

Lampiran 1. Data Awal Dan Kuisinoner FMEA

a) Responden 1

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	O	D	RPN	RANK
1	Vakum	Terlalu besar angin	Bahan tinline keluar double	Keluar bahan tinline tidak stabil	Penyesuaian pada besar kecilnya angin	2	4	2	16	8
		Terlalu kecil angin	Bahan tinline sulit untuk keluar	Keluar bahan tinline tidak stabil	Penyesuaian pada besar kecilnya angin	9	5	4	180	2
2	Swet Doblesheet	Bahan tinline rusak	Mesin mati	Tinline double	Setting ulang mesin	8	2	2	32	6
3	Cut Corner	Tumpul	Ujung tinline tidak terpotong	Terlalu sering digunakan	Pengasahan	1	1	1	1	12
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	1	2	2	4	10
5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuain antara ujung kanan dan kiri forming paper	6	4	2	48	4
6	Press	Pecah	Bocor	Setting tidak sesuai	Setting ulang	3	2	2	12	9

7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	6	6	6	216	1
8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	3	4	3	36	5
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	6	5	2	60	3
10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	2	1	2	4	11
11	Oil Spill	Bercak pada kaleng	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian oil	3	5	2	30	7

b) Responden 2

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	O	D	RPN	RANK
1	Vakum	Terlalu besar angin	Bahan tinplate keluar double	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	4	4	2	32	10
		Terlalu kecil angin	Bahan tinplate sulit untuk keluar	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	3	5	2	30	11
2	Swet Doblesheet	Bahan tinplate rusak	Mesin mati	Tinplate double	Setting ulang mesin	5	3	6	90	6

3	Cut Corner	Tumpul	Ujung tinplate tidak terpotong	Terlalu sering digunakan	Pengasahan	6	6	5	180	2
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	5	7	7	245	1
5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuaian antara ujung kanan dan kiri forming paper	6	6	5	180	3
6	Press	Pecah	Bocor	Setting tidak sesuai	Setting ulang	4	3	4	48	8
7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	5	6	4	120	4
8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	6	4	4	96	7
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	5	5	4	100	5
10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	5	2	4	40	9
11	Oil Spill	Bercak pada kaleng	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian oil	3	4	2	24	12

c) Responden 3

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	O	D	RPN	RANK
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1	Vakum	Terlalu besar angin	Bahan tinplate keluar double	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	1	1	2	2	11
		Terlalu kecil angin	Bahan tinplate sulit untuk keluar	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	2	1	1	2	12
2	Swet Doblesheet	Bahan tinplate rusak	Mesin mati	Tinplate double	Setting ulang mesin	5	3	3	45	4
3	Cut Corner	Tumpul	Ujung tinplate tidak terpotong	Terlalu sering digunakan	Pengasahan	6	3	5	90	1
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	6	3	3	54	3
5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuain antara ujung kanan dan kiri forming paper	5	4	2	40	5
6	Press	Pecah	Bocor	Setting tidak sesuai	Setting ulang	2	3	3	18	8
7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	6	2	2	24	7

8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	6	4	3	72	2
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	4	2	1	8	10
10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	3	3	2	18	9
11	Oil Spill	Bercak pada kaleng	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian oil	3	4	3	36	6

d) Responden 4

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	O	D	RPN	RANK
1	Vakum	Terlalu besar angin	Bahan tinplate keluar double	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	1	2	2	4	12
		Terlalu kecil angin	Bahan tinplate sulit untuk keluar	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	1	3	2	6	10
2	Swet Doble sheet	Bahan tinplate rusak	Mesin mati	Tinplate double	Setting ulang mesin	4	3	2	24	6

3	Cut Corner	Tumpul	Ujung tinfoil tidak terpotong	Terlalu sering digunakan	Pengasahan	6	5	3	90	2
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	6	3	5	90	3
5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuaian antara ujung kanan dan kiri forming paper	5	4	6	120	1
6	Press	Pecah	Bocor	Setting tidak sesuai	Setting ulang	3	2	1	6	11
7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	5	2	2	20	9
8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	6	4	3	72	5
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	4	3	2	24	7
10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	6	2	2	24	8
11	Oil Spill	Bercak pada	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian	3	5	5	75	4

		kaleng			oil					
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e) Responden 5

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	O	D	RPN	RANK
1	Vakum	Terlalu besar angin	Bahan tinplate keluar double	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	1	2	2	4	11
		Terlalu kecil angin	Bahan tinplate sulit untuk keluar	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	2	1	4	8	10
2	Swet Doble sheet	Bahan tinplate rusak	Mesin mati	Tinplate double	Setting ulang mesin	1	3	4	12	7
3	Cut Corner	Tumpul	Ujung tinplate tidak terpotong	Terlalu sering digunakan	Pengasahan	2	2	3	12	8
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	3	3	5	45	1
5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuain antara ujung kanan dan kiri forming paper	3	4	3	36	3
6	Press	Pecah	Bocor	Setting	Setting ulang	3	3	3	27	4

				tidak sesuai						
7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	5	2	4	40	2
8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	3	2	4	24	5
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	2	6	1	12	9
10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	6	1	4	24	6
11	Oil Spill	Bercak pada kaleng	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian oil	1	2	2	4	12

f) Responden 6

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	O	D	RPN	RANK
1	Vakum	Terlalu besar angin	Bahan tinfoil keluar double	Keluar bahan tinfoil tidak stabil	Penyesuaian pada besar kecilnya angin	5	3	5	75	7
		Terlalu kecil angin	Bahan tinfoil sulit untuk keluar	Keluar bahan tinfoil tidak	Penyesuaian pada besar kecilnya angin	3	5	5	75	8

				stabil						
2	Swet Doblesheet	Bahan tinplate rusak	Mesin mati	Tinplate double	Setting ulang mesin	3	5	5	75	9
3	Cut Corner	Tumpul	Ujung tinplate tidak terpotong	Terlalu sering digunakan	Pengasahan	3	6	2	36	12
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	6	3	5	90	5
5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuain antara ujung kanan dan kiri forming paper	6	4	3	72	11
6	Press	Pecah	Bocor	Setting tidak sesuai	Setting ulang	6	6	4	144	3
7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	6	5	5	150	1
8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	6	6	4	144	2
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	4	4	5	80	6

10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	6	5	4	120	4
11	Oil Spill	Bercak pada kaleng	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian oil	3	5	5	75	10

g) Responden 7

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	O	D	RPN	RANK
1	Vakum	Terlalu besar angin	Bahan tinplate keluar double	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	1	3	2	6	11
		Terlalu kecil angin	Bahan tinplate sulit untuk keluar	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	3	5	4	60	6
2	Swet Doblesheet	Bahan tinplate rusak	Mesin mati	Tinplate double	Setting ulang mesin	3	4	2	24	8
3	Cut Corner	Tumpul	Ujung tinplate tidak terpotong	Terlalu sering digunakan	Pengasahan	2	4	2	16	10
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	6	3	5	90	3

5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuain antara ujung kanan dan kiri forming paper	6	4	5	120	1
6	Press	Pecah	Bocor	Setting tidak sesuai	Setting ulang	3	6	4	72	5
7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	5	3	5	75	4
8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	6	5	4	120	2
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	3	4	2	24	9
10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	6	5	2	60	7
11	Oil Spill	Bercak pada kaleng	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian oil	1	2	2	4	12

h) Responden 8

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	O	D	RPN	RANK
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1	Vakum	Terlalu besar angin	Bahan tinplate keluar double	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	1	4	2	8	11
		Terlalu kecil angin	Bahan tinplate sulit untuk keluar	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	3	1	4	12	9
2	Swet Doblesheet	Bahan tinplate rusak	Mesin mati	Tinplate double	Setting ulang mesin	8	4	1	32	6
3	Cut Corner	Tumpul	Ujung tinplate tidak terpotong	Terlalu sering digunakan	Pengasahan	2	2	5	20	7
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	6	3	5	90	4
5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuain antara ujung kanan dan kiri forming paper	6	4	5	120	2
6	Press	Pecah	Bocor	Setting tidak sesuai	Setting ulang	2	2	4	16	8
7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	6	5	4	120	3

8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	6	6	4	144	1
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	2	6	1	12	10
10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	6	4	2	48	5
11	Oil Spill	Bercak pada kaleng	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian oil	1	2	2	4	12

i) Hasil Data FMEA

No	Nama Komponen	Potensi	Efek	Penyebab	Penanganan	S	Rata - Rata	O	Rata - Rata	D	Rata - Rata	RPN	Rank
1	Vakum	Terlalu besar angin	Bahan tinplate keluar double	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	16	2	23	2,8	19	2,3	12,88	12
		Terlalu kecil angin	Bahan tinplate sulit untuk keluar	Keluar bahan tinplate tidak stabil	Penyesuaian pada besar kecilnya angin	26	3,2	26	3,2	26	3,2	32,768	9
2	Swet Doblesheet	Bahan tinplate rusak	Mesin mati	Tinplate double	Setting ulang mesin	37	4,6	27	3,3	23	2,8	42,504	5
3	Cut Corner	Tumpul	Ujung tinplate tidak terpotong	Terlalu sering digunakan	Pengasahan	28	3,5	27	3,3	26	3,2	36,96	6
4	Overlap	Terbuka	Bocor	Settingan mesin	Setting ulang	36	4,5	27	3,3	37	4,6	68,31	4

5	Forming Paper	Sambungan terbuka	Sambungan kaleng terputus	Settingan kurang standar	Penyesuaian settingan dan penyesuain antara ujung kanan dan kiri kupu-kupu	43	5,3	34	4,2	31	3,8	84,588	1
6	Press	Pecah	Bocor	Setting tidak sesuai	Setting ulang	26	3,2	27	3,3	25	3,1	32,736	10
7	Curling	Tajam dan terbuka	Hasil curling tidak sempurna	Settingan tidak sesuai	Setting ulang	44	5,5	31	3,8	32	4	83,6	2
8	Flanging	Body kaleng rusak	Hasil flanging terlalu terbuka	Settingan berubah	Settingan diperbaiki	42	5,2	35	4,3	29	3,6	80,496	3
9	Swet Double Bottom	Kaleng tergores	Kaleng rusak	Kaleng dan mesin tidak pas	Perbaikan pada swetnya	30	3,7	35	4,3	18	2,2	35,002	7
10	Beading	Kegagalan mesin	Beading tidak sempurna	Settingan beading tidak sesuai	Perbaikan pada proses beading	40	5	23	2,8	20	2,5	35	8
11	Oil Spill	Bercak pada kaleng	Kaleng berminyak	Oil berlebihan	Pengontrolan pemberian oil	18	2,2	29	3,6	20	2,5	19,8	11

Lampiran 2. Data Komponen

1. Data Komponen Mesin Forming Paper

A. Data MTTR Komponen Mesin Forming Paper

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Kerusakan	Waktu Selesai Kerusakan	Lama Perbaikan (Menit)
1	03/02/2022	Forming Paper eror	09:00	09:40	40
2	04/02/2022	Forming Paper eror	13:00	13:25	25
3	04/02/2022	Forming Paper eror	15:15	15:40	25
4	05/02/2022	Forming Paper eror	10:05	10:20	15
5	06/02/2022	Forming Paper eror	09:15	09:50	35
6	06/02/2022	Forming Paper eror	20:00	20:20	20
7	07/02/2022	Forming Paper eror	11:15	11:40	25
8	08/02/2022	Forming Paper eror	21:00	21:15	15
9	09/02/2022	Forming Paper eror	09:00	09:20	20
10	10/02/2022	Forming Paper eror	15:20	15:40	20
11	10/02/2022	Forming Paper eror	21:00	21:25	25
12	11/02/2022	Forming Paper eror	03:00	03:15	15
13	11/02/2022	Forming Paper eror	13:00	13:20	20
14	13/02/2022	Forming Paper eror	10:20	10:45	25
15	14/02/2022	Forming Paper eror	14:15	14:40	25
16	15/02/2022	Forming Paper eror	16:20	16:50	30
17	16/02/2022	Forming Paper eror	01:00	01:30	30
18	17/02/2022	Forming Paper eror	08:25	08:55	30
19	18/02/2022	Forming Paper eror	19:20	19:40	20
20	19/02/2022	Forming Paper eror	03:05	03:25	20
21	20/02/2022	Forming Paper eror	21:00	21:40	40
22	21/02/2022	Forming Paper eror	03:00	03:15	15
23	22/02/2022	Forming Paper eror	13:35	13:50	15
24	23/02/2022	Forming Paper eror	05:20	05:45	25
25	23/02/2022	Forming Paper eror	13:00	13:40	40

26	25/02/2022	Forming Paper eror	08:20	08:35	15
27	26/02/2022	Forming Paper eror	15:30	15:50	20
28	27/02/2022	Forming Paper eror	01:00	01:15	15
29	28/02/2022	Forming Paper eror	16:00	16:30	30
30	01/03/2022	Forming Paper eror	05:00	05:15	15
31	02/03/2022	Forming Paper eror	14:00	14:25	25
32	03/03/2022	Forming Paper eror	09:00	09:30	30
33	04/03/2022	Forming Paper eror	14:15	14:55	40
34	05/03/2022	Forming Paper eror	04:30	04:45	15
35	06/03/2022	Forming Paper eror	10:05	10:30	25
36	07/03/2022	Forming Paper eror	09:35	09:50	15
37	07/03/2022	Forming Paper eror	22:15	22:40	25
38	09/03/2022	Forming Paper eror	23:00	23:25	25
39	11/03/2022	Forming Paper eror	13:10	13:50	40
40	13/03/2022	Forming Paper eror	20:15	20:40	25
41	14/03/2022	Forming Paper eror	15:35	15:55	20
42	16/03/2022	Forming Paper eror	03:00	03:15	15
43	16/03/2022	Forming Paper eror	21:55	22:10	15
44	17/03/2022	Forming Paper eror	09:30	09:45	15
45	18/03/2022	Forming Paper eror	23:10	23:30	20
46	20/03/2022	Forming Paper eror	05:00	05:10	10
47	20/03/2022	Forming Paper eror	10:30	10:55	25
48	20/03/2022	Forming Paper eror	17:00	17:25	25
49	21/03/2022	Forming Paper eror	04:00	04:15	15
50	23/03/2022	Forming Paper eror	13:30	13:50	20
51	23/03/2022	Forming Paper eror	23:45	23:55	10
52	25/03/2022	Forming Paper eror	18:00	18:35	35
53	26/03/2022	Forming Paper eror	19:25	19:40	15
54	26/03/2022	Forming Paper eror	22:00	22:20	20
55	27/03/2022	Forming Paper eror	01:15	01:30	15
56	28/03/2022	Forming Paper eror	09:00	09:35	35
57	29/03/2022	Forming Paper eror	02:40	02:50	10
58	29/03/2022	Forming Paper eror	10:35	10:45	10

59	29/03/2022	Forming Paper eror	18:45	18:55	10
60	31/03/2022	Forming Paper eror	19:05	19:20	15
61	01/04/2022	Forming Paper eror	04:45	04:55	10
62	03/04/2022	Forming Paper eror	08:30	08:45	15
63	04/04/2022	Forming Paper eror	23:15	23:30	15
64	05/04/2022	Forming Paper eror	01:00	01:45	45
65	07/04/2022	Forming Paper eror	10:10	10:50	40
66	07/04/2022	Forming Paper eror	23:10	23:50	40
67	09/04/2022	Forming Paper eror	20:00	20:20	20
68	10/04/2022	Forming Paper eror	17:00	17:30	30
69	11/04/2022	Forming Paper eror	16:35	16:55	20
70	13/04/2022	Forming Paper eror	17:35	17:55	20
71	14/04/2022	Forming Paper eror	20:05	20:40	35
72	16/04/2022	Forming Paper eror	21:05	21:50	45
73	17/04/2022	Forming Paper eror	02:00	02:40	40
74	19/04/2022	Forming Paper eror	10:15	10:30	15
75	20/04/2022	Forming Paper eror	11:00	11:35	35
76	22/04/2022	Forming Paper eror	03:40	04:10	30
77	22/04/2022	Forming Paper eror	20:20	20:40	20
78	25/04/2022	Forming Paper eror	20:00	20:40	40
79	28/04/2022	Forming Paper eror	05:55	06:15	10
80	28/04/2022	Forming Paper eror	13:25	13:40	20
81	28/04/2022	Forming Paper eror	23:00	23:40	40
82	29/04/2022	Forming Paper eror	21:30	21:50	20
83	30/04/2022	Forming Paper eror	05:10	05:55	45
84	30/04/2022	Forming Paper eror	17:05	17:25	20
Jumlah					2000

B. Data MTTF Komponen mesin Forming Paper

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Optimal	Waktu Selesai Optimal	Lama Perbaikan (Jam)
1	03/02/2022	Forming Paper Error	03/02/2022 09:41	04/02/2022 13:00	27,32
2	04/02/2022	Forming Paper Error	04/02/2022 13:26	04/02/2022 15:15	1,82
3	04/02/2022	Forming Paper Error	04/02/2022 15:41	05/02/2022 10:05	18,40
4	05/02/2022	Forming Paper Error	05/02/2022 10:21	06/02/2022 09:15	22,90
5	06/02/2022	Forming Paper Error	06/02/2022 09:51	06/02/2022 20:00	10,15
6	06/02/2022	Forming Paper Error	06/02/2022 20:21	07/02/2022 11:15	14,90
7	07/02/2022	Forming Paper Error	07/02/2022 11:41	08/02/2022 21:00	33,32
8	08/02/2022	Forming Paper Error	08/02/2022 21:16	09/02/2022 09:00	11,73
9	09/02/2022	Forming Paper Error	09/02/2022 09:21	10/02/2022 15:20	29,98
10	10/02/2022	Forming Paper Error	10/02/2022 15:41	10/02/2022 21:00	5,32
11	10/02/2022	Forming Paper Error	10/02/2022 21:26	11/02/2022 03:00	5,57
12	11/02/2022	Forming Paper Error	11/02/2022 03:16	11/02/2022 13:00	9,73
13	11/02/2022	Forming Paper Error	11/02/2022 13:21	13/02/2022 10:20	44,98
14	13/02/2022	Forming Paper Error	13/02/2022 10:46	14/02/2022 14:15	27,48

15	14/02/2022	Forming Paper Error	14/02/2022 14:41	15/02/2022 16:20	25,65
16	15/02/2022	Forming Paper Error	15/02/2022 16:51	16/02/2022 01:00	8,15
17	16/02/2022	Forming Paper Error	16/02/2022 01:31	17/02/2022 08:25	30,90
18	17/02/2022	Forming Paper Error	17/02/2022 08:56	18/02/2022 19:20	34,40
19	18/02/2022	Forming Paper Error	18/02/2022 19:41	19/02/2022 03:05	7,40
20	19/02/2022	Forming Paper Error	19/02/2022 03:26	20/02/2022 21:00	41,57
21	20/02/2022	Forming Paper Error	20/02/2022 21:41	21/02/2022 03:00	5,32
22	21/02/2022	Forming Paper Error	21/02/2022 03:16	22/02/2022 13:35	34,32
23	22/02/2022	Forming Paper Error	22/02/2022 13:51	23/02/2022 05:20	15,48
24	23/02/2022	Forming Paper Error	23/02/2022 05:46	23/02/2022 13:00	7,23
25	23/02/2022	Forming Paper Error	23/02/2022 13:41	25/02/2022 08:20	42,65
26	25/02/2022	Forming Paper Error	25/02/2022 08:36	26/02/2022 15:30	30,90
27	26/02/2022	Forming Paper Error	26/02/2022 15:51	27/02/2022 01:00	9,15
28	27/02/2022	Forming Paper Error	27/02/2022 01:16	28/02/2022 16:00	38,73
29	28/02/2022	Forming Paper Error	28/02/2022 16:31	01/03/2022 05:00	12,48
30	01/03/2022	Forming Paper Error	01/03/2022 05:16	02/03/2022 14:00	32,73

31	02/03/2022	Forming Paper Error	02/03/2022 14:26	03/03/2022 09:00	18,57
32	03/03/2022	Forming Paper Error	03/03/2022 09:31	04/03/2022 14:15	28,73
33	04/03/2022	Forming Paper Error	04/03/2022 14:56	05/03/2022 04:30	13,57
34	05/03/2022	Forming Paper Error	05/03/2022 04:46	06/03/2022 10:05	29,32
35	06/03/2022	Forming Paper Error	06/03/2022 10:31	07/03/2022 09:35	23,07
36	07/03/2022	Forming Paper Error	07/03/2022 09:51	07/03/2022 22:15	12,40
37	07/03/2022	Forming Paper Error	07/03/2022 22:41	09/03/2022 23:00	48,32
38	09/03/2022	Forming Paper Error	09/03/2022 23:26	11/03/2022 13:10	37,73
39	11/03/2022	Forming Paper Error	11/03/2022 13:51	13/03/2022 20:15	54,40
40	13/03/2022	Forming Paper Error	13/03/2022 20:41	14/03/2022 15:35	18,90
41	14/03/2022	Forming Paper Error	14/03/2022 15:56	16/03/2022 03:00	35,07
42	16/03/2022	Forming Paper Error	16/03/2022 03:16	16/03/2022 21:55	18,65
43	16/03/2022	Forming Paper Error	16/03/2022 22:11	17/03/2022 09:30	11,32
44	17/03/2022	Forming Paper Error	17/03/2022 09:46	18/03/2022 23:10	37,40
45	18/03/2022	Forming Paper Error	18/03/2022 23:31	20/03/2022 05:00	29,48
46	20/03/2022	Forming Paper Error	20/03/2022 05:11	20/03/2022 10:30	5,32

47	20/03/2022	Forming Paper Error	20/03/2022 10:56	20/03/2022 17:00	6,07
48	20/03/2022	Forming Paper Error	20/03/2022 17:26	21/03/2022 04:00	10,57
49	21/03/2022	Forming Paper Error	21/03/2022 04:16	23/03/2022 13:30	57,23
50	23/03/2022	Forming Paper Error	23/03/2022 13:51	23/03/2022 23:45	9,90
51	23/03/2022	Forming Paper Error	23/03/2022 23:56	25/03/2022 18:00	42,07
52	25/03/2022	Forming Paper Error	25/03/2022 18:36	26/03/2022 19:25	24,82
53	26/03/2022	Forming Paper Error	26/03/2022 19:41	26/03/2022 22:00	2,32
54	26/03/2022	Forming Paper Error	26/03/2022 22:21	27/03/2022 01:15	2,90
55	27/03/2022	Forming Paper Error	27/03/2022 01:31	28/03/2022 09:00	31,48
56	28/03/2022	Forming Paper Error	28/03/2022 09:36	29/03/2022 02:40	17,07
57	29/03/2022	Forming Paper Error	29/03/2022 02:51	29/03/2022 10:35	7,73
58	29/03/2022	Forming Paper Error	29/03/2022 10:46	29/03/2022 18:45	7,98
59	29/03/2022	Forming Paper Error	29/03/2022 18:56	31/03/2022 19:05	48,15
60	31/03/2022	Forming Paper Error	31/03/2022 19:21	01/04/2022 04:45	9,40
61	01/04/2022	Forming Paper Error	01/04/2022 04:56	03/04/2022 08:30	51,57
62	03/04/2022	Forming Paper Error	03/04/2022 08:46	04/04/2022 23:15	38,48

63	04/04/2022	Forming Paper Error	04/04/2022 23:31	05/04/2022 01:00	1,48
64	05/04/2022	Forming Paper Error	05/04/2022 01:46	07/04/2022 10:10	56,40
65	07/04/2022	Forming Paper Error	07/04/2022 10:56	07/04/2022 23:10	12,23
66	07/04/2022	Forming Paper Error	07/04/2022 23:51	09/04/2022 20:00	44,15
67	09/04/2022	Forming Paper Error	09/04/2022 20:21	10/04/2022 17:00	20,65
68	10/04/2022	Forming Paper Error	10/04/2022 17:31	11/04/2022 16:35	23,07
69	11/04/2022	Forming Paper Error	11/04/2022 16:56	13/04/2022 17:35	48,65
70	13/04/2022	Forming Paper Error	13/04/2022 17:56	14/04/2022 20:05	26,15
71	14/04/2022	Forming Paper Error	14/04/2022 20:41	16/04/2022 21:05	48,40
72	16/04/2022	Forming Paper Error	16/04/2022 21:51	17/04/2022 02:00	4,15
73	17/04/2022	Forming Paper Error	17/04/2022 02:41	19/04/2022 10:15	55,57
74	19/04/2022	Forming Paper Error	19/04/2022 10:31	20/04/2022 03:40	17,15
75	20/04/2022	Forming Paper Error	20/04/2022 11:36	22/04/2022 11:00	47,40
76	22/04/2022	Forming Paper Error	22/04/2022 04:11	22/04/2022 20:20	16,15
77	22/04/2022	Forming Paper Error	22/04/2022 20:41	25/04/2022 20:00	71,32
78	25/04/2022	Forming Paper Error	25/04/2022 20:41	28/04/2022 05:55	57,23

79	28/04/2022	Forming Paper Error	28/04/2022 06:16	28/04/2022 13:25	7,15
80	28/04/2022	Forming Paper Error	28/04/2022 13:41	28/04/2022 23:00	9,32
81	28/04/2022	Forming Paper Error	28/04/2022 23:41	29/04/2022 21:30	21,82
82	29/04/2022	Forming Paper Error	29/04/2022 21:56	30/04/2022 05:10	7,23
83	30/04/2022	Forming Paper Error	30/04/2022 05:56	30/04/2022 17:05	11,15
84	30/04/2022	Forming Paper Error	30/04/2022 17:26	01/05/2022 10:05	16,65
Jumlah					2054,10

C. Data MTBF Komponen mesin Forming Paper

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Optimal	Waktu Selesai Optimal	Lama Perbaikan (Jam)
1	03/02/2022	Forming Paper Error	03/02/2022 09:40	04/02/2022 13:00	27,33
2	04/02/2022	Forming Paper Error	04/02/2022 13:25	04/02/2022 15:15	1,83
3	04/02/2022	Forming Paper Error	04/02/2022 15:40	05/02/2022 10:05	18,42
4	05/02/2022	Forming Paper Error	05/02/2022 10:20	06/02/2022 09:15	22,92
5	06/02/2022	Forming Paper Error	06/02/2022 09:50	06/02/2022 20:00	10,17
6	06/02/2022	Forming Paper Error	06/02/2022 20:20	07/02/2022 11:15	14,92
7	07/02/2022	Forming Paper Error	07/02/2022 11:40	08/02/2022 21:00	33,33
8	08/02/2022	Forming Paper Error	08/02/2022 21:10	09/02/2022 09:00	11,83
9	09/02/2022	Forming Paper Error	09/02/2022 09:20	10/02/2022 15:20	30,00
10	10/02/2022	Forming Paper Error	10/02/2022 15:40	10/02/2022 21:00	5,33
11	10/02/2022	Forming Paper Error	10/02/2022 21:25	11/02/2022 03:00	5,58

12	11/02/2022	Forming Paper Eror	11/02/2022 03:15	11/02/2022 13:00	9,75
13	11/02/2022	Forming Paper Eror	11/02/2022 13:20	13/02/2022 10:20	45,00
14	13/02/2022	Forming Paper Eror	13/02/2022 10:45	14/02/2022 14:15	27,50
15	14/02/2022	Forming Paper Eror	14/02/2022 14:40	15/02/2022 16:20	25,67
16	15/02/2022	Forming Paper Eror	15/02/2022 16:50	16/02/2022 01:00	8,17
17	16/02/2022	Forming Paper Eror	16/02/2022 01:30	17/02/2022 08:25	30,92
18	17/02/2022	Forming Paper Eror	17/02/2022 08:55	18/02/2022 19:20	34,42
19	18/02/2022	Forming Paper Eror	18/02/2022 19:40	19/02/2022 03:05	7,42
20	19/02/2022	Forming Paper Eror	19/02/2022 03:25	20/02/2022 21:00	41,58
21	20/02/2022	Forming Paper Eror	20/02/2022 21:40	21/02/2022 03:00	5,33
22	21/02/2022	Forming Paper Eror	21/02/2022 03:15	22/02/2022 13:35	34,33
23	22/02/2022	Forming Paper Eror	22/02/2022 13:50	23/02/2022 05:20	15,50
24	23/02/2022	Forming Paper Eror	23/02/2022 05:45	23/02/2022 13:00	7,25
25	23/02/2022	Forming Paper Eror	23/02/2022 13:40	25/02/2022 08:20	42,67
26	25/02/2022	Forming Paper Eror	25/02/2022 08:35	26/02/2022 15:30	30,92
27	26/02/2022	Forming Paper Eror	26/02/2022 15:50	27/02/2022 01:00	9,17
28	27/02/2022	Forming Paper Eror	27/02/2022 01:15	28/02/2022 16:00	38,75
29	28/02/2022	Forming Paper Eror	28/02/2022 16:30	01/03/2022 05:00	12,50
30	01/03/2022	Forming Paper Eror	01/03/2022 05:15	02/03/2022 14:00	32,75
31	02/03/2022	Forming Paper Eror	02/03/2022 14:25	03/03/2022 09:00	18,58
32	03/03/2022	Forming Paper Eror	03/03/2022 09:30	04/03/2022 14:15	28,75
33	04/03/2022	Forming Paper Eror	04/03/2022 14:55	05/03/2022 04:30	13,58
34	05/03/2022	Forming Paper Eror	05/03/2022 04:45	06/03/2022 10:05	29,33
35	06/03/2022	Forming Paper Eror	06/03/2022 10:30	07/03/2022 09:35	23,08

36	07/03/2022	Forming Paper Eror	07/03/2022 09:50	07/03/2022 22:15	12,42
37	07/03/2022	Forming Paper Eror	07/03/2022 22:40	09/03/2022 23:00	48,33
38	09/03/2022	Forming Paper Eror	09/03/2022 23:25	11/03/2022 13:10	37,75
39	11/03/2022	Forming Paper Eror	11/03/2022 13:50	13/03/2022 20:15	54,42
40	13/03/2022	Forming Paper Eror	13/03/2022 20:40	14/03/2022 15:35	18,92
41	14/03/2022	Forming Paper Eror	14/03/2022 15:55	16/03/2022 03:00	35,08
42	16/03/2022	Forming Paper Eror	16/03/2022 03:15	16/03/2022 21:55	18,67
43	16/03/2022	Forming Paper Eror	16/03/2022 22:10	17/03/2022 09:30	11,33
44	17/03/2022	Forming Paper Eror	17/03/2022 09:45	18/03/2022 23:10	37,42
45	18/03/2022	Forming Paper Eror	18/03/2022 23:30	20/03/2022 05:00	29,50
46	20/03/2022	Forming Paper Eror	20/03/2022 05:10	20/03/2022 10:30	5,33
47	20/03/2022	Forming Paper Eror	20/03/2022 10:55	20/03/2022 17:00	6,08
48	20/03/2022	Forming Paper Eror	20/03/2022 17:25	21/03/2022 04:00	10,58
49	21/03/2022	Forming Paper Eror	21/03/2022 04:15	23/03/2022 13:30	57,25
50	23/03/2022	Forming Paper Eror	23/03/2022 13:50	23/03/2022 23:45	9,92
51	23/03/2022	Forming Paper Eror	23/03/2022 23:55	25/03/2022 18:00	42,08
52	25/03/2022	Forming Paper Eror	25/03/2022 18:35	26/03/2022 19:25	24,83
53	26/03/2022	Forming Paper Eror	26/03/2022 19:40	26/03/2022 22:00	2,33
54	26/03/2022	Forming Paper Eror	26/03/2022 22:20	27/03/2022 01:15	2,92
55	27/03/2022	Forming Paper Eror	27/03/2022 01:30	28/03/2022 09:00	31,50
56	28/03/2022	Forming Paper Eror	28/03/2022 09:35	29/03/2022 02:40	17,08
57	29/03/2022	Forming Paper Eror	29/03/2022 02:50	29/03/2022 10:35	7,75
58	29/03/2022	Forming Paper Eror	29/03/2022 10:45	29/03/2022 18:45	8,00
59	29/03/2022	Forming Paper Eror	29/03/2022 18:55	31/03/2022 19:05	48,17

60	31/03/2022	Forming Paper Eror	31/03/2022 19:20	01/04/2022 04:45	9,42
61	01/04/2022	Forming Paper Eror	01/04/2022 04:55	03/04/2022 08:30	51,58
62	03/04/2022	Forming Paper Eror	03/04/2022 08:45	04/04/2022 23:15	38,50
63	04/04/2022	Forming Paper Eror	04/04/2022 23:30	05/04/2022 01:00	1,50
64	05/04/2022	Forming Paper Eror	05/04/2022 01:45	07/04/2022 10:10	56,42
65	07/04/2022	Forming Paper Eror	07/04/2022 10:55	07/04/2022 23:10	12,25
66	07/04/2022	Forming Paper Eror	07/04/2022 23:50	09/04/2022 20:00	44,17
67	09/04/2022	Forming Paper Eror	09/04/2022 20:20	10/04/2022 17:00	20,67
68	10/04/2022	Forming Paper Eror	10/04/2022 17:30	11/04/2022 16:35	23,08
69	11/04/2022	Forming Paper Eror	11/04/2022 16:55	13/04/2022 17:35	48,67
70	13/04/2022	Forming Paper Eror	13/04/2022 17:55	14/04/2022 20:05	26,17
71	14/04/2022	Forming Paper Eror	14/04/2022 20:40	16/04/2022 21:05	48,42
72	16/04/2022	Forming Paper Eror	16/04/2022 21:50	17/04/2022 02:00	4,17
73	17/04/2022	Forming Paper Eror	17/04/2022 02:40	19/04/2022 10:15	55,58
74	19/04/2022	Forming Paper Eror	19/04/2022 10:30	20/04/2022 03:40	17,17
75	20/04/2022	Forming Paper Eror	20/04/2022 11:35	22/04/2022 11:00	47,42
76	22/04/2022	Forming Paper Eror	22/04/2022 04:10	22/04/2022 20:20	16,17
77	22/04/2022	Forming Paper Eror	22/04/2022 20:40	25/04/2022 20:00	71,33
78	25/04/2022	Forming Paper Eror	25/04/2022 20:40	28/04/2022 05:55	57,25
79	28/04/2022	Forming Paper Eror	28/04/2022 06:15	28/04/2022 13:25	7,17
80	28/04/2022	Forming Paper Eror	28/04/2022 13:40	28/04/2022 23:00	9,33
81	28/04/2022	Forming Paper Eror	28/04/2022 23:40	29/04/2022 21:30	21,83
82	29/04/2022	Forming Paper Eror	29/04/2022 21:55	30/04/2022 05:10	7,25
83	30/04/2022	Forming Paper Eror	30/04/2022 05:55	30/04/2022 17:05	11,17

84	30/04/2022	Forming Paper Error	30/04/2022 17:25	01/05/2022 10:05	16,67
Jumlah					2055,58

2. Data Komponen Mesin Curling

A. Data MTTR Komponen mesin Curling

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Kerusakan	Waktu Selesai Kerusakan	Lama Perbaikan (Menit)
1	02/02/2022	Curling Error	03:15	03:25	10
2	03/02/2022	Curling Error	08:15	08:40	25
3	04/02/2022	Curling Error	13:40	13:55	15
4	05/02/2022	Curling Error	23:05	23:20	15
5	06/02/2022	Curling Error	06:20	06:45	25
6	06/02/2022	Curling Error	17:05	17:20	15
7	06/02/2022	Curling Error	22:30	22:40	10
8	08/02/2022	Curling Error	05:40	05:55	15
9	08/02/2022	Curling Error	21:45	21:55	10
10	10/02/2022	Curling Error	11:15	11:30	15
11	10/02/2022	Curling Error	22:30	22:55	25
12	12/02/2022	Curling Error	18:25	18:40	15
13	13/02/2022	Curling Error	16:30	16:45	15
14	15/02/2022	Curling Error	21:07	21:17	10
15	15/02/2022	Curling Error	23:00	23:10	10
16	16/02/2022	Curling Error	03:50	04:05	15
17	18/02/2022	Curling Error	14:15	14:25	10
18	18/02/2022	Curling Error	22:45	22:55	10
19	19/02/2022	Curling Error	10:25	10:40	15
20	20/02/2022	Curling Error	06:23	06:43	20
21	22/02/2022	Curling Error	09:20	09:30	10
22	22/02/2022	Curling Error	23:40	00:00	20
23	24/02/2022	Curling Error	04:25	04:50	25
24	25/02/2022	Curling Error	14:10	14:30	20

25	26/02/2022	Curling Error	15:50	16:10	20
26	27/02/2022	Curling Error	05:40	06:05	25
27	27/02/2022	Curling Error	13:45	13:55	10
28	27/02/2022	Curling Error	22:55	23:20	25
29	28/02/2022	Curling Error	21:15	21:35	20
30	01/03/2022	Curling Error	01:35	01:50	15
31	03/03/2022	Curling Error	04:15	04:25	10
32	03/03/2022	Curling Error	21:20	21:35	15
33	05/03/2022	Curling Error	20:15	20:25	10
34	07/03/2022	Curling Error	04:02	04:12	10
35	08/03/2022	Curling Error	15:25	15:40	15
36	10/03/2022	Curling Error	07:05	07:15	10
37	12/03/2022	Curling Error	08:30	08:40	10
38	12/03/2022	Curling Error	17:00	17:15	15
39	13/03/2022	Curling Error	16:55	17:15	15
40	15/03/2022	Curling Error	09:45	09:55	10
41	15/03/2022	Curling Error	22:45	23:05	20
42	17/03/2022	Curling Error	08:30	08:40	10
43	17/03/2022	Curling Error	23:15	23:30	15
44	19/03/2022	Curling Error	02:30	02:40	10
45	19/03/2022	Curling Error	22:05	22:15	10
46	21/03/2022	Curling Error	05:15	05:35	20
47	21/03/2022	Curling Error	18:05	18:20	15
48	23/03/2022	Curling Error	04:15	04:30	15
49	24/03/2022	Curling Error	21:25	21:35	10
50	25/03/2022	Curling Error	23:10	23:20	10
51	27/03/2022	Curling Error	22:15	22:30	15
52	29/03/2022	Curling Error	05:15	05:40	25
53	01/04/2022	Curling Error	04:30	04:55	25
54	01/04/2022	Curling Error	23:00	23:20	20
55	03/04/2022	Curling Error	01:00	01:15	15
56	04/04/2022	Curling Error	15:05	15:20	15
57	05/04/2022	Curling Error	20:15	20:30	15

58	06/04/2022	Curling Error	08:45	09:05	20
59	08/04/2022	Curling Error	10:05	10:15	10
60	08/04/2022	Curling Error	14:15	14:30	15
61	10/04/2022	Curling Error	14:40	14:50	10
62	10/04/2022	Curling Error	21:15	21:30	15
63	11/04/2022	Curling Error	23:15	23:25	10
64	13/04/2022	Curling Error	14:15	14:25	10
65	15/04/2022	Curling Error	15:15	15:40	25
66	17/04/2022	Curling Error	06:55	07:10	15
67	18/04/2022	Curling Error	07:15	07:40	25
68	19/04/2022	Curling Error	19:05	19:20	15
69	21/04/2022	Curling Error	19:50	20:10	20
70	22/04/2022	Curling Error	21:05	21:20	15
71	24/04/2022	Curling Error	08:30	08:40	10
72	24/04/2022	Curling Error	18:30	18:50	20
73	26/04/2022	Curling Error	02:00	02:15	15
74	28/04/2022	Curling Error	07:40	07:55	15
75	29/04/2022	Curling Error	07:05	07:20	15
76	30/04/2022	Curling Error	03:10	03:35	25
77	30/04/2022	Curling Error	19:05	19:25	20
Jumlah					1200

B. Data MTTF Komponen Mesin Curling

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Optimal	Waktu Selesai Optimal	Lama Perbaikan (Jam)
1	02/02/2022	Curling Error	02/02/2022 03:26	03/02/2022 08:15	28,82
2	03/02/2022	Curling Error	03/02/2022 08:41	04/02/2022 13:40	28,98
3	04/02/2022	Curling Error	04/02/2022 13:56	05/02/2022 23:05	33,15
4	05/02/2022	Curling Error	05/02/2022 23:21	06/02/2022 06:20	6,98
5	06/02/2022	Curling Error	06/02/2022 06:46	06/02/2022 17:05	10,32
6	06/02/2022	Curling Error	06/02/2022 17:21	06/02/2022 22:30	5,15
7	06/02/2022	Curling Error	06/02/2022 22:41	08/02/2022 05:40	30,98
8	08/02/2022	Curling Error	08/02/2022 05:56	08/02/2022 21:45	15,82

9	08/02/2022	Curling Error	08/02/2022 21:56	10/02/2022 11:15	37,32
10	10/02/2022	Curling Error	10/02/2022 11:31	10/02/2022 22:30	10,98
11	10/02/2022	Curling Error	10/02/2022 22:56	12/02/2022 18:25	43,48
12	12/02/2022	Curling Error	12/02/2022 18:41	13/02/2022 16:30	21,82
13	13/02/2022	Curling Error	13/02/2022 16:46	15/02/2022 21:07	52,35
14	15/02/2022	Curling Error	15/02/2022 21:18	15/02/2022 23:00	1,70
15	15/02/2022	Curling Error	15/02/2022 23:11	16/02/2022 03:50	4,65
16	16/02/2022	Curling Error	16/02/2022 04:06	18/02/2022 14:15	58,15
17	18/02/2022	Curling Error	18/02/2022 14:26	18/02/2022 22:45	8,32
18	18/02/2022	Curling Error	18/02/2022 22:56	19/02/2022 10:25	11,48
19	19/02/2022	Curling Error	19/02/2022 10:41	20/02/2022 06:23	19,70
20	20/02/2022	Curling Error	20/02/2022 06:44	22/02/2022 09:20	50,60
21	22/02/2022	Curling Error	22/02/2022 09:31	22/02/2022 23:40	14,15
22	22/02/2022	Curling Error	22/02/2022 00:01	24/02/2022 04:25	52,40
23	24/02/2022	Curling Error	24/02/2022 04:51	25/02/2022 14:10	33,32
24	25/02/2022	Curling Error	25/02/2022 14:31	26/02/2022 15:50	25,32
25	26/02/2022	Curling Error	26/02/2022 16:11	27/02/2022 05:40	13,48
26	27/02/2022	Curling Error	27/02/2022 06:06	27/02/2022 13:45	7,65
27	27/02/2022	Curling Error	27/02/2022 13:56	27/02/2022 22:55	8,98
28	27/02/2022	Curling Error	27/02/2022 23:21	28/02/2022 21:15	21,90
29	28/02/2022	Curling Error	28/02/2022 21:36	01/03/2022 01:35	3,98
30	01/03/2022	Curling Error	01/03/2022 01:51	03/03/2022 04:15	50,40
31	03/03/2022	Curling Error	03/03/2022 04:26	03/03/2022 21:20	16,90
32	03/03/2022	Curling Error	03/03/2022 21:36	05/03/2022 20:15	46,65
33	05/03/2022	Curling Error	05/03/2022 20:26	07/03/2022 04:02	31,60
34	07/03/2022	Curling Error	07/03/2022 04:13	08/03/2022 15:25	35,20
35	08/03/2022	Curling Error	08/03/2022 15:41	10/03/2022 07:05	39,40
36	10/03/2022	Curling Error	10/03/2022 07:16	12/03/2022 08:30	49,23
37	12/03/2022	Curling Error	12/03/2022 08:41	12/03/2022 17:00	8,32
38	12/03/2022	Curling Error	12/03/2022 17:16	13/03/2022 16:55	23,65
39	13/03/2022	Curling Error	13/03/2022 17:16	15/03/2022 09:45	40,48
40	15/03/2022	Curling Error	15/03/2022 09:56	15/03/2022 22:45	12,82
41	15/03/2022	Curling Error	15/03/2022 23:06	17/03/2022 08:30	33,40
42	17/03/2022	Curling Error	17/03/2022 08:41	17/03/2022 23:15	14,57
43	17/03/2022	Curling Error	17/03/2022 23:31	19/03/2022 02:30	26,98
44	19/03/2022	Curling Error	19/03/2022 02:41	19/03/2022 22:05	19,40
45	19/03/2022	Curling Error	19/03/2022 22:16	21/03/2022 05:15	30,98
46	21/03/2022	Curling Error	21/03/2022 05:36	21/03/2022 18:05	12,48
47	21/03/2022	Curling Error	21/03/2022 18:21	23/03/2022 04:15	33,90
48	23/03/2022	Curling Error	23/03/2022 04:31	24/03/2022 21:25	40,90
49	24/03/2022	Curling Error	24/03/2022 21:36	25/03/2022 23:10	25,57

50	25/03/2022	Curling Error	25/03/2022 23:21	27/03/2022 22:15	46,90
51	27/03/2022	Curling Error	27/03/2022 22:31	29/03/2022 05:15	30,73
52	29/03/2022	Curling Error	29/03/2022 05:41	01/04/2022 04:30	70,82
53	01/04/2022	Curling Error	01/04/2022 04:56	01/04/2022 23:00	18,07
54	01/04/2022	Curling Error	01/04/2022 23:21	03/04/2022 01:00	25,65
55	03/04/2022	Curling Error	03/04/2022 01:16	04/04/2022 15:05	37,82
56	04/04/2022	Curling Error	04/04/2022 15:21	05/04/2022 20:15	28,90
57	05/04/2022	Curling Error	05/04/2022 20:31	06/04/2022 08:45	12,23
58	06/04/2022	Curling Error	06/04/2022 09:06	08/04/2022 10:05	48,98
59	08/04/2022	Curling Error	08/04/2022 10:16	08/04/2022 14:15	3,98
60	08/04/2022	Curling Error	08/04/2022 14:31	10/04/2022 14:40	48,15
61	10/04/2022	Curling Error	10/04/2022 14:51	10/04/2022 21:15	6,40
62	10/04/2022	Curling Error	10/04/2022 21:31	11/04/2022 23:15	25,73
63	11/04/2022	Curling Error	11/04/2022 23:26	13/04/2022 14:15	38,82
64	13/04/2022	Curling Error	13/04/2022 14:26	15/04/2022 15:15	48,82
65	15/04/2022	Curling Error	15/04/2022 15:41	17/04/2022 06:55	39,23
66	17/04/2022	Curling Error	17/04/2022 07:11	18/04/2022 07:15	24,07
67	18/04/2022	Curling Error	18/04/2022 07:41	19/04/2022 19:05	35,40
68	19/04/2022	Curling Error	19/04/2022 19:21	21/04/2022 19:50	48,48
69	21/04/2022	Curling Error	21/04/2022 20:11	22/04/2022 21:05	24,90
70	22/04/2022	Curling Error	22/04/2022 21:21	24/04/2022 08:30	35,15
71	24/04/2022	Curling Error	24/04/2022 08:41	24/04/2022 18:30	9,82
72	24/04/2022	Curling Error	24/04/2022 18:51	26/04/2022 02:00	31,15
73	26/04/2022	Curling Error	26/04/2022 02:16	28/04/2022 07:40	53,40
74	28/04/2022	Curling Error	28/04/2022 07:56	29/04/2022 07:05	23,15
75	29/04/2022	Curling Error	29/04/2022 07:21	30/04/2022 03:10	19,82
76	30/04/2022	Curling Error	30/04/2022 03:36	30/04/2022 19:05	15,48
77	30/04/2022	Curling Error	30/04/2022 19:26	01/05/2022 01:00	5,57
Jumlah					2112,38

C. Data MTBF Komponen Mesin Curling

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Optimal	Waktu Selesai Optimal	Lama Perbaikan (Jam)
1	02/02/2022	Curling Error	02/02/2022 03:25	03/02/2022 08:15	28,83
2	03/02/2022	Curling Error	03/02/2022 08:40	04/02/2022 13:40	29,00
3	04/02/2022	Curling Error	04/02/2022 13:55	05/02/2022 23:05	33,17
4	05/02/2022	Curling Error	05/02/2022 23:20	06/02/2022 06:20	7,00
5	06/02/2022	Curling Error	06/02/2022 06:45	06/02/2022 17:05	10,33
6	06/02/2022	Curling Error	06/02/2022 17:20	06/02/2022 22:30	5,17

7	06/02/2022	Curling Error	06/02/2022 22:40	08/02/2022 05:40	31,00
8	08/02/2022	Curling Error	08/02/2022 05:55	08/02/2022 21:45	15,83
9	08/02/2022	Curling Error	08/02/2022 21:55	10/02/2022 11:15	37,33
10	10/02/2022	Curling Error	10/02/2022 11:30	10/02/2022 22:30	11,00
11	10/02/2022	Curling Error	10/02/2022 22:55	12/02/2022 18:25	43,50
12	12/02/2022	Curling Error	12/02/2022 18:40	13/02/2022 16:30	21,83
13	13/02/2022	Curling Error	13/02/2022 16:45	15/02/2022 21:07	52,37
14	15/02/2022	Curling Error	15/02/2022 21:17	15/02/2022 23:00	1,72
15	15/02/2022	Curling Error	15/02/2022 23:10	16/02/2022 03:50	4,67
16	16/02/2022	Curling Error	16/02/2022 04:05	18/02/2022 14:15	58,17
17	18/02/2022	Curling Error	18/02/2022 14:25	18/02/2022 22:45	8,33
18	18/02/2022	Curling Error	18/02/2022 22:55	19/02/2022 10:25	11,50
19	19/02/2022	Curling Error	19/02/2022 10:40	20/02/2022 06:23	19,72
20	20/02/2022	Curling Error	20/02/2022 06:43	22/02/2022 09:20	50,62
21	22/02/2022	Curling Error	22/02/2022 09:30	22/02/2022 23:40	14,17
22	22/02/2022	Curling Error	22/02/2022 00:00	24/02/2022 04:25	52,42
23	24/02/2022	Curling Error	24/02/2022 04:50	25/02/2022 14:10	33,33
24	25/02/2022	Curling Error	25/02/2022 14:30	26/02/2022 15:50	25,33
25	26/02/2022	Curling Error	26/02/2022 16:10	27/02/2022 05:40	13,50
26	27/02/2022	Curling Error	27/02/2022 06:05	27/02/2022 13:45	7,67
27	27/02/2022	Curling Error	27/02/2022 13:55	27/02/2022 22:55	9,00
28	27/02/2022	Curling Error	27/02/2022 23:20	28/02/2022 21:15	21,92
29	28/02/2022	Curling Error	28/02/2022 21:35	01/03/2022 01:35	4,00
30	01/03/2022	Curling Error	01/03/2022 01:50	03/03/2022 04:15	50,42
31	03/03/2022	Curling Error	03/03/2022 04:25	03/03/2022 21:20	16,92
32	03/03/2022	Curling Error	03/03/2022 21:35	05/03/2022 20:15	46,67
33	05/03/2022	Curling Error	05/03/2022 20:25	07/03/2022 04:02	31,62
34	07/03/2022	Curling Error	07/03/2022 04:12	08/03/2022 15:25	35,22
35	08/03/2022	Curling Error	08/03/2022 15:40	10/03/2022 07:05	39,42
36	10/03/2022	Curling Error	10/03/2022 07:15	12/03/2022 08:30	49,25
37	12/03/2022	Curling Error	12/03/2022 08:40	12/03/2022 17:00	8,33
38	12/03/2022	Curling Error	12/03/2022 17:15	13/03/2022 16:55	23,67
39	13/03/2022	Curling Error	13/03/2022 17:15	15/03/2022 09:45	40,50
40	15/03/2022	Curling Error	15/03/2022 09:55	15/03/2022 22:45	12,83
41	15/03/2022	Curling Error	15/03/2022 23:05	17/03/2022 08:30	33,42
42	17/03/2022	Curling Error	17/03/2022 08:40	17/03/2022 23:15	14,58
43	17/03/2022	Curling Error	17/03/2022 23:30	19/03/2022 02:30	27,00
44	19/03/2022	Curling Error	19/03/2022 02:40	19/03/2022 22:05	19,42
45	19/03/2022	Curling Error	19/03/2022 22:15	21/03/2022 05:15	31,00
46	21/03/2022	Curling Error	21/03/2022 05:35	21/03/2022 18:05	12,50
47	21/03/2022	Curling Error	21/03/2022 18:20	23/03/2022 04:15	33,92

48	23/03/2022	Curling Error	23/03/2022 04:30	24/03/2022 21:25	40,92
49	24/03/2022	Curling Error	24/03/2022 21:35	25/03/2022 23:10	25,58
50	25/03/2022	Curling Error	25/03/2022 23:20	27/03/2022 22:15	46,92
51	27/03/2022	Curling Error	27/03/2022 22:30	29/03/2022 05:15	30,75
52	29/03/2022	Curling Error	29/03/2022 05:40	01/04/2022 04:30	70,83
53	01/04/2022	Curling Error	01/04/2022 04:55	01/04/2022 23:00	18,08
54	01/04/2022	Curling Error	01/04/2022 23:20	03/04/2022 01:00	25,67
55	03/04/2022	Curling Error	03/04/2022 01:15	04/04/2022 15:05	37,83
56	04/04/2022	Curling Error	04/04/2022 15:20	05/04/2022 20:15	28,92
57	05/04/2022	Curling Error	05/04/2022 20:30	06/04/2022 08:45	12,25
58	06/04/2022	Curling Error	06/04/2022 09:05	08/04/2022 10:05	49,00
59	08/04/2022	Curling Error	08/04/2022 10:15	08/04/2022 14:15	4,00
60	08/04/2022	Curling Error	08/04/2022 14:30	10/04/2022 14:40	48,17
61	10/04/2022	Curling Error	10/04/2022 14:50	10/04/2022 21:15	6,42
62	10/04/2022	Curling Error	10/04/2022 21:30	11/04/2022 23:15	25,75
63	11/04/2022	Curling Error	11/04/2022 23:25	13/04/2022 14:15	38,83
64	13/04/2022	Curling Error	13/04/2022 14:25	15/04/2022 15:15	48,83
65	15/04/2022	Curling Error	15/04/2022 15:40	17/04/2022 06:55	39,25
66	17/04/2022	Curling Error	17/04/2022 07:10	18/04/2022 07:15	24,08
67	18/04/2022	Curling Error	18/04/2022 07:40	19/04/2022 19:05	35,42
68	19/04/2022	Curling Error	19/04/2022 19:20	21/04/2022 19:50	48,50
69	21/04/2022	Curling Error	21/04/2022 20:10	22/04/2022 21:05	24,92
70	22/04/2022	Curling Error	22/04/2022 21:20	24/04/2022 08:30	35,17
71	24/04/2022	Curling Error	24/04/2022 08:40	24/04/2022 18:30	9,83
72	24/04/2022	Curling Error	24/04/2022 18:50	26/04/2022 02:00	31,17
73	26/04/2022	Curling Error	26/04/2022 02:15	28/04/2022 07:40	53,42
74	28/04/2022	Curling Error	28/04/2022 07:55	29/04/2022 07:05	23,17
75	29/04/2022	Curling Error	29/04/2022 07:20	30/04/2022 03:10	19,83
76	30/04/2022	Curling Error	30/04/2022 03:35	30/04/2022 19:05	15,50
77	30/04/2022	Curling Error	30/04/2022 19:25	01/05/2022 01:00	5,58
Jumlah					2113,67

3. Data Komponen Mesin Flanging

A. Data MTTR Komponen mesin Flanging

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Kerusakan	Waktu Selesai Kerusakan	Lama Perbaikan (Menit)
1	01/02/2022	Flanging eror	02:40	02:55	15
2	01/02/2022	Flanging eror	16:00	16:15	15

3	03/02/2022	Flanging eror	05:35	05:45	10
4	04/02/2022	Flanging eror	21:05	21:20	15
5	06/02/2022	Flanging eror	06:45	06:55	10
6	06/02/2022	Flanging eror	23:05	23:25	20
7	07/02/2022	Flanging eror	21:10	21:30	20
8	09/02/2022	Flanging eror	04:30	04:50	20
9	09/02/2022	Flanging eror	22:10	22:20	10
10	11/02/2022	Flanging eror	11:00	11:15	15
11	11/02/2022	Flanging eror	20:45	20:55	10
12	12/02/2022	Flanging eror	09:35	09:45	10
13	14/02/2022	Flanging eror	05:55	06:15	15
14	14/02/2022	Flanging eror	17:20	17:30	10
15	15/02/2022	Flanging eror	02:00	02:15	15
16	17/02/2022	Flanging eror	18:20	18:40	20
17	18/02/2022	Flanging eror	02:45	02:55	10
18	19/02/2022	Flanging eror	04:50	05:00	10
19	19/02/2022	Flanging eror	09:10	09:20	10
20	19/02/2022	Flanging eror	15:30	15:45	15
21	21/02/2022	Flanging eror	06:20	06:35	15
22	22/02/2022	Flanging eror	23:05	23:25	20
23	24/02/2022	Flanging eror	04:15	04:30	15
24	24/02/2022	Flanging eror	21:10	21:30	20
25	26/02/2022	Flanging eror	11:00	11:15	15
26	27/02/2022	Flanging eror	20:15	20:25	10
27	28/02/2022	Flanging eror	10:15	10:25	10
28	01/03/2022	Flanging eror	01:15	01:25	10
29	02/03/2022	Flanging eror	05:45	06:00	15
30	03/03/2022	Flanging eror	20:15	20:35	20
31	05/03/2022	Flanging eror	01:15	01:30	15
32	07/03/2022	Flanging eror	21:00	21:25	25
33	09/03/2022	Flanging eror	02:45	03:00	15
34	09/03/2022	Flanging eror	14:35	14:50	15
35	09/03/2022	Flanging eror	22:20	22:40	20
36	11/03/2022	Flanging eror	13:25	13:40	25
37	12/03/2022	Flanging eror	14:15	14:25	10
38	13/03/2022	Flanging eror	23:10	23:25	15
39	14/03/2022	Flanging eror	16:30	16:45	15
40	15/03/2022	Flanging eror	21:25	21:35	10
41	16/03/2022	Flanging eror	23:15	23:30	15
42	17/03/2022	Flanging eror	18:55	19:05	10
43	18/03/2022	Flanging eror	19:55	20:05	10

44	19/03/2022	Flanging eror	20:55	21:05	10
45	20/03/2022	Flanging eror	01:15	01:30	15
46	22/03/2022	Flanging eror	02:15	02:30	15
47	22/03/2022	Flanging eror	19:40	19:50	10
48	24/03/2022	Flanging eror	05:40	06:00	20
49	24/03/2022	Flanging eror	10:15	10:30	15
50	25/03/2022	Flanging eror	01:45	01:55	10
51	27/03/2022	Flanging eror	19:20	19:40	20
52	27/03/2022	Flanging eror	23:05	23:20	15
53	29/03/2022	Flanging eror	01:25	01:40	15
54	30/03/2022	Flanging eror	01:50	02:00	10
55	02/04/2022	Flanging eror	05:50	06:10	20
56	03/04/2022	Flanging eror	23:40	23:55	15
57	04/04/2022	Flanging eror	20:15	20:30	15
58	05/04/2022	Flanging eror	21:15	21:30	15
59	06/04/2022	Flanging eror	22:15	22:30	15
60	08/04/2022	Flanging eror	11:20	11:40	20
61	09/04/2022	Flanging eror	09:25	09:35	10
62	10/04/2022	Flanging eror	05:30	05:45	15
63	11/04/2022	Flanging eror	07:10	07:25	15
64	13/04/2022	Flanging eror	03:40	04:00	20
65	13/04/2022	Flanging eror	10:50	11:00	10
66	15/04/2022	Flanging eror	17:50	18:00	10
67	15/04/2022	Flanging eror	21:20	21:40	20
68	16/04/2022	Flanging eror	06:50	07:00	10
69	19/04/2022	Flanging eror	02:40	02:55	15
70	19/04/2022	Flanging eror	13:45	13:55	10
71	19/04/2022	Flanging eror	23:05	23:20	15
72	21/04/2022	Flanging eror	08:30	08:40	10
73	22/04/2022	Flanging eror	09:30	09:40	10
74	23/04/2022	Flanging eror	23:15	23:30	15
75	24/04/2022	Flanging eror	01:50	02:00	10
76	26/04/2022	Flanging eror	16:40	17:00	20
77	28/04/2022	Flanging eror	02:30	02:40	10
78	28/04/2022	Flanging eror	14:05	14:20	15
79	28/04/2022	Flanging eror	23:00	23:20	20
80	29/04/2022	Flanging eror	15:00	15:25	25
81	30/04/2022	Flanging eror	01:20	01:40	20
Jumlah					1185

B. Data MTTF Komponen Mesin Flanging

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Optimal	Waktu Selesai Optimal	Lama Perbaikan (Jam)
1	01/02/2022	Flanging Error	01/02/2022 02:56	01/02/2022 16:00	13,07
2	01/02/2022	Flanging Error	01/02/2022 16:16	03/02/2022 05:35	37,32
3	03/02/2022	Flanging Error	03/02/2022 05:46	04/02/2022 21:05	39,32
4	04/02/2022	Flanging Error	04/02/2022 21:21	06/02/2022 06:45	33,40
5	06/02/2022	Flanging Error	06/02/2022 06:56	06/02/2022 23:05	16,15
6	06/02/2022	Flanging Error	06/02/2022 23:26	07/02/2022 21:10	21,73
7	07/02/2022	Flanging Error	07/02/2022 21:31	09/02/2022 04:30	30,98
8	09/02/2022	Flanging Error	09/02/2022 04:51	09/02/2022 22:10	17,32
9	09/02/2022	Flanging Error	09/02/2022 22:21	11/02/2022 11:00	36,65
10	11/02/2022	Flanging Error	11/02/2022 11:16	11/02/2022 20:45	9,48
11	11/02/2022	Flanging Error	11/02/2022 20:56	12/02/2022 09:35	12,65
12	12/02/2022	Flanging Error	12/02/2022 09:46	14/02/2022 05:55	44,15
13	14/02/2022	Flanging Error	14/02/2022 06:16	14/02/2022 17:20	11,07
14	14/02/2022	Flanging Error	14/02/2022 17:31	15/02/2022 02:00	8,48
15	15/02/2022	Flanging Error	15/02/2022 02:16	17/02/2022 18:20	64,07
16	17/02/2022	Flanging Error	17/02/2022 18:41	18/02/2022 02:45	8,07
17	18/02/2022	Flanging Error	18/02/2022 02:56	19/02/2022 04:50	25,90
18	19/02/2022	Flanging Error	19/02/2022 05:01	19/02/2022 09:10	4,15
19	19/02/2022	Flanging Error	19/02/2022 09:21	19/02/2022 15:30	6,15
20	19/02/2022	Flanging Error	19/02/2022 15:46	21/02/2022 06:20	38,57
21	21/02/2022	Flanging Error	21/02/2022 06:36	22/02/2022 23:05	40,48
22	22/02/2022	Flanging Error	22/02/2022 23:26	24/02/2022 04:15	28,82

23	24/02/2022	Flanging Error	24/02/2022 04:31	24/02/2022 21:10	16,65
24	24/02/2022	Flanging Error	24/02/2022 21:31	26/02/2022 11:00	37,48
25	26/02/2022	Flanging Error	26/02/2022 11:16	27/02/2022 20:15	32,98
26	27/02/2022	Flanging Error	27/02/2022 20:26	28/02/2022 10:15	13,82
27	28/02/2022	Flanging Error	28/02/2022 10:26	01/03/2022 01:15	14,82
28	01/03/2022	Flanging Error	01/03/2022 01:26	02/03/2022 05:46	28,33
29	02/03/2022	Flanging Error	02/03/2022 06:01	03/03/2022 20:15	38,23
30	03/03/2022	Flanging Error	03/03/2022 20:36	05/03/2022 01:15	28,65
31	05/03/2022	Flanging Error	05/03/2022 01:31	07/03/2022 21:00	67,48
32	07/03/2022	Flanging Error	07/03/2022 21:26	09/03/2022 02:45	29,32
33	09/03/2022	Flanging Error	09/03/2022 03:01	09/03/2022 14:35	11,57
34	09/03/2022	Flanging Error	09/03/2022 14:51	09/03/2022 22:20	7,48
35	09/03/2022	Flanging Error	09/03/2022 22:41	11/03/2022 13:25	38,73
36	11/03/2022	Flanging Error	11/03/2022 13:41	12/03/2022 14:15	24,57
37	12/03/2022	Flanging Error	12/03/2022 14:26	13/03/2022 23:10	32,73
38	13/03/2022	Flanging Error	13/03/2022 23:26	14/03/2022 16:30	17,07
39	14/03/2022	Flanging Error	14/03/2022 16:46	15/03/2022 21:25	28,65
40	15/03/2022	Flanging Error	15/03/2022 21:36	16/03/2022 23:15	25,65
41	16/03/2022	Flanging Error	16/03/2022 23:31	17/03/2022 18:55	19,40
42	17/03/2022	Flanging Error	17/03/2022 19:06	18/03/2022 19:55	24,82
43	18/03/2022	Flanging Error	18/03/2022 20:06	19/03/2022 20:55	24,82
44	19/03/2022	Flanging Error	19/03/2022 21:06	20/03/2022 01:15	4,15
45	20/03/2022	Flanging Error	20/03/2022 01:31	22/03/2022 02:15	48,73
46	22/03/2022	Flanging Error	22/03/2022 02:31	22/03/2022 19:40	17,15

47	22/03/2022	Flanging Error	22/03/2022 19:51	24/03/2022 05:40	33,82
48	24/03/2022	Flanging Error	24/03/2022 06:01	24/03/2022 10:15	4,23
49	24/03/2022	Flanging Error	24/03/2022 10:31	25/03/2022 01:45	15,23
50	25/03/2022	Flanging Error	25/03/2022 01:56	27/03/2022 19:20	65,40
51	27/03/2022	Flanging Error	27/03/2022 19:41	27/03/2022 23:05	3,40
52	27/03/2022	Flanging Error	27/03/2022 23:21	29/03/2022 01:25	26,07
53	29/03/2022	Flanging Error	29/03/2022 01:41	30/03/2022 01:50	24,15
54	30/03/2022	Flanging Error	30/03/2022 02:01	02/04/2022 05:50	75,82
55	02/04/2022	Flanging Error	02/04/2022 06:11	03/04/2022 23:40	41,48
56	03/04/2022	Flanging Error	03/04/2022 23:56	04/04/2022 20:15	20,32
57	04/04/2022	Flanging Error	04/04/2022 20:31	05/04/2022 21:15	24,73
58	05/04/2022	Flanging Error	05/04/2022 21:31	06/04/2022 22:15	24,73
59	06/04/2022	Flanging Error	06/04/2022 22:31	08/04/2022 11:20	36,82
60	08/04/2022	Flanging Error	08/04/2022 11:41	09/04/2022 09:25	21,73
61	09/04/2022	Flanging Error	09/04/2022 09:36	10/04/2022 05:30	19,90
62	10/04/2022	Flanging Error	10/04/2022 05:46	11/04/2022 07:10	25,40
63	11/04/2022	Flanging Error	11/04/2022 07:26	13/04/2022 03:40	44,23
64	13/04/2022	Flanging Error	13/04/2022 04:01	13/04/2022 10:50	6,82
65	13/04/2022	Flanging Error	13/04/2022 11:01	15/04/2022 17:50	54,82
66	15/04/2022	Flanging Error	15/04/2022 18:01	15/04/2022 21:20	3,32
67	15/04/2022	Flanging Error	15/04/2022 21:41	16/04/2022 06:50	9,15
68	16/04/2022	Flanging Error	16/04/2022 07:01	19/04/2022 02:40	67,65
69	19/04/2022	Flanging Error	19/04/2022 02:56	19/04/2022 13:45	10,82
70	19/04/2022	Flanging Error	19/04/2022 13:56	19/04/2022 23:05	9,15

71	19/04/2022	Flanging Eror	19/04/2022 23:21	21/04/2022 08:30	33,15
72	21/04/2022	Flanging Eror	21/04/2022 08:41	22/04/2022 09:30	24,82
73	22/04/2022	Flanging Eror	22/04/2022 09:41	23/04/2022 23:15	37,57
74	23/04/2022	Flanging Eror	23/04/2022 23:31	24/04/2022 01:50	2,32
75	24/04/2022	Flanging Eror	24/04/2022 02:01	26/04/2022 16:40	62,65
76	26/04/2022	Flanging Eror	26/04/2022 17:01	28/04/2022 02:30	33,48
77	28/04/2022	Flanging Eror	28/04/2022 02:41	28/04/2022 14:05	11,40
78	28/04/2022	Flanging Eror	28/04/2022 14:21	28/04/2022 23:00	8,65
79	28/04/2022	Flanging Eror	28/04/2022 23:21	29/04/2022 15:00	15,65
80	29/04/2022	Flanging Eror	29/04/2022 15:26	30/04/2022 01:20	9,90
81	30/04/2022	Flanging Eror	30/04/2022 01:41	01/05/2022 06:15	28,57
Jumlah					2118,58

C. Data MTBF Komponen Mesin Flanging

No	Tanggal Kerusakan	Jenis Kerusakan	Waktu Mulai Optimal	Waktu Selesai Optimal	Lama Perbaikan (Jam)
1	01/02/2022	Flanging Eror	01/02/2022 02:55	01/02/2022 16:00	13,08
2	01/02/2022	Flanging Eror	01/02/2022 16:15	03/02/2022 05:35	37,33
3	03/02/2022	Flanging Eror	03/02/2022 05:45	04/02/2022 21:05	39,33
4	04/02/2022	Flanging Eror	04/02/2022 21:20	06/02/2022 06:45	33,42
5	06/02/2022	Flanging Eror	06/02/2022 06:55	06/02/2022 23:05	16,17
6	06/02/2022	Flanging Eror	06/02/2022 23:25	07/02/2022 21:10	21,75
7	07/02/2022	Flanging Eror	07/02/2022 21:30	09/02/2022 04:30	31,00
8	09/02/2022	Flanging Eror	09/02/2022 04:50	09/02/2022 22:10	17,33
9	09/02/2022	Flanging Eror	09/02/2022 22:20	11/02/2022 11:00	36,67

10	11/02/2022	Flanging Error	11/02/2022 11:15	11/02/2022 20:45	9,50
11	11/02/2022	Flanging Error	11/02/2022 20:55	12/02/2022 09:35	12,67
12	12/02/2022	Flanging Error	12/02/2022 09:45	14/02/2022 05:55	44,17
13	14/02/2022	Flanging Error	14/02/2022 06:15	14/02/2022 17:20	11,08
14	14/02/2022	Flanging Error	14/02/2022 17:30	15/02/2022 02:00	8,50
15	15/02/2022	Flanging Error	15/02/2022 02:15	17/02/2022 18:20	64,08
16	17/02/2022	Flanging Error	17/02/2022 18:40	18/02/2022 02:45	8,08
17	18/02/2022	Flanging Error	18/02/2022 02:55	19/02/2022 04:50	25,92
18	19/02/2022	Flanging Error	19/02/2022 05:00	19/02/2022 09:10	4,17
19	19/02/2022	Flanging Error	19/02/2022 09:20	19/02/2022 15:30	6,17
20	19/02/2022	Flanging Error	19/02/2022 15:45	21/02/2022 06:20	38,58
21	21/02/2022	Flanging Error	21/02/2022 06:35	22/02/2022 23:05	40,50
22	22/02/2022	Flanging Error	22/02/2022 23:25	24/02/2022 04:15	28,83
23	24/02/2022	Flanging Error	24/02/2022 04:30	24/02/2022 21:10	16,67
24	24/02/2022	Flanging Error	24/02/2022 21:30	26/02/2022 11:00	37,50
25	26/02/2022	Flanging Error	26/02/2022 11:15	27/02/2022 20:15	33,00
26	27/02/2022	Flanging Error	27/02/2022 20:25	28/02/2022 10:15	13,83
27	28/02/2022	Flanging Error	28/02/2022 10:25	01/03/2022 01:15	14,83
28	01/03/2022	Flanging Error	01/03/2022 01:25	02/03/2022 05:46	28,35
29	02/03/2022	Flanging Error	02/03/2022 06:00	03/03/2022 20:15	38,25
30	03/03/2022	Flanging Error	03/03/2022 20:35	05/03/2022 01:15	28,67
31	05/03/2022	Flanging Error	05/03/2022 01:30	07/03/2022 21:00	67,50
32	07/03/2022	Flanging Error	07/03/2022 21:25	09/03/2022 02:45	29,33
33	09/03/2022	Flanging Error	09/03/2022 03:00	09/03/2022 14:35	11,58

34	09/03/2022	Flanging Error	09/03/2022 14:50	09/03/2022 22:20	7,50
35	09/03/2022	Flanging Error	09/03/2022 22:40	11/03/2022 13:25	38,75
36	11/03/2022	Flanging Error	11/03/2022 13:40	12/03/2022 14:15	24,58
37	12/03/2022	Flanging Error	12/03/2022 14:25	13/03/2022 23:10	32,75
38	13/03/2022	Flanging Error	13/03/2022 23:25	14/03/2022 16:30	17,08
39	14/03/2022	Flanging Error	14/03/2022 16:45	15/03/2022 21:25	28,67
40	15/03/2022	Flanging Error	15/03/2022 21:35	16/03/2022 23:15	25,67
41	16/03/2022	Flanging Error	16/03/2022 23:30	17/03/2022 18:55	19,42
42	17/03/2022	Flanging Error	17/03/2022 19:05	18/03/2022 19:55	24,83
43	18/03/2022	Flanging Error	18/03/2022 20:05	19/03/2022 20:55	24,83
44	19/03/2022	Flanging Error	19/03/2022 21:05	20/03/2022 01:15	4,17
45	20/03/2022	Flanging Error	20/03/2022 01:30	22/03/2022 02:15	48,75
46	22/03/2022	Flanging Error	22/03/2022 02:30	22/03/2022 19:40	17,17
47	22/03/2022	Flanging Error	22/03/2022 19:50	24/03/2022 05:40	33,83
48	24/03/2022	Flanging Error	24/03/2022 06:00	24/03/2022 10:15	4,25
49	24/03/2022	Flanging Error	24/03/2022 10:30	25/03/2022 01:45	15,25
50	25/03/2022	Flanging Error	25/03/2022 01:55	27/03/2022 19:20	65,42
51	27/03/2022	Flanging Error	27/03/2022 19:40	27/03/2022 23:05	3,42
52	27/03/2022	Flanging Error	27/03/2022 23:20	29/03/2022 01:25	26,08
53	29/03/2022	Flanging Error	29/03/2022 01:40	30/03/2022 01:50	24,17
54	30/03/2022	Flanging Error	30/03/2022 02:00	02/04/2022 05:50	75,83
55	02/04/2022	Flanging Error	02/04/2022 06:10	03/04/2022 23:40	41,50
56	03/04/2022	Flanging Error	03/04/2022 23:55	04/04/2022 20:15	20,33
57	04/04/2022	Flanging Error	04/04/2022 20:30	05/04/2022 21:15	24,75

58	05/04/2022	Flanging Eror	05/04/2022 21:30	06/04/2022 22:15	24,75
59	06/04/2022	Flanging Eror	06/04/2022 22:30	08/04/2022 11:20	36,83
60	08/04/2022	Flanging Eror	08/04/2022 11:40	09/04/2022 09:25	21,75
61	09/04/2022	Flanging Eror	09/04/2022 09:35	10/04/2022 05:30	19,92
62	10/04/2022	Flanging Eror	10/04/2022 05:45	11/04/2022 07:10	25,42
63	11/04/2022	Flanging Eror	11/04/2022 07:25	13/04/2022 03:40	44,25
64	13/04/2022	Flanging Eror	13/04/2022 04:00	13/04/2022 10:50	6,83
65	13/04/2022	Flanging Eror	13/04/2022 11:00	15/04/2022 17:50	54,83
66	15/04/2022	Flanging Eror	15/04/2022 18:00	15/04/2022 21:20	3,33
67	15/04/2022	Flanging Eror	15/04/2022 21:40	16/04/2022 06:50	9,17
68	16/04/2022	Flanging Eror	16/04/2022 07:00	19/04/2022 02:40	67,67
69	19/04/2022	Flanging Eror	19/04/2022 02:55	19/04/2022 13:45	10,83
70	19/04/2022	Flanging Eror	19/04/2022 13:55	19/04/2022 23:05	9,17
71	19/04/2022	Flanging Eror	19/04/2022 23:20	21/04/2022 08:30	33,17
72	21/04/2022	Flanging Eror	21/04/2022 08:40	22/04/2022 09:30	24,83
73	22/04/2022	Flanging Eror	22/04/2022 09:40	23/04/2022 23:15	37,58
74	23/04/2022	Flanging Eror	23/04/2022 23:30	24/04/2022 01:50	2,33
75	24/04/2022	Flanging Eror	24/04/2022 02:00	26/04/2022 16:40	62,67
76	26/04/2022	Flanging Eror	26/04/2022 17:00	28/04/2022 02:30	33,50
77	28/04/2022	Flanging Eror	28/04/2022 02:40	28/04/2022 14:05	11,42
78	28/04/2022	Flanging Eror	28/04/2022 14:20	28/04/2022 23:00	8,67
79	28/04/2022	Flanging Eror	28/04/2022 23:20	29/04/2022 15:00	15,67
80	29/04/2022	Flanging Eror	29/04/2022 15:25	30/04/2022 01:20	9,92
81	30/04/2022	Flanging Eror	30/04/2022 01:40	01/05/2022 06:15	28,58
Jumlah					2119,93

Lampiran 3. Hasil Perhitungan Analisa Software Minitab 19

Distribution ID Plot : Forming Paper; Curling; Flanging

Results for variable: Forming Paper

Goodness-of-Fit

Distribution	Anderson-Darling (adj)
Weibull	0,716
Lognormal	1,248
Exponential	3,007
Normal	1,867

Table of Percentiles

Distribution	Percent	Percentile	Standard Error	95% Normal CI Lower	95% Normal CI Upper
Weibull	1	1,17238	0,361566	0,640554	2,14576
Lognormal	1	2,42812	0,440271	1,70188	3,46427
Exponential	1	0,245767	0,0268153	0,198449	0,304366
Normal	1	-14,3207	3,50089	-21,1823	-7,45908
Weibull	5	3,56324	0,766931	2,33688	5,43316
Lognormal	5	4,37288	0,631768	3,29451	5,80423
Exponential	5	1,25430	0,136856	1,01281	1,55338
Normal	5	-2,96194	2,78946	-8,42917	2,50529
Weibull	10	5,82171	1,02190	4,12702	8,21228
Lognormal	10	5,98374	0,760589	4,66420	7,67659
Exponential	10	2,57644	0,281113	2,08040	3,19076
Normal	10	3,09338	2,45418	-1,71673	7,90349
Weibull	50	21,0392	1,84600	17,7151	24,9870
Lognormal	50	18,0899	1,70387	15,0405	21,7575
Exponential	50	16,9499	1,84939	13,6866	20,9914
Normal	50	24,4536	1,81857	20,8892	28,0179

Table of MTTF

Distribution	Mean	Standard Error	95% Normal CI Lower	95% Normal CI Upper
Weibull	24,4570	1,84751	21,0913	28,3599
Lognormal	26,2577	2,89754	21,1508	32,5977
Exponential	24,4536	2,66810	19,7455	30,2842
Normal	24,4536	1,81857	20,8892	28,0179

Results for variable: Curling

Goodness-of-Fit

Distribution	Anderson-Darling (adj)
Weibull	0,750
Lognormal	1,924
Exponential	5,293
Normal	0,862

Table of Percentiles

Distribution	Percent	Percentile	Standard Error	95% Normal CI	
				Lower	Upper
Weibull	1	2,26795	0,613887	1,33423	3,85510
Lognormal	1	3,68649	0,617953	2,65418	5,12032
Exponential	1	0,275716	0,0314208	0,220526	0,344720
Normal	1	-9,25548	3,45992	-16,0368	-2,47416
Weibull	5	5,71272	1,07667	3,94837	8,26547
Lognormal	5	6,20522	0,828780	4,77605	8,06204
Exponential	5	1,40716	0,160360	1,12548	1,75932
Normal	5	1,49243	2,75681	-3,91081	6,89566
Weibull	10	8,59066	1,31798	6,35967	11,6043
Lognormal	10	8,19056	0,962461	6,50564	10,3119
Exponential	10	2,89041	0,329393	2,31183	3,61379
Normal	10	7,22209	2,42546	2,46829	11,9759
Weibull	50	24,9881	1,89830	21,5312	29,0000
Lognormal	50	21,8060	1,89876	18,3848	25,8640
Exponential	50	19,0155	2,16702	15,2091	23,7745
Normal	50	27,4335	1,79728	23,9109	30,9562

Table of MTTF

Distribution	Mean	Standard Error	95% Normal CI	
			Lower	Upper
Weibull	27,3804	1,81925	24,0372	31,1887
Lognormal	29,1978	2,88974	24,0495	35,4483
Exponential	27,4335	3,12634	21,9421	34,2993
Normal	27,4335	1,79728	23,9109	30,9562

Results for variable: Flanging

Goodness-of-Fit

Distribution	Anderson-Darling (adj)
Weibull	0,500
Lognormal	1,376
Exponential	4,593
Normal	1,515

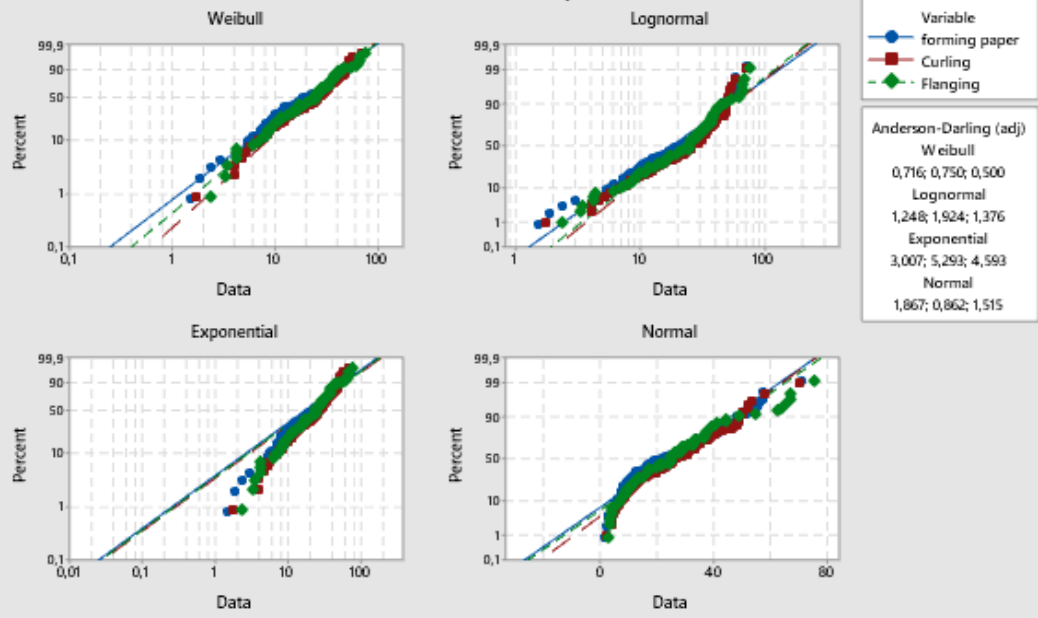
Table of Percentiles

Distribution	Percent	Percentile	Standard Error	95% Normal CI	
				Lower	Upper
Weibull	1	1,65691	0,465397	0,955454	2,87333
Lognormal	1	3,38701	0,559488	2,45024	4,68191
Exponential	1	0,262870	0,0292078	0,211428	0,326828
Normal	1	-12,9121	3,59209	-19,9524	-5,87169
Weibull	5	4,58029	0,900256	3,11594	6,73281
Lognormal	5	5,73302	0,754568	4,42945	7,42022
Exponential	5	1,34159	0,149066	1,07905	1,66801
Normal	5	-1,46742	2,86212	-7,07706	4,14223
Weibull	10	7,17648	1,15298	5,23790	9,83254
Lognormal	10	7,58982	0,878889	6,04873	9,52356
Exponential	10	2,75574	0,306193	2,21646	3,42623
Normal	10	4,63368	2,51811	-	9,56908
				0,301728	
Weibull	50	23,2431	1,89486	19,8107	27,2701
Lognormal	50	20,4199	1,75218	17,2589	24,1597
Exponential	50	18,1295	2,01439	14,5817	22,5405
Normal	50	26,1553	1,86594	22,4982	29,8125

Table of MTTF

Distribution	Mean	Standard Error	95% Normal CI	
			Lower	Upper
Weibull	26,1880	1,85801	22,7882	30,0950
Lognormal	27,5143	2,69001	22,7164	33,3257
Exponential	26,1553	2,90615	21,0369	32,5191
Normal	26,1553	1,86594	22,4982	29,8125

Probability Plot for forming paper; Curling; Flanging ML Estimates-Complete Data



Lampiran 4. Kuisisioner Penilaian Resiko

PENILAIAN ANALISA RESIKO

Analisa resiko merupakan suatu proses penilaian terhadap resiko yang telah teridentifikasi dalam rangka mengestimasi kemungkinan munculnya dan besarnya dampak untuk menetapkan level atau status resikonya. Aktivitas pada analisa berupa pemberian nilai resiko agar dapat ditimbang tingkatannya. Nilai resiko diberikan dengan mempertimbangkan pengendalian atau control yang telah ditetapkan. Berikut acuan dalam penilaian analisa resiko.

1. *Likelihood*

Merupakan besarnya peluang ketidakpastian terjadinya resiko, yang diperkirakan berdasarkan data historis frekuensi keseringan dari kejadian serupa. Berikan kriteria penilaian pada tabel *likelihood*.

Nilai	Kriteria	Deskripsi	Frekuensi Kejadian
1	<i>Rare</i>	Resiko tersebut hampir tidak pernah terjadi	>2
2	<i>Unlikely</i>	Resiko tersebut jarang terjadi	1 - 2 tahun
3	<i>Possible</i>	Resiko tersebut kadang terjadi	7 - 12 bulan
4	<i>Likely</i>	Resiko tersebut sering terjadi	4 - 6 bulan
5	<i>Certain</i>	Resiko tersebut pasti terjadi	1 - 3 bulan

2. *Consequence*

Merupakan besarnya akibat suatu kejadian yang biasanya dinyatakan sebagai kerugian dari suatu resiko. Berikut kriteria pada penilaian pada tabel *consequence*.

Nilai	Kriteria	Keterangan
1	<i>Insignificant</i>	Resiko tersebut tidak mengganggu kondisi aktivitas perusahaan
2	<i>Minor</i>	Resiko tersebut sedikit menghambat tapi aktivitas utama perusahaan tidak terganggu
3	<i>Moderate</i>	Resiko tersebut mengalami hambatan pada proses bisnis yang ada sehingga sebagian jalannya aktivitas perusahaan terhambat
4	<i>Major</i>	Resiko tersebut hampir mengalami hambatan pada seluruh jalannya aktivitas perusahaan
5	<i>Catastrophic</i>	Resiko tersebut membuat aktivitas pada perusahaan berhenti total

Penilaian Analisa Resiko

Jabatan : Admin Teknik

No	Nama Komponen	Potensi Kegagalan	Likelihood	Consequence
1	<i>Forming Paper</i>	Hasil sambungan pada kaleng terbuka	4	3
2	<i>Curling</i>	Hasil bagian atas kaleng terbuka dan tajam	3	3
3	<i>Flanging</i>	Hasil body kaleng rusak	3	2



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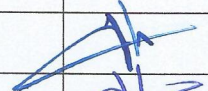






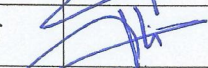
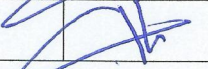

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KAMPUS II: Jl. Dukuh Menanggal XII/4 ☎ (031) 8281181 Surabaya 60234

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BERITA ACARA BIMBINGAN SKRIPSI

Form Skripsi-03

Nama	: Dhany Ar - Royyan			
NIM	: 193700049			
Program Studi	: Teknik Industri			
Pembimbing	: M. Nushron Ali Mukhtar, S.T., M.T.			
Periode Bimbingan	: Gasal/Genap*) Tahun 2022 / 2023			
Judul Skripsi	Perencanaan <i>Preventive Maintenance Line</i> Produksi Dengan Metode <i>Reliability Centered Maintenance (RCM)</i> Di PT Raya			
KEGIATAN KONSULTASI / BIMBINGAN				
No	Tanggal	Materi pembimbingan	Keterangan	Paraf
1.	18/1/2023	Pengarahan Jurnal		
2.	8/2/2023	Pendahuluan Jurnal	Revisi	
3.	12/2/2023	Pendahuluan dan Metode Penelitian	Revisi	
4.	20/2/2023	Hasil dan Pembahasan	Revisi	
5.	8/3/2023	Hasil, Pembahasan dan Kesimpulan	ACC	
6.	16/3/2023	Bab IX	Revisi	
7.	20/3/2023	Pengolahan Data	Revisi	
8.	3/4/2023	Pengolahan Data dan Analisis Hasil	ACC	
9.	10/4/2023	Bab X	Revisi	
10.	14/4/2023	Bab I - V (TA siap Diuji)	ACC	
Dinyatakan selesai tanggal 20....				

Surabaya, 5 Juni 2023

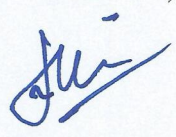
Mengetahui,
Ketua Program Studi,

Dosen Pembimbing,

Mahasiswa,


M. Nushron Ali Mukhtar, S.T., M.T.


M. Nushron Ali Mukhtar, S.T., M.T.


Dhany Ar - Royyan



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FormTA-TI10a

PERSETUJUAN REVISI TUGAS AKHIR PENGUJI I

Nama Mahasiswa : Dhany Ar-Royan NIM : 193100049

Ujian Tanggal : 21 Juni 2023

Judul Tugas Akhir : Perencanaan Preventive Maintenance Line Produksi Dengan Metode FMEA dan RCM Di PT Raya

NO	TANGGAL	MATERI REVISI	KETERANGAN	PARAF DOSEN
1	03-07-2023	variabel penelitian	Acc	
2	03-07-2023	Pengumpulan data	Acc	
3	03-07-2023	Tujuan dan kesimpulan	Acc	
4	06-07-2023	Penjadwalan mesin	Acc	

Revisi disetujui Dosen Penguji I tanggal : 6-7-2023

Catatan : Lembar revisi ini dilampirkan dalam Tugas Akhir

Surabaya, 06-07-2023

Penguji I

Indra Dwi Febriyanto, S.T., M.T.

Catatan :

5. Penyelesaian Revisi paling lambat 2 minggu dari pelaksanaan Ujian Tugas Akhir
6. Pengumpulan Buku Tugas Akhir paling lambat 2 minggu dari disetujuinya revisi.
7. Apabila sampai batas waktu belum menyelesaikan maka harus mengulang siding TA



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FormTA-TI10b

PERSETUJUAN REVISI TUGAS AKHIR PENGUJI II

Nama Mahasiswa : Dhany Ar-Royan NIM : 193700049
Ujian Tanggal : 21 Juni 2023
Judul Tugas Akhir : Perencanaan Preventive Maintenance line produksi Dengan Metode FMEA dan RCM di PT Raya

NO	TANGGAL	MATERI REVISI	KETERANGAN	PARAF DOSEN
1	03-07-2023	Perbaiki judul dan alur proses produksi	selesai	f
2	03-07-2023	Pengolahan data di bab 3 pindah bab 4 atau lampiran	selesai	f
3	03-07-2023	tata tulis	selesai	f

Revisi disetujui Dosen Penguji II tanggal : 03-07-2023

Catatan : Lembar revisi ini dilampirkan dalam Tugas Akhir.

Surabaya, 03 Juli 2023

Penguji II

Ir. Titiek Koerdigati, M.T.

Catatan :

1. Penyelesaian Revisi paling lambat 2 minggu dari pelaksanaan Ujian Tugas Akhir
2. Pengumpulan Buku Tugas Akhiri paling lambat 2 minggu dari disetujuinya revisi.
3. Apabila sampai batas waktu belum menyelesaikan maka harus mengulang siding TA



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KAMPUS II: Jl. Dukuh Menanggal XII/4 ☎ (031) 8281181 Surabaya 60234

Website : www.ft.unipasby.ac.id E-mail : ft@unipasby.ac.id

Nomor : 729 Ad. 1 /FT/X/2022
Lamp. :-
Hal : Permohonan Ijin Penelitian

Surabaya, 19 Oktober 2022

Kepada Yth.

Pimpinan PT. Raya

Jl. Raya Pilang KM 8.5 Wonoayu, Sidoarjo

Untuk memenuhi tuntutan Kurikulum Jurusan/ Program Studi Teknik Industri Fakultas Teknik Universitas PGRI Adi Buana Surabaya, dimana mahasiswa diwajibkan untuk menempuh mata kuliah Skripsi / Tugas Akhir, maka dengan ini kami mengajukan permohonan ijin, agar mahasiswa di bawah ini dapat melakukan penelitian dan mengambil data. Adapun mahasiswa tersebut adalah :

Nama : Dhany Ar - Royyan

NIM : 193700049

Prodi : Teknik Industri

Dengan penelitian yang berjudul “Usulan Perencanaan Preventive Maintenance Pada Line Produksi Dengan Metode RCM (Realibility Centered Maintenance) di PT Raya”

Demikian permohonan ini atas perkenan dan kerjasamanya disampaikan terima kasih.

Mengetahui,
Dekan,

Dr. Yulia Dwi Nurcahyanie, ST., MT.
NIP. 19780609 20050 1 2003

Ketua Program Studi,

M. Nushron Ali Mukhtar, ST., MT.
NIDN. 0722108505

Sidoarjo, 29 Oktober 2022

Kepada, Yth.

DEKAN FAKULTAS TEKNIK

UNIVERSITAS PGRI ADI BUANA SURABAYA

Dengan Hormat,

Berdasarkan surat dari Universitas PGRI Adi Buana Surabaya No. 702a /Ad. I /FT/X/2022 pada tanggal 19 Oktober 2022 Perihal Permohonan Ijin penelitian. Bersama ini Perusahaan kami menerima Mahasiswa dibawah ini :

Nama : Dhany R- Royyan

NIM : 193700049

Prodi : Teknik Industri

Untuk melakukan penelitian yang berjudul "Usulan Perencanaan Preventive Maintenance Pada Line Produksi Dengan Metode RCM (Reliability Centered Maintenance) di Perusahaan kami.

Demikian surat ini dibuat atas perhatian dan kerjasamanya kami ucapkan terimakasih.

Hormat kami,

PT.KALENG RAYA INDONESIA



Kevin Chrismanto Nugroho

Pimpinan