

BAB VI

KESIMPULAN DAN SARAN

6.1 KESIMPULAN

Berdasarkan penelitian yang dilakukan pada proses produksi bedak di Plant Cikembar – Sukabumi, ada beberapa hal yang dapat disimpulkan. Kesimpulan pada penelitian ini yaitu :

1. Pada proses produksi pembuatan bedak, distribusi pada stasiun kerja pemeriksaan Talcum distribusinya adalah BETA(1.78, 1.42). pemeriksaan Irg distribusinya adalah TRIA(4.5, 10, 14.5), mesin Inkjet Printer distribusinya adalah NORM(4.5, 1.86).
2. Jumlah antrian pada proses produksi pembuatan bedak pada stasiun kerja pemeriksaan Talcum memiliki rata-rata jumlah antrian sebanyak 3.1567 unit, rata-rata waktu menunggu selama 1.4915 menit dan memiliki tingkat kesibukan senilai 95%. Pada stasiun kerja pemeriksaan Irg memiliki rata-rata jumlah antrian sebanyak 12.7682 unit, rata-rata waktu menunggu selama 4.2409 menit dan memiliki tingkat kesibukan senilai 95%. Pada stasiun kerja mesin Inkjet Printer memiliki rata-rata jumlah antrian sebanyak 4.0377 unit, rata-rata waktu

menunggu selama 2.7437 menit dan memiliki tingkat kesibukan senilai 76%.

3. Alternatif dengan mengurangi waktu pada uji sensitivitas stasiun kerja pemeriksaan Talcum dari BETA (1.24, 1.79) menjadi BETA(1.1, 1) , pemeriksaan Irg dari TRIA(4.5, 10, 14.5) menjadi TRIA(3, 7, 11) , pemeriksaan Sod Bicar dari BETA(1.62, 1.17) menjadi BETA(1.52, 1.07) dan mesin Mixing-Filling dari BETA(1.74, 1.11) menjadi BETA(1.65, 1.05). Perubahan yang telah dilakukan pada uji sensitivitas mampu mengatasi permasalahan antrian yang terjadi pada proses produksi pembuatan bedak, bahkan dalam simulasi yang telah dilakukan, seluruh proses produksi berjalan tanpa adanya antrian. Adapun penurunan antrian dengan dilakukannya uji sensitivitas ketiga adalah menurunnya jumlah antrian pada stasiun pemeriksaan Talcum dari 7 unit menjadi 0, menurunnya jumlah antrian pada stasiun kerja pemeriksaan Irg dari 24 unit menjadi 1 dan menurunnya jumlah antrian pada stasiun kerja mesin Inkjet Printer dari 10 unit menjadi 0.

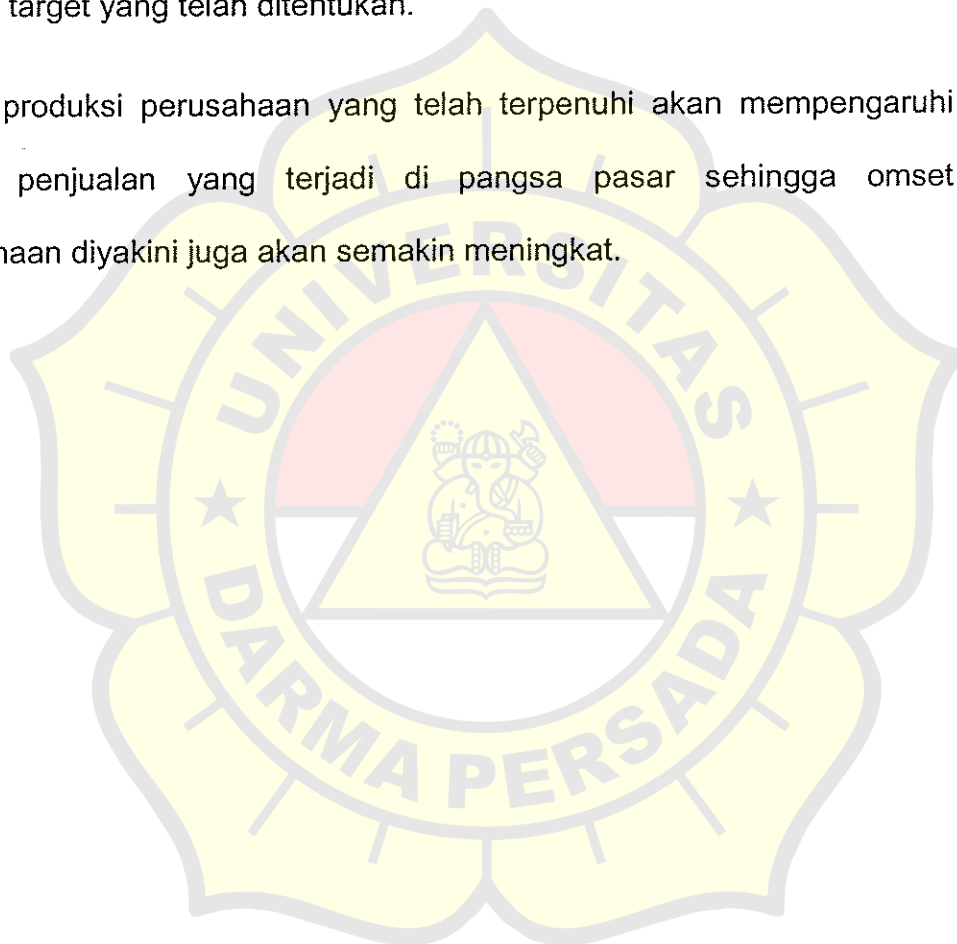
6.2 SARAN

Dari kesimpulan yang telah didapat maka peneliti akan memberikan saran yang dapat mengatasi masalah antrian yang terjadi dalam proses

produksi pembuatan bedak yang ada di Plant Cikembar – Sukabumi. Saran yang akan diberikan oleh peneliti yaitu dengan mengambil alternatif ketiga.

Alasan mengapa alternatif ketiga yang diambil dikarenakan dengan hilangnya antrian produk pada stasiun-stasiun kerja proses produksi akan semakin lancar, sehingga produk yang dihasilkan dapat terpenuhi sesuai dengan target yang telah ditentukan.

Target produksi perusahaan yang telah terpenuhi akan mempengaruhi jumlah penjualan yang terjadi di pangsa pasar sehingga omset perusahaan diyakini juga akan semakin meningkat.



DAFTAR PUSTAKA

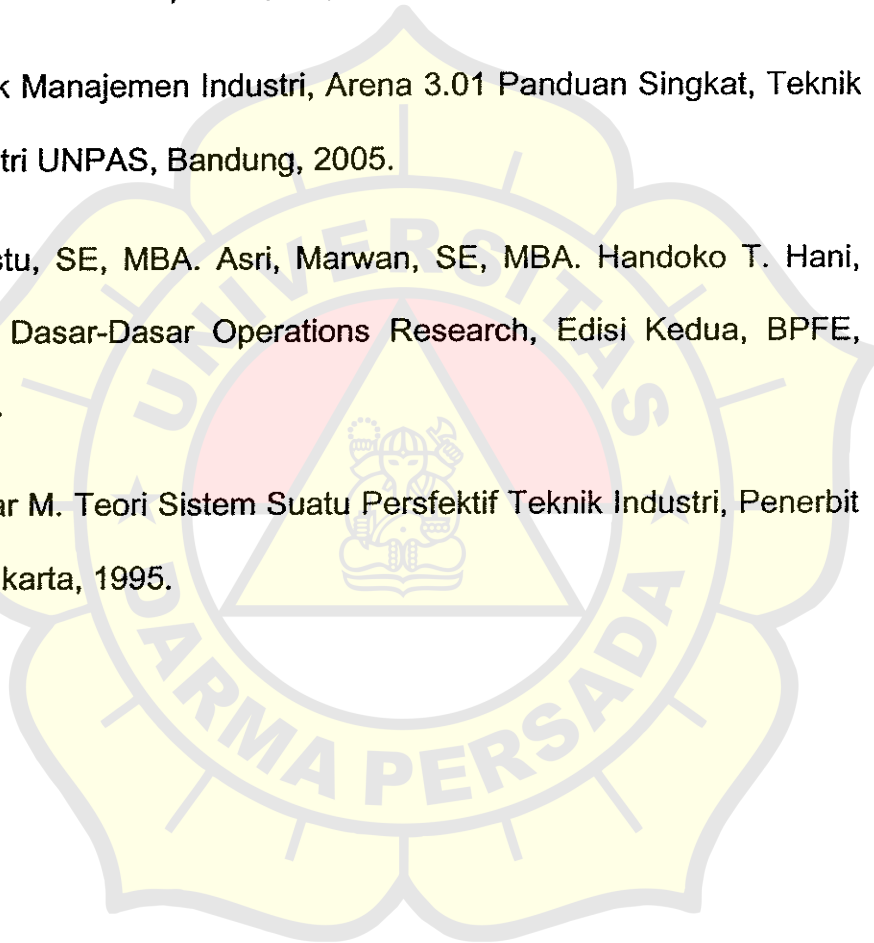
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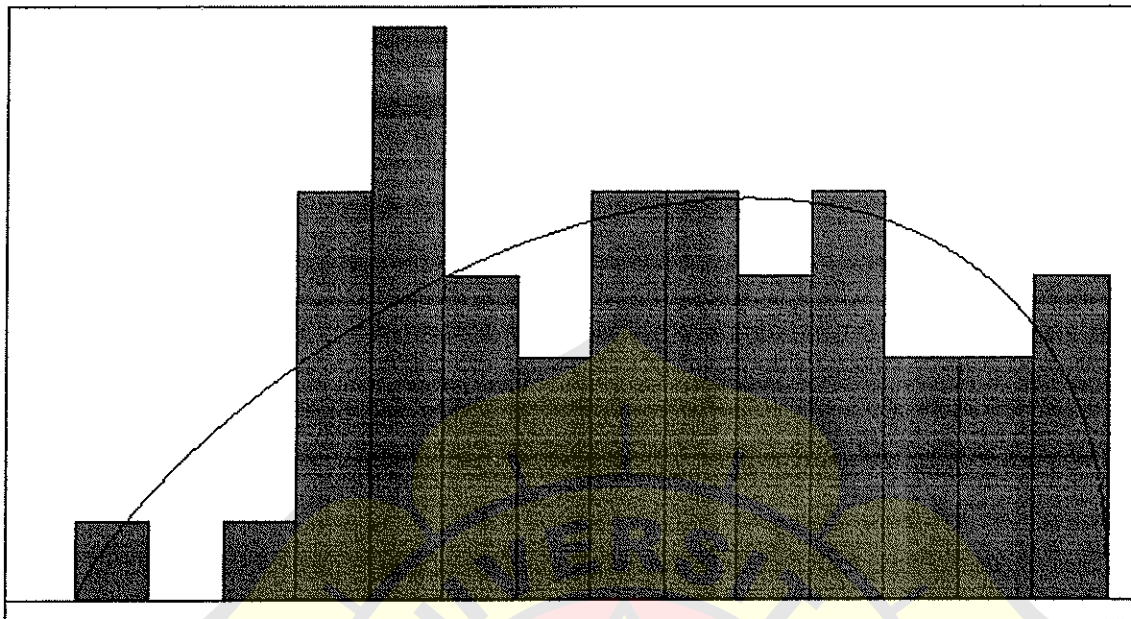
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WAKTU ANTAR KEDATANGAN DAN PELAYANAN

I. Pemeriksaan Talcum



Distribution Summary

Distribution: Beta

Expression: $11.5 + 14 * \text{BETA}(1.78, 1.42)$

Square Error: 0.011221

Chi Square Test

Number of intervals= 6

Degrees of freedom = 3

Test Statistic = 6.62

Corresponding p-value = 0.0881

Data Summary

Number of Data Points = 50

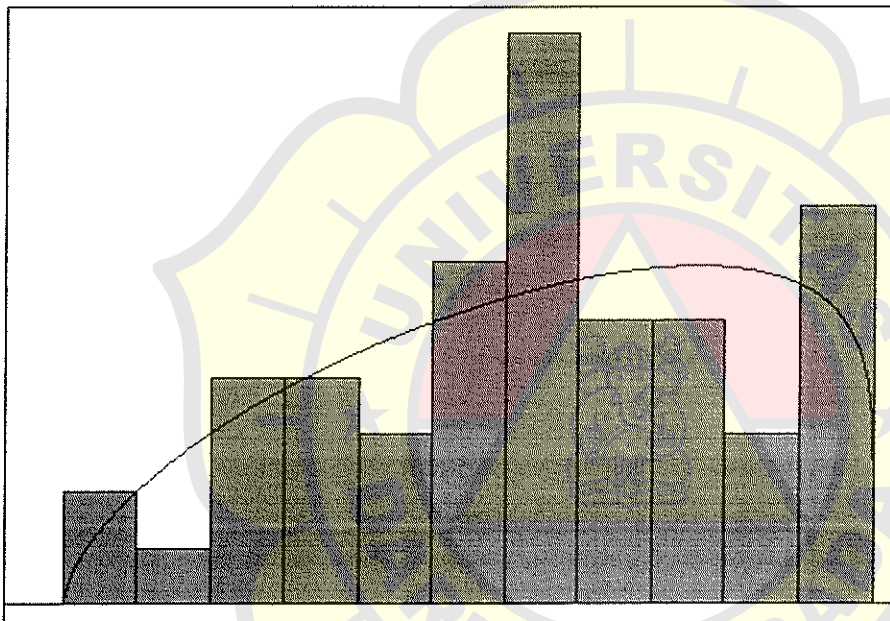
Min Data Value = 12

Max Data Value = 25
 Sample Mean = 19.3
 Sample Std Dev = 3.39

Histogram Summary

Histogram Range = 11.5 to 25.5
 Number of Intervals = 14

II. Pemeriksaan Sodium Bicarbonate



Distribution Summary

Distribution: Beta

Expression: $9.5 + 11 * \text{BETA}(1.62, 1.17)$

Square Error: 0.016141

Chi Square Test

Number of intervals= 7

Degrees of freedom = 4

Test Statistic = 5.74

Corresponding p-value = 0.228

Data Summary

Number of Data Points = 50

Min Data Value = 10

Max Data Value = 20

Sample Mean = 15.9

Sample Std Dev = 2.78

Histogram Summary

Histogram Range = 9.5 to 20.5

Number of Intervals = 11

III. Pemeriksaan Zinc dan Mg Stear



Distribution Summary

Distribution: Beta

Expression: $8.5 + 9 * \text{BETA}(1.1, 1.05)$

Square Error: 0.013992

Chi Square Test

Number of intervals= 8

Degrees of freedom = 5

Test Statistic = 5.16

Corresponding p-value = 0.411

Data Summary

Number of Data Points = 50

Min Data Value = 9

Max Data Value = 17

Sample Mean = 13.1

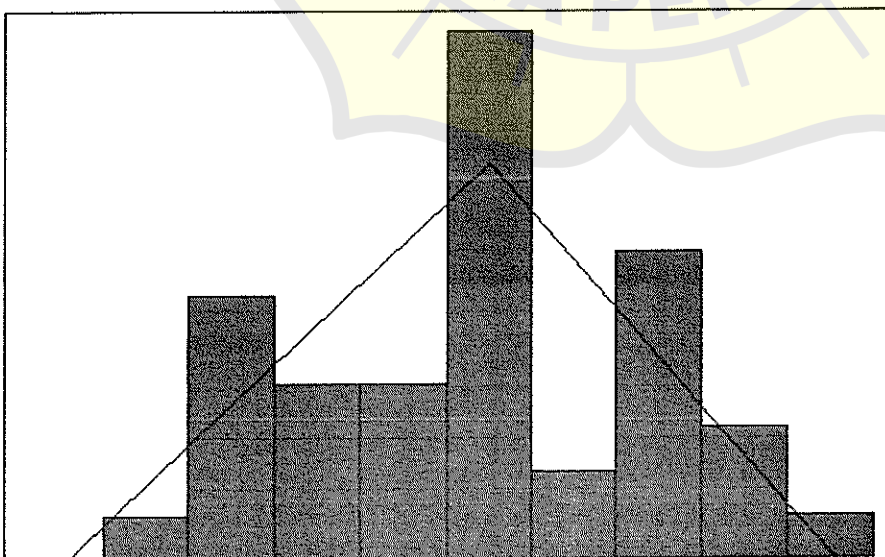
Sample Std Dev = 2.53

Histogram Summary

Histogram Range = 8.5 to 17.5

Number of Intervals = 9

IV. Pemeriksaan Irg



Distribution Summary

Distribution: Triangular

Expression: $\text{TRIA}(4.5, 10, 14.5)$

Square Error: 0.024347

Chi Square Test

Number of intervals = 6

Degrees of freedom = 4

Test Statistic = 8.84

Corresponding p-value = 0.069

Data Summary

Number of Data Points = 50

Min Data Value = 5

Max Data Value = 14

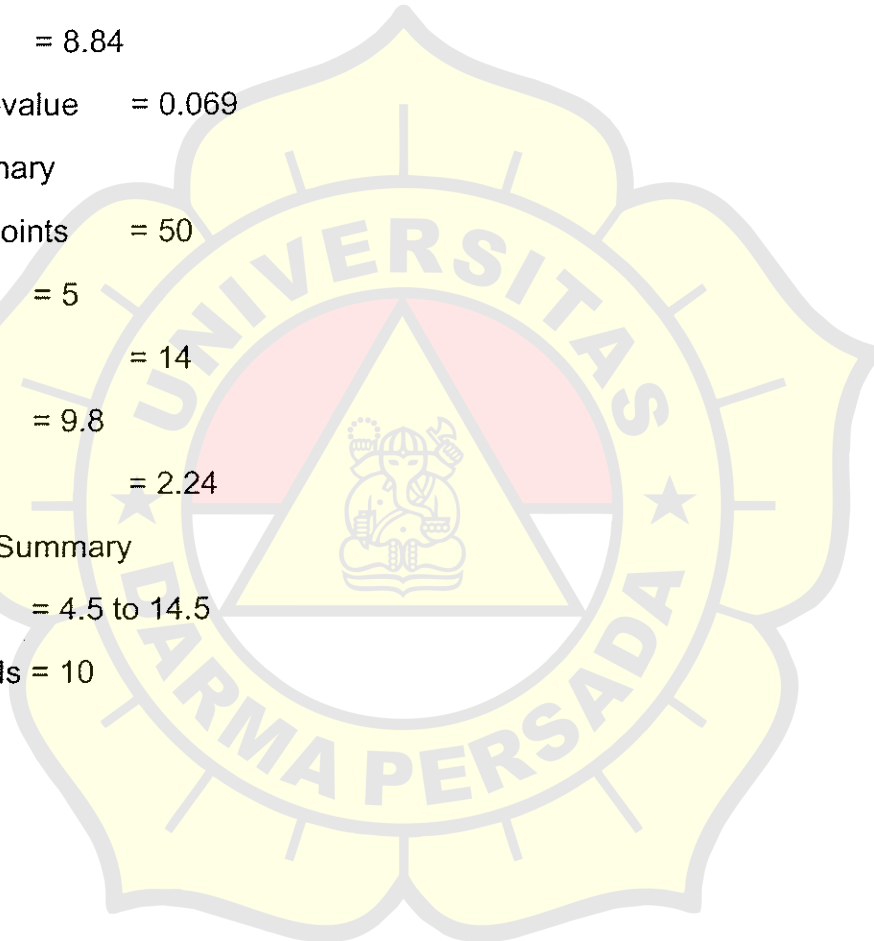
Sample Mean = 9.8

Sample Std Dev = 2.24

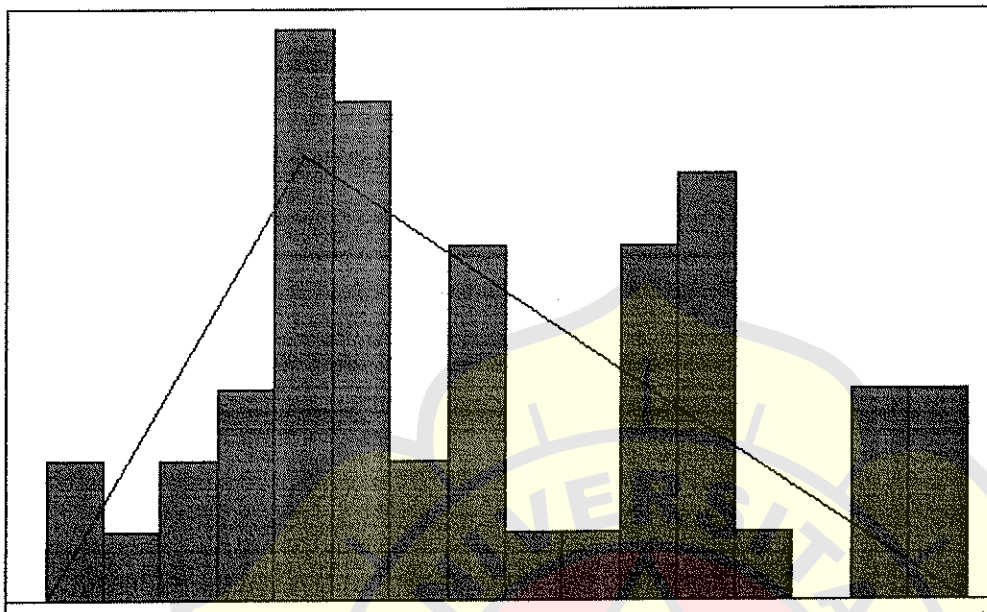
Histogram Summary

Histogram Range = 4.5 to 14.5

Number of Intervals = 10



V. Pemeriksaan Alcohol dan Perfume



Distribution Summary

Distribution: Triangular

Expression: $\text{TRIA}(14.5, 19, 30.5)$

Square Error: 0.028691

Chi Square Test

Number of intervals= 7

Degrees of freedom = 5

Test Statistic = 9.32

Corresponding p-value = 0.0976

Data Summary

Number of Data Points = 50

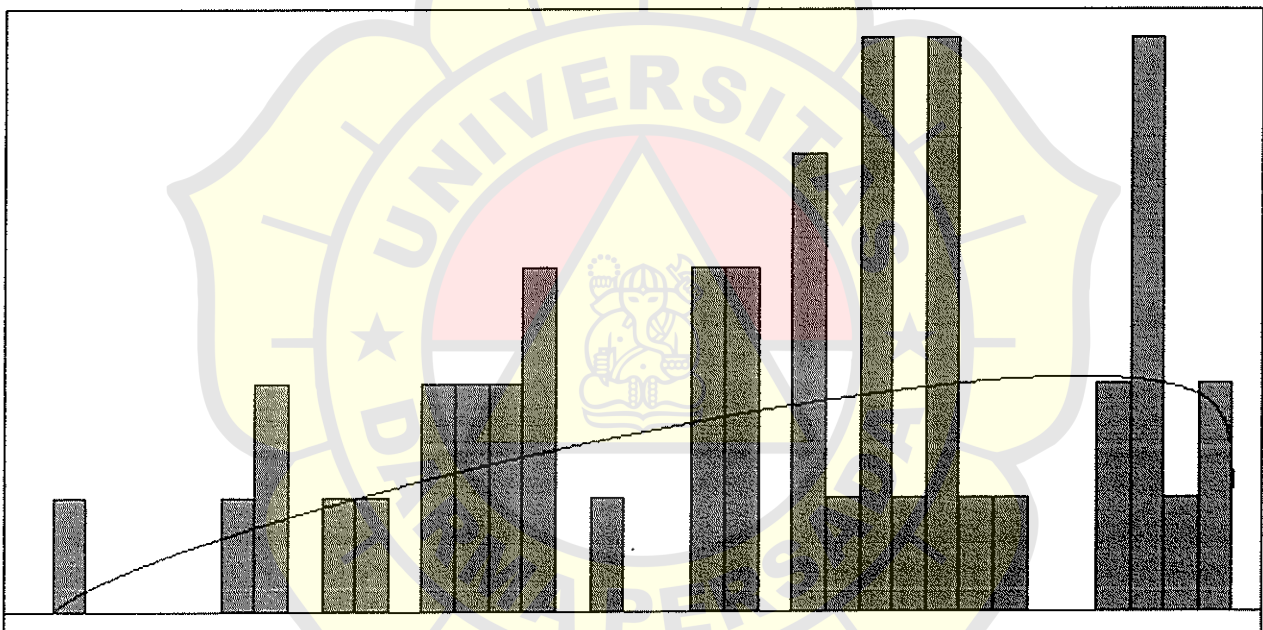
Min Data Value = 15

Max Data Value = 30
 Sample Mean = 22.2
 Sample Std Dev = 4.15

Histogram Summary

Histogram Range = 14.5 to 30.5
 Number of Intervals = 16

VI. Mesin Mixing-Filling



Distribution Summary

Distribution: Beta

Expression: $124 + 35 * \text{BETA}(1.74, 1.11)$

Square Error: 0.027545

Chi Square Test

Number of intervals= 8

Degrees of freedom = 5

Test Statistic = 8.51

Corresponding p-value = 0.142

Data Summary

Number of Data Points = 50

Min Data Value = 124

Max Data Value = 158

Sample Mean = 145

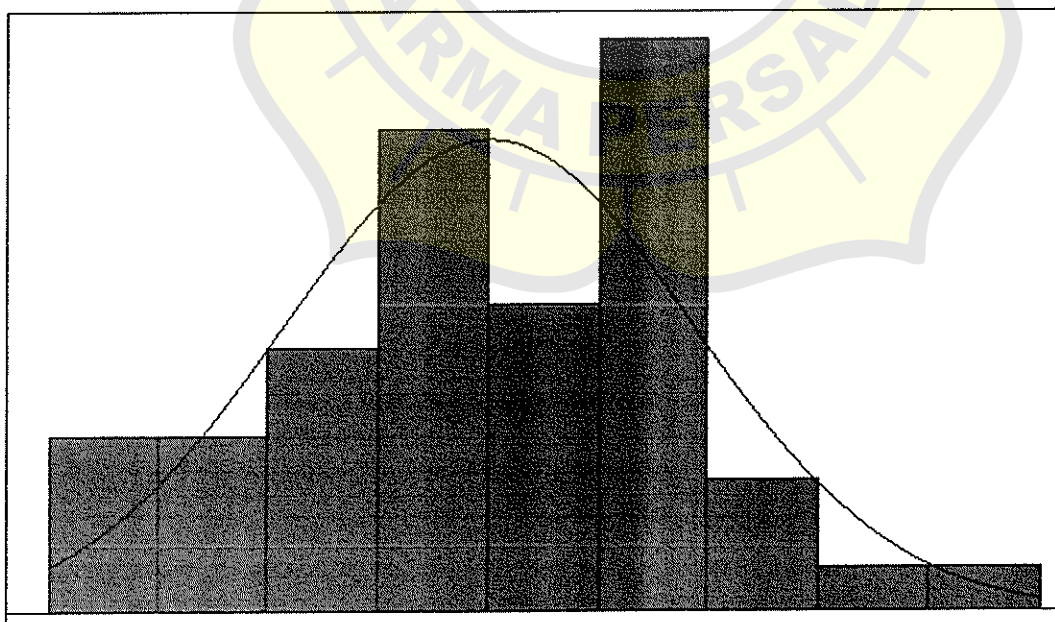
Sample Std Dev = 8.69

Histogram Summary

Histogram Range = 124 to 159

Number of Intervals = 35

VII. Mesin Inkjet Printer



Distribution Summary

Distribution: Normal

Expression: $NORM(4.5, 1.86)$

Square Error: 0.019773

Chi Square Test

Number of intervals= 6

Degrees of freedom = 3

Test Statistic = 6.88

Corresponding p-value = 0.0798

Data Summary

Number of Data Points = 50

Min Data Value = 1

Max Data Value = 9

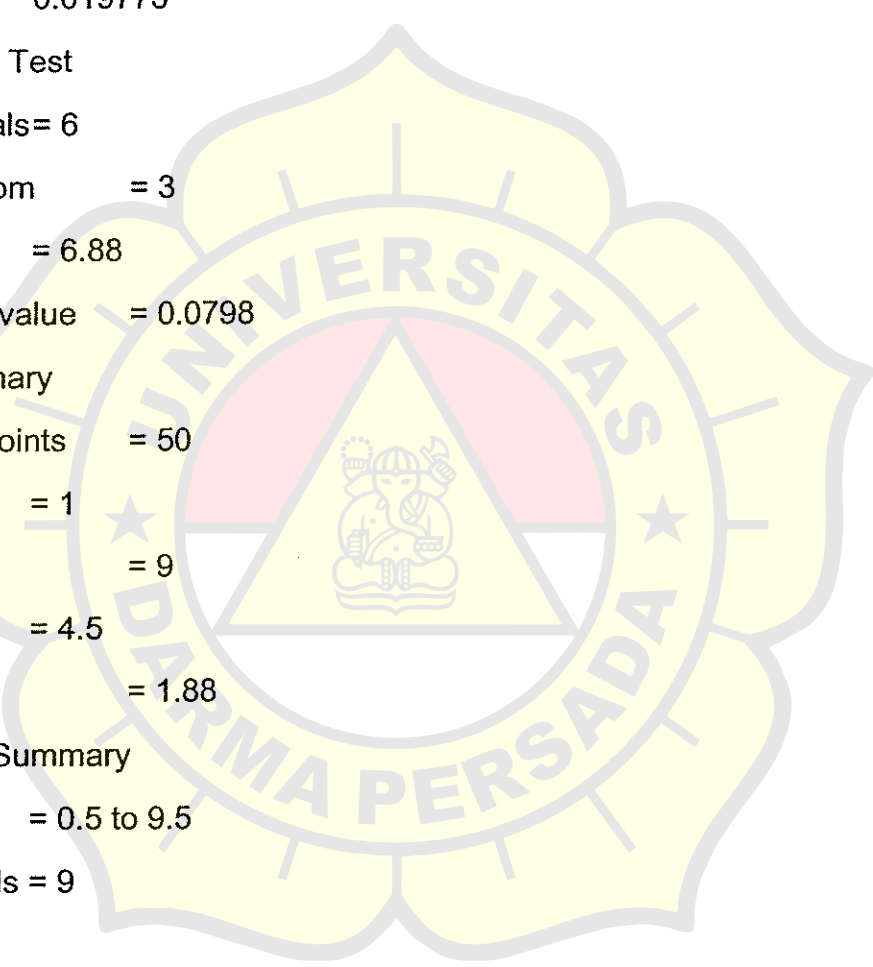
Sample Mean = 4.5

Sample Std Dev = 1.88

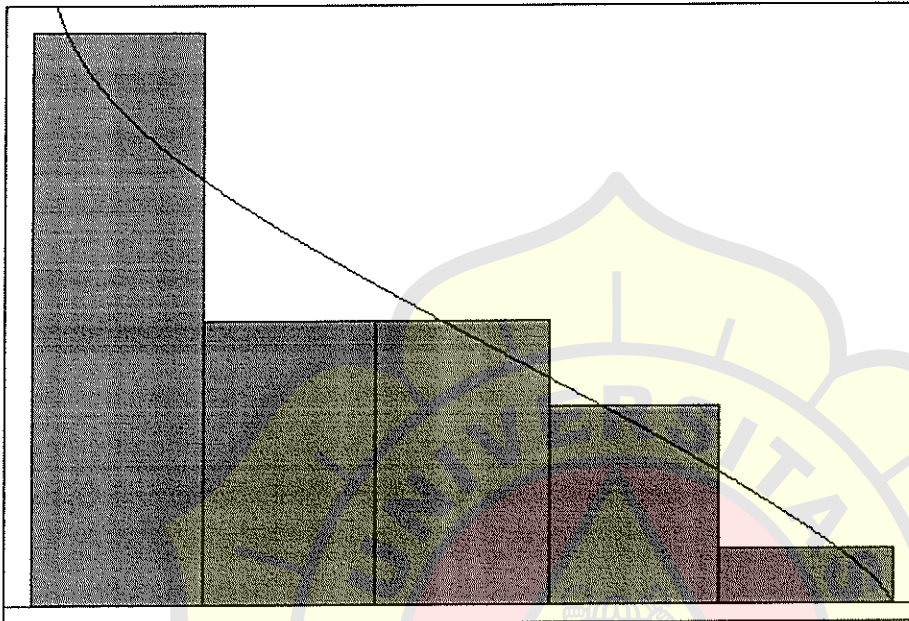
Histogram Summary

Histogram Range = 0.5 to 9.5

Number of Intervals = 9



VIII. Pemeriksaan Quality Control



Distribution Summary

Distribution: Beta

Expression: $4.5 + 5 * \text{BETA}(0.902, 1.74)$

Square Error: 0.005470

Chi Square Test

Number of intervals= 4

Degrees of freedom = 1

Test Statistic = 0.95

Corresponding p-value = 0.357

Data Summary

Number of Data Points = 49

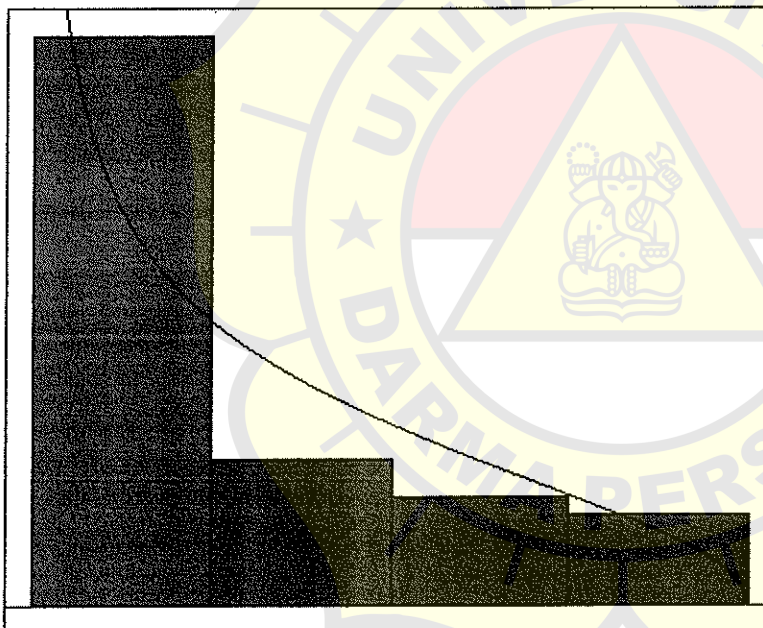
Min Data Value = 5
Max Data Value = 9
Sample Mean = 6.2
Sample Std Dev = 1.24

Histogram Summary

Histogram Range = 4.5 to 9.5

Number of Intervals = 5

IX. Mesin Shrink Tunnel



Distribution Summary

Distribution: Beta

Expression: $4.5 + 4 * \text{BETA}(0.641, 1.5)$

Square Error: 0.010986

Chi Square Test

Number of intervals= 3

Degrees of freedom = 0

Test Statistic = 2.22

Corresponding p-value < 0.005

Data Summary

Number of Data Points = 50

Min Data Value = 5

Max Data Value = 8

Sample Mean = 5.7

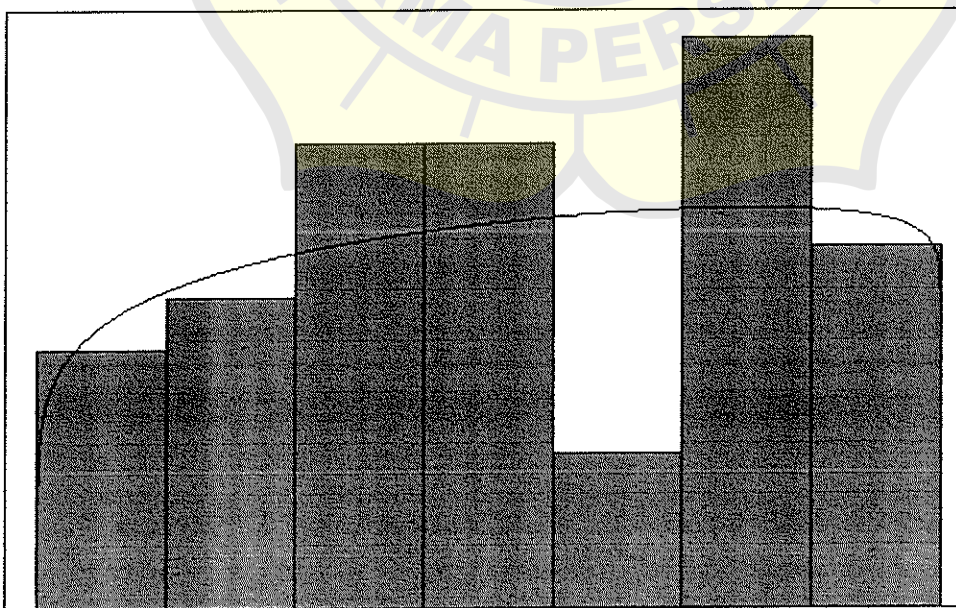
Sample Std Dev = 1.04

Histogram Summary

Histogram Range = 4.5 to 8.5

Number of Intervals = 4

X. Packing



Distribution Summary

Distribution: Beta

Expression: $9.5 + 7 * \text{BETA}(1.17, 1.04)$

Square Error: 0.015582

Chi Square Test

Number of intervals = 7

Degrees of freedom = 4

Test Statistic = 5.14

Corresponding p-value = 0.28

Data Summary

Number of Data Points = 50

Min Data Value = 10

Max Data Value = 16

Sample Mean = 13.2

Sample Std Dev = 1.95

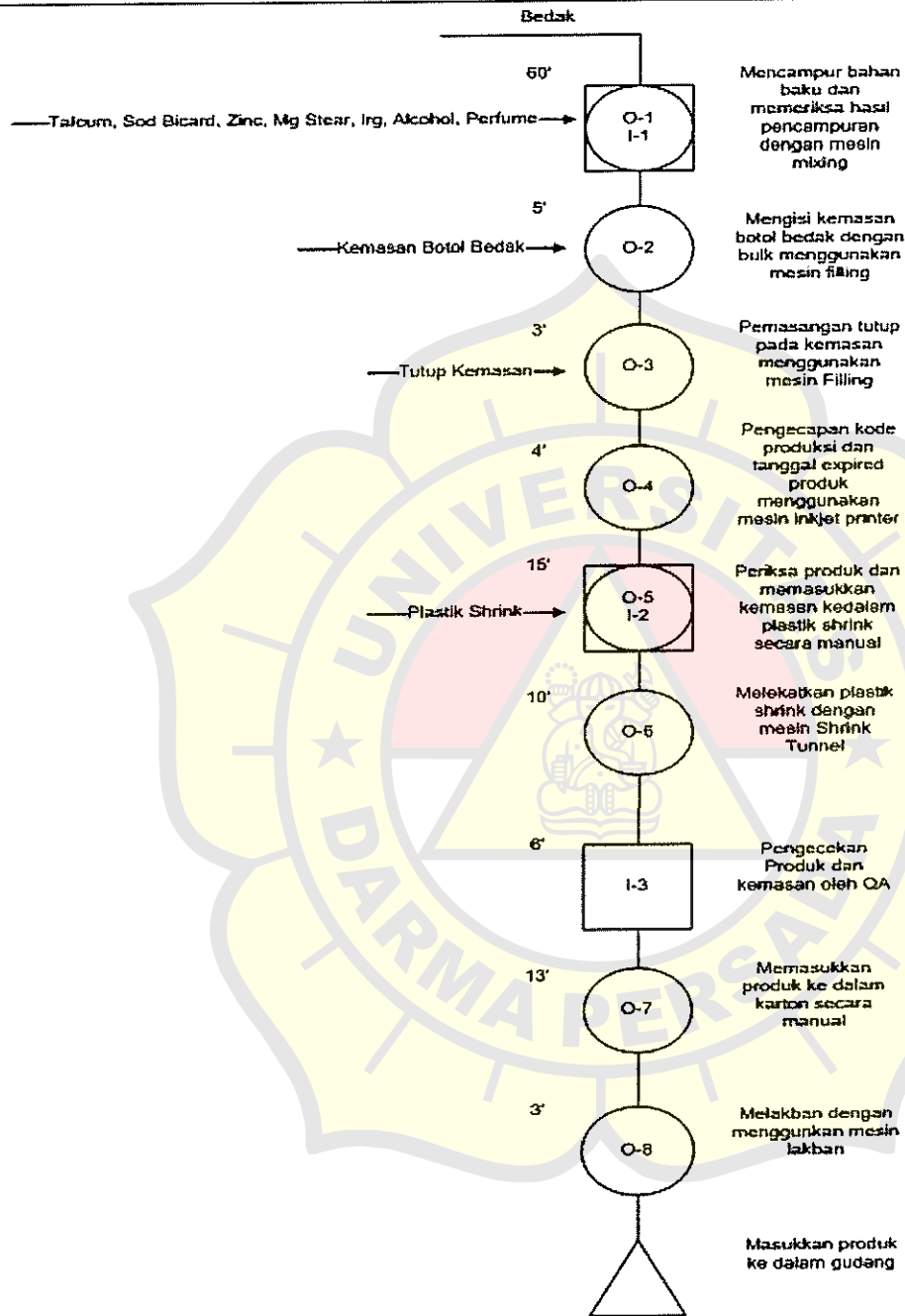
Histogram Summary

Histogram Range = 9.5 to 16.5

Number of Intervals = 7

PETA PROSES OPERASI

NAMA OBYEK : BEDAK
NOMOR PETA : 01
DIPETAKAN OLEH : ANDHIKA AL FARISI
TANGGAL DIPETAKAN : JULI 2014



RINGKASAN

KEGIATAN	JML	WAKTU
○ Operasi	8	76
□ Pemeriksaan	3	43
TOTAL	11	119

HASIL UJI SENSITIVITAS 1

4:13:40PM

Category by Replication

July 9 2014

Proses Produksi Bedak Anak

Replications: 1

Replication 1

Start Time: 0.00 Stop Time: 11.00 Time Units: Hours

Queue

Time

Waiting Time	Average	Half Width	Minimum	Maximum
Mesin Injet Printer_R_Q	3.2019	(Insufficient)	0	8.4134
Mesin Mixing Filling_R_Q	2.1752	(Insufficient)	0	4.5861
Periksa Alcohol dan Perfume_R_Q	0	(Insufficient)	0	0
Periksa Irg_R_Q	2.7704	(Insufficient)	0	5.5448
Periksa Sod Bicar_R_Q	2.0858	(Insufficient)	0	4.3208
Periksa Talcum_R_Q	0	(Insufficient)	0	0
Periksa zinc dan Mg sear_R_Q	1.0638	(Insufficient)	0	2.6947

Other

Number Waiting	Average	Half Width	Minimum	Maximum
Mesin Injet Printer_R_Q	4.0850	(Insufficient)	0	11.0000
Mesin Mixing Filling_R_Q	5.1045	(Insufficient)	0	11.0000
Mesin Srink Tunnel_R_Q	0	(Insufficient)	0	0
Packing_R_Q	0	(Insufficient)	0	0
Periksa Alcohol dan Perfume_R_Q	0	(Insufficient)	0	0
Periksa Irg_R_Q	0.5545	(Insufficient)	0	1.0000
Periksa Quality Control_R_Q	0	(Insufficient)	0	0
Periksa Sod Bicar_R_Q	5.5888	(Insufficient)	0	13.0000
Periksa Talcum_R_Q	0	(Insufficient)	0	0
Periksa zinc dan Mg sear_R_Q	2.5508	(Insufficient)	0	0.0000

Resource

Usage

4:13:40PM

Category by Replication

July 9, 2014

Proses Produksi Bedak Anak

Replications: 1

Replication 1

Star Time:

0.00

Stop Time:

10.00

Time Util. Hours

Resource

Usage

Instantaneous Utilization	Average	Half Width	Minimum	Maximum
Mesin Injjet Printer_R	0.7382	(Insufficient)	0	1.0000
Mesin Mixing Filling_R	0.8754	(Insufficient)	0	1.0000
Mesin Shrink Tunnel_R	0	(Insufficient)	0	0
Packing_R	0	(Insufficient)	0	0
Periksa Alcohol dan Perfume_R	0.9500	(Insufficient)	0	1.0000
Periksa Iq_R	0.0500	(Insufficient)	0	1.0000
Periksa Quality Control_R	0	(Insufficient)	0	0
Periksa Sod Bicar_R	0.9415	(Insufficient)	0	1.0000
Periksa Talcum_R	0.5224	(Insufficient)	0	1.0000
Periksa zinc dan Mg stear_R	0.9443	(Insufficient)	0	1.0000

Number Busy	Average	Half Width	Minimum	Maximum
Mesin Injjet Printer_R	0.7382	(Insufficient)	0	1.0000
Mesin Mixing Filling_R	0.8754	(Insufficient)	0	1.0000
Mesin Shrink Tunnel_R	0	(Insufficient)	0	0
Packing_R	0	(Insufficient)	0	0
Periksa Alcohol dan Perfume_R	0.9500	(Insufficient)	0	1.0000
Periksa Iq_R	0.0500	(Insufficient)	0	1.0000
Periksa Quality Control_R	0	(Insufficient)	0	0
Periksa Sod Bicar_R	0.9415	(Insufficient)	0	1.0000
Periksa Talcum_R	0.5224	(Insufficient)	0	1.0000
Periksa zinc dan Mg stear_R	0.9443	(Insufficient)	0	1.0000

HASIL UJI SENSITIVITAS 2

4.07:12PM

Category by Replication

July 9, 2014

Proses Produksi Bedak Anak

Replications: 1

Replication 1

Start Time: 0.00 Stop Time: 10.00 Time Units: Hours

Queue

Time

Waiting Time	Average	Half Width	Minimum	Maximum
Mesin Mixing Filling_R_Q	0	(Insufficient)	0	0
Periksa Alcohol dan Perfume_R_Q	0	(Insufficient)	0	0
Periksa Irg_R_Q	0	(Insufficient)	0	0
Periksa Sod Bicar_R_Q	0	(Insufficient)	0	0
Periksa Talcum_R_Q	2.7260	(Insufficient)	0	4.5212
Periksa zinc dan Mg stear_R_Q	0.8014	(Insufficient)	0	1.5140

Other

Number Waiting	Average	Half Width	Minimum	Maximum
Mesin Inkjet Printer_R_Q	0	(Insufficient)	0	0
Mesin Mixing Filling_R_Q	8.4848	(Insufficient)	0	17.0000
Mesin Shrink Tunnel_R_Q	0	(Insufficient)	0	0
Packing_R_Q	0	(Insufficient)	0	0
Periksa Alcohol dan Perfume_R_Q	0	(Insufficient)	0	0
Periksa Irg_R_Q	15.4148	(Insufficient)	0	30.0000
Periksa Quality Control_R_Q	0	(Insufficient)	0	0
Periksa Sod Bicar_R_Q	0	(Insufficient)	0	0
Periksa Talcum_R_Q	8.5548	(Insufficient)	0	18.0000
Periksa zinc dan Mg stear_R_Q	1.7281	(Insufficient)	0	6.0000

Resource

Usage

4:07:12PM

Category by Replication

July 9, 2014

Proses Produksi Bedak Anak

Replications: 1

Replication 1

Start Time:

0.00

Stop Time:

10.00

Time Units: Hours

Resource

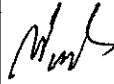
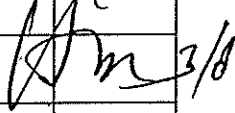
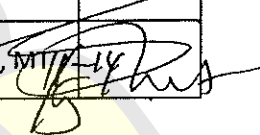
Usage

Instantaneous Utilization	Average	Half Width	Minimum	Maximum
Mesin Inget Printer_F	0	(Insufficient)	0	0
Mesin Mixing Filling_R	0.8830	(Insufficient)	0	1.0000
Mesin Shrink Tunnel_R	0	(Insufficient)	0	0
Packing_R	0	(Insufficient)	0	0
Periksa Alcohol dan Perfume_R	0.2500	(Insufficient)	0	1.0000
Periksa Irg_R	0.2500	(Insufficient)	0	1.0000
Periksa Quality Control_R	0	(Insufficient)	0	0
Periksa Sod Bicar_R	0.6023	(Insufficient)	0	1.0000
Periksa Talum_R	0.2380	(Insufficient)	0	1.0000
Periksa zinc dan Mg stear_R	0.8624	(Insufficient)	0	1.0000
Number Busy	Average	Half Width	Minimum	Maximum
Mesin Inget Printer_F	0	(Insufficient)	0	0
Mesin Mixing Filling_R	0.8830	(Insufficient)	0	1.0000
Mesin Shrink Tunnel_R	0	(Insufficient)	0	0
Packing_R	0	(Insufficient)	0	0
Periksa Alcohol dan Perfume_R	0.2500	(Insufficient)	0	1.0000
Periksa Irg_R	0.2500	(Insufficient)	0	1.0000
Periksa Quality Control_R	0	(Insufficient)	0	0
Periksa Sod Bicar_R	0.6023	(Insufficient)	0	1.0000
Periksa Talum_R	0.2380	(Insufficient)	0	1.0000
Periksa zinc dan Mg stear_R	0.8624	(Insufficient)	0	1.0000

HASIL UJI SENSITIVITAS 3

4:09:34PM		Category by Replication		July 9, 2014	
Proses Produksi Bedak Anak					Replications: 1
Replication 1		Start Time: 0.00	Stop Time: 10.00	Time Units: Hours	
Queue					
Time					
Waiting Time	Average	Half Width	Minimum	Maximum	
Mesin Mixing Filling_R_Q	0	(Insufficient)	0	0	
Periksa Alcohol dan Perfume_R_Q	0	(Insufficient)	0	0	
Periksa Irg_R_Q	0.05283448	(Insufficient)	0	0.1057	
Periksa Sod Bicar_R_Q	0	(Insufficient)	0	0	
Periksa Talcum_R_Q	0	(Insufficient)	0	0	
Periksa zinc dan Mg stear_R_Q	0	(Insufficient)	0	0	
Other					
Number Waiting	Average	Half Width	Minimum	Maximum	
Mesin Inkjet Printer_R_Q	0	(Insufficient)	0	0	
Mesin Mixing Filling_R_Q	1.2584	(Insufficient)	0	4.0000	
Mesin Shrink Tunnel_R_Q	0	(Insufficient)	0	0	
Packing_R_Q	0	(Insufficient)	0	0	
Periksa Alcohol dan Perfume_R_Q	0.8082	(Insufficient)	0	2.0000	
Periksa Irg_R_Q	0.01058859	(Insufficient)	0	1.0000	
Periksa Quality Control_R_Q	0	(Insufficient)	0	0	
Periksa Sod Bicar_R_Q	0.1041	(Insufficient)	0	1.0000	
Periksa Talcum_R_Q	0	(Insufficient)	0	0	
Periksa zinc dan Mg stear_R_Q	0	(Insufficient)	0	0	
Resource					
Usage					
Model Filename: C:\Arena\Examples\Simulasi awal produksi bedak					
Page 1 of 4					

LEMBAR PERBAIKAN

No	Perbaikan	Dosen	TTD
1	Kesimpulan	Ir. Jamaludin Purba, MT	
	Saran		
	Hasil simulasi diperjelas		
2	Validasi hasil dan model	Ir. Herman Noer Rahman, ME (hal. 86)	 3/8
3	Konversi arena ke manual Kesimpulan	Dr. Ir. Budi Sumartono, MT	

Dibuat Oleh,

Andhika Al-Farisi
Mahasiswa

Disetujui Oleh,

Ir. Jamaludin Purba, MT
Kajur Teknik Industri

