


## LAMPIRAN


### LAMPIRAN 1. Lembar Bimbingan Skripsi



**JURNAL BIMBINGAN TUGAS AKHIR**  
**PRODI TEKNIK INDUSTRI**  
**SEMESTER GENAP 2022/2023**

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**Nama :** Ridiwan Dwi W  
**NBI :** 1411900150  
**Judul Penelitian :** Analisis perawatan komponen Chamber Box Dan Area Roll Reminder Pada Mesin Laminating and Printing Produk Kemasan  
**Dosen Pembimbing:** Dr. Ir. I Nyoman Loka Jaya, ST, MM



No.	Tanggal	Materi Bimbingan	Catatan Pembimbing	Paraf Pembimbing
1	03/03/2023	BaB I	Perbaikan Data Kurang Lengkap.	<i>[Signature]</i>
2	10/03/2023	BaB II	Letak belah ketupat yang diperjelas.	<i>[Signature]</i>
3	11/03/2023	BaB I	Rumusan masalah Perbaikan.	<i>[Signature]</i>
4	13/03/2023	BaB II	- Perbaikan Matriks - Penambahan Matriks	<i>[Signature]</i>
5	14/03/2023	BaB II	- Penambahan Pendekatan for Data	<i>[Signature]</i>
6	15/03/2023	BaB III	- Flow chart Flow chart. - Data Pengadaan.	<i>[Signature]</i>
7	3/04/2023	BaB IV		<i>[Signature]</i>
8	11/04/2023	BaB IV	- Revisi Data t+R	<i>[Signature]</i>
9	17/04/2023	BaB IV	- Keaccaban data	<i>[Signature]</i>
10	03/05/2023	BaB IV	- Hasil uji distribusi	<i>[Signature]</i>
11	08/05/2023	BaB IV	- Biaya komponen	<i>[Signature]</i>
12	09/05/2023	BaB IV	- Rekap Biaya.	<i>[Signature]</i>
13	17/05/2023	BaB IV	- Analisis Perjadwalan Preventive	<i>[Signature]</i>
14	19/05/2023	BaB IV	- Revisi Biaya pemeliharaan.	<i>[Signature]</i>
15	23/05/2023	BaB IV	- Revisi Kesimpulan.	<i>[Signature]</i>
16	24/05/2023	BaB V	- Saran di Perjelas lagi	<i>[Signature]</i>



**LAMPIRAN 2.Data Kerusakan Komponen Heater Chamber Box**

Tanggal Kerusakan	Jenis Kersukan	Status		Down Time	Biaya Perawatan
		Diperbaiki	Diganti		
05 Juli 2022	Heter camber box tidak panas	✓		60	Rp.130,000
07 Juli 2022	Temperatur D4 tidak normal	✓		60	Rp.157,096
13 Juli 2022	Sprey powder macet	✓		60	Rp.300,000
14 Juli 2022	power suply dan slector s/w	✓		60	Rp.333,840
23 Juli 2022	Heater temperatur turun	✓		60	Rp.321,000
25 Juli 2022	heater adapter temperatur tidak normal	✓		60	Rp.115,000
28 Juli 2022	Heater adapter temperatur tidak normal	✓		60	Rp.268,000
03 Agustus 2022	cuoating dais tidak normal			180	Rp.233,000
04 Agustus 2022	Vant belt Motor extruder 1 aus		✓	60	Rp.3,200,000
10 Agustus 2022	Ganti heater cylinder C4 karena heater rusak		✓	120	Rp.630,000
16 Agustus 2022	Heater temperatur turun	✓		60	Rp.260,000
20 Agustus 2022	Roll chil drum putaran tidak normal	✓		380	Rp.123,000
22 Agustus 2022	Pipa udara banyak yang bocor	✓		60	Rp.89,000
23 Agustus 2022	Putaran roll chill drum tidak narmL	✓		180	Rp.175,077
26 Agustus 2022	check control gear box dan motor	✓		340	Rp.453,099
27 Agustus 2022	Spray powder tidak berfungsi baik	✓		720	Rp.322,000

Tanggal Kerusakan	Jenis Kersukan	Status		Down Time	Biaya Perawatan
		Diperbaiki	Diganti		
31 Agustus 2022	Timming belt gear box PIV putus 1st & Vant belt doctor bleade putus 1 <sup>st</sup>		✓	60	Rp.840,000
02 September 2022	Pipa supply udara diatas extruder bocor	✓		60	Rp.33,773
10 September 2022	Selang udara rewinder unit supply bocor	✓		120	Rp.34,000
12 September 2022	Slang supply udara unwinder bocor	✓		120	Rp.101,318
18 September 2022	Press roll cutting lepas	✓		780	Rp.127,500
19 September 2022	Heater D1 temperatur tidak normal	✓		60	Rp.268,000
21 September 2022	LPC unwinder tidak berfungsi	✓		120	Rp.324,000
22 September 2022	Rotary roll silicon rusak		✓	60	Rp.660,000
24 September 2022	LPC macet	✓		120	Rp.297,000
25 September 2022	slang udara aus		✓	60	Rp.1,280,000
26 September 2022	Check dan ganti heater catrid		✓	60	Rp.3,200,000
28 September 2022	check heater dan TPR	✓		180	Rp.125,000
16 Oktober 2022	heater dan TPR	✓		60	Rp.123,088
22 Oktober 2022	check selenoid dan slang udara	✓		240	Rp.142,000
23 Oktober 2022	perbaiki adapter bearing roll silicon	✓		330	Rp.360,000
01 November 2022	check dan ganti slang udara		✓	60	Rp.1,280,000
05 November 2022	check salng udara dan air cylinder	✓		120	Rp.89,000

Tanggal Kerusakan	Jenis Kersukan	Status		Down Time	Biaya Perawatan
		Diperbaiki	Diganti		
09 November 2022	check dan ganti valve "		✓	120	Rp.340,000
11 November 2022	Heater ceamber Box Perbaikan	✓		60	Rp.660,000
12 November 2022	check heater dan TPR	✓		480	Rp.225,088
16 November 2022	heater dan TPR	✓		60	Rp.178,099
22 November 2022	check selenoid dan slang udara	✓		60	Rp.78,000
26 November 2022	perbaikan adapter bearing roll silicon	✓		60	Rp.360,000
27 November 2022	Ganti heater cylinder karena heater rusak		✓	60	Rp.5,200,000
11 Desember 2022	Heater temperatur turun	✓		180	Rp.232,000
14 Desember 2022	Roll chil drum putaran tidak normal	✓		60	Rp.122,811
16 Desember 2022	Pipa udara banyak yang bocor	✓		120	Rp.120,000
19 Desember 2022	check control gear box dan motor	✓		790	Rp.453,099
27 Desember 2022	Spray powder tidak berfungsi baik	✓		730	Rp.660,000

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### LAMPIRAN 3.Data Kersukan Komponen Press Roll Rewinder

Tanggal Kerusakan	Jenis Kerusakan	Status		Down Time	Biaya Perawatan
		Diperbaiki	Diganti		
03 Juli 2022	perbaikan roll backupc kondisi cacat	✓		660	Rp.2,738,090
12 Juli 2022	instalasi hoist dan PIV gearbox	✓		30	Rp.300,000

Tanggal Kerusakan	Jenis Kerusakan	Status		Down Time	Biaya Perawatan
		Diperbaiki	Diganti		
15 Juli 2022	perbaikan bearing rooll infeed	✓		120	Rp.367,000
18 Juli 2022	glass kondisi perlu modifikasi	✓		180	Rp.1.617,375
23 Juli 2022	perbaikan temperatur all conexction rusak	✓		30	Rp.423,000
29 Juli 2022	kondisi TPR rusak	✓		210	Rp.1.89,000
01 Agustus 2022	perbaikan bubut cones untuk cylindr	✓		60	Rp.362,097
03 Agustus 2022	perbaikan ganti rotary kondisi bocor		✓	60	Rp.840,000
08 Agustus 2022	perbaikan air cylinder	✓		30	Rp.525,000
14 Agustus 2022	pasang beberapa guide roll	✓		60	Rp.1,214,203
25 Agustus 2022	Repair Gear boxx	✓		30	Rp.300,000
29 Agustus 2022	check motor repair	✓		60	Rp.246,088
06 September 2022	perbaikan air cylinder	✓		120	Rp.364,000
08 September 2022	perbaikan van belt	✓		60	Rp.643,000
11 September 2022	perbaikan unwinder lpc kondisi lepas	✓		60	Rp.260,000
14 September 2022	roll Glas perlu perbaikan	✓		60	Rp.2,210,200
21 September 2022	Check kabel motor	✓		30	Rp.198,000
04 Oktober 2022	perbaikan dc motor	✓		120	Rp.222,428
06 Oktober 2022	sensor kondisi rusak	✓		120	Rp.324,000
09 Oktober 2022	roll chil drum rusak		✓	30	Rp.828,415
11 Oktober 2022	transfomer kondisi rusak	✓		60	Rp.222,428

Tanggal Kerusakan	Jenis Kerusakan	Status		Down Time	Biaya Perawatan
		Diperbaiki	Diganti		
13 Oktober 2022	glass kondisi kurang baik	✓		180	Rp.660,000
20 Oktober 2022	modifikasi bearing	✓		60	Rp.63,561
24 Oktober 2022	ganti roll chilldrum kondisi cacat		✓	75	Rp.810,000
30 Oktober 2022	check motor spray	✓		30	Rp.83,000
07 November 2022	perbaiki roll backupc kondisi cacat	✓		80	Rp.2,700,090
09 November 2022	ganti kabel baru untuk control sandwich		✓	75	Rp.950,000
10 Desember 2022	normalisasi penghaslusan press rewinder	✓		90	Rp.1,392,329
16 Desember 2022	normalisasi oil press system		✓	60	Rp.612,380
18 Desember 2022	sensor kondisi rusak	✓		90	Rp.324,000
24 Desember 2022	perbaiki roll backupc kondisi cacat	✓		120	Rp.754,000
29 Desember 2022	ganti roll belt aus		✓	60	Rp.186,000

**LAMPIRAN 4.Data Kerusakan Mesin Laminating**

Tanggal	Komponen	kerusakan	Mulai (Menit)	Selesai (Menit)	Status
03 Juli 2022	Press Roll Rewinder	perbaikan roll backupc kondisi cacat	09:30	20:30	Diperbaiki
05 Juli 2022	Heater Ceamber Box	Heter Temperatur Tidak Normal	07:00	08:00	Diperbaiki
07 Juli 2022	Heater Ceamber Box	LPC macet	08:00	09:00	Diperbaiki
12 Juli 2022	Press Roll Rewinder	instalasi hoist dan PIV gearbox	07:00	07:30	Diperbaiki
13 Juli 2022	Heater Ceamber Box	Sprey powder macet	07:05	08:05	Diperbaiki
14 Juli 2022	Heater Ceamber Box	Pipa supply udara diatas extruder bocor	14:00	15:00	Diperbaiki
15 Juli 2022	Press Roll Rewinder	perbaikan bearing rooll infeed	14:00	16:00	Diperbaiki
18 Juli 2022	Press Roll Rewinder	glass kondisi perlu modifikasi	10:00	13:00	Diperbaiki
23 Juli 2022	Heater Ceamber Box	Heater Temperatur turun	07:30	08:30	Diperbaiki
23 Juli 2022	Press Roll Rewinder	perbaikan temperatur all conexction rusak	08:00	08:30	Diperbaiki
25 Juli 2022	Heater Ceamber Box	heater adapter temperatur tidak normal	13:00	14:00	Diperbaiki
28 Juli 2022	Heater Ceamber Box	check selenoid dan slang udara	08:00	09:00	Diperbaiki
29 Juli 2022	Press Roll Rewinder	kondisi TPR rusak	08:30	11:35	Diperbaiki
01 Agustus 2022	Press Roll Rewinder	perbaikan bubut cones untuk cylindr	10:00	11:00	Diperbaiki
03 Agustus 2022	Heater Ceamber Box	cuoating dais tidak normal	08:00	12:00	Diperbaiki
	Press Roll Rewinder	perbaikan ganti rotary kondisi bocor	14:00	15:00	Diganti
04 Agustus 2022	Heater Ceamber Box	Vant belt Motor extruder aus	07:00	08:00	Diganti
08 Agustus 2022	Press Roll Rewinder	perbaikan air cylinder	12:00	12:30	Diperbaiki
10 Agustus 2022	Heater Ceamber Box	Ganti heater cylinder karena heater rusak	09:00	12:00	Diganti



Tanggal	Komponen	kerusakan	Mulai (Menit)	Selesai (Menit)	Status
14 Agustus 2022	Press Roll Rewinder	pasang beberapa guide roll	14:00	15:00	Diperbaiki
16 Agustus 2022	Heater Ceamber Box	Heater adapter temperatur tidak normal	14:000	15:00	Diperbaiki
20 Agustus 2022	Heater Ceamber Box	Roll chil drum putaran tidak normal	08:00	13:33	Diperbaiki
22 Agustus 2022	Heater Ceamber Box	Pipa udara banyak yang bocor	07:00	08:00	Diperbaiki
23 Agustus 2022	Heater Ceamber Box	Heater adapter temperatur tidak normal	08:00	10:00	Diperbaiki
25 Agustus 2022	Press Roll Rewinder	Repair Gear boxx	09:00	09:30	Diperbaiki
26 Agustus 2022	Heater Ceamber Box	check control gear box dan motor	10:00	14:40	Diperbaiki
27 Agustus 2022	Heater Ceamber Box	Spray powder macet	10:30	20:30	Diperbaiki
29 Agustus 2022	Press Roll Rewinder	check motor repair	09:00	10:00	Diperbaiki
31 Agustus 2022	Heater Ceamber Box	Timming belt gear box PIV putus 1st & Vant belt doctor bleade putus 1 <sup>st</sup>	13:00	14:00	Diganti
02 September 2022	Heater Ceamber Box	slang udara aus	11:00	12:00	Diperbaiki
06 September 2022	Press Roll Rewinder	perbaiki air cylinder	10:30	12:30	Diperbaiki
08 September 2022	Press Roll Rewinder	perbaiki van belt	6:30	07:30	Diperbaiki
10 September 2022	Heater Ceamber Box	Pipa supply udara diatas extruder bocor	13:00	16:00	Diperbaiki
11 September 2022	Press Roll Rewinder	perbaiki unwinder kondisi lepas	12:34	13:36	Diperbaiki
12 September 2022	Heater Ceamber Box	LPC macet	07:00	10:00	Diperbaiki
14 September 2022	Press Roll Rewinder	roll Glas perlu perbaikan	08:00	09:00	Diperbaiki
18 September 2022	Heater Ceamber Box	Press roll cutting lepas	09:00	22.00	Diperbaiki
19 September 2022	Heater Ceamber Box	Heater temperatur tidak normal	13:30	14:30	Diperbaiki
21 September 2022	Heater Ceamber Box	Temperatur tidak normal	08:35	11:35	Diperbaiki
	Press Roll Rewinder	Check kabel motor	14:00	14:30	Diperbaiki

Tanggal	Komponen	kerusakan	Mulai (Menit)	Selesai (Menit)	Status
22 September 2022	Heater Ceamber Box	Rotary roll silicon rusak	07:00	08:00	Diganti
24 September 2022	Heater Ceamber Box	Pipa supply udara diatas extruder bocor	10:30	12:30	Diperbaiki
25 September 2022	Heater Ceamber Box	slang udara aus	07:00	08:00	Diganti
26 September 2022	Heater Ceamber Box	Check dan ganti heater catrid	09:00	10:00	Diganti
28 September 2022	Heater Ceamber Box	check heater	10:00	13:00	Diperbaiki
04 Oktober 2022	Press Roll Rewinder	perbaikan dc motor	16:00	18:00	Diperbaiki
06 Oktober 2022	Press Roll Rewinder	sensor kondisi rusak	15:00	17:00	Diperbaiki
09 Oktober 2022	Press Roll Rewinder	roll chil drum rusak	08:00	08:30	Diganti
11 Oktober 2022	Press Roll Rewinder	transfomer kondisi rusak	13:00	14:00	Diperbaiki
13 Oktober 2022	Press Roll Rewinder	glass kondisi kurang baik	10:30	13:30	Diperbaiki
16 Oktober 2022	Heater Ceamber Box	check selang udara dan air cylinder	12:00	13:00	Diperbaiki
20 Oktober 2022	Press Roll Rewinder	modifikasi bearing	11:00	12:00	Diperbaiki
22 Oktober 2022	Heater Ceamber Box	Heater temperatur turun	07:30	11:30	Diperbaiki
23 Oktober 2022	Heater Ceamber Box	perbaikan adapter bearing roll silicon	08:00	13:05	Diperbaiki
24 Oktober 2022	Press Roll Rewinder	ganti roll chilldrum kondisi cacat	13:00	12:25	Diganti
30 Oktober 2022	Press Roll Rewinder	check motor spray	15:00	15:30	Diperbaiki
01 November 2022	Heater Ceamber Box	check dan ganti slang udara	09:30	10:30	Diganti
05 November 2022	Heater Ceamber Box	Check heater dan TPR	13:00	15:00	Diperbaiki
07 November 2022	Press Roll Rewinder	perbaikan roll backupc kondisi cacat	13:00	14:33	Diperbaiki
09 November 2022	Heater Ceamber Box	check dan ganti valve "	08:00	10:00	Diganti
	Press Roll Rewinder	ganti kabel baru untuk control sandwich	13:00	14:00	Diganti

Tanggal	Komponen	kerusakan	Mulai (Menit)	Selesai (Menit)	Status
11 November 2022	Heater Ceamber Box	Heater temperatur tidak normal	08:10	09:10	Diperbaiki
12 November 2022	Heater Ceamber Box	check heater dan TPR	13:00	21:00	Diperbaiki
16 November 2022	Heater Ceamber Box	heater dan TPR	07:00	08:00	Diperbaiki
22 November 2022	Heater Ceamber Box	heater adapter temperatur tidak normal	11:30	12:30	Diperbaiki
26 November 2022	Heater Ceamber Box	perbaiki adapter bearing roll silicon	13:00	14:00	Diperbaiki
27 November 2022	Heater Ceamber Box	Ganti heater cylinder karena heater rusak	07:00	08:00	Diganti
10 Desember 2022	Press Roll Rewinder	normalisasi penghaslusan press rewinder	07:00	08:50	Diperbaiki
11 Desember 2022	Heater Ceamber Box	check selang udara dan air cylinder	15:00	18:00	Diperbaiki
14 Desember 2022	Heater Ceamber Box	Roll chil drum putaran tidak normal	07:00	08:00	Diperbaiki
16 Desember 2022	Heater Ceamber Box	Pipa udara banyak yang bocor	12:00	14:00	Diperbaiki
16 Desember 2022	Press Roll Rewinder	normalisasi oil press system	09:00	10:00	Diganti
18 Desember 2022	Press Roll Rewinder	sensor kondisi rusak	11:00	12:50	Diperbaiki
19 Desember 2022	Heater Ceamber Box	check control gear box dan motor	10:00	23:13	Diperbaiki
24 Desember 2022	Press Roll Rewinder	perbaiki roll backupc kondisi cacat	10:00	12:00	Diperbaiki
27 Desember 2022	Heater Ceamber Box	Sprey powder macet	09:00	21:16	Diperbaiki
29 Desember 2022	Press Roll Rewinder	perbaiki roll belt aus	12:25	13:35	Diganti

**LAMPIRAN 5. Pengolahan Data Menggunakan Uji distribusi Pada Software Stagraphich**

**Data TTF Dan TTR Komponen Heater Chamber Box**

No	Tanggal Kerusakan	Time To Failure (Hari)	Time To Repair (Menit)
1	7/5/2022	0	60
2	7/7/2022	2	60
3	7/13/2022	6	60
4	7/14/2022	1	60
5	7/23/2022	9	60
6	7/25/2022	2	60
7	7/28/2022	3	60
8	8/3/2022	6	180
9	8/4/2022	1	60
10	8/10/2022	6	120
11	8/16/2022	6	60
12	8/20/2022	4	380
13	8/22/2022	2	60
14	8/23/2022	1	180
15	8/26/2022	3	340
16	8/27/2022	1	720
17	8/31/2022	4	60
18	9/2/2022	2	60
19	9/10/2022	8	120
20	9/12/2022	2	120
21	9/18/2022	6	780
22	9/19/2022	1	60
23	9/21/2022	2	120
24	9/22/2022	1	60
25	9/24/2022	2	120
26	9/25/2022	1	60
27	9/26/2022	1	60
28	9/28/2022	2	180
29	10/16/2022	18	60
30	10/22/2022	6	240

No	Tanggal Kerusakan	Time To Failure (Hari)	Time To Repair (Menit)
31	10/23/2022	1	330
32	11/1/2022	9	60
33	11/5/2022	4	120
34	11/9/2022	4	120
35	11/11/2022	2	60
36	11/12/2022	1	480
37	11/16/2022	4	60
38	11/22/2022	6	60
39	11/26/2022	4	60
40	11/27/2022	1	60
41	12/11/2022	14	180
42	12/14/2022	3	60
43	12/16/2022	2	120
44	12/19/2022	3	790
45	12/27/2022	8	730

**Data TTF Dan TTR Komponen Press Roll Rewinder**

No	Tanggal Kerusakan	Time To Failure (Hari)	Time To Repair (Menit)
1	7/3/2022	0	660
2	7/12/2022	9	30
3	7/15/2022	3	120
4	7/18/2022	3	180
5	7/23/2022	5	30
6	7/29/2022	6	210
7	8/1/2022	3	60
8	8/3/2022	2	60
9	8/8/2022	5	30
10	8/14/2022	6	60
11	8/25/2022	11	30
12	8/29/2022	4	60
13	9/6/2022	8	120
14	9/8/2022	2	60

No	Tanggal Kerusakan	Time To Failure (Hari)	Time To Repair (Menit)
15	9/11/2022	3	60
16	9/14/2022	3	60
17	9/21/2022	7	30
18	10/4/2022	13	120
19	10/6/2022	2	120
20	10/9/2022	3	30
21	10/11/2022	2	60
22	10/13/2022	2	180
23	10/20/2022	7	60
24	10/24/2022	4	75
25	10/30/2022	6	30
26	11/7/2022	8	80
27	11/9/2022	2	75
28	12/10/2022	33	90
29	12/16/2022	6	60
30	12/18/2022	8	90
31	12/24/2022	14	120
32	12/29/2022	5	60

The screenshot displays the STATGRAPHICS Centurion software interface. The main window shows a data table with the following columns: 'TTF HEATER CEAMBER BOX', 'TTR HEATER CEAMBER BOX', 'TTF PRES ROLL REWINDER', and 'TTR PRES ROLL REWINDER'. The data rows correspond to the table provided in the previous block. A 'Tables and Graphs' dialog box is open, allowing users to select analysis options. The 'TABLES' section includes checkboxes for 'Analysis Summary', 'Tests for Normality', 'Goodness-of-Fit Tests', 'Tail Areas', 'Critical Values', 'Normal Tolerance Limits', 'Distribution-Free Limits', and 'Comparison of Alternative Distributions'. The 'GRAPHS' section includes checkboxes for 'Density Trace', 'Symmetry Plot', 'Frequency Histogram', 'Quantile Plot', 'Quantile-Quantile Plot', 'Distribution Functions 1', and 'Distribution Functions 2'. The software interface also shows a menu bar, a toolbar, and a taskbar at the bottom with system icons and the date/time (5/20/2023, 10:52 PM).

STATGRAPHICS Centurion - Untitled StafFolio - [D:\SEMESTER 8 - BARU 2023\PENELITIAN TUGAS AKHIR\DATA KUSUS SKRIPSI BAB 4\WEIBULL\PERHITUNGAN FX0X.sgd]

File Edit Plot Describe Compare Relate Forecast SPC DOE SnapStats!! Tools View Window Help

Numeric Data  
Categorical Data

Distribution Fitting  
Life Data  
Multivariate Methods  
Time Series  
Point Processes

- Probability Distributions...
- Probability Plots...
- Fitting Uncensored Data...
- Fitting Censored Data...

Label	Row	Col_5	Col_6	Col_7	Col_8	Col_9	Col_10
TTR PRES ROLL REWINDER							
	3	1	60	3	180		
	4	9	60	5	30		
	5	2	60	6	210		
	6	3	60	3	60		
	7	6	60	2	60		
	8	1	180	5	30		
	9	6	60	6	60		
	10	6	120	11	30		
	11	4	60	4	60		
	12	2	380	8	120		
	13	1	60	2	60		
	14	3	180	3	60		
	15	1	340	3	60		
	16	4	720	7	30		
	17	2	60	13	120		
	18	8	60	2	120		
	19	2	120	3	30		
	20	6	120	2	60		
	21	1	780	2	180		
	22	2	60	7	60		
	23	1	120	4	75		
	24	2	60	6	30		
	25	1	120	8	80		
	26	1	60	2	75		
	27	2	60	33	90		

Distribution fitting for numeric data. Distribution Fitting

28°C Cerah 10:51 PM 5/20/2023

STATGRAPHICS Centurion - Untitled StafFolio - [D:\SEMESTER 8 - BARU 2023\PENELITIAN TUGAS AKHIR\DATA KUSUS SKRIPSI BAB 4\WEIBULL\PERHITUNGAN FX0X.sgd]

File Edit Plot Describe Compare Relate Forecast SPC DOE SnapStats!! Tools View Window Help

Label	Row	TTF HEATER CEAMBER BOX	TTR HEATER CEAMBER BOX	TTF PRESS ROLL REWINDER	TTR PRES ROLL REWINDER	Col_5	Col_6	Col_7	Col_8	Col_9	Col_10
	1	2	60	9	30						
	2	6	60	3	120						
	3	1	60	3	180						
	4	9	60	5	30						
	5	2	60	6	210						
	6	3	60	3	60						
	7	6	60	2	60						
	8	1	180	5	30						
	9	6	60	6	60						
	10	6	120	11	30						
	11	4	60	4	60						
	12	2	380	8	120						
	13	1	60	2	60						
	14	3	180	3	60						
	15	1	340	3	60						
	16	4	720	7	30						
	17	2	60	13	120						
	18	8	60	2	120						
	19	2	120	3	30						
	20	6	120	2	60						
	21	1	780	2	180						
	22	2	60	7	60						
	23	1	120	4	75						
	24	2	60	6	30						
	25	1	120	8	80						
	26	1	60	2	75						
	27	2	60	33	90						

Distribution Fitting (Uncensored Data)

Data:  
 TTF HEATER CEAMBER BOX  
 TTF PRESS ROLL REWINDER  
 TTR HEATER CEAMBER BOX  
 TTR PRES ROLL REWINDER

(Select):

Sort column names

OK Cancel Delete Transform... Help

For Help, press F1

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STATGRAPHICS Centurion - Untitled StatFolio

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DataBook

StatAdvisor  
StatGallery  
StatReporter  
StatFolio Comments

DASEMESTER 8 - BARU 2023/PENELITIAN TUGAS AKHIR/DATA KUSUS SK...

	TTF HEATER CEAMBER BOX	TTF HEATER CEAMBER BOX	TTF PRESS ROLL REWINDER	TTF PRESS ROLL REWINDER
1	2			
2	6			
3	1			
4	9			
5	2			
6	3			
7	6			
8	1			
9	6			
10	6			
11	4			
12	2			
13	1			
14	3			
15	1			
16	4			
17	2			
18	8			
19	?			

PERHITUNGAN F...

Distribution Fitting Options

Distribution:

- Bernoulli
- Binomial
- Discrete Uniform
- Geometric
- Hypergeometric
- Negative Binomial
- Poisson
- Beta
- Beta (4-parameter)
- Birnbaum-Saunders
- Cauchy
- Chi-Square
- Erlang
- Exponential
- Exponential (2-parameter)
- Exponential Power
- F (Variance Ratio)
- Folded Normal
- Gamma
- Gamma (3-parameter)
- Generalized Gamma
- Generalized Logistic
- Inverse Gaussian
- Laplace
- Logistic
- Logistic (3-parameter)
- Lognormal
- Lognormal (3-parameter)
- Maxwell (2-parameter)
- Noncentral Chi-Square
- Noncentral F
- Noncentral t
- Normal
- Pareto
- Pareto (2-parameter)
- Pareto (3-parameter)
- Rayleigh (2-parameter)
- Smallest Extreme Value
- Student's t
- Triangular
- Uniform
- Weibull
- Weibull (3-parameter)

Binomial Trials  
Sample Size n: 100

Hypergeometric Trials  
Sample Size n: 100  
 Estimate N  
 Specify N: 1000

Negative Binomial Trials  
 Estimate k  
 Specify k: 10

Extended Threshold Parameters  
 Estimate  
 Specify lower/upper: 0.0 1.0

For Help, press F1

Type here to search

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STATGRAPHICS Centurion - Untitled StatFolio

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DataBook

StatAdvisor  
StatGallery  
StatReporter  
StatFolio Comments

DASEMESTER 8 - BARU 2023/PENELITIAN TUGAS AKHIR/DATA KUSUS SK...

	TTF HEATER CEAMBER BOX	TTF HEATER CEAMBER BOX	TTF PRESS ROLL REWINDER	TTF PRESS ROLL REWINDER
1	2	60	9	30
2	6	60	3	120
3	1	60	3	180
4	9	60		
5	2	60		
6	3	60		
7	6	60		
8	1	180		
9	6	60		
10	6	120		
11	4	60		
12	2	380		
13	1	60		
14	3	180		
15	1	340		
16	4	720	7	30
17	2	60	13	120
18	8	60	2	120
19	?	170	3	30

PERHITUNGAN F...

Tables and Graphs

TABLES

- Analysis Summary
- Tests for Normality
- Goodness-of-Fit Tests
- Tail Areas
- Critical Values
- Normal Tolerance Limits
- Distribution-Free Limits
- Comparison of Alternative Distributions

GRAPHS

- Density Trace
- Symmetry Plot
- Frequency Histogram
- Quantile Plot
- Quantile-Quantile Plot
- Distribution Functions 1
- Distribution Functions 2

For Help, press F1

Type here to search

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STATGRAPHICS Centurion - Untitled StatFolio - [Uncensored Data - TTF HEATER CEAMBER BOX]

File Edit Plot Describe Compare Relate Forecast SPC DOE SnapStats!! Tools View Window Help

DataBook StatAdvisor StatGallery StatReporter StatFolio Comments Uncensored Data - TTF

### Uncensored Data - TTF HEATER CEAMBER BOX

Data variable: TTF HEATER CEAMBER BOX

44 values ranging from 1.0 to 18.0

Fitted Distributions

Exponential	Gamma	Normal	Weibull
mean = 3.97727	shape = 1.66681	mean = 3.97727	shape = 1.25867
	scale = 0.419085	standard deviation = 3.57308	scale = 4.31196

**The StatAdvisor**

This analysis shows the results of fitting 4 distributions to the data on TTF HEATER CEAMBER BOX. The estimated parameters of the fitted distributions are shown above. You can test whether the distributions fit the data adequately by selecting Goodness-of-Fit Tests from the list of Tabular Options. You can also assess visually how well the distributions fit by selecting Frequency Histogram from the list of Graphical Options. Other options within the procedure allow you to compute and display tail areas and critical values for the distribution. To select a different distribution, press the alternate mouse button and select Analysis Options.

STATGRAPHICS Centurion - Untitled StatFolio - [Uncensored Data - TTF HEATER CEAMBER BOX]

File Edit Plot Describe Compare Relate Forecast SPC DOE SnapStats!! Tools View Window Help

DataBook StatAdvisor StatGallery StatReporter StatFolio Comments Uncensored Data - TTF

### Uncensored Data - TTF HEATER CEAMBER BOX

Data variable: TTF HEATER CEAMBER BOX

#### Goodness-of-Fit Tests for TTF HEATER CEAMBER BOX

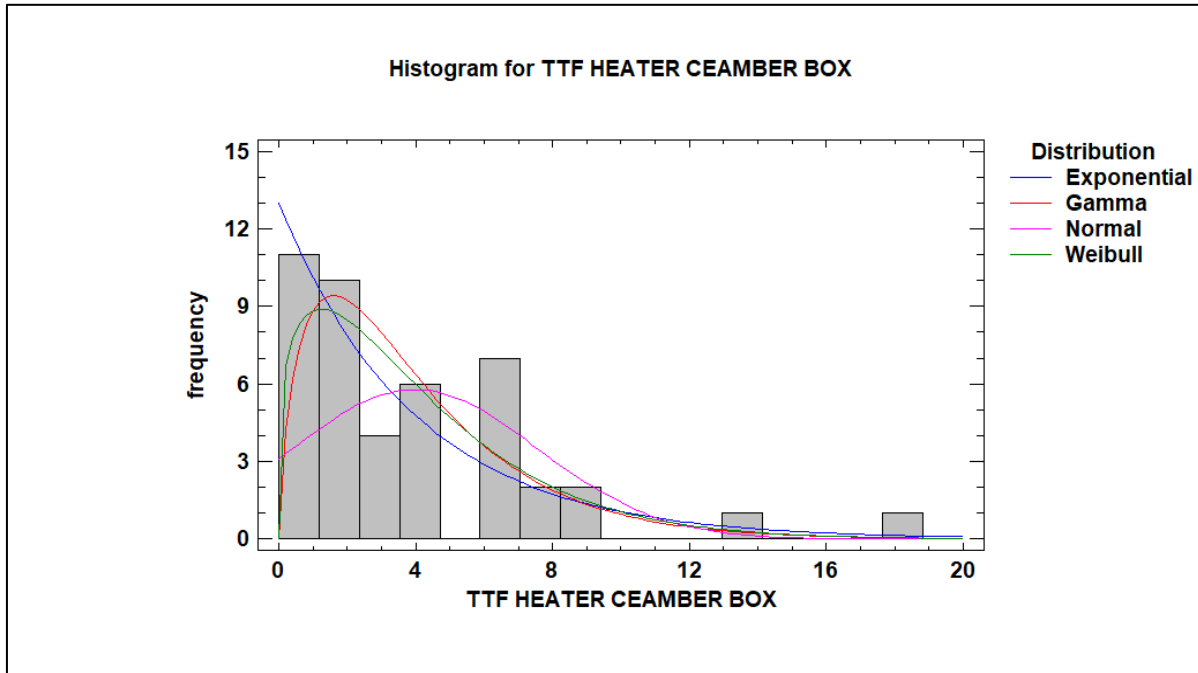
Kolmogorov-Smirnov Test

	Exponential	Gamma	Normal	Weibull
DPLUS	0.0848622	0.177191	0.202005	0.160975
DMINUS	0.222311	0.120698	0.202351	0.146927
DN	0.222311	0.177191	0.202351	0.160975
P-Value	0.0258356	0.126233	0.0544717	0.204611

**The StatAdvisor**

This pane shows the results of tests run to determine whether TTF HEATER CEAMBER BOX can be adequately modeled by various distributions.

P-values less than 0.05 would indicate that TTF HEATER CEAMBER BOX does not come from the selected distribution with 95% confidence.



**LAMPIRAN 6. Tabel Fungsi Gamma**

n	$\Gamma(n)$	n	$\Gamma(n)$	n	$\Gamma(n)$	n	$\Gamma(n)$	n	$\Gamma(n)$
1.00	1,000,000	1.20	0,918169	1.40	0,887264	1.60	0,893516	1.80	0,931384
1.01	0,994326	1.21	0,915577	1.41	0,886764	1.61	0,894681	1.81	0,934076
1.02	0,988844	1.22	0,913106	1.42	0,886465	1.62	0,895924	1.82	0,936845
1.03	0,983550	1.23	0,910735	1.43	0,886063	1.63	0,897244	1.83	0,939690
1.04	0,978438	1.24	0,918521	1.44	0,885805	1.64	0,898642	1.84	0,942690
1.05	0,973504	1.25	0,916403	1.45	0,885661	1.65	0,900117	1.85	0,945611
1.06	0,968744	1.26	0,914397	1.46	0,885604	1.66	0,901668	1.86	0,948687
1.07	0,964152	1.27	0,912503	1.47	0,885633	1.67	0,903296	1.87	0,951840
1.08	0,959725	1.28	0,910719	1.48	0,885754	1.68	0,905001	1.88	0,955071
1.09	0,955459	1.29	0,899042	1.49	0,885945	1.69	0,906782	1.89	0,958380
1.10	0,951351	1.30	0,897471	1.50	0,886227	1.70	0,908693	1.90	0,961766
1.11	0,947395	1.31	0,896004	1.51	0,886592	1.71	0,910572	1.91	0,965231
1.12	0,943590	1.32	0,894640	1.52	0,887039	1.72	0,912580	1.92	0,968774
1.13	0,939931	1.33	0,893378	1.53	0,887568	1.73	0,914665	1.93	0,972797
1.14	0,936416	1.34	0,892215	1.54	0,888178	1.74	0,916862	1.94	0,976099

<b>n</b>	<b><math>\Gamma(n)</math></b>	<b>n</b>	<b><math>\Gamma(n)</math></b>	<b>n</b>	<b><math>\Gamma(n)</math></b>	<b>n</b>	<b><math>\Gamma(n)</math></b>	<b>n</b>	<b><math>\Gamma(n)</math></b>
1.15	0,933041	1.35	0,891151	1.55	0,888669	1.75	0,919062	1.95	0,989881
1.16	0,929803	1.36	0,890184	1.56	0,889639	1.76	0,921375	1.96	0,983742
1.17	0,926700	1.37	0,889313	1.57	0,890490	1.77	0,923763	1.97	0,987685
1.18	0,923728	1.38	0,888537	1.58	0,891420	1.78	0,926227	1.98	0,991708
1.19	0,920885	1.39	0,887854	1.59	0,892428	1.79	0,928767	1.99	0,995813
1.20	0,0,918169	1.40	0,887264	1.60	0,893516	1.80	0,931384	2.00	1,000000

Jika  $0 < n < 1$ , maka

$$\Gamma(n) = \frac{\Gamma(n+1)}{n}$$

Jika  $n > 0$ , dan  $n$  bilangan real, maka

$$\Gamma(n+1) = n\Gamma(n)$$

Jika  $n > 0$  dan  $n$  bilangan bulat positif, maka  $\Gamma(n) = (n-1)!$

Jika  $n = 0,5$ , maka  $\Gamma(n) = \sqrt{\pi}$

Jika  $n = 0,7$ , maka  $\Gamma(0,7) = \frac{\Gamma(0,7+1)}{0,7} = \frac{\Gamma(1,7)}{0,7} = \frac{0,908639}{0,7}$

Jika  $n = 2,7$ , maka  $\Gamma(2,7) = \frac{\Gamma(1,7+1)}{2,7} = \frac{(1,7)\Gamma(1,7)}{2,7} = \frac{(1,7)(0,908639)}{0,7}$

Jika  $n = 4$ , maka  $\Gamma(4) = (4-1)! = 3! = 3 \cdot 2 \cdot 1 = 6$

Jika  $n = 0,5$ , maka  $\Gamma(0,5) = \sqrt{\pi} = \sqrt{3,14}$

### LAMPIRAN 7. Tabel Uji Kesesuaian Distribusi Weibull Komponen Ceamber

#### Box

i	$t_i$	$(bi/beta)^\alpha$	$F(t) = 1 - e^{-(t/b)^\alpha}$	$D_n^- = \text{Max}\{F(t_i) - \frac{i-1}{n}\}$	$D_n^+ = \text{Max}\{\frac{i}{n} - F(t_i)\}$
1	2	0.3802	0.3163	0.0663	-0.0436
2	6	1.5156	0.7803	0.0758	-0.0531
3	1	0.1589	0.1469	0.1469	-0.1242
4	9	2.5248	0.9199	0.0108	0.0119
5	2	0.3802	0.3163	0.0436	-0.0208

i	t <sub>i</sub>	(bi/beta) <sup>alpha</sup>	F(t) = 1 - e <sup>-(tβ)<sup>α</sup></sup>	D <sub>n</sub> <sup>-</sup> = Max{F(t <sub>i</sub> ) - $\frac{i-1}{n}$ }	D <sub>n</sub> <sup>+</sup> = Max{ $\frac{i}{n}$ - F(t <sub>i</sub> )}
6	3	0.6334	0.4692	-0.0080	0.0308
7	6	1.5156	0.7803	0.0531	-0.0303
8	1	0.1589	0.1469	0.1242	-0.1015
9	6	1.5156	0.7803	0.0303	-0.0076
10	6	1.5156	0.7803	0.0076	0.0151
11	4	0.9098	0.5974	0.0292	-0.0065
12	2	0.3802	0.3163	0.0208	0.0019
13	1	0.1589	0.1469	0.1015	-0.0787
14	3	0.6334	0.4692	-0.0308	0.0535
15	1	0.1589	0.1469	0.0787	-0.0560
16	4	0.9098	0.5974	0.0065	0.0162
17	2	0.3802	0.3163	-0.0019	0.0246
18	8	2.1769	0.8866	0.0230	-0.0002
19	2	0.3802	0.3163	-0.0246	0.0473
20	6	1.5156	0.7803	-0.0151	0.0379
21	1	0.1589	0.1469	0.0560	-0.0333
22	2	0.3802	0.3163	-0.0473	0.0701
23	1	0.1589	0.1469	0.0333	-0.0106
24	2	0.3802	0.3163	-0.0701	0.0928
25	1	0.1589	0.1469	0.0106	0.0122
26	1	0.1589	0.1469	-0.0122	0.0349
27	2	0.3802	0.3163	-0.0928	0.1155
28	18	6.0413	0.9976	0.0203	0.0024
29	6	1.5156	0.7803	-0.0379	0.0606
30	1	0.1589	0.1469	-0.0349	0.0576
31	9	2.5248	0.9199	-0.0119	0.0346
32	4	0.9098	0.5974	-0.0162	0.0390
33	4	0.9098	0.5974	-0.0390	0.0617
34	2	0.3802	0.3163	-0.1155	0.1382
35	1	0.1589	0.1469	-0.0576	0.0803
36	4	0.9098	0.5974	-0.0617	0.0844
37	6	1.5156	0.7803	-0.0606	0.0833
38	4	0.9098	0.5974	-0.0844	0.1071
39	1	0.1589	0.1469	-0.0803	0.1031

i	t <sub>i</sub>	(b <sub>i</sub> /beta) <sup>alpha</sup>	F(t) = 1 - e <sup>-(tβ)<sup>α</sup></sup>	D <sub>n</sub> <sup>-</sup> = Max{F(t <sub>i</sub> ) - $\frac{i-1}{n}$ }	D <sub>n</sub> <sup>+</sup> = Max{ $\frac{i}{n}$ - F(t <sub>i</sub> )}
40	14	4.4030	0.9878	0.0332	-0.0105
41	3	0.6334	0.4692	-0.0535	0.0762
42	2	0.3802	0.3163	-0.1382	0.1610
43	3	0.6334	0.4692	-0.0762	0.0990
44	8	2.1769	0.8866	0.0002	0.0225
			Max	0.1469	0.1610
			D <sub>n</sub>	0.1610	

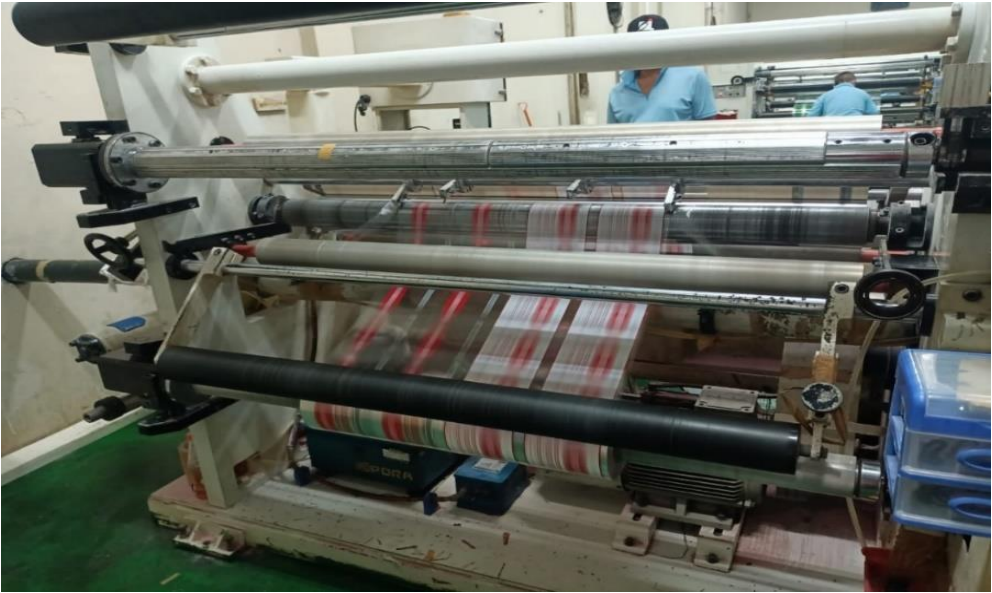
**LAMPIRAN 8. Tabel Uji Kesesuaian Distribusi Weibull Komponen Press Roll Rewinder**

i	t <sub>i</sub>	(b <sub>i</sub> /beta) <sup>alpha</sup>	F(t) = 1 - e <sup>-(tβ)<sup>α</sup></sup>	D <sub>n</sub> <sup>-</sup> = Max{F(t <sub>i</sub> ) - $\frac{i-1}{n}$ }	D <sub>n</sub> <sup>+</sup> = Max{ $\frac{i}{n}$ - F(t <sub>i</sub> )}
1	9	0.1804	0.1651	-0.7016	0.7349
2	3	0.0424	0.0415	-0.1585	0.1918
3	3	0.0424	0.0415	-0.1918	0.2251
4	5	0.0831	0.0798	-0.3869	0.4202
5	6	0.1057	0.1003	-0.4663	0.4997
6	3	0.0424	0.0415	-0.2251	0.2585
7	2	0.1948	0.1770	0.1770	-0.1437
8	5	0.0831	0.0798	-0.4202	0.4536
9	6	0.1057	0.1003	-0.4997	0.5330
10	11	0.2350	0.2095	-0.6905	0.7239
11	4	0.0620	0.0601	-0.3399	0.3733
12	8	0.1545	0.1431	-0.6235	0.6569
13	2	0.0249	0.0245	-0.0088	0.0421
14	3	0.0424	0.0415	-0.2585	0.2918
15	3	0.0424	0.0415	-0.2918	0.3251
16	7	0.1295	0.1215	-0.5785	0.6118
17	13	0.2929	0.2539	-0.6794	0.7127
18	2	0.0249	0.0245	-0.0421	0.0755
19	3	0.0424	0.0415	-0.3251	0.3585
20	2	0.0249	0.0245	-0.0755	0.1088
21	2	0.0249	0.0245	-0.1088	0.1421
22	7	0.1295	0.1215	-0.6118	0.6452

i	t <sub>i</sub>	(b <sub>i</sub> /β) <sup>α</sup>	F(t) = 1 - e <sup>-(t/β)<sup>α</sup></sup>	D <sub>n</sub> <sup>-</sup> = Max{F(t <sub>i</sub> ) - $\frac{i-1}{n}$ }	D <sub>n</sub> <sup>+</sup> = Max{ $\frac{i}{n}$ - F(t <sub>i</sub> )}
23	4	0.0620	0.0601	-0.3733	0.4066
24	6	0.1057	0.1003	-0.5330	0.5663
25	8	0.1545	0.1431	-0.6569	0.6902
26	2	0.0249	0.0245	-0.1421	0.1755
27	33	1.0000	0.6321	-0.3679	0.4012
28	6	0.1057	0.1003	-0.5663	0.5997
29	8	0.1545	0.1431	-0.6902	0.7235
30	14	0.3230	0.2760	-0.6906	0.7240
31	5	0.0831	0.0798	-0.4536	0.4869
			Max	0.1770	0.7349
			D <sub>n</sub>	0.1770	

### LAMPIRAN 9. Gambar Mesin Dan Produk







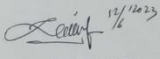
## LAMPIRAN 10. Lembar Revisian Sidang Tugas Akhir

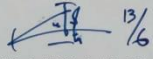
UNIVERSITAS 17 AGUSTUS 1945 SURABAYA  
FAKULTAS TEKNIK  
PROGRAM STUDI TEKNIK INDUSTRI


**REVISI SIDANG TUGAS AKHIR**

NAMA : Ridhwan Dwi Wicaksono  
NBI : 1411900150  
JUDUL : EVALUASI PERAWATAN KOMPONEN CEAMBER BOX DAN PRESS ROLL REWINDER PADA MESIN LAMINATING UNIT PRINTING PRODUKSI KEMASAN PLASTIK (STUDI KASUS EADA PT DAESANG INGERDIENTS INDONESIA TBK DI GRESIK)  
BATAS BIMBINGAN REVISI : 1 Minggu setelah Sidang

NO	URAIAN	BAB	HALAMAN	NO	URAIAN	BAB	HALAMAN
1.	Flow chart ditata dalam yg Corrective maintenance	4		1.	tujuan diubah, sinkronkan dgn kampu Lain	1	ACC
2.	Di bab 2 → dihilangkan corrective maintenance..			4	ACC		
				3.	jadwal pelaksanaan tidak perlu dikam pikirkan lagi	3	ACC

Telah Direvisi,  
Dosen Penguji 1,  
 13/6/2023  
Dr. Ir. Zainal Arief, MT

Dosen Penguji 2,  
 13/6  
Wiwin Widiasih, ST, MT

Surabaya, 07 Juni 2023  
Mengetahui  
Dosen Pembimbing,  
  
Dr. Ir. Nyoman Lokajaya, ST, MM