



METODE PERAMALAN LINEAR

BULAN	t	Y(t)	Y(t) . T	t ²	Forecast
JAN	1	2,824	2,824	1	11,710
FEB	2	200	400	4	12,024
MAR	3	24,800	74,400	9	12,338
APR	4	11,635	46,540	16	12,652
MAY	5	9,652	48,260	25	12,966
JUN	6	1,200	7,200	36	13,280
JUL	7	20,600	144,200	49	13,594
AUG	8	4,900	39,200	64	13,908
SEP	9	6,100	54,900	81	14,221
OCT	10	10,500	105,000	100	14,535
NOV	11	7,300	80,300	121	14,849
DEC	12	16,325	195,900	144	15,163
TOTAL	78	116,036	799,124	650	7,629

Maka, $b = \frac{314}{7,629}$ $a = \frac{7,629}{314}$

Menghitung Tingkat Kesalahan

No.	Bulan	Pemakaian	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,824	7,943	-5,119	5,119	26,205,474
14	Feb	200	8,257	-8,057	8,057	64,915,963
15	Mar	24,800	8,571	16,229	16,229	263,381,727
16	Apr	11,635	8,885	2,750	2,750	7,563,180
17	May	9,652	9,199	453	453	205,397
18	Jun	1,200	9,513	-8,313	8,313	69,101,125
19	Jul	20,600	9,827	10,773	10,773	116,065,615
20	Aug	4,900	10,141	-5,241	5,241	27,463,268
21	Sep	6,100	10,454	-4,354	4,354	18,961,295
22	Oct	10,500	10,768	-268	268	72,024
23	Nov	7,300	11,082	-3,782	3,782	14,305,710
24	Dec	16,325	11,396	4,929	4,929	24,293,019
	JUMLAH	116,036	116,036	0	70,269	632,533,796

$$\text{MAD} = \frac{70,269}{12} = 5,856$$

$$\text{MSE} = \frac{632,533,796}{12} = 52,711,150$$

METODE SINGLE MOVING AVERAGE

Periode (Bulan)	PENJUALAN	3 Bulan Moving Average Pertama
1	2,824	-
2	200	-
3	24,800	-
4	11,635	9,275
5	9,652	12,212
6	1,200	15,362
7	20,600	7,496
8	4,900	10,484
9	6,100	8,900
10	10,500	10,533
11	7,300	7,167
12	16,325	7,967
TOTAL	116,036	89,395

Perhitungan Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan 3 Bln	Error	Abs. Error	Squared Error
13	Jan	2,824				
14	Feb	200				
15	Mar	24,800				
16	Apr	11,635	9,275	2,360	2,360	5,571,173
17	May	9,652	12,212	-2,560	2,560	6,551,893
18	Jun	1,200	15,362	-14,162	14,162	200,571,685
19	Jul	20,600	7,496	13,104	13,104	171,723,552
20	Aug	4,900	10,484	-5,584	5,584	31,181,056
21	Sep	6,100	8,900	-2,800	2,800	7,840,000
22	Oct	10,500	10,533	-33	33	1,111
23	Nov	7,300	7,167	133	133	17,778
24	Dec	16,325	7,967	8,358	8,358	69,861,736
	JUMLAH	116,036	89,395	-1,183	49,096	493,319,985

$$MAD = \frac{49,096}{12} = 5,455$$

$$MSE = \frac{493,319,985}{12} = 41,109,999$$

MODEL DOUBLE MOVING AVERAGE

Periode (Bulan)	Penjualan	3 Bulan Moving Average Pertama	3 Bulan Moving Average Kedua	Peramalan Berikutnya
1	2,824	-	-	9,194
2	200	-	-	9,358
3	24,800	-	-	9,521
4	11,635	9,275	-	9,685
5	9,652	12,212	-	9,848
6	1,200	15,362	-	10,012
7	20,600	7,496	12,283	10,176
8	4,900	10,484	11,690	10,339
9	6,100	8,900	11,114	10,503
10	10,500	10,533	8,960	10,667
11	7,300	7,167	9,972	10,830
12	16,325	7,967	8,867	10,994
TOTAL	116,036	89,395	62,886	121,127

$$a = 7,067$$

$$b = -164$$

Langkah 4: Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,824	7,230	(4,406)	4,406	19,415,506
14	Feb	200	7,394	(7,194)	7,194	51,752,764
15	Mar	24,800	7,558	17,242	17,242	297,301,194
16	Apr	11,635	7,721	3,914	3,914	15,317,736
17	May	9,652	7,885	1,767	1,767	3,122,824
18	Jun	1,200	8,048	(6,848)	6,848	46,901,745
19	Jul	20,600	8,212	12,388	12,388	153,459,541
20	Aug	4,900	8,376	(3,476)	3,476	12,080,891
21	Sep	6,100	8,539	(2,439)	2,439	5,950,643
22	Oct	10,500	8,703	1,797	1,797	3,229,100
23	Nov	7,300	8,867	(1,567)	1,567	2,454,444
24	Dec	16,325	9,030	7,295	7,295	53,212,604
	JUMLAH	116,036	97,564	18,472	70,333	664,198,992

$$MAD = \frac{70,333}{12} = 5,861$$

$$MSE = \frac{664,198,992}{12} = 55,349,916$$

METODE SINGLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	PERAMALAN
			ALFA = 0.1
1	Jan	2,824	0
2	Feb	200	2,824
3	Mar	24,800	2,562
4	Apr	11,635	4,785
5	May	9,652	5,470
6	Jun	1,200	5,889
7	Jul	20,600	5,420
8	Aug	4,900	6,938
9	Sep	6,100	6,734
10	Oct	10,500	6,671
11	Nov	7,300	7,054
12	Dec	16,325	7,078
JUMLAH		116,036	61,424

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,824	0		0	0
14	Feb	200	2,824	-2,624	2,624	6,885,376
15	Mar	24,800	2,562	22,238	22,238	494,546,435
16	Apr	11,635	4,785	6,850	6,850	46,916,472
17	May	9,652	5,470	4,182	4,182	17,485,812
18	Jun	1,200	5,889	-4,689	4,689	21,982,561
19	Jul	20,600	5,420	15,180	15,180	230,441,485
20	Aug	4,900	6,938	-2,038	2,038	4,152,346
21	Sep	6,100	6,734	-634	634	401,902
22	Oct	10,500	6,671	3,829	3,829	14,664,597
23	Nov	7,300	7,054	246	246	60,759
24	Dec	16,325	7,078	9,247	9,247	85,504,141
JUMLAH		116,036	61,424	51,788	71,757	923,041,886

$$\text{MAD} = \frac{71,757}{12} = 6,523$$

$$\text{MSE} = \frac{923,041,886}{12} = 76,920,157$$

METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			S't	S''t	
1	Jan	2,824	2,824	2,824	14,579
2	Feb	200	2,562	2,798	14,878
3	Mar	24,800	4,785	2,997	15,177
4	Apr	11,635	5,470	3,244	15,476
5	May	9,652	5,889	3,508	15,775
6	Jun	1,200	5,420	3,700	16,074
7	Jul	20,600	6,938	4,023	16,373
8	Aug	4,900	6,734	4,294	16,672
9	Sep	6,100	6,671	4,532	16,971
10	Oct	10,500	7,054	4,784	17,270
11	Nov	7,300	7,078	5,014	17,569
12	Dec	16,325	8,003	5,312	17,867
JUMLAH		116,036	69,426	47,030	194,680

$$a = 2S't - S''t = 10,693$$

$$b = 299$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,824	10,992		0	0
14	Feb	200	11,291	-11,091	11,091	123,011,305
15	Mar	24,800	11,590	13,210	13,210	174,504,786
16	Apr	11,635	11,889	-254	254	64,466
17	May	9,652	12,188	-2,536	2,536	6,430,433
18	Jun	1,200	12,487	-11,287	11,287	127,390,898
19	Jul	20,600	12,786	7,814	7,814	61,063,511
20	Aug	4,900	13,085	-8,185	8,185	66,987,896
21	Sep	6,100	13,384	-7,284	7,284	53,049,973
22	Oct	10,500	13,682	-3,182	3,182	10,128,110
23	Nov	7,300	13,981	-6,681	6,681	44,641,066
24	Dec	16,325	14,280	2,045	2,045	4,180,696
JUMLAH		116,036	151,635	-27,431	73,569	671,453,141

$$MAD = \frac{73,569}{12} = 6,688$$

$$MSE = \frac{671,453,141}{12} = 55,954,428$$

LAMPU LISTRIK TIPE

KRF25W



METODE PERAMALAN LINEAR

BULAN	t	Y(t)	Y(t) . T	t ²	Forecast
JAN	1	2,876	2,876	1	13,385
FEB	2	1,000	2,000	4	13,503
MAR	3	37,500	112,500	9	13,620
APR	4	14,025	56,100	16	13,737
MAY	5	13,240	66,200	25	13,855
JUN	6	200	1,200	36	13,972
JUL	7	28,700	200,900	49	14,089
AUG	8	5,300	42,400	64	14,206
SEP	9	9,200	82,800	81	14,324
OCT	10	15,600	156,000	100	14,441
NOV	11	7,650	84,150	121	14,558
DEC	12	16,188	194,256	144	14,675
TOTAL	78	151,479	1,001,382	650	11,861

Maka,

$$b = \frac{117}{12} = 9,75$$

$$a = 11,861 - 9,75 \times 12 = -10,74$$

Menghitung Tingkat Kesalahan

No.	Bulan	Pemakaian	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,876	11,978	-9,102	9,102	82,852,005
14	Feb	1,000	12,096	-11,096	11,096	123,111,672
15	Mar	37,500	12,213	25,287	25,287	639,440,857
16	Apr	14,025	12,330	1,695	1,695	2,872,705
17	May	13,240	12,447	793	793	628,283
18	Jun	200	12,565	-12,365	12,365	152,883,800
19	Jul	28,700	12,682	16,018	16,018	256,580,132
20	Aug	5,300	12,799	-7,499	7,499	56,237,151
21	Sep	9,200	12,916	-3,716	3,716	13,811,671
22	Oct	15,600	13,034	2,566	2,566	6,586,061
23	Nov	7,650	13,151	-5,501	5,501	30,260,232
24	Dec	16,188	13,268	2,920	2,920	8,525,277
	JUMLAH	151,479	151,479	0	98,558	1,373,789,846

$$MAD = \frac{98,558}{12} = 8,213$$

$$MSE = \frac{1,373,789,846}{12} = 114,482,487$$

METODE SINGLE MOVING AVERAGE

Periode (Bulan)	PENJUALAN	3 Bulan Moving Average Pertama	4 Bulan Moving Average Kedua
1	2,876	-	-
2	1,000	-	-
3	37,500	-	-
4	14,025	13,792	-
5	13,240	17,508	13,850
6	200	21,588	16,441
7	28,700	9,155	16,241
8	5,300	14,047	14,041
9	9,200	11,400	11,660
10	15,600	14,400	10,850
11	7,650	10,033	14,700
12	16,188	10,817	9,438
TOTAL	151,479	122,740	107,422

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan 3 Bln	Error	Abs. Error	Squared Error
13	Jan	2,876				
14	Feb	1,000				
15	Mar	37,500				
16	Apr	14,025	13,792	233	233	54,289
17	May	13,240	17,508	-4,268	4,268	18,218,669
18	Jun	200	21,588	-21,388	21,388	457,460,803
19	Jul	28,700	9,155	19,545	19,545	382,007,025
20	Aug	5,300	14,047	-8,747	8,747	76,504,178
21	Sep	9,200	11,400	-2,200	2,200	4,840,000
22	Oct	15,600	14,400	1,200	1,200	1,440,000
23	Nov	7,650	10,033	-2,383	2,383	5,680,278
24	Dec	16,188	10,817	5,371	5,371	28,851,222
	JUMLAH	151,479	122,740	-12,637	65,336	975,056,464

$$\text{MAD} = \frac{65,336}{12} = 7,260$$

$$\text{MSE} = \frac{975,056,464}{12} = 81,254,705$$

ODEL DOUBLE MOVING AVERAGE

Periode (Bulan)	Penjualan	3 Bulan Moving Average Pertama	3 Bulan Moving Average Kedua	Peramalan Berikutnya
1	2,876	-	-	12,355
2	1,000	-	-	12,560
3	37,500	-	-	12,765
4	14,025	13,792	-	12,970
5	13,240	17,508	-	13,175
6	200	21,588	-	13,380
7	28,700	9,155	17,630	13,585
8	5,300	14,047	16,084	13,790
9	9,200	11,400	14,930	13,995
10	15,600	14,400	11,534	14,200
11	7,650	10,033	13,282	14,405
12	16,188	10,817	11,944	14,610
TOTAL	151,479	122,740	85,404	161,788

$$a = 9,689$$

$$b = -205$$

ghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,876	9,894	(7,018)	7,018	49,251,473
14	Feb	1,000	10,099	(9,099)	9,099	82,791,617
15	Mar	37,500	10,304	27,196	27,196	739,620,218
16	Apr	14,025	10,509	3,516	3,516	12,361,617
17	May	13,240	10,714	2,526	2,526	6,379,962
18	Jun	200	10,919	(10,719)	10,719	114,901,075
19	Jul	28,700	11,124	17,576	17,576	308,907,254
20	Aug	5,300	11,329	(6,029)	6,029	36,352,373
21	Sep	9,200	11,534	(2,334)	2,334	5,449,159
22	Oct	15,600	11,739	3,861	3,861	14,904,279
23	Nov	7,650	11,944	(4,294)	4,294	18,442,253
24	Dec	16,188	12,149	4,039	4,039	16,309,523
	JUMLAH	151,479	132,261	19,218	98,207	1,405,670,805

$$MAD = \frac{98,207}{12} = 8,184$$

$$MSE = \frac{1,405,670,805}{12} = 117,139,234$$

METODE SINGLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	PERAMALAN
			ALFA = 0,1
1	Jan	2,876	0
2	Feb	1,000	2,876
3	Mar	37,500	2,688
4	Apr	14,025	6,170
5	May	13,240	6,955
6	Jun	200	7,584
7	Jul	28,700	6,845
8	Aug	5,300	9,031
9	Sep	9,200	8,658
10	Oct	15,600	8,712
11	Nov	7,650	9,401
12	Dec	16,188	9,226
	JUMLAH	151,479	78,144

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,876	0		0	0
14	Feb	1,000	2,876	-1,876	1,876	3,519,376
15	Mar	37,500	2,688	34,812	34,812	1,211,847,495
16	Apr	14,025	6,170	7,855	7,855	61,707,938
17	May	13,240	6,955	6,285	6,285	39,499,918
18	Jun	200	7,584	-7,384	7,384	54,517,454
19	Jul	28,700	6,845	21,855	21,855	477,630,766
20	Aug	5,300	9,031	-3,731	3,731	13,918,203
21	Sep	9,200	8,658	542	542	294,155
22	Oct	15,600	8,712	6,888	6,888	47,446,256
23	Nov	7,650	9,401	-1,751	1,751	3,064,909
24	Dec	16,188	9,226	6,962	6,962	48,474,744
	JUMLAH	151,479	78,144	70,459	99,941	1,961,921,233

$$\text{MAD} = \frac{99,941}{12} = 9,086$$

$$\text{MSE} = \frac{1,961,921,233}{12} = 163,493,436$$

METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			S't	S''t	
1	Jan	2,876	2,876	2,876	18,087
2	Feb	1,000	2,688	2,857	18,458
3	Mar	37,500	6,170	3,188	18,829
4	Apr	14,025	6,955	3,565	19,201
5	May	13,240	7,584	3,967	19,572
6	Jun	200	6,845	4,255	19,943
7	Jul	28,700	9,031	4,732	20,314
8	Aug	5,300	8,658	5,125	20,685
9	Sep	9,200	8,712	5,484	21,056
10	Oct	15,600	9,401	5,875	21,428
11	Nov	7,650	9,226	6,210	21,799
12	Dec	16,188	9,922	6,582	22,170
	JUMLAH	151,479	88,066	54,717	241,542

$$a = 2S't - S''t = 13,262$$

$$b = 371$$

Menhitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,876	13,633		0	0
14	Feb	1,000	14,005	-13,005	13,005	169,117,332
15	Mar	37,500	14,376	23,124	23,124	534,734,990
16	Apr	14,025	14,747	-722	722	521,014
17	May	13,240	15,118	-1,878	1,878	3,526,746
18	Jun	200	15,489	-15,289	15,289	233,756,996
19	Jul	28,700	15,860	12,840	12,840	164,858,819
20	Aug	5,300	16,231	-10,931	10,931	119,495,822
21	Sep	9,200	16,603	-7,403	7,403	54,797,967
22	Oct	15,600	16,974	-1,374	1,374	1,887,094
23	Nov	7,650	17,345	-9,695	9,695	93,990,421
24	Dec	16,188	17,716	-1,528	1,528	2,334,833
	JUMLAH	151,479	188,096	-25,860	97,788	1,379,022,033

$$MAD = \frac{97,788}{12} = 8,890$$

$$MSE = \frac{1,379,022,033}{12} = 114,918,503$$

LAMPU LISTRIK TIPE

KRF40W



METODE PERAMALAN LINEAR

BULAN	t	Y(t)	Y(t) . T	t ²	Forecast
JAN	1	2,405	2,405	1	9,728
FEB	2	1,000	2,000	4	10,020
MAR	3	18,500	55,500	9	10,313
APR	4	9,245	36,980	16	10,606
MAY	5	4,881	24,405	25	10,898
JUN	6	0	0	36	11,191
JUL	7	20,400	142,800	49	11,483
AUG	8	5,400	43,200	64	11,776
SEP	9	5,200	46,800	81	12,069
OCT	10	9,400	94,000	100	12,361
NOV	11	5,600	61,600	121	12,654
DEC	12	11,882	142,584	144	12,946
TOTAL	78	93,913	652,274	650	5,924

Maka, $b = \frac{293}{5,924}$ $a = \frac{5,924}{78}$
 $a = \frac{5,924}{78}$ $b = \frac{293}{5,924}$

Menghitung Tingkat Kesalahan

No.	Bulan	Pemakaian	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,405	6,217	-3,812	3,812	14,530,367
14	Feb	1,000	6,509	-5,509	5,509	30,354,102
15	Mar	18,500	6,802	11,698	11,698	136,842,277
16	Apr	9,245	7,095	2,150	2,150	4,624,119
17	May	4,881	7,387	-2,506	2,506	6,281,076
18	Jun	0	7,680	-7,680	7,680	58,979,196
19	Jul	20,400	7,972	12,428	12,428	154,445,856
20	Aug	5,400	8,265	-2,865	2,865	8,207,991
21	Sep	5,200	8,558	-3,358	3,358	11,273,096
22	Oct	9,400	8,850	550	550	302,360
23	Nov	5,600	9,143	-3,543	3,543	12,550,801
24	Dec	11,882	9,435	2,447	2,447	5,986,366
	JUMLAH	93,913	93,913	0	58,545	444,377,606

$$\text{MAD} = \frac{58,545}{12} = 4,879$$

$$\text{MSE} = \frac{444,377,606}{12} = 37,031,467$$

TODE SINGLE MOVING AVERAGE

periode (3 bulan)	PENJUALAN	3 Bulan Moving Average Pertama	4 Bulan Moving Average Kedua
1	2,405	-	-
2	1,000	-	-
3	18,500	-	-
4	9,245	7,302	-
5	4,881	9,582	7,788
6	0	10,875	8,407
7	20,400	4,709	8,157
8	5,400	8,427	8,632
9	5,200	8,600	7,670
10	9,400	10,333	7,750
11	5,600	6,667	10,100
12	11,882	6,733	6,400
TOTAL	93,913	73,228	64,902

hitung Tingkat Kesalahan

o.	Bulan	Y(t)	Peramalan 3 Bln	Error	Abs. Error	Squared Error
13	Jan	2,405				
14	Feb	1,000				
15	Mar	18,500				
16	Apr	9,245	7,302	1,943	1,943	3,776,544
17	May	4,881	9,582	-4,701	4,701	22,096,267
18	Jun	0	10,875	-10,875	10,875	118,272,875
19	Jul	20,400	4,709	15,691	15,691	246,217,942
20	Aug	5,400	8,427	-3,027	3,027	9,162,729
21	Sep	5,200	8,600	-3,400	3,400	11,560,000
22	Oct	9,400	10,333	-933	933	871,111
23	Nov	5,600	6,667	-1,067	1,067	1,137,778
24	Dec	11,882	6,733	5,149	5,149	26,508,768
	JUMLAH	93,913	73,228	-1,220	46,786	439,604,015

$$\text{MAD} = \frac{46,786}{12} = 5,198$$

$$\text{MSE} = \frac{439,604,015}{12} = 36,633,668$$

MODEL DOUBLE MOVING AVERAGE

Periode (Bulan)	Penjualan	3 Bulan Moving Average Pertama	3 Bulan Moving Average Kedua	Peramalan Berikutnya
1	2,405	-	-	9,188
2	1,000	-	-	9,515
3	18,500	-	-	9,842
4	9,245	7,302	-	10,170
5	4,881	9,582	-	10,497
6	-	10,875	-	10,824
7	20,400	4,709	9,253	11,152
8	5,400	8,427	8,389	11,479
9	5,200	8,600	8,004	11,806
10	9,400	10,333	7,245	12,133
11	5,600	6,667	9,120	12,461
12	11,882	6,733	8,533	12,788
TOTAL	93,913	73,228	50,544	131,855

$$a = 4,933$$

$$b = -327$$

Menhitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,405	5,261	(2,856)	2,856	8,154,486
14	Feb	1,000	5,588	(4,588)	4,588	21,048,632
15	Mar	18,500	5,915	12,585	12,585	158,378,411
16	Apr	9,245	6,242	3,003	3,003	9,015,461
17	May	4,881	6,570	(1,689)	1,689	2,851,697
18	Jun	-	6,897	(6,897)	6,897	47,568,191
19	Jul	20,400	7,224	13,176	13,176	173,600,588
20	Aug	5,400	7,552	(2,152)	2,152	4,629,017
21	Sep	5,200	7,879	(2,679)	2,679	7,175,904
22	Oct	9,400	8,206	1,194	1,194	1,425,491
23	Nov	5,600	8,533	(2,933)	2,933	8,604,444
24	Dec	11,882	8,861	3,021	3,021	9,128,821
	JUMLAH	93,913	84,727	9,186	56,771	451,581,145

$$MAD = \frac{56,771}{12} = 4,731$$

$$MSE = \frac{451,581,145}{12} = 37,631,762$$

METODE SINGLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	PERAMALAN
			ALFA = 0.1
1	Jan	2,405	0
2	Feb	1,000	2,405
3	Mar	18,500	2,265
4	Apr	9,245	3,888
5	May	4,881	4,424
6	Jun	0	4,469
7	Jul	20,400	4,023
8	Aug	5,400	5,660
9	Sep	5,200	5,634
10	Oct	9,400	5,591
11	Nov	5,600	5,972
12	Dec	11,882	5,935
JUMLAH		93,913	50,265

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,405	0		0	0
14	Feb	1,000	2,405	-1,405	1,405	1,974,025
15	Mar	18,500	2,265	16,236	16,236	263,591,460
16	Apr	9,245	3,888	5,357	5,357	28,696,913
17	May	4,881	4,424	457	457	209,082
18	Jun	0	4,469	-4,469	4,469	19,976,167
19	Jul	20,400	4,023	16,377	16,377	268,221,738
20	Aug	5,400	5,660	-260	260	67,741
21	Sep	5,200	5,634	-434	434	188,568
22	Oct	9,400	5,591	3,809	3,809	14,509,855
23	Nov	5,600	5,972	-372	372	138,189
24	Dec	11,882	5,935	5,947	5,947	35,371,996
JUMLAH		93,913	50,265	41,243	55,125	632,945,735

$$MAD = \frac{55,125}{12} = 5,011$$

$$MSE = \frac{632,945,735}{12} = 52,745,478$$

METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			S't	S''t	
1	Jan	2,405	2,405	2,405	11,772
2	Feb	1,000	2,265	2,391	12,010
3	Mar	18,500	3,888	2,541	12,249
4	Apr	9,245	4,424	2,729	12,487
5	May	4,881	4,469	2,903	12,725
6	Jun	0	4,023	3,015	12,964
7	Jul	20,400	5,660	3,279	13,202
8	Aug	5,400	5,634	3,515	13,440
9	Sep	5,200	5,591	3,723	13,679
10	Oct	9,400	5,972	3,947	13,917
11	Nov	5,600	5,935	4,146	14,155
12	Dec	11,882	6,529	4,384	14,394
	JUMLAH	93,913	56,794	38,979	156,995

$$a = 2S't - S''t = 8,674$$

$$b = 238$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	2,405	8,912		0	0
14	Feb	1,000	9,151	-8,151	8,151	66,434,597
15	Mar	18,500	9,389	9,111	9,111	83,009,330
16	Apr	9,245	9,627	-382	382	146,204
17	May	4,881	9,866	-4,985	4,985	24,847,023
18	Jun	0	10,104	-10,104	10,104	102,090,636
19	Jul	20,400	10,342	10,058	10,058	101,157,262
20	Aug	5,400	10,581	-5,181	5,181	26,838,778
21	Sep	5,200	10,819	-5,619	5,619	31,572,350
22	Oct	9,400	11,057	-1,657	1,657	2,746,445
23	Nov	5,600	11,296	-5,696	5,696	32,439,316
24	Dec	11,882	11,534	348	348	121,198
	JUMLAH	93,913	122,678	-22,257	61,291	471,403,139

$$MAD = \frac{61,291}{12} = 5,572$$

$$MSE = \frac{471,403,139}{12} = 39,283,595$$

LAMPU LISTRIK TIPE

EDC25W



METODE PERAMALAN LINEAR

BULAN	t	Y(t)	Y(t) . T	t ²	Forecast
JAN	1	1,806	1,806	1	17,641
FEB	2	0	0	4	18,834
MAR	3	16,462	49,386	9	20,028
APR	4	17,385	69,540	16	21,221
MAY	5	3,666	18,330	25	22,414
JUN	6	1,200	7,200	36	23,608
JUL	7	2,000	14,000	49	24,801
AUG	8	8,800	70,400	64	25,994
SEP	9	12,100	108,900	81	27,187
OCT	10	24,600	246,000	100	28,381
NOV	11	11,100	122,100	121	29,574
DEC	12	19,500	234,000	144	30,767
TOTAL	78	118,619	941,662	650	2,129

Maka,

$$b = \frac{1,193}{2,129} \quad a = \frac{2,129}{1,193}$$

Menghitung Tingkat Kesalahan

No.	Bulan	Pemakaian	Peramalan	Error	Abs. Error	Squared Error
13	Jan	1,806	3,322	-1,516	1,516	2,297,945
14	Feb	0	4,515	-4,515	4,515	20,386,793
15	Mar	16,462	5,708	10,754	10,754	115,638,840
16	Apr	17,385	6,902	10,483	10,483	109,899,032
17	May	3,666	8,095	-4,429	4,429	19,616,062
18	Jun	1,200	9,288	-8,088	8,088	65,420,250
19	Jul	2,000	10,482	-8,482	8,482	71,936,771
20	Aug	8,800	11,675	-2,875	2,875	8,264,653
21	Sep	12,100	12,868	-768	768	589,989
22	Oct	24,600	14,061	10,539	10,539	111,062,439
23	Nov	11,100	15,255	-4,155	4,155	17,261,197
24	Dec	19,500	16,448	3,052	3,052	9,315,095
	JUMLAH	118,619	118,619	0	69,655	551,689,066

$$\text{MAD} = \frac{69,655}{12} = 5,805$$

$$\text{MSE} = \frac{551,689,066}{12} = 45,974,089$$

MODE SINGLE MOVING AVERAGE

periode (bulan)	PENJUALAN	3 Bulan Moving Average Pertama	4 Bulan Moving Average Kedua
1	1,806	-	-
2	0	-	-
3	16,462	-	-
4	17,385	6,089	-
5	3,666	11,282	8,913
6	1,200	12,504	9,378
7	2,000	7,417	9,678
8	8,800	2,289	6,063
9	12,100	4,000	3,917
10	24,600	7,633	6,025
11	11,100	15,167	11,875
12	19,500	15,933	14,150
TOTAL	118,619	82,315	69,999

Hitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan 3 Bln	Error	Abs. Error	Squared Error
13	Jan	1,806				
14	Feb	0				
15	Mar	16,462				
16	Apr	17,385	6,089	11,296	11,296	127,592,085
17	May	3,666	11,282	-7,616	7,616	58,008,533
18	Jun	1,200	12,504	-11,304	11,304	127,787,952
19	Jul	2,000	7,417	-5,417	5,417	29,343,889
20	Aug	8,800	2,289	6,511	6,511	42,397,462
21	Sep	12,100	4,000	8,100	8,100	65,610,000
22	Oct	24,600	7,633	16,967	16,967	287,867,778
23	Nov	11,100	15,167	-4,067	4,067	16,537,778
24	Dec	19,500	15,933	3,567	3,567	12,721,111
	JUMLAH	118,619	82,315	18,036	74,845	767,866,588

$$MAD = \frac{74,845}{12} = 8,316$$

$$MSE = \frac{767,866,588}{12} = 63,988,882$$

EL DOUBLE MOVING AVERAGE

ode an)	Penjualan	3 Bulan Moving Average Pertama	3 Bulan Moving Average Kedua	Peramalan Berikutnya
	1,806	-	-	6,388
	-	-	-	5,115
	16,462	-	-	3,842
	17,385	6,089	-	2,570
	3,666	11,282	-	1,297
	1,200	12,504	-	24
	2,000	7,417	9,959	(1,248)
	8,800	2,289	10,401	(2,521)
	12,100	4,000	7,403	(3,794)
	24,600	7,633	4,569	(5,067)
	11,100	15,167	4,641	(6,339)
	19,500	15,933	8,933	(7,612)
JAL	118,619	82,315	45,906	(7,345)

$$a = 22,933$$

$$b = 1,273$$

Tingkat Kesalahan

Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
Jan	1,806	21,661	(19,855)	19,855	394,205,382
Feb	-	20,388	(20,388)	20,388	415,665,601
Mar	16,462	19,115	(2,653)	2,653	7,039,213
Apr	17,385	17,842	(457)	457	209,237
May	3,666	16,570	(12,904)	12,904	166,505,395
Jun	1,200	15,297	(14,097)	14,097	198,724,555
Jul	2,000	14,024	(12,024)	12,024	144,582,406
Aug	8,800	12,752	(3,952)	3,952	15,614,472
Sep	12,100	11,479	621	621	385,904
Oct	24,600	10,206	14,394	14,394	207,185,491
Nov	11,100	8,933	2,167	2,167	4,694,444
Dec	19,500	7,661	11,839	11,839	140,171,249
JUMLAH	118,619	175,927	(57,308)	115,351	1,694,983,350

$$MAD = \frac{115,351}{12} = 9,613$$

$$MSE = \frac{1,694,983,350}{12} = 141,248,613$$

ODE SINGLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	PERAMALAN
			ALFA = 0.1
1	Jan	1,806	0
2	Feb	0	1,806
3	Mar	16,462	1,625
4	Apr	17,385	3,109
5	May	3,666	4,537
6	Jun	1,200	4,450
7	Jul	2,000	4,125
8	Aug	8,800	3,912
9	Sep	12,100	4,401
10	Oct	24,600	5,171
1	Nov	11,100	7,114
2	Dec	19,500	7,512
JUMLAH		118,619	47,761

Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
3	Jan	1,806	0		0	0
4	Feb	0	1,806	-1,806	1,806	3,261,636
5	Mar	16,462	1,625	14,837	14,837	220,124,700
6	Apr	17,385	3,109	14,276	14,276	203,802,463
7	May	3,666	4,537	-871	871	758,038
8	Jun	1,200	4,450	-3,250	3,250	10,559,826
9	Jul	2,000	4,125	-2,125	2,125	4,514,052
10	Aug	8,800	3,912	4,888	4,888	23,890,914
	Sep	12,100	4,401	7,699	7,699	59,275,370
	Oct	24,600	5,171	19,429	19,429	377,491,672
	Nov	11,100	7,114	3,986	3,986	15,890,033
	Dec	19,500	7,512	11,988	11,988	143,702,731
JUMLAH		118,619	47,761	69,052	85,153	1,063,271,434

$$MAD = \frac{85,153}{12} = 7,741$$

$$MSE = \frac{1,063,271,434}{12} = 88,605,953$$

METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			S ^t	S ^{tt}	
1	Jan	1,806	1,806	1,806	19,271
2	Feb	0	1,625	1,788	19,751
3	Mar	16,462	3,109	1,920	20,231
4	Apr	17,385	4,537	2,182	20,711
5	May	3,666	4,450	2,408	21,191
6	Jun	1,200	4,125	2,580	21,671
7	Jul	2,000	3,912	2,713	22,151
8	Aug	8,800	4,401	2,882	22,631
9	Sep	12,100	5,171	3,111	23,111
10	Oct	24,600	7,114	3,511	23,591
11	Nov	11,100	7,512	3,911	24,071
12	Dec	19,500	8,711	4,391	24,550
	JUMLAH	118,619	56,473	33,205	262,927

$$a = 2S^t - S^{tt} = 13,031$$

$$b = 480$$

Menhitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Jan	1,806	13,511		0	0
14	Feb	0	13,991	-13,991	13,991	195,746,161
15	Mar	16,462	14,471	1,991	1,991	3,964,435
16	Apr	17,385	14,951	2,434	2,434	5,924,886
17	May	3,666	15,431	-11,765	11,765	138,412,186
18	Jun	1,200	15,911	-14,711	14,711	216,409,128
19	Jul	2,000	16,391	-14,391	14,391	207,096,003
20	Aug	8,800	16,871	-8,071	8,071	65,137,979
21	Sep	12,100	17,351	-5,251	5,251	27,570,797
22	Oct	24,600	17,831	6,769	6,769	45,822,475
23	Nov	11,100	18,311	-7,211	7,211	51,994,913
24	Dec	19,500	18,791	709	709	503,064
	JUMLAH	118,619	193,810	-63,486	87,294	958,582,028

$$MAD = \frac{87,294}{12} = 7,936$$

$$MSE = \frac{958,582,028}{12} = 79,881,836$$

NILAI MAD BERDASARKAN HASIL PERAMALAN

TIPE : EDC25W

No.	Uji Error	METODE					Error Yang Terkecil	Jenis Error Yang Digunakan
		Linear	Single Moving Average	Double Moving Average	Single Eksponensial Smoothing	Double Eksponensial Smoothing		
1	MAD	5,805	8,316	9,613	7,741	7,936	5,805	Linear

TIPE : KRF10W

No.	Uji Error	METODE					Error Yang Terkecil	Jenis Error Yang Digunakan
		Linear	Single Moving Average	Double Moving Average	Single Eksponensial Smoothing	Double Eksponensial Smoothing		
1	MAD	5,833	5,920	5,596	5,994	6,680	5,596	D M A

TIPE : KRF15W

No.	Uji Error	METODE					Error Yang Terkecil	Jenis Error Yang Digunakan
		Linear	Single Moving Average	Double Moving Average	Single Eksponensial Smoothing	Double Eksponensial Smoothing		
1	MAD	5,856	5,455	5,861	6,523	6,688	5,455	S M A

TIPE : KRF25W

No.	Uji Error	METODE					Error Yang Terkecil	Jenis Error Yang Digunakan
		Linear	Single Moving Average	Double Moving Average	Single Eksponensial Smoothing	Double Eksponensial Smoothing		
1	MAD	8,213	7,260	8,184	9,086	8,890	7,260	S M A

TIPE : KRF40W

No.	Uji Error	MODEL					Error Yang Terkecil	Jenis Error Yang Digunakan
		Linear	Single Moving Average	Double Moving Average	Single Eksponensial Smoothing	Double Eksponensial Smoothing		
1	MAD	4,879	5,198	4,731	5,011	5,572	4,731	D M A

LAMPIRAN C

PERENCANAAN KEBUTUHAN MATERIAL (METODE M R P)



Tipe : KRFLOW

Table with columns PERIODE, JUMLAH, and 24 columns of values representing a time series for Filamen.

139,424

Perhitungan Untuk Komponen : Filamen

Summary table for Filamen component showing UTILITI and LEAD TIME.

Main calculation table for Filamen component with columns PERIODE, 24 columns of values, and a total of 662,232.

662,232

Perhitungan Untuk Komponen : Glass Bulb

Summary table for Glass Bulb component showing UTILITI and LEAD TIME.

Main calculation table for Glass Bulb component with columns PERIODE, 24 columns of values, and a total of 864,002.

864,002

Perhitungan Untuk Komponen : Cap

Summary table for Cap component showing UTILITI and LEAD TIME.

Main calculation table for Cap component with columns PERIODE, 24 columns of values, and a total of 818,002.

818,002

Perhitungan Untuk Komponen : Elektroda

Summary table for Elektroda component showing UTILITI and LEAD TIME.

Main calculation table for Elektroda component with columns PERIODE, 24 columns of values, and a total of 1,788,679.

1,788,679

Perhitungan Untuk Komponen : Exhaust Tube

Summary table for Exhaust Tube component showing UTILITI and LEAD TIME.

Main calculation table for Exhaust Tube component with columns PERIODE, 24 columns of values, and a total of 485,572.

485,572

Perhitungan Untuk Komponen : Flare

Summary table for Flare component showing UTILITI and LEAD TIME.

Main calculation table for Flare component with columns PERIODE, 24 columns of values, and a total of 414,203.

414,203

Perhitungan Untuk Komponen : Filamen

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LEAD TIME	bulan																								
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kotor																									
Di Tangan																									
Yg Akan Diterima																									
Kebutuhan Bersih																									
UTILITI	bulan																								
LEAD TIME	bulan																								

Perhitungan Untuk Komponen : Class Bulb

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LEAD TIME	bulan																								
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kotor																									
Di Tangan																									
Yg Akan Diterima																									
Kebutuhan Bersih																									
UTILITI	bulan																								
LEAD TIME	bulan																								

Perhitungan Untuk Komponen : Cap

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LEAD TIME	bulan																								
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kotor																									
Di Tangan																									
Yg Akan Diterima																									
Kebutuhan Bersih																									
UTILITI	bulan																								
LEAD TIME	bulan																								

Perhitungan Untuk Komponen : Elektroda

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LEAD TIME	bulan																								
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kotor																									
Di Tangan																									
Yg Akan Diterima																									
Kebutuhan Bersih																									
UTILITI	bulan																								
LEAD TIME	bulan																								

Perhitungan Untuk Komponen : Exhaust Tube

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LEAD TIME	bulan																								
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kotor																									
Di Tangan																									
Yg Akan Diterima																									
Kebutuhan Bersih																									
UTILITI	bulan																								
LEAD TIME	bulan																								

Perhitungan Untuk Komponen : Flare

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LEAD TIME	bulan																								
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kotor																									
Di Tangan																									
Yg Akan Diterima																									
Kebutuhan Bersih																									
UTILITI	bulan																								
LEAD TIME	bulan																								

TIFE... KRF2SW

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Jumlah																								

122,740

Perhitungan Untuk Komponen : Filamen

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
LEAD TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kabel																								
Di Tangan																								
Yg Akan Ditema																								
Kebutuhan Bersih																								

5,843,528

Perhitungan Untuk Komponen : Glass Bulb

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
LEAD TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kabel																								
Di Tangan																								
Yg Akan Ditema																								
Kebutuhan Bersih																								

436,489

Perhitungan Untuk Komponen : Cap

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
LEAD TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kabel																								
Di Tangan																								
Yg Akan Ditema																								
Kebutuhan Bersih																								

6,898,640

Perhitungan Untuk Komponen : Elektroda

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
LEAD TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kabel																								
Di Tangan																								
Yg Akan Ditema																								
Kebutuhan Bersih																								

3,715,265

Perhitungan Untuk Komponen : Exhaust Tube

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
LEAD TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kabel																								
Di Tangan																								
Yg Akan Ditema																								
Kebutuhan Bersih																								

367,792

Perhitungan Untuk Komponen : Flare

UTILITI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
LEAD TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PERIODE	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Kebutuhan Kabel																								
Di Tangan																								
Yg Akan Ditema																								
Kebutuhan Bersih																								

111,120

Tipe : KRF40W																									
PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Jumlah													9,188	9,515	9,842	10,170	10,497	10,824	11,152	11,479	11,806	12,133	12,461	12,788	

131,855

Filamen

Perhitungan Untuk Komponen :
UTILITI
LEAD TIME

1	bulan
3	

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Di Tangan													9,188	9,515	9,842	10,170	10,497	10,824	11,152	11,479	11,806	12,133	12,461	12,788
Yr Akan Diterima													134,897	135,382	135,867	136,352	136,837	137,322	137,807	138,292	138,777	139,262	139,747	140,232
Kebutuhan Bersih													134,897	135,382	135,867	136,352	136,837	137,322	137,807	138,292	138,777	139,262	139,747	140,232

918,765

Glass Bulb

Perhitungan Untuk Komponen :
UTILITI
LEAD TIME

1	bulan
2	

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Di Tangan													9,188	9,515	9,842	10,170	10,497	10,824	11,152	11,479	11,806	12,133	12,461	12,788
Yr Akan Diterima													-9,188	-18,703	-28,545	-38,715	-49,212	-60,036	-71,188	-82,667	-94,473	-106,606	-119,067	-131,855
Kebutuhan Bersih													9,188	18,703	28,545	38,715	49,212	60,036	71,188	82,667	94,473	106,606	119,067	131,855

810,255

Cap

Perhitungan Untuk Komponen :
UTILITI
LEAD TIME

1	
2	

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Di Tangan													9,188	9,515	9,842	10,170	10,497	10,824	11,152	11,479	11,806	12,133	12,461	12,788
Yr Akan Diterima													-9,188	-18,703	-28,545	-38,715	-49,212	-60,036	-71,188	-82,667	-94,473	-106,606	-119,067	-131,855
Kebutuhan Bersih													9,188	18,703	28,545	38,715	49,212	60,036	71,188	82,667	94,473	106,606	119,067	131,855

810,255

Elektroda

Perhitungan Untuk Komponen :
UTILITI
LEAD TIME

1	Bulan
2	

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Di Tangan													19,030	19,665	20,333	21,048	21,812	22,628	23,498	24,424	25,408	26,452	27,558	28,728
Yr Akan Diterima													68,068	69,624	71,236	72,904	74,628	76,408	78,246	80,144	82,100	84,116	86,192	88,328
Kebutuhan Bersih													68,068	69,624	71,236	72,904	74,628	76,408	78,246	80,144	82,100	84,116	86,192	88,328

726,206

Exhaust Tube

Perhitungan Untuk Komponen :
UTILITI
LEAD TIME

1	Bulan
2	

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Di Tangan													9,188	9,515	9,842	10,170	10,497	10,824	11,152	11,479	11,806	12,133	12,461	12,788
Yr Akan Diterima													-9,188	-18,703	-28,545	-38,715	-49,212	-60,036	-71,188	-82,667	-94,473	-106,606	-119,067	-131,855
Kebutuhan Bersih													9,188	18,703	28,545	38,715	49,212	60,036	71,188	82,667	94,473	106,606	119,067	131,855

810,255

Flare

Perhitungan Untuk Komponen :
UTILITI
LEAD TIME

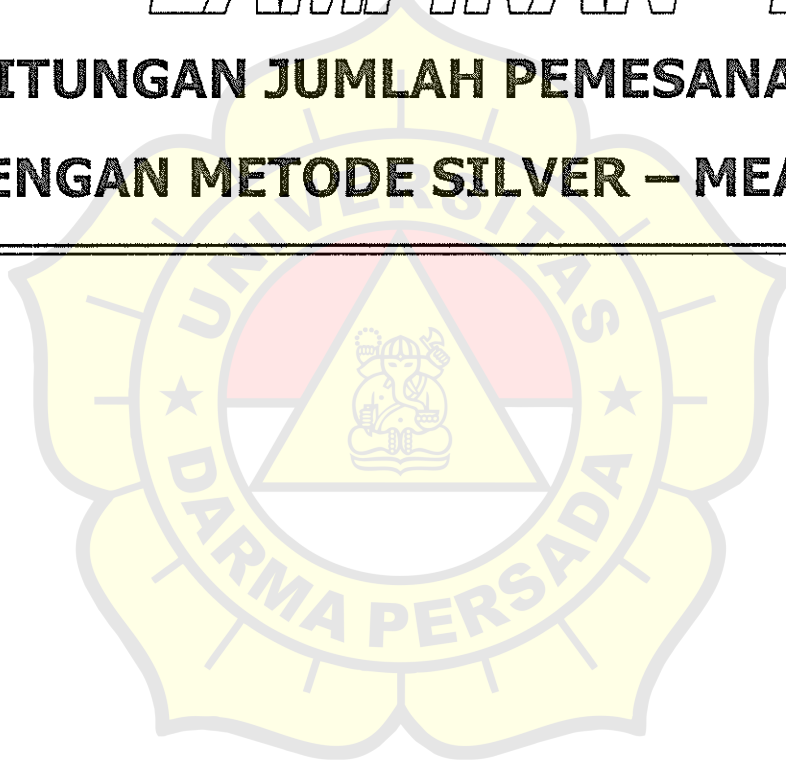
1	Bulan
2	

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Di Tangan													9,188	9,515	9,842	10,170	10,497	10,824	11,152	11,479	11,806	12,133	12,461	12,788
Yr Akan Diterima													-34,421	-34,233	-34,718	-35,286	-35,918	-36,604	-37,344	-38,138	-38,986	-39,888	-40,844	-41,856
Kebutuhan Bersih													9,188	18,703	28,545	38,715	49,212	60,036	71,188	82,667	94,473	106,606	119,067	131,855

367,735

LAMPIRAN D

PERHITUNGAN JUMLAH PEMESANAN DENGAN METODE SILVER – MEAL



SILVER MEAL LOT SIZING

FILAMEN Ong.Simp = 0.4128 Ong.Pesan = 4.128

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*4.128	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
13	195,626	195,626	0.5	40,377	847,920	65,225
14	380,937	185,312	1.5	114,745	879,711	62,837
15	555,645	174,708	2.5	180,298	901,491	60,099
16	719,459	163,814	3.5	236,678	912,901	57,056
16	163,814	163,814	0.5	33,811	710,034	44,377
17	316,443	152,630	1.5	94,508	724,564	42,621
18	457,599	141,156	2.5	145,673	728,365	40,465
19	586,992	129,392	3.5	186,946	721,078	37,951
19	129,392	129,392	0.5	26,707	560,839	29,518
20	246,731	117,339	1.5	72,656	557,031	27,852
21	351,727	104,995	2.5	108,355	541,777	25,799
22	444,089	92,362	3.5	133,445	514,716	23,396
22	92,362	92,362	0.5	19,064	400,334	18,197
23	171,801	79,439	1.5	49,189	377,112	16,396
24	238,027	66,226	2.5	68,345	341,725	14,239

GLASS BULB Ong.Simp = 0.68 Ong.Pesan = 6.800

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.68	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
13	10,024	10,024	0.5	3,408	71,573	5,506
14	30,363	20,338	1.5	20,745	159,046	11,360
15	61,305	30,942	2.5	52,602	263,011	17,534
16	103,141	41,836	3.5	99,571	384,058	24,004
16	41,836	41,836	0.5	14,224	298,712	18,669
17	94,857	53,020	1.5	54,081	414,618	24,389
18	159,351	64,494	2.5	109,640	548,198	30,455
19	235,508	76,258	3.5	181,493	700,045	36,844
19	76,258	76,258	0.5	25,928	544,479	28,657
20	164,569	88,311	1.5	90,077	690,593	34,530
21	265,223	100,655	2.5	171,113	855,564	40,741
22	378,511	113,288	3.5	269,625	1,039,983	47,272
22	113,288	113,288	0.5	38,518	808,875	36,767
23	239,499	126,211	1.5	128,735	986,971	42,912
24	378,923	139,424	2.5	237,021	1,185,106	49,379

CAP Ong.Simp = 0.444 Ong.Pesan = 4.440

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.444	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
13	6,124	6,124	0.5	1,360	28,551	2,196
14	22,563	16,438	1.5	10,948	83,934	5,995
15	49,605	27,042	2.5	30,017	150,085	10,006
16	87,541	37,936	3.5	58,953	227,391	14,212
16	37,936	37,936	0.5	8,422	176,859	11,054
17	87,057	49,120	1.5	32,714	250,808	14,753
18	147,651	60,594	2.5	67,259	336,296	18,683
19	220,008	72,358	3.5	112,444	433,711	22,827
19	72,358	72,358	0.5	16,063	337,331	17,754
20	156,769	84,411	1.5	56,218	431,003	21,550
21	253,523	96,755	2.5	107,398	536,988	25,571
22	362,911	109,388	3.5	169,989	655,671	29,803
22	109,388	109,388	0.5	24,284	509,966	23,180
23	231,699	122,311	1.5	81,459	624,521	27,153
24	367,223	135,524	2.5	150,432	752,160	31,340

ELEKTRODA Ong.Simp = 0.038 Ong.Pesan = 0.380

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.038	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
17	10,424	10,424	0.5	198	4,159	245
18	42,497	32,073	1.5	1,828	14,016	779
19	96,873	54,376	2.5	5,166	25,828	1,359
20	174,206	77,333	3.5	10,285	39,672	1,984
20	77,333	77,333	0.5	1,469	30,856	1,543
21	178,279	100,945	1.5	5,754	44,113	2,101
22	303,491	125,212	2.5	11,895	59,476	2,703
23	453,624	150,133	3.5	19,968	77,018	3,349
23	150,133	150,133	0.5	2,853	59,903	2,604
24	325,842	175,709	1.5	10,015	76,785	3,199

EXHAUST TUBE Ong.Simp = 0.0352 Ong.Pesan = 0.352

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.0352	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
16	6,511	6,511	0.5	115	2,407	150
17	24,207	17,695	1.5	934	7,163	421
18	53,376	29,169	2.5	2,567	12,834	713
19	94,308	40,933	3.5	5,043	19,451	1,024
19	40,933	40,933	0.5	720	15,129	796
20	93,919	52,986	1.5	2,798	21,449	1,072
21	159,248	65,330	2.5	5,749	28,745	1,369
22	237,211	77,963	3.5	9,605	37,048	1,684
22	77,963	77,963	0.5	1,372	28,815	1,310
23	168,849	90,886	1.5	4,799	36,791	1,600
24	272,948	104,099	2.5	9,161	45,804	1,908

FLARE Ong.Simp = 0.0958 Ong.Pesan = 0.958

Order Arrives at Beginning of Period Number = (a)	Tentative Lct Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.4128	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
17	9,599	9,599	0.5	460	9,656	568
18	30,672	21,073	1.5	3,028	23,216	1,290
19	63,509	32,837	2.5	7,864	39,322	2,070
20	108,399	44,890	3.5	15,052	58,056	2,903
20	44,890	44,890	0.5	2,150	45,155	2,258
21	102,124	57,234	1.5	8,224	63,054	3,003
22	171,991	69,867	2.5	16,733	83,666	3,803
23	254,781	82,790	3.5	27,760	107,072	4,655
23	82,790	82,790	0.5	3,966	83,279	3,621
24	178,793	96,003	1.5	13,796	105,767	4,407

SILVER MEAL LOT SIZING

KRF15W

LAMEN Ong.Simp = 0.4128 Ong.Pesan = 4.128

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.4128	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
18	449	449	0.5	93	1,945	108
19	8,393	7,944	1.5	4,919	37,713	1,985
20	26,821	18,428	2.5	19,018	95,090	4,755
21	54,150	27,328	3.5	39,484	152,295	7,252
21	27,328	27,328	0.5	5,641	118,452	5,641
22	65,190	37,862	1.5	23,444	179,737	8,170
23	110,218	45,028	2.5	46,469	232,346	10,102
24	163,213	52,995	3.5	76,567	295,331	12,305

GLASS BULB Ong.Simp = 0.7364 Ong.Pesan = 7.364

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.7364	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
16	9,275	9,275	0.5	3,415	71,714	4,482
17	30,761	21,486	1.5	23,734	181,959	10,703
18	67,610	36,849	2.5	67,838	339,192	18,844
19	111,954	44,344	3.5	114,293	440,845	23,202
19	44,344	44,344	0.5	16,328	342,879	18,046
20	99,173	54,828	1.5	60,563	464,319	23,216
21	162,901	63,728	2.5	117,324	586,619	27,934
22	237,163	74,262	3.5	191,402	738,265	33,557
22	74,262	74,262	0.5	27,343	574,206	26,100
23	155,690	81,428	1.5	89,946	689,584	29,982
24	245,085	89,395	2.5	164,576	822,881	34,287

GLASS BULB Ong.Simp = 0.444 Ong.Pesan = 4.440

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.444	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
16	3,275	3,275	0.5	727	15,266	954
17	18,761	15,486	1.5	10,314	79,073	4,651
18	49,610	30,849	2.5	34,242	171,210	9,512
19	87,954	38,344	3.5	59,587	229,836	12,097
19	38,344	38,344	0.5	8,512	178,761	9,408
20	87,173	48,828	1.5	32,520	249,317	12,466
21	144,901	57,728	2.5	64,078	320,392	15,257
22	213,163	68,262	3.5	106,079	409,160	18,598
22	68,262	68,262	0.5	15,154	318,236	14,465
23	143,690	75,428	1.5	50,235	385,137	16,745
24	227,085	83,395	2.5	92,568	462,842	19,285

ELEKTRODA Ong.Simp = 0.038 Ong.Pesan = 0.380

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A) * (B) * 0.038	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
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EXHAUST TUBE Ong.Simp = 0.0352 Ong.Pesan = 0.352

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A) * (B) * 0.0352	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
18	1,524	1,524	2.5	134	670	37
19	10,543	9,019	0.5	159	3,334	175
20	30,046	19,503	1.5	1,030	7,895	395
21	58,450	28,403	2.5	2,499	12,497	595
21	28,403	28,403	3.5	3,499	13,497	643
22	67,340	38,937	0.5	685	14,391	654
23	113,443	46,103	1.5	2,434	18,663	811
24	167,513	54,070	2.5	4,758	23,791	991

FLARE Ong.Simp = 0.0958 Ong.Pesan = 0.958

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A) * (B) * 0.0958	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
19	923	923	2.5	221	1,106	58
20	12,331	11,407	3.5	3,825	14,753	738
21	32,638	20,307	1.5	2,918	22,373	1,065
22	63,479	30,841	2.5	7,386	36,932	1,679
22	30,841	30,841	3.5	10,341	39,886	1,813
23	68,848	38,007	3.5	12,744	49,155	2,137
24	114,822	45,974	1.5	6,606	50,650	2,110

SILVER MEAL LOT SIZING

KRF25W

FILAMEN Ong.Simp = 0.4128 Ong.Pesan = 4.128

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.4128	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)

GLASS BULB Ong.Simp = 0.75 Ong.Pesan = 7.500

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.828	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
17	5,065	5,065	0.5	1,900	39,890	2,346
18	31,719	26,654	1.5	29,985	229,888	12,772
19	58,373	26,654	2.5	49,976	249,878	13,151
20	94,181	35,809	3.5	93,998	362,563	18,128
20	35,809	35,809	0.5	13,428	281,993	14,100
21	97,064	61,255	1.5	68,912	528,327	25,158
22	172,719	75,655	2.5	141,854		
23	258,408	85,689	3.5	224,933	867,598	37,722
23	85,689	85,689	0.5	32,133	674,798	29,339
24	182,194	96,505	1.5	108,569	832,359	34,682

CAP Ong.Simp = 0.444 Ong.Pesan = 4.440

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.444	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)

ELEKTRODA Ong.Simp = 0.038 Ong.Pesan = 0.380

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.038	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)

EXHAUST TUBE Ong.Simp = 0.0352 Ong.Pesan = 0.352

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.0352	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
18	17,564	17,564	0.5	309	6,492	361
19	44,282	26,719	1.5	1,411	10,816	569
20	85,048	40,765	2.5	3,587	17,937	897
21	137,213	52,165	3.5	6,427	24,789	1,180
21	52,165	52,165	0.5	918	19,280	918
22	118,731	66,565	1.5	3,515	26,946	1,225
23	195,329	76,599	2.5	6,741	33,703	1,465
24	282,745	87,415	3.5	10,770	41,540	1,731

FLARE Ong.Simp = 0.0958 Ong.Pesan = 0.958

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.4128	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
18	9,468	9,468	0.5	454	9,524	529
19	28,090	18,623	1.5	2,676	20,517	1,080
20	60,760	32,669	2.5	7,824	39,122	1,956
21	104,829	44,069	3.5	14,776	56,995	2,714
					0	
21	44,069	44,069	0.5	2,111	44,329	2,111
22	102,539	58,469	1.5	8,402	64,416	2,928
23	171,041	68,503	2.5	16,406	82,032	3,567
24	250,361	79,319	3.5	26,596	102,584	4,274

SILVER MEAL LOT SIZING

KRF40W

Filamen Ong.Simp = 0.4398 Ong.Pesan = 4.398

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.4398	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
13	134,897	134,897	0.5	29,664	622,941	47,919
14	260,279	125,382	1.5	82,714	634,144	45,296
15	375,819	115,540	2.5	127,036	635,179	42,345
16	481,188	105,370	3.5	162,196	625,612	39,101
16	105,370	105,370	0.5	23,171	486,587	30,412
17	200,243	94,873	1.5	62,588	479,839	28,226
18	284,291	84,049	2.5	92,411	462,057	25,670
19	357,188	72,897	3.5	112,211	432,812	22,780
19	72,897	72,897	0.5	16,030	336,632	17,717
20	134,315	61,418	1.5	40,518	310,636	15,532
21	183,928	49,612	2.5	54,549	272,743	12,988
22	221,407	37,479	3.5	57,691	222,524	10,115
22	37,479	37,479	0.5	8,242	173,074	7,867
23	62,497	25,018	1.5	16,505	126,535	5,502
24	74,728	12,230	2.5	13,447	67,237	2,802

GLASS BULB Ong.Simp = 0.828 Ong.Pesan = 8.280

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.828	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
13	9,188	9,188	0.5	3,804	79,879	6,145
14	27,891	18,703	1.5	12,338	167,199	11,943
15	56,436	28,545	2.5	31,386	267,742	17,849
16	95,152	38,715	3.5	59,594	380,156	23,760
16	38,715	38,715	0.5	8,513	329,075	20,567
17	87,927	49,212	1.5	32,465	439,942	25,879
18	147,964	60,036	2.5	66,010	563,111	31,284
19	219,152	71,188	3.5	109,580	699,015	36,790
19	71,188	71,188	0.5	15,654	605,090	31,847
20	153,855	82,667	1.5	54,535	739,015	36,951
21	248,327	94,473	2.5	103,873	886,107	42,196
22	354,933	106,606	3.5	164,099	1,046,797	47,582
22	106,606	106,606	0.5	23,443	906,141	41,188
23	225,673	119,067	1.5	78,548	1,064,420	46,279
24	357,527	131,855	2.5	144,974	1,236,730	51,530

CAP Ong.Simp = 0.444 Ong.Pesan = 4.440

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.444	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
13	9,188	9,188	0.5	2,040	42,834	3,295
14	27,891	18,703	1.5	12,338	95,380	6,813
15	56,436	28,545	2.5	31,386	158,128	10,542
16	95,152	38,715	3.5	59,594	231,490	14,468
16	38,715	38,715	0.5	8,513	180,409	11,276
17	87,927	49,212	1.5	32,465	250,967	14,763
18	147,964	60,036	2.5	66,010	332,571	18,476
19	219,152	71,188	3.5	109,580	425,654	22,403
19	71,188	71,188	0.5	15,654	331,728	17,459
20	153,855	82,667	1.5	54,535	421,575	21,079
21	248,327	94,473	2.5	103,873	523,332	24,921
22	354,933	106,606	3.5	164,099	637,430	28,974
22	106,606	106,606	0.5	23,443	496,774	22,581
23	225,673	119,067	1.5	78,548	607,204	26,400
24	357,527	131,855	2.5	144,974	730,408	30,434

ELEKTRODA Ong.Simp = 0.038 Ong.Pesan = 0.380

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.038	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
17	10,424	10,424	0.5	198	4,159	245
18	42,497	32,073	1.5	1,828	14,016	779
19	96,373	54,376	2.5	5,166	25,828	1,359
20	174,206	77,333	3.5	10,285	39,672	1,984
20	77,333	77,333	0.5	1,469	30,856	1,543
21	178,279	100,945	1.5	5,754	44,113	2,101
22	303,491	125,212	2.5	11,895	59,476	2,703
23	453,624	150,133	3.5	19,968	77,018	3,349
23	150,133	150,133	0.5	2,853	59,903	2,604
24	325,842	175,709	1.5	10,015	76,785	3,199

EXHAUST TUBE Ong.Simp = 0.0352 Ong.Pesan = 0.352

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.0352	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
13	9,188	9,188	0.5	162	3,396	261
14	27,891	18,703	1.5	12,338	18,922	1,352
15	56,436	28,545	2.5	31,386	41,434	2,762
16	95,152	38,715	3.5	59,594	73,222	4,576
16	38,715	38,715	0.5	8,513	22,141	1,384
17	87,927	49,212	1.5	32,465	49,788	2,929
18	147,964	60,036	2.5	66,010	87,143	4,841
19	219,152	71,188	3.5	109,580	134,638	7,086
19	71,188	71,188	0.5	15,654	40,712	2,143
20	153,855	82,667	1.5	54,535	83,634	4,182
21	248,327	94,473	2.5	103,873	137,127	6,530
22	354,933	106,606	3.5	164,099	201,624	9,165
22	106,606	106,606	0.5	23,443	60,968	2,771
23	225,673	119,067	1.5	78,548	120,460	5,237
24	357,527	131,855	2.5	144,974	191,387	7,974

FLARE Ong.Simp = 0.0958 Ong.Pesan = 0.958

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.4128	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
17	5,791	5,791	0.5	277	5,825	343
18	22,406	16,615	1.5	2,388	18,305	1,017
19	50,173	27,767	2.5	6,650	33,251	1,750
20	89,419	39,246	3.5	13,159	50,756	2,538
20	39,246	39,246	0.5	1,880	39,477	1,974
21	90,297	51,052	1.5	7,336	56,244	2,678
22	153,482	63,185	2.5	15,133	75,664	3,439
23	229,128	75,646	3.5	25,364	97,833	4,254
23	75,646	75,646	0.5	3,623	76,092	3,308
24	164,079	88,434	1.5	12,708	97,427	4,059

SILVER MEAL LOT SIZING

EDC25W

FILAMEN Ong.Simp = 0.4128 Ong.Pesan = 4.128

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.4128	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
22	11,110	11,110	0.5	2,293	48,153	2,189
23	51,793	40,684	1.5	25,191	193,133	8,397
24	123,244	71,451	2.5	73,737	368,686	15,362

GLASS BULB Ong.Simp = 0.756 Ong.Pesan = 7.560

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.828	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
15	19,583	19,583	0.5	7,403	155,454	10,364
16	60,388	40,805	1.5	46,272	354,754	22,172
17	123,607	63,219	2.5	119,484	597,418	35,142
18	210,433	86,826	3.5	229,743	886,150	49,231
18	86,826	86,826	0.5	32,820	689,228	38,290
19	198,454	111,627	1.5	126,585	970,488	51,078
20	336,075	137,621	2.5	260,105	1,300,523	65,026
21	500,884	164,809	3.5	436,084	1,682,039	80,097
21	164,809	164,809	0.5	62,298	1,308,253	62,298
22	357,998	193,190	1.5	219,077	1,679,590	76,345
23	580,762	222,764	2.5	421,023	2,105,115	91,527
24	834,293	253,531	3.5	670,842	2,587,535	107,814

CAP Ong.Simp = 0.444 Ong.Pesan = 4.440

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.444	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
14	3,476	3,476	0.5	772	16,204	1,157
15	26,979	23,503	1.5	14,553	118,909	7,927
16	71,704	44,725	2.5	46,156	244,732	15,296
17	138,842	67,139	3.5	97,002	395,099	23,241
17	67,139	67,139	0.5	13,857	311,954	18,350
18	157,885	90,746	1.5	56,190	459,104	25,506
19	273,433	115,547	2.5	119,245	632,275	33,278
20	344,620	71,188	3.5	102,852	418,926	20,946
20	71,188	71,188	0.5	14,693	330,767	16,538
21	239,917	168,729	1.5	104,477	853,633	40,649
22	437,026	197,110	2.5	203,417	1,078,583	49,027
23	663,710	226,684	3.5	327,512	1,333,987	57,999
23	663,710	226,684	0.5	46,787	1,053,262	45,794
24	921,161	257,451	1.5	159,414	1,302,495	54,271

ELEKTRODA Ong.Simp = 0.038 Ong.Pesan = 0.380

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.038	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
17	56,367	56,367	0.5	1,071	22,490	1,323
18	174,269	117,902	1.5	6,720	51,523	2,862

EXHAUST TUBE Ong.Simp = 0.0352 Ong.Pesan = 0.352

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.0352	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
14	1,151	1,151	0.5	20	425	30
15	22,329	21,178	1.5	13,114	20,569	1,371
16	64,729	42,400	2.5	43,756	58,681	3,668
17	129,542	64,814	3.5	93,643	116,457	6,850
17	64,814	64,814	0.5	13,378	36,192	2,129
18	153,235	88,421	1.5	54,751	85,875	4,771
19	266,458	113,222	2.5	116,845	156,700	8,247
20	405,674	139,216	3.5	201,140	250,144	12,507
20	139,216	139,216	0.5	28,734	77,738	3,887
21	305,620	166,404	1.5	103,037	161,611	7,696
22	500,405	194,785	2.5	201,018	269,582	12,254
23	724,763	224,359	3.5	324,153	403,127	17,527
23	224,359	224,359	0.5	46,308	125,282	5,447
24	479,484	255,126	1.5	157,974	247,778	10,324

FLARE Ong.Simp = 0.0958 Ong.Pesan = 0.958

Order Arrives at Beginning of Period Number = (a)	Tentative Lot Size	Additional Beginning Inventory = (A)	Number of Periods That (A) Held = (B)	Ditambah Ongkos Simpan = (A)*(B)*0.4128	Kumulatif Ongkos Simpan + Ongkos Pesan = (C)	= (C) / (a)
15	13,082	13,082	0.5	627	13,160	877
16	47,386	34,304	1.5	4,929	37,792	2,362
17	104,104	56,718	2.5	13,584	67,920	3,995
18	184,429	80,325	3.5	26,933	103,885	5,771
18	80,325	80,325	0.5	3,848	80,799	4,489
19	185,452	105,126	1.5	15,107	115,818	6,096
20	316,572	131,120	2.5	31,403	157,017	7,851
21	474,880	158,308	3.5	53,081	204,740	9,750
21	158,308	158,308	0.5	7,583	159,242	7,583
22	344,996	186,689	1.5	26,827	205,675	9,349
23	561,259	216,263	2.5	51,795	258,974	11,260
24	808,289	247,030	3.5	82,829	319,484	13,312

LAMPIRAN E

PERENCANAAN PEMESANAN MATERIAL



TIPE : KRFLOW

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Jumlah													10,024	10,314	10,604	10,894	11,184	11,474	11,764	12,054	12,343	12,633	12,923	13,213
Perhitungan Untuk Komponen :	Filamen																							
UTILITI	1																							
LEAD TIME	3																							
	bulan																							
PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Koror	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4
Di Tangan													10,024	10,314	10,604	10,894	11,184	11,474	11,764	12,054	12,343	12,633	12,923	13,213
Vg Aman Dierama												3,900	-10,024	-20,338	-30,652	-41,066	-51,480	-61,894	-72,308	-82,722	-93,136	-103,550	-113,964	-124,378
Kebutuhan Berah																								
Rencana Pesan																								
Perhitungan Untuk Komponen :	Glass Bulb																							
UTILITI	1																							
LEAD TIME	2																							
	bulan																							
PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Koror	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4
Di Tangan																								
Vg Aman Dierama																								
Kebutuhan Berah																								
Rencana Pesan																								
Perhitungan Untuk Komponen :	Cap																							
UTILITI	1																							
LEAD TIME	2																							
	bulan																							
PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Koror	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4
Di Tangan																								
Vg Aman Dierama																								
Kebutuhan Berah																								
Rencana Pesan																								
Perhitungan Untuk Komponen :	Elektroda																							
UTILITI	1																							
LEAD TIME	2																							
	bulan																							
PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Koror	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4
Di Tangan																								
Vg Aman Dierama																								
Kebutuhan Berah																								
Rencana Pesan																								
Perhitungan Untuk Komponen :	Echhaust Tube																							
UTILITI	1																							
LEAD TIME	2																							
	bulan																							
PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Koror	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4
Di Tangan																								
Vg Aman Dierama																								
Kebutuhan Berah																								
Rencana Pesan																								
Perhitungan Untuk Komponen :	Flare																							
UTILITI	1																							
LEAD TIME	2																							
	bulan																							
PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebutuhan Koror	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4	11213 1 4
Di Tangan																								
Vg Aman Dierama																								
Kebutuhan Berah																								
Rencana Pesan																								
Perhitungan Untuk Komponen :	Flare																							
UTILITI	1																							
LEAD TIME	2																							
	bulan																							

1,692,898 0
66,226

864,802 12

818,002 12

1,788,679 0
135,152

485,572 9

414,293 8

UTLITI
LEAD TIME

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebijakan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl Tangan						36.400																		
Yg Akan Diambil						36.400																		
Kebijakan Bersih						0																		
Rencana Pesan						0																		

Perhitungan Untuk Komponen : Class Bulb

UTLITI
LEAD TIME

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebijakan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl Tangan																								
Yg Akan Diambil																								
Kebijakan Bersih																								
Rencana Pesan																								

Perhitungan Untuk Komponen : Cap

UTLITI
LEAD TIME

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebijakan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl Tangan																								
Yg Akan Diambil																								
Kebijakan Bersih																								
Rencana Pesan																								

Perhitungan Untuk Komponen : Elektroda

UTLITI
LEAD TIME

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebijakan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl Tangan																								
Yg Akan Diambil																								
Kebijakan Bersih																								
Rencana Pesan																								

Perhitungan Untuk Komponen : Exhaust Tube

UTLITI
LEAD TIME

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebijakan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl Tangan																								
Yg Akan Diambil																								
Kebijakan Bersih																								
Rencana Pesan																								

Perhitungan Untuk Komponen : Flare

UTLITI
LEAD TIME

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kebijakan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl Tangan																								
Yg Akan Diambil																								
Kebijakan Bersih																								
Rencana Pesan																								

Tipe : KRFSW

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
JMLAH																									
Perhitungan Untuk Komponen :	Filamen																								
UTILITI	bulan																								
LEAD TIME																									

122.740

5.843.528 0

418.234

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl. Tangan																									
Yg Akan Ditema																									
Kebutuhan Bersih																									
Rencana Peleat																									

Perhitungan Untuk Komponen : Glass Bulb

UTILITI

LEAD TIME

1 bulan

2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl. Tangan																									
Yg Akan Ditema																									
Kebutuhan Bersih																									
Rencana Peleat																									

436.488 8

Perhitungan Untuk Komponen : Cap

UTILITI

LEAD TIME

1 bulan

2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl. Tangan																									
Yg Akan Ditema																									
Kebutuhan Bersih																									
Rencana Peleat																									

6.898.640 0

507.160

Perhitungan Untuk Komponen : Elektroda

UTILITI

LEAD TIME

1 bulan

2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl. Tangan																									
Yg Akan Ditema																									
Kebutuhan Bersih																									
Rencana Peleat																									

3.715.265 0

390.519

Perhitungan Untuk Komponen : Exhaust Tube

UTILITI

LEAD TIME

1 bulan

2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl. Tangan																									
Yg Akan Ditema																									
Kebutuhan Bersih																									
Rencana Peleat																									

367.792 7

Perhitungan Untuk Komponen : Flare

UTILITI

LEAD TIME

1 bulan

2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314
Dl. Tangan																									
Yg Akan Ditema																									
Kebutuhan Bersih																									
Rencana Peleat																									

311.120 7

Filamen

Table with columns PERIODE 1-24 and rows: Utuliti, Lead Time, Keabahan Kotor, Di Langan, Yg Akan Diperiksa, Keabahan Bersih, Rencana Pasan.

Glass Bulb

Table with columns PERIODE 1-24 and rows: Utuliti, Lead Time, Keabahan Kotor, Di Langan, Yg Akan Diperiksa, Keabahan Bersih, Rencana Pasan.

Cap

Table with columns PERIODE 1-24 and rows: Utuliti, Lead Time, Keabahan Kotor, Di Langan, Yg Akan Diperiksa, Keabahan Bersih, Rencana Pasan.

Elektroda

Table with columns PERIODE 1-24 and rows: Utuliti, Lead Time, Keabahan Kotor, Di Langan, Yg Akan Diperiksa, Keabahan Bersih, Rencana Pasan.

Exhaust Tube

Table with columns PERIODE 1-24 and rows: Utuliti, Lead Time, Keabahan Kotor, Di Langan, Yg Akan Diperiksa, Keabahan Bersih, Rencana Pasan.

Flare

Table with columns PERIODE 1-24 and rows: Utuliti, Lead Time, Keabahan Kotor, Di Langan, Yg Akan Diperiksa, Keabahan Bersih, Rencana Pasan.

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
JUKRAJAH														17,641	10,834	20,028	21,221	22,414	23,608	24,801	25,994	27,187	28,381	29,574	30,767

Perhitungan Untuk Komponen : Filamen

UTILITI
LEAD TIME 3 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	
Di Tangan														17,641	10,834	20,028	21,221	22,414	23,608	24,801	25,994	27,187	28,381	29,574	30,767
Yg Akan Diterima											219,000		201,353	162,594	162,594	141,275	118,063	95,254	70,453	44,659	17,271	-11,110	-40,684	-71,451	
Kebutuhan Bersih													0	0	0	0	0	0	0	0	0	0	0	0	0
Rencana Pasan																			11,110	40,684	71,451				

Perhitungan Untuk Komponen : Gies Bulb

UTILITI
LEAD TIME 2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	
Di Tangan														17,641	10,834	20,028	21,221	22,414	23,608	24,801	25,994	27,187	28,381	29,574	30,767
Yg Akan Diterima											35,520		19,279	444	-19,593	-49,895	-63,219	-66,565	-69,926	-73,301	-76,691	-80,099	-83,527	-86,974	
Kebutuhan Bersih													0	0	0	0	0	0	0	0	0	0	0	0	0
Rencana Pasan											19,553		19,553	40,955	63,219	86,565	110,927	135,301	160,687	187,085	214,495	242,915	271,345	300,784	

Perhitungan Untuk Komponen : Cap

UTILITI
LEAD TIME 2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	
Di Tangan														17,641	10,834	20,028	21,221	22,414	23,608	24,801	25,994	27,187	28,381	29,574	30,767
Yg Akan Diterima											35,000		15,359	-3,476	-23,503	-44,725	-67,139	-90,746	-115,547	-141,541	-168,729	-197,109	-226,684	-257,451	
Kebutuhan Bersih													0	0	0	0	0	0	0	0	0	0	0	0	0
Rencana Pasan											3,475		23,503	44,725	67,139	90,746	115,547	141,541	168,729	197,109	226,684	257,451			

Perhitungan Untuk Komponen : Elektroda

UTILITI
LEAD TIME 2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	
Di Tangan														17,641	10,834	20,028	21,221	22,414	23,608	24,801	25,994	27,187	28,381	29,574	30,767
Yg Akan Diterima											463,000		227,718	390,843	549,966	709,089	868,212	1,027,335	1,186,458	1,345,581	1,504,704	1,663,827	1,822,950	1,982,073	
Kebutuhan Bersih													0	0	0	0	0	0	0	0	0	0	0	0	0
Rencana Pasan																									

Perhitungan Untuk Komponen : Exhaust Tube

UTILITI
LEAD TIME 2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	
Di Tangan														17,641	10,834	20,028	21,221	22,414	23,608	24,801	25,994	27,187	28,381	29,574	30,767
Yg Akan Diterima												35,325		17,684	-1,193	-21,178	-42,400	-64,814	-88,228	-112,642	-138,056	-164,470	-191,884	-220,298	
Kebutuhan Bersih													0	0	0	0	0	0	0	0	0	0	0	0	0
Rencana Pasan																									

Perhitungan Untuk Komponen : Flare

UTILITI
LEAD TIME 2 bulan

PERIODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Kebutuhan Kotor	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	1121314	
Di Tangan														17,641	10,834	20,028	21,221	22,414	23,608	24,801	25,994	27,187	28,381	29,574	30,767
Yg Akan Diterima											43,421		25,780	6,545	-13,082	-34,364	-56,718	-80,072	-104,426	-128,780	-153,134	-177,488	-201,842	-226,196	
Kebutuhan Bersih													0	0	0	0	0	0	0	0	0	0	0	0	0
Rencana Pasan																									

Usulan Yang Diajukan

	Komponen	Total Pesanan	Order	Sisa	Ong.Simpan	Ong.Pesan	Biaya	Total Cost
KRF10W	Filamen	1,602,998	0	66,226	0.4128	4.1280		
	Glass Bulb	864,802	12		0.7364	7.3640	76,739,245	
	Cap	818,002	12		0.4440	4.4400	43,764,744	
	Elektroda	1,788,679	0	135,152	0.0380	0.3800		
	Exhaust Tube	485,572	9		0.0352	0.3520	1,546,838	
	Flare	414,293	8		0.0958	0.9580	3,194,983	125,245,810
KRF15W	Filamen	190,035	7		0.4128	4.1280	5,530,465	
	Glass Bulb	475,596	9		0.7364	7.3640	31,695,693	
	Cap	421,596	9		0.4440	4.4400	16,940,557	
	Elektroda	2,499,358	0	250,210	0.0380	0.3800		
	Exhaust Tube	197,560	7		0.0352	0.3520	490,264	
	Flare	147,460	6		0.0958	0.9580	854,663	55,511,642
KRF25W	Filamen	5,843,528	0	419,234	0.4128	4.1280		
	Glass Bulb	436,488	8		0.7364	7.3640	25,875,076	
	Cap	6,898,640	0	507,160	0.4440	4.4400		
	Elektroda	3,715,265	0	380,519	0.0380	0.3800		
	Exhaust Tube	367,792	7		0.0352	0.3520	912,713	
	Flare	311,120	7		0.0958	0.9580	2,101,276	28,889,065
KRF40W	Filamen	918,765	0	12,230	0.4128	4.1280		
	Glass Bulb	810,255	12		0.7364	7.3640	71,898,909	
	Cap	810,255	12		0.4440	4.4400	43,350,239	
	Elektroda	726,206	8		0.0380	0.3800	2,221,464	
	Exhaust Tube	810,255	12		0.0352	0.3520	3,436,776	
	Flare	367,735	8		0.0958	0.9580	2,835,936	123,743,324
EDC25W	Filamen	123,244	3		0.4128	4.1280	1,551,689	
	Glass Bulb	1,293,975	10		0.7364	7.3640	95,764,733	
	Cap	1,336,650	11		0.4440	4.4400	65,578,739	
	Elektroda	174,269	2		0.0380	0.3800	135,755	
	Exhaust Tube	1,311,075	11		0.0352	0.3520	5,099,559	
	Flare	1,228,965	10		0.0958	0.9580	11,832,349	178,962,824