LAMPIRAN

Lampiran 1 Bahan Baku Limbah Kertas

Lampiran 2 bahan baku limbah kertas campuran

Lampiran 3 Hasil Kertas Daur Ulang

Perhitungan software minitab 21

BOILER TTF

contol boiler

Descriptive Statistics

N	N*	Mean	StDev	Median	Minimum	Maximum	Skewness	Kurtosis
5	1	50.8	96.3442	9	2	223	2.22661	4.96636

Goodness of Fit Test

Distribution	AD	P
Normal	1.089	<0.005
Exponential	2.277	<0.003
Weibull	0.557	0.127
Lognormal	0.393	0.224

ML Estimates of Distribution Parameters

Distribution	Location	Shape	Scale	Threshold
Normal*	50.80000		96.34417	
Exponential			50.80000	
Weibull		0.58955	29.91911	
Lognormal*	2.56168		1.73927	

** Scale: Adjusted ML estimate*

BOILER

Distribution Analysis

Distribution Analysis: TTF (hari)

Variable: TTF (hari)

* NOTE * 5 cases were used

Censoring

Censoring Information	Count
Uncensored value	5

Estimation Method: Maximum Likelihood

Distribution: Lognormal

Parameter Estimates

Parameter	Estimate	Standard Error	95.0% Normal CI Lower	Upper
Location	2.56168	0.695708	1.19812	3.92524
Scale	1.55565	0.491940	0.837025	2.89125

Log-Likelihood = -22.113

Goodness-of-Fit

Anderson-Darling (Adjusted)
2.679

Characteristics of Distribution

	Estimate	Standard Error	95.0% Normal CI Lower	Upper
Mean(MTTF)	43.4541	44.9424	5.72368	329.903
Standard Deviation	139.097	243.355	4.50930	4290.67
Median	12.9576	9.01469	3.31387	50.6654
First Quartile(Q1)	4.53765	3.49755	1.00170	20.5553
Third Quartile(Q3)	37.0012	28.5199	8.16816	167.613
Interquartile Range(IQR)	32.4636	26.4587	6.57121	160.379

SCREEN TTF

contol screen

Descriptive Statistics

N	N*	Mean	StDev	Median	Minimum	Maximum	Skewness	Kurtosis
8	1	26.625	32.1423	14	1	88	1.32132	0.593370

Goodness of Fit Test

Distribution	AD	P
Normal	0.714	0.037
Exponential	0.763	0.196
Weibull	0.275	>0.250
Lognormal	0.255	0.619

ML Estimates of Distribution Parameters

Distribution	Location	Shape	Scale	Threshold
Normal*	26.62500		32.14226	
Exponential			26.62500	
Weibull		0.76407	22.75573	
Lognormal*	2.37782		1.63446	

* *Scale: Adjusted ML estimate*

SCREEN

Distribution Analysis

Distribution Analysis: TTF (hari)

Variable: TTF (hari)

* NOTE * 8 cases were used

* NOTE * 1 cases contained missing values

Censoring

Censoring Information	Count
Uncensored value	8

Estimation Method: Maximum Likelihood

Distribution: Lognormal

Parameter Estimates

Parameter	Estimate	Standard Error	95.0% Normal CI Lower	Upper
Location	2.37782	0.540546	1.31837	3.43727
Scale	1.52890	0.382224	0.936650	2.49562

Log-Likelihood = -33.770

Goodness-of-Fit

Anderson-Darling (Adjusted)
1.774

Characteristics of Distribution

	Estimate	Standard Error	95.0% Normal CI Lower	Upper
Mean(MTTF)	34.6944	27.6184	7.28893	165.141
Standard Deviation	106.119	142.694	7.60711	1480.36
Median	10.7814	5.82782	3.73732	31.1019
First Quartile(Q1)	3.84431	2.30227	1.18865	12.4332
Third Quartile(Q3)	30.2363	18.1078	9.34896	97.7899
Interquartile Range(IQR)	26.3920	16.7546	7.60495	91.5899

WIRE TTF

contol wire

Descriptive Statistics

N	N*	Mean	StDev	Median	Minimum	Maximum	Skewness	Kurtosis
6	1	49.5	54.0990	28	2	151	1.70296	2.94355

Goodness of Fit Test

Distribution	AD	P
Normal	0.572	0.076
Exponential	0.269	0.832
Weibull	0.249	>0.250
Lognormal	0.337	0.362

ML Estimates of Distribution Parameters

Distribution	Location	Shape	Scale	Threshold
Normal*	49.50000		54.09898	
Exponential			49.50000	
Weibull		0.95160	48.42434	
Lognormal*	3.26724		1.46044	

* *Scale: Adjusted ML estimate*

Distribution Analysis: TTF (hari)

Variable: TTF (hari)

* NOTE * 6 cases were used

* NOTE * 1 cases contained missing values

Censoring

Censoring Information	Count
Uncensored value	6

Estimation Method: Maximum Likelihood

Distribution: Exponential

Parameter Estimates

Parameter	Estimate	Standard Error	95.0% Normal CI Lower	Upper
Mean	49.5000	20.2083	22.2384	110.181

Log-Likelihood = -29.412

Goodness-of-Fit

Anderson-Darling (Adjusted)
2.186

Characteristics of Distribution

	Estimate	Standard Error	95.0% Normal CI Lower	Upper
Mean(MTTF)	49.5000	20.2083	22.2384	110.181
Standard Deviation	49.5000	20.2083	22.2384	110.181
Median	34.3108	14.0073	15.4145	76.3717
First Quartile(Q1)	14.2403	5.81356	6.39759	31.6971
Third Quartile(Q3)	68.6216	28.0146	30.8290	152.743
Interquartile Range(IQR)	54.3813	22.2011	24.4314	121.046

ROLL PM 2

Distribution Identification for TTF PM 2 (hari)

Descriptive Statistics

N	N*	Mean	StDev	Median	Minimum	Maximum	Skewness	Kurtosis
3	1	78	64.6452	73	16	145	0.345972	*

Goodness of Fit Test

Distribution	AD	P
Weibull	0.274	>0.250
Lognormal	0.241	0.447
Normal	0.194	0.607
Exponential	0.239	0.845

ML Estimates of Distribution Parameters

Distribution	Location	Shape	Scale	Threshold
Weibull		1.40713	85.45899	
Lognormal*	4.01326		1.12792	
Normal*	78.00000		64.64519	
Exponential			78.00000	

** Scale: Adjusted ML estimate*

Distribution Analysis: TTF PM 2 (hari)

Variable: TTF PM 2 (hari)

* NOTE * 3 cases were used

Censoring

Censoring Information	Count
Uncensored value	3

Estimation Method: Maximum Likelihood

Distribution: Exponential

Parameter Estimates

Parameter	Estimate	Standard Error	95.0% Normal CI Lower	Upper
Mean	78.0000	45.0333	25.1567	241.844

Log-Likelihood = -16.070

Goodness-of-Fit

Anderson-Darling (Adjusted)
3.685

Characteristics of Distribution

	Estimate	Standard Error	95.0% Normal CI Lower	Upper
Mean(MTTF)	78.0000	45.0333	25.1567	241.844
Standard Deviation	78.0000	45.0333	25.1567	241.844
Median	54.0655	31.2147	17.4373	167.634
First Quartile(Q1)	22.4392	12.9553	7.23712	69.5743
Third Quartile(Q3)	108.131	62.4294	34.8746	335.268
Interquartile Range(IQR)	85.6918	49.4742	27.6374	265.693

VACUM PM 2

Distribution Identification for TTF PM 2 (hari)

Descriptive Statistics

N	N*	Mean	StDev	Median	Minimum	Maximum	Skewness	Kurtosis
4	1	42.75	26.3613	52	4	63	-1.75569	3.33209

Goodness of Fit Test

Distribution	AD	P
Weibull	0.857	0.019
Lognormal	0.701	0.018
Normal	0.505	0.080
Exponential	0.711	0.198

ML Estimates of Distribution Parameters

Distribution	Location	Shape	Scale	Threshold
Weibull		1.52690	46.39456	
Lognormal*	3.35789		1.31760	
Normal*	42.75000		26.36127	
Exponential			42.75000	

* *Scale: Adjusted ML estimate*

VACUM PM 2

Distribution Analysis

Distribution Analysis: TTF PM 2 (hari)

Variable: TTF PM 2 (hari)

* NOTE * 4 cases were used

Censoring

Censoring Information	Count
Uncensored value	4

Estimation Method: Maximum Likelihood

Distribution: Exponential

Parameter Estimates

		Standard	95.0% Normal CI	
Parameter	Estimate	Error	Lower	Upper
Mean	42.7500	21.3750	16.0448	113.903

Log-Likelihood = -19.021

Goodness-of-Fit

Anderson-Darling (Adjusted)
3.421

Characteristics of Distribution

		Standard	95.0% Normal CI	
	Estimate	Error	Lower	Upper
Mean(MTTF)	42.7500	21.3750	16.0448	113.903
Standard Deviation	42.7500	21.3750	16.0448	113.903
Median	29.6320	14.8160	11.1214	78.9519
First Quartile(Q1)	12.2984	6.14920	4.61581	32.7680
Third Quartile(Q3)	59.2641	29.6320	22.2429	157.904
Interquartile Range(IQR)	46.9657	23.4828	17.6271	125.136

WIRE PM 2

Distribution Identification for TTF PM 2 (hari)

Descriptive Statistics

N	N*	Mean	StDev	Median	Minimum	Maximum	Skewness	Kurtosis
17	1	22.0588	44.4233	4	1	177	3.04760	10.0015

Goodness of Fit Test

Distribution	AD	P
Weibull	0.856	0.023
Lognormal	0.551	0.132
Normal	3.133	<0.005
Exponential	5.308	<0.003

ML Estimates of Distribution Parameters

Distribution	Location	Shape	Scale	Threshold
Weibull		0.59870	13.18325	
Lognormal*	1.75082		1.61081	
Normal*	22.05882		44.42335	
Exponential			22.05882	

** Scale: Adjusted ML estimate*

WIRE PM 2

Distribution Analysis

Distribution Analysis: TTF PM 2 (hari)

Variable: TTF PM 2 (hari)

* NOTE * 17 cases were used

Censoring

Censoring Information	Count
Uncensored value	17

Estimation Method: Maximum Likelihood

Distribution: Lognormal

Parameter Estimates

		Standard	95.0% Normal CI	
Parameter	Estimate	Error	Lower	Upper
Location	1.75082	0.379014	1.00797	2.49368
Scale	1.56271	0.268003	1.11660	2.18705

Log-Likelihood = -61.475

Goodness-of-Fit

Anderson-Darling (Adjusted)
1.280

Characteristics of Distribution

		Standard	95.0% Normal CI	
	Estimate	Error	Lower	Upper
Mean(MTTF)	19.5282	11.0305	6.45449	59.0831
Standard Deviation	63.2692	60.4775	9.71739	411.941
Median	5.75935	2.18287	2.74004	12.1057
First Quartile(Q1)	2.00730	0.842892	0.881416	4.57134
Third Quartile(Q3)	16.5247	6.93896	7.25610	37.6327
Interquartile Range(IQR)	14.5174	6.44186	6.08393	34.6414

No : 202/HR-BM/VIII/2023
Perihal : Jawaban Permohonan Penelitian

Kepada Yth,
Dekan Universitas 17 Agustus 1945 (UNTAG)
Jln Semolowaru no 45, Surabaya – Jawa Timur
Di –
Surabaya – Jawa Timur

Dengan Hormat,

Menindaklanjuti surat ijin **Permohonan Penelitian Tugas Akhir** bagi mahasiswa Universitas 17 Agustus 1945 (UNTAG) Fakultas Teknik yang dimulai pada semester genap 2022 – 2023 guna menyelesaikan studi Program Strata 1 (S1) sebagai penerapan teori dan praktik yang diperoleh selama masa studinya sesuai surat no. 986/K/FT/Akd/V/2023 tanggal 23 mei 2023, kepada mahasiswa Bapak/Ibu berikut ini:

No	Nama Mahasiswa	NBI	Email	No Telp
1	Aditya Rafly Syah Putra	1411900065	Raflyakbar586@gmail.com	087764754426
2	Praditya Dimas Santosa	1411900025	Dimas.gru17@gmail.com	083830280008

Dengan ini kami sampaikan bahwa :

Kami menerima permohonan tersebut, sesuai dengan surat yang terlampir..

Demikian surat ini disampaikan untuk dapat di pergunakan sebagaimana mestinya, terima kasih

Pasuruan, 01 September 2023
Mengetahui

Kresno Handoko
HRD/GA/HSE Manager

Lampiran 4 Surat Balasan

JURNAL BIMBINGAN TUGAS AKHIR
PRODI TEKNIK INDUSTRI
SEMESTER GASAL 2023/2024

Nama : Praditya Dimas Santosa
NBI : 19119000 25
Judul Penelitian : Perawatan Paper Machine untuk mengurangi kertas putus pada PT. X
Dosen Pembimbing: Wiwin Widiasih, ST., MT

No.	Tanggal	Materi Bimbingan	Catatan Pembimbing	Paraf Pembimbing
1.	7/8 2023	Topik	Maintenance pepper machine	
2.	11/8 2023	bab 1	metode preventive maintenance	
3.	15/8 2023	bab 2	uraian penelitian terdahulu	
4.	18/8 2023	bab 2	WMUS nomor, metode QC	
5	24/8 2023	bab 3	metodologi penelitian, flowchart	
6	28/8 2023	bab 3	jadwal pelaksanaan	
7.	5/9 2023	bab 1	manfaat	
8.	9/10 2023	bab 4	pengumpulan data	
9.	11/10 2023	bab 4	identifikasi kualitas, fishbone	
10	26/10 2023	bab 4	pareto chart, MTTR, MTTF	
11.	2/11 2023	bab 4	hitung MTTF	
12.	9/11 2023	bab 4	hitung Reliability	
13	16/11 2023	bab 4	age replacement	
14	29/11 2023	bab 4	hitung biaya maintenance	
15.	30/11 2023	Bab 5	kesimpulan	

Lampiran 5 Lembar Bimbingan

UNIVERSITAS 17 AGUSTUS 1945 SURABAYA
FAKUTAS TEKNIK
PROGRAM STUDI TEKNIK INDUSTRI

REVISI SIDANG TUGAS AKHIR

NAMA : Praditya Dimas Santosa
NBI : 1411900025
JUDUL : ANALISIS PERAWATAN PAPER MACHINE UNTUK MENGURANGI KERTAS PUTUS PADA PT.X PAPER MILLS DI JAWA TIMUR

BATAS BIMBINGAN REVISI : 1 Minggu setelah Sidang

NO	URAIAN	BAB	HALAMAN
1.	Bab 1, 2, 3, 4 & 5 → harus konsisten		
2.	Perbaiki Metodologi penelitian		
4.	Penyebab sesuai jurnal		
	13/12/23		

NO	URAIAN	BAB	HALAMAN
1.	Rumusan masalah, tujuan, kesimpulan tidak sinkron.		
2.	Selisih biaya (terjadi peningkatan atau penurunan.		
3.	Sitasi dosen"		

Surabaya, 07 Desember 2023

Telah Direvisi,
Dosen Penguji 1,

Ir. Siti Mundari, MT

Dosen Penguji 2,

Putu Eka Dewi Karunia Wati, ST., MT., CSCA

Mengetahui
Dosen Pembimbing/Ketua Penguji,

13/12/2023

Wiwin Widiasih, ST., MT

Lampiran 6 Lembar Revisi Sidang Akhir

BIOGRAFI

Praditya Dimas Santosa adalah nama penulis skripsi ini. Lahir di Surabaya 17 Februari 2001. Penulis pertama kali masuk pendidikan di SDN Dupak V pada tahun 2007 dan tamat pada tahun 2013, pada tahun yang sama penulis melanjutkan pendidikan di SMPN 7 Surabaya dan tamat pada tahun 2016 Setelah tamat SMP, penulis melanjutkan ke SMAS Hang Tuah 1 Surabaya jurusan IPA dan tamat pada tahun 2019. Pada tahun yang sama penulis terdaftar sebagai mahasiswa di Universitas 17 Agustus 1945 Surabaya. Fakultas Teknik, Program Studi Teknik Industri. Penulis dapat dihubungi melalui email : Dimas.gru17@gmail.com atau melalui nomor 083830280008

Penulis berhasil menyelesaikan Tugas Akhir dengan judul "ANALISIS PERAWATAN PAPER MACHINE UNTUK MENGURANGI KERTAS PUTUS PADA PT.X PAPER MILLS DI JAWA TIMUR" guna meminimalkan kerusakan dan menghitung biaya perawatan, semoga dengan adanya penelitian tugas akhir ini dapat memberikan kontribusi yang positif untuk penelitian selanjutnya dan dalam Pendidikan maupun kehidupan sehari-hari.