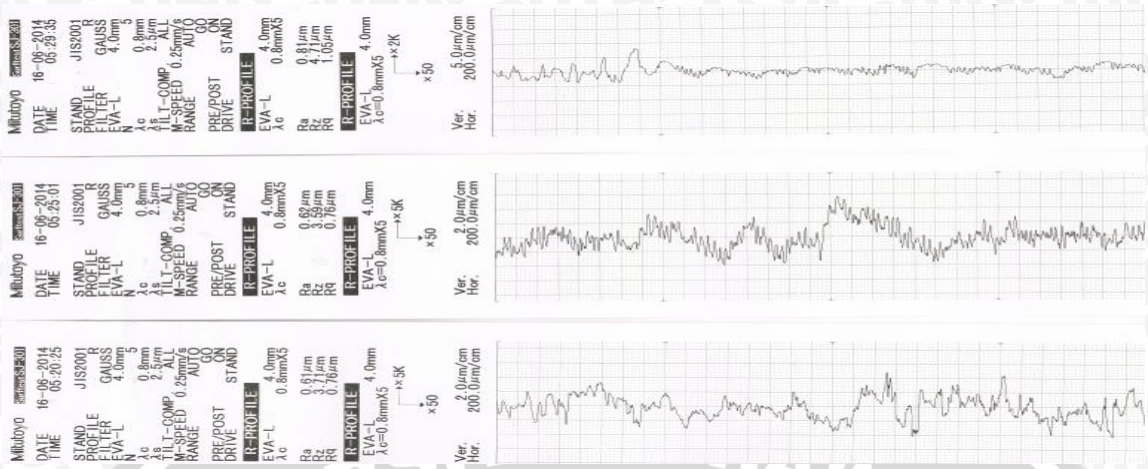
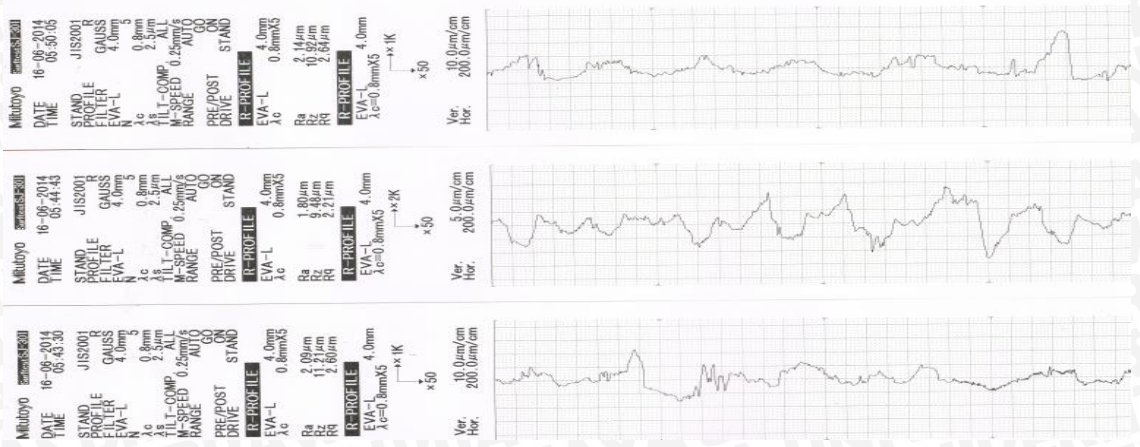
Lampiran 1 Hasil *Print Out* Mitutoyo *Surftest* SJ – 301

Kemiringan Pahat 1°, *Spindle Speed* 700 rpm, *feed rate* 100 mm/min.

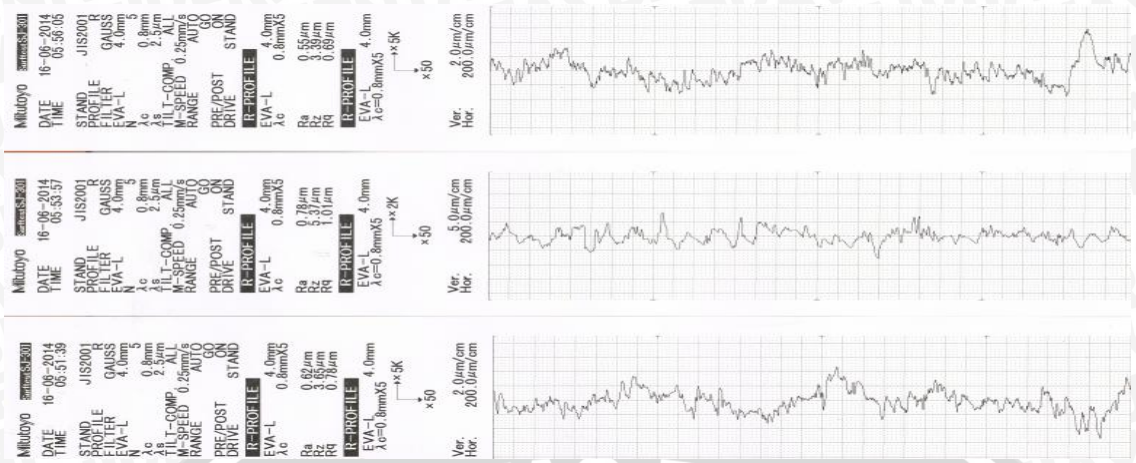


Kemiringan Pahat 1°, *Spindle Speed* 700 rpm, *feed rate* 200 mm/min

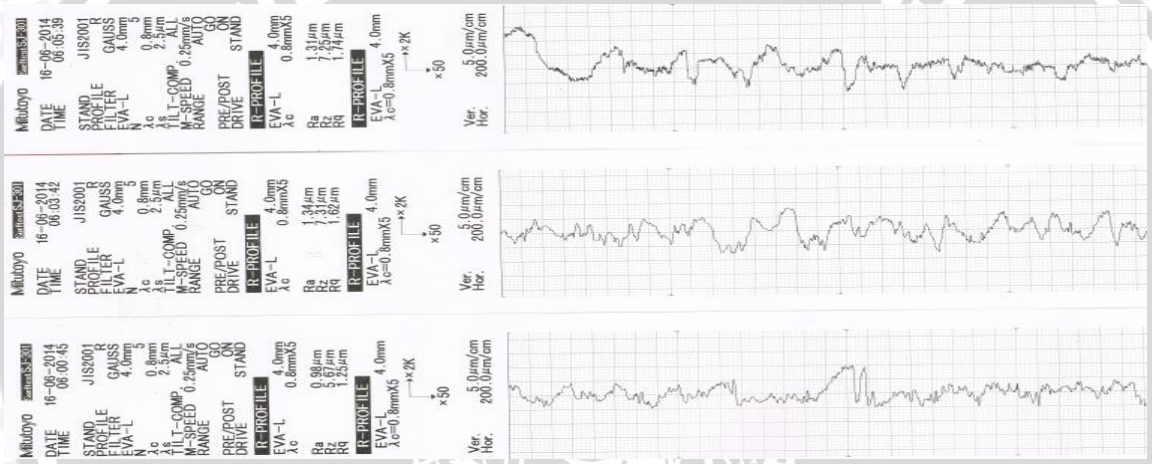
Kemiringan Pahat 1°, *Spindle Speed* 700 rpm, *feed rate* 300 mm/min



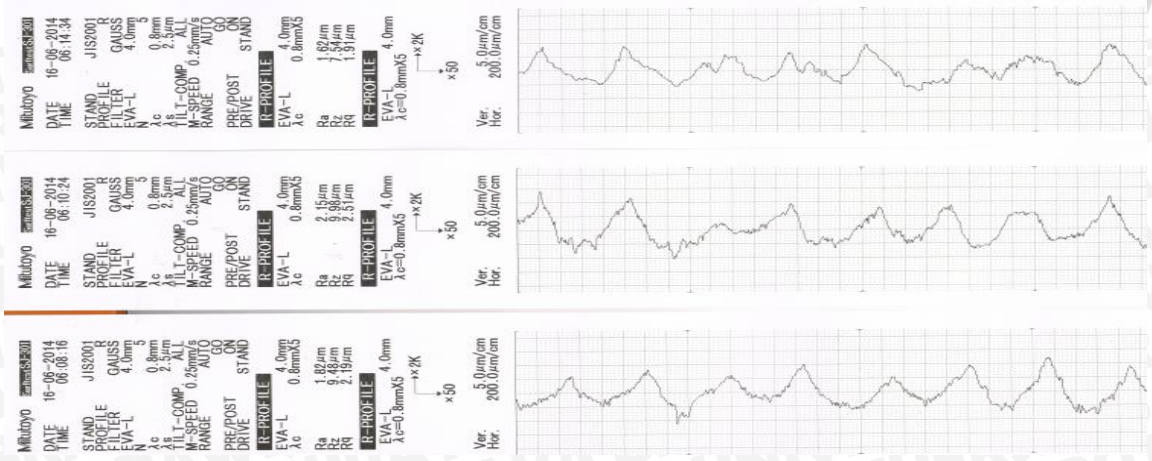
Kemiringan Pahat 1°, *Spindle Speed* 800 rpm, *feed rate* 100 mm/min



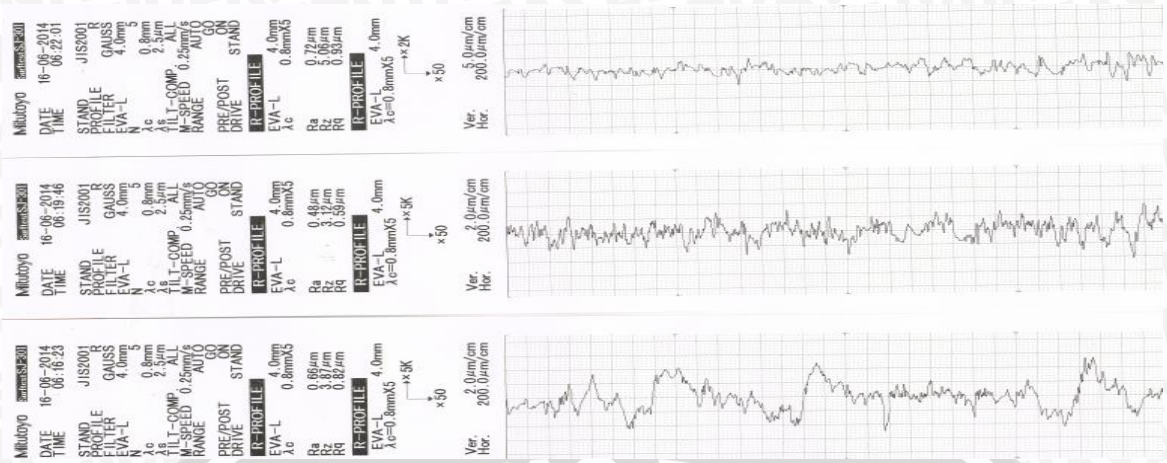
Kemiringan Pahat 1°, *Spindle Speed* 800 rpm, *feed rate* 200 mm/min



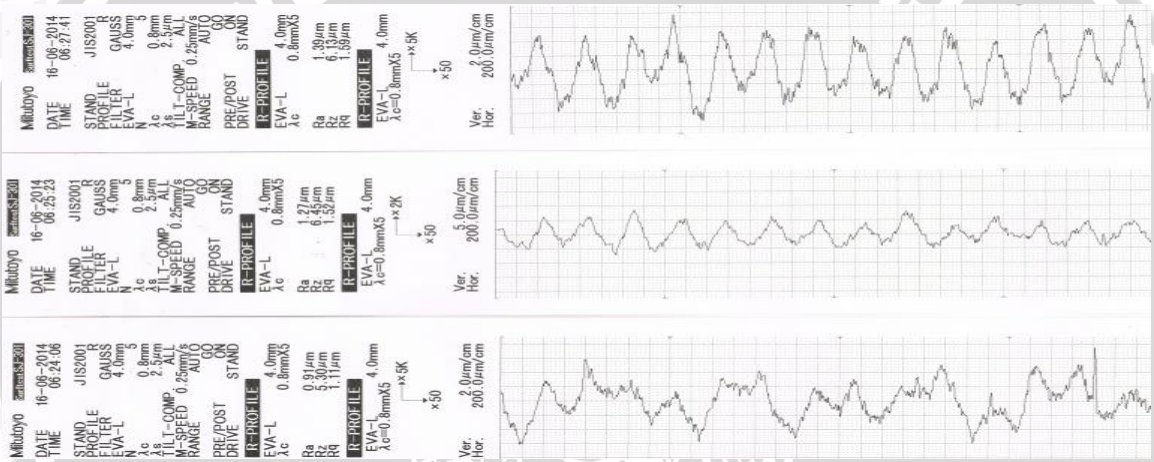
Kemiringan Pahat 1°, *Spindle Speed* 800 rpm, *feed rate* 300 mm/min



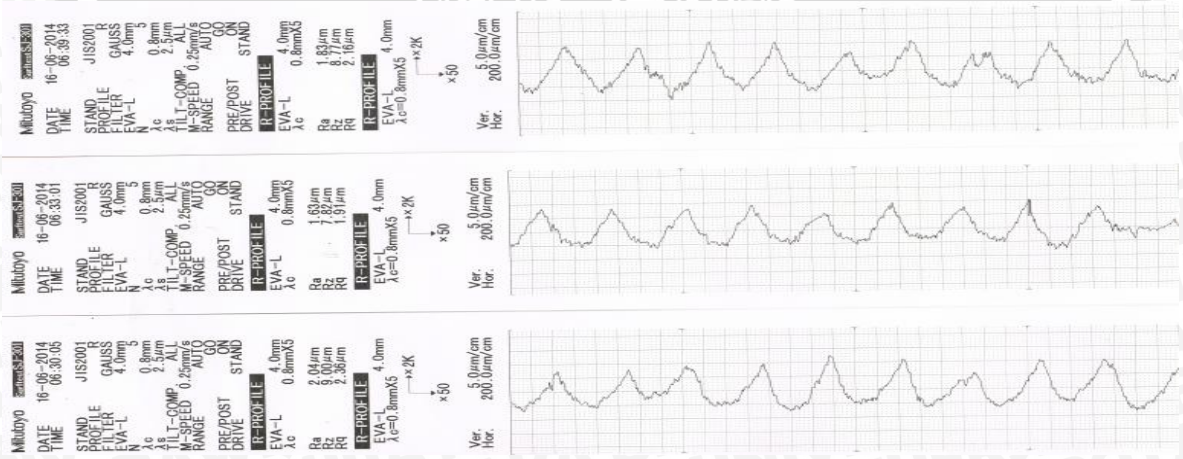
Kemiringan Pahat 1°, *Spindle Speed* 900 rpm, *feed rate* 100 mm/min



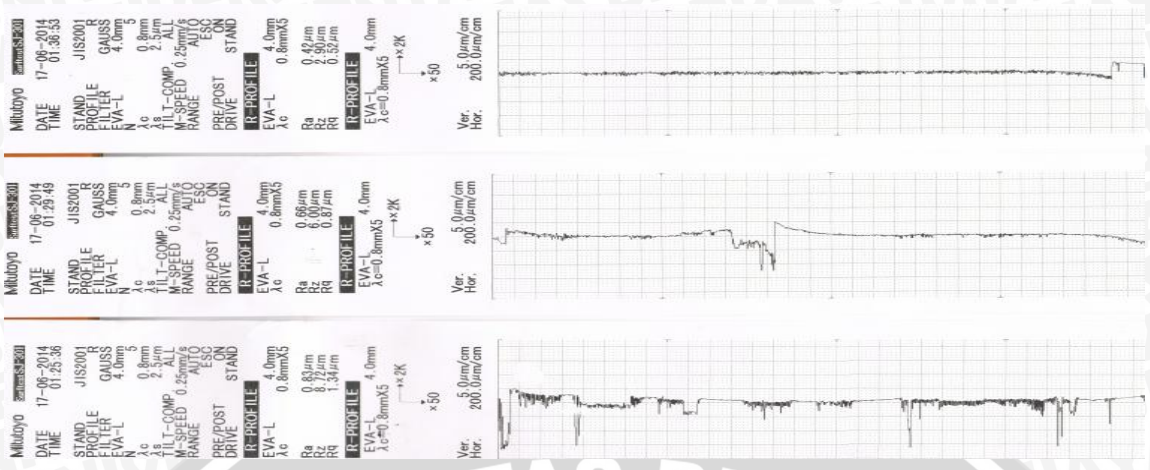
Kemiringan Pahat 1°, *Spindle Speed* 900 rpm, *feed rate* 200 mm/min



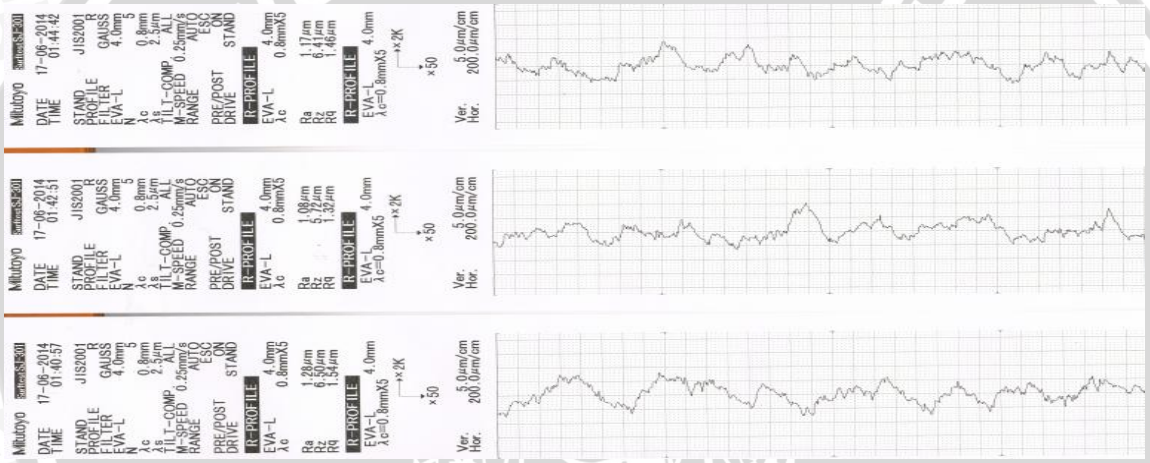
Kemiringan Pahat 1°, *Spindle Speed* 900 rpm, *feed rate* 300 mm/min



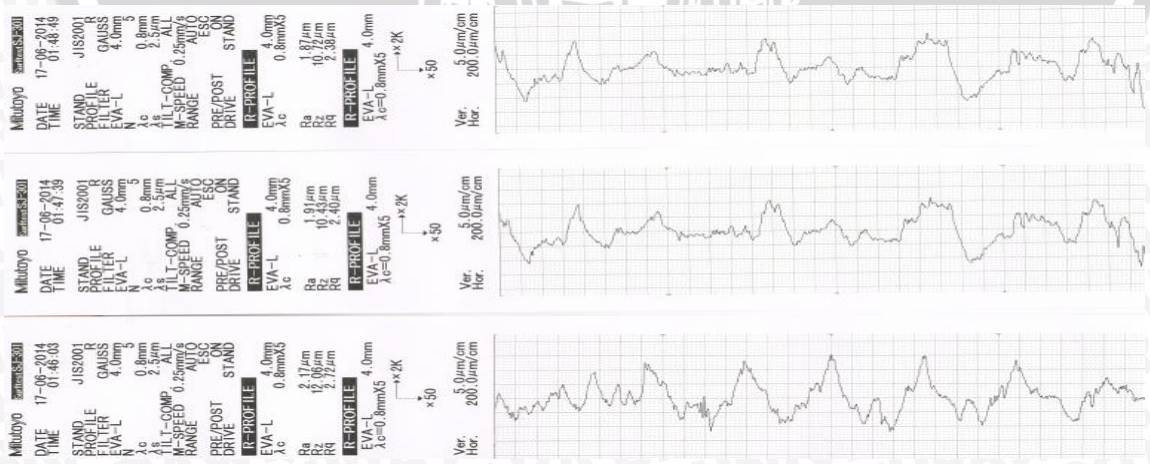
Kemiringan Pahat 3°, *Spindle Speed* 700 rpm, *feed rate* 100 mm/min



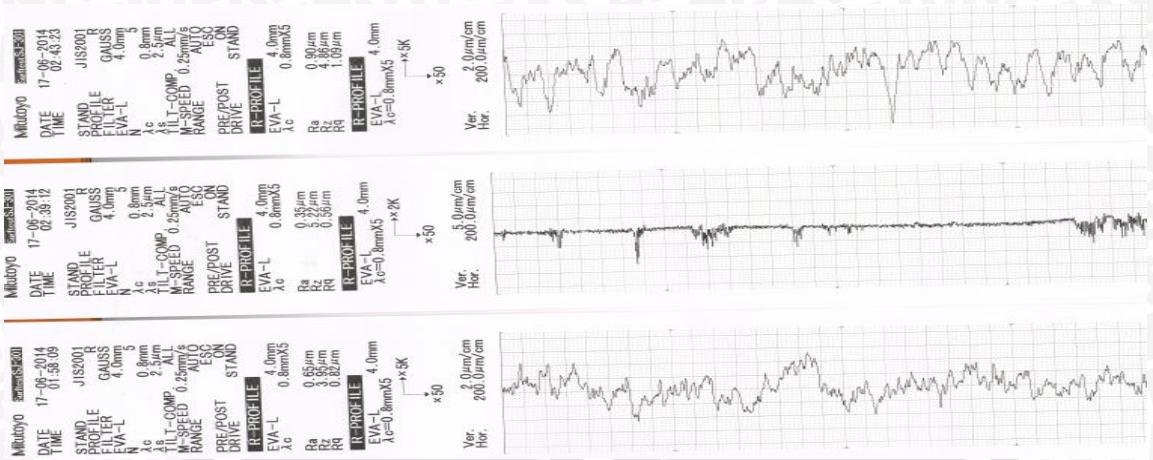
Kemiringan Pahat 3°, *Spindle Speed* 700 rpm, *feed rate* 200 mm/min



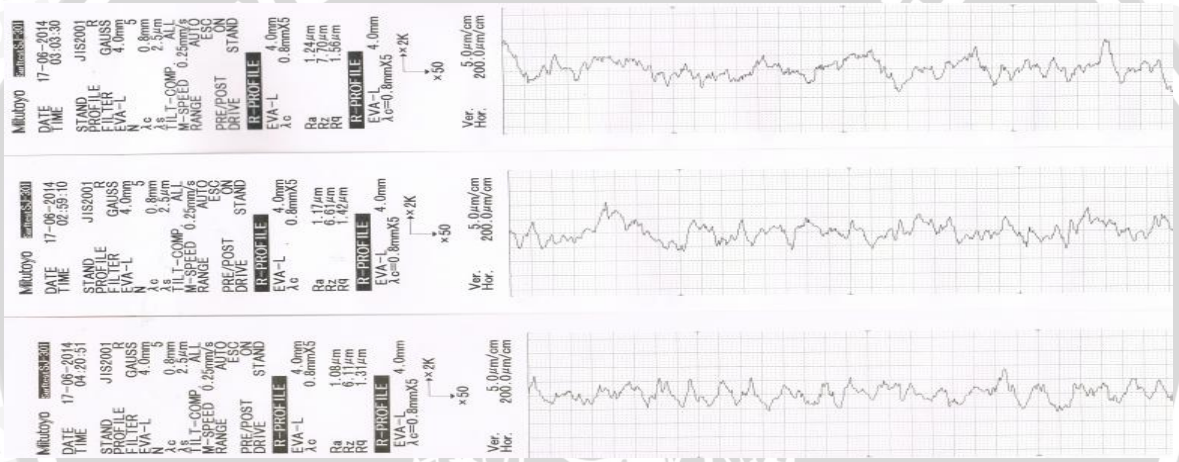
Kemiringan Pahat 3°, *Spindle Speed* 700 rpm, *feed rate* 300 mm/min



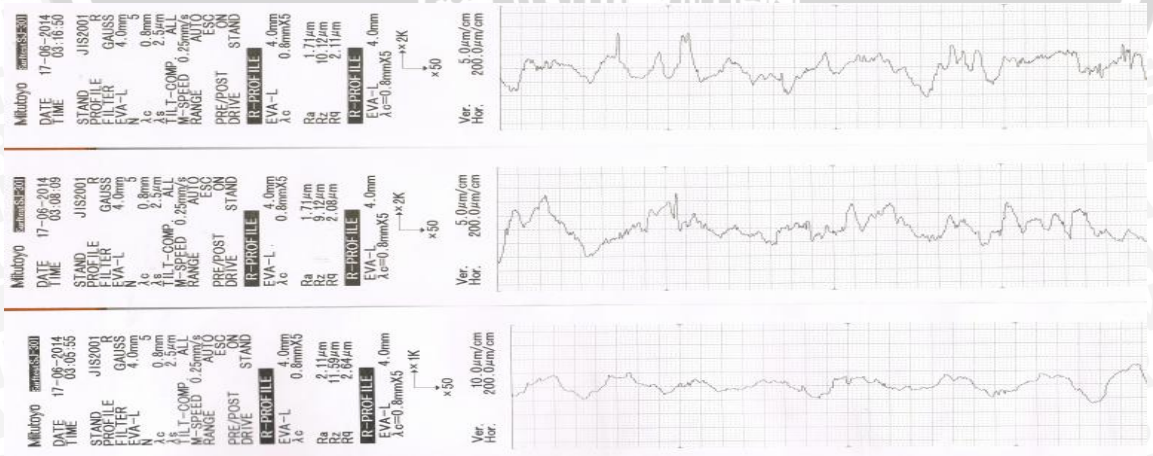
Kemiringan Pahat 3°, *Spindle Speed* 800 rpm, *feed rate* 100 mm/min



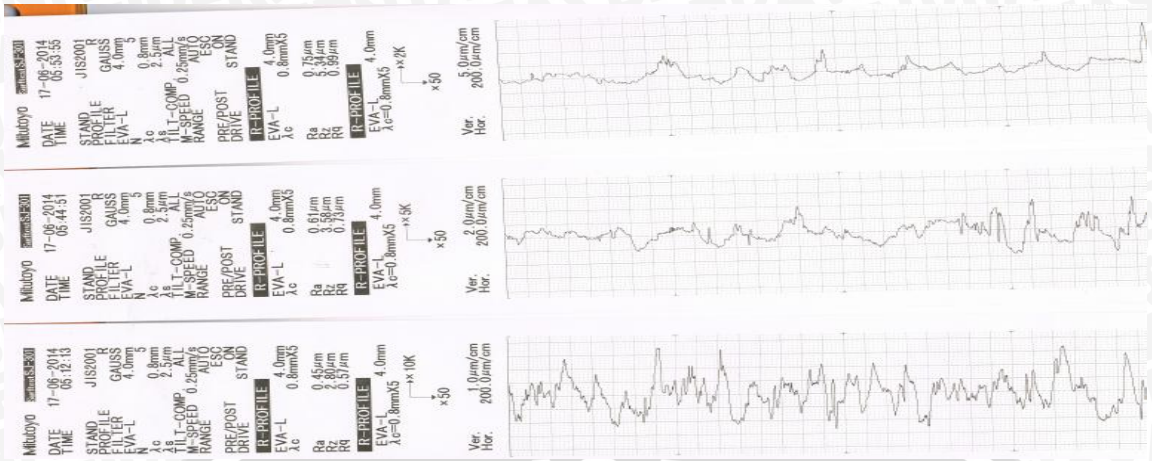
Kemiringan Pahat 3°, *Spindle Speed* 800 rpm, *feed rate* 200 mm/min



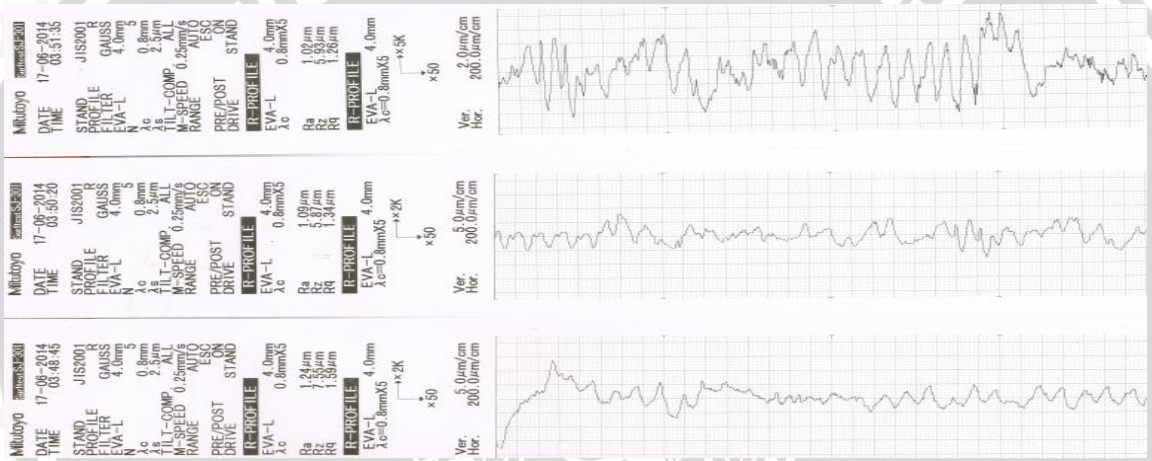
Kemiringan Pahat 3°, *Spindle Speed* 800 rpm, *feed rate* 300 mm/min



Kemiringan Pahat 3°, *Spindle Speed* 900 rpm, *feed rate* 100 mm/min

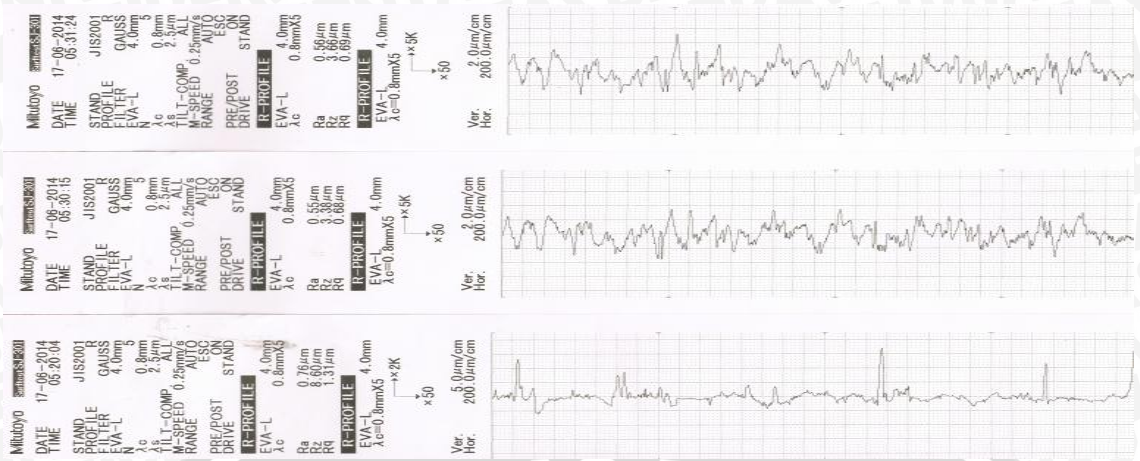


Kemiringan Pahat 3°, *Spindle Speed* 900 rpm, *feed rate* 200 mm/min

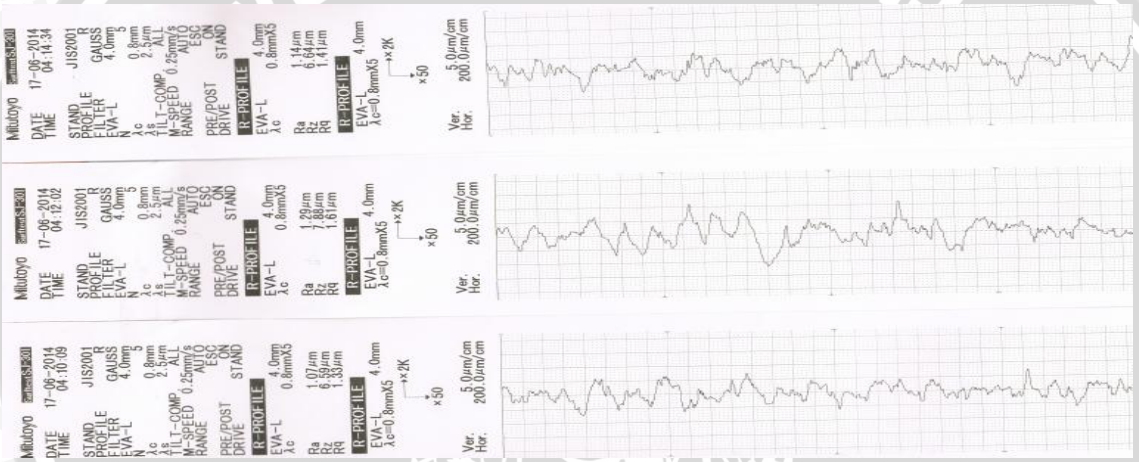


Kemiringan Pahat 3°, *Spindle Speed* 900 rpm, *feed rate* 300 mm/min

Kemiringan Pahat 5°, *Spindle Speed* 700 rpm, *feed rate* 100 mm/min



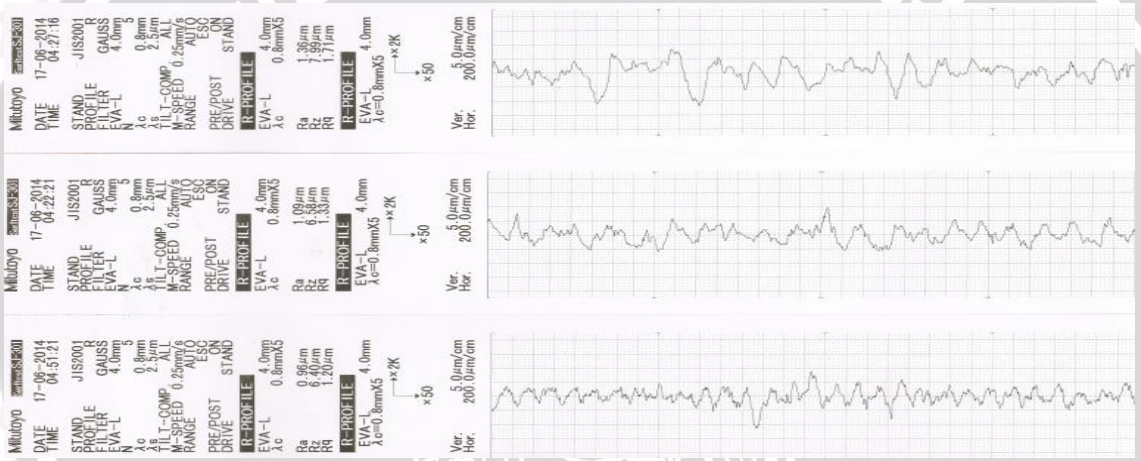
Kemiringan Pahat 5°, *Spindle Speed* 700 rpm, *feed rate* 200 mm/min



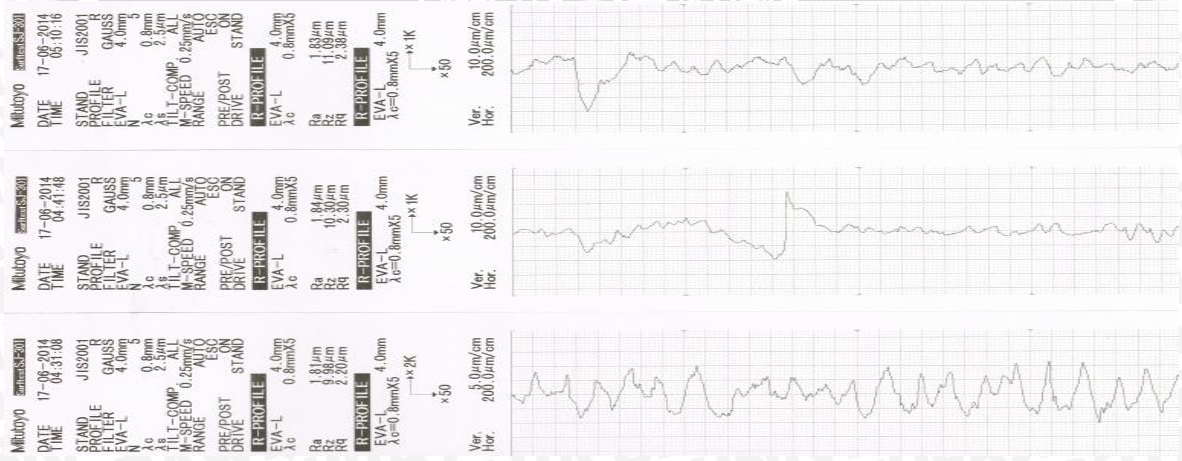
Kemiringan Pahat 5°, *Spindle Speed* 700 rpm, *feed rate* 300 mm/min

Kemiringan Pahat 5°, *Spindle Speed* 800 rpm, *feed rate* 100 mm/min

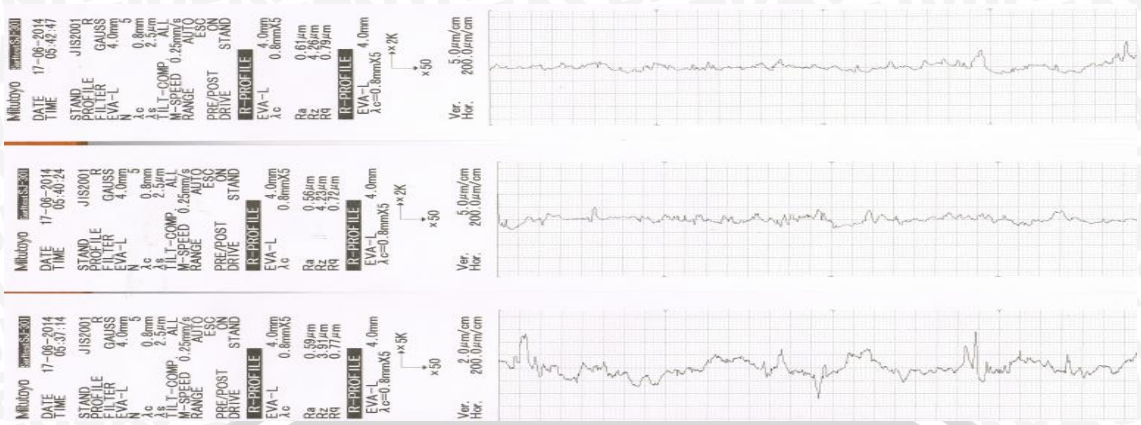
Kemiringan Pahat 5°, *Spindle Speed* 800 rpm, *feed rate* 200 mm/min



Kemiringan Pahat 5°, *Spindle Speed* 800 rpm, *feed rate* 300 mm/min

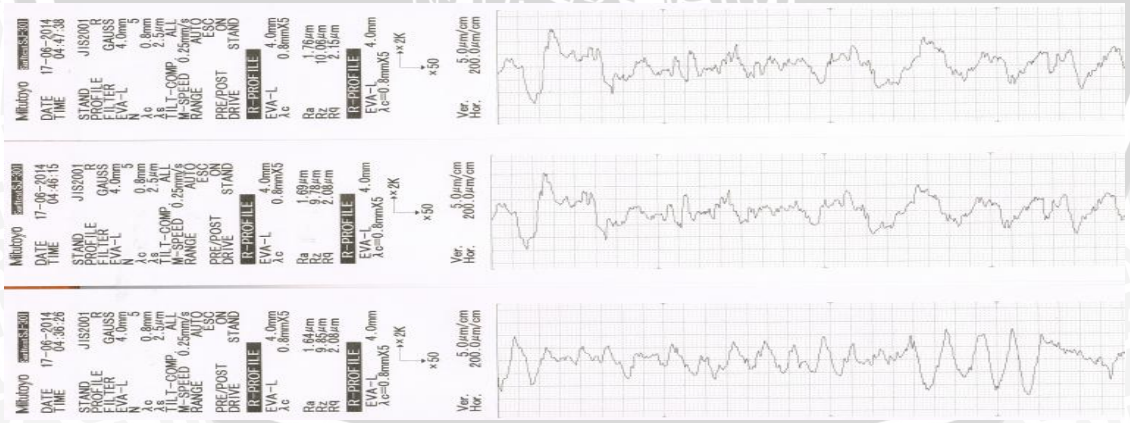


Kemiringan Pahat 5°, *Spindle Speed* 900 rpm, *feed rate* 100 mm/min

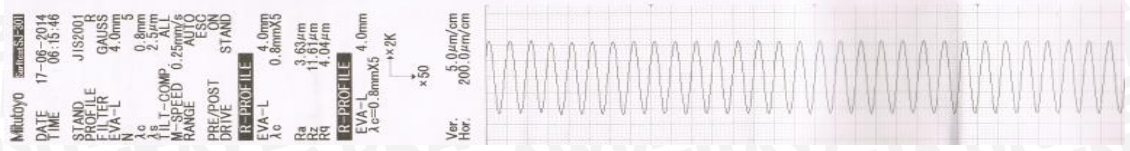


Kemiringan Pahat 5°, *Spindle Speed* 900 rpm, *feed rate* 200 mm/min

Kemiringan Pahat 5°, *Spindle Speed* 900 rpm, *feed rate* 300 mm/min



Hasil Uji Kekasaran Permukaan dengan Kalibrasi



Lampiran 2 Data untuk grafik hubungan antara kekasaran permukaan dengan proses pemotongan *conventional* dengan kemiringan pahat 1°, 3°, dan 5°

No	Kemiringan Pahat (°)	Feed Rate (mm/min)	Spindle Speed (rpm)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	1	100	900	0.66	0.48	0.72	0.62000
2	1	100	800	0.62	0.78	0.55	0.65000
3	1	100	700	0.61	0.62	0.81	0.68000
4	1	200	900	0.91	1.27	1.39	1.19000
5	1	200	800	0.98	1.34	1.31	1.21000
6	1	200	700	1.12	1.45	1.24	1.27000
7	1	300	900	2.04	1.63	1.83	1.83333
8	1	300	800	1.82	2.15	1.62	1.86333
9	1	300	700	2.09	1.80	2.14	2.01000

No	Kemiringan Pahat (°)	Feed Rate (mm/min)	Spindle Speed (rpm)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	3	100	900	0.45	0.61	0.75	0.60333
2	3	100	800	0.65	0.35	0.90	0.63333
3	3	100	700	0.83	0.66	0.42	0.63667
4	3	200	900	1.24	1.09	1.02	1.11667
5	3	200	800	1.08	1.17	1.24	1.16333
6	3	200	700	1.28	1.08	1.17	1.17667
7	3	300	900	1.63	1.50	2.09	1.74000
8	3	300	800	2.11	1.71	1.71	1.84333
9	3	300	700	2.17	1.91	1.87	1.98333

No	Kemiringan Pahat (°)	Feed Rate (mm/min)	Spindle Speed (rpm)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	5	100	900	0.59	0.56	0.61	0.58667
2	5	100	800	0.60	0.61	0.65	0.62000
3	5	100	700	0.76	0.55	0.56	0.62333
4	5	200	900	1.00	1.05	1.15	1.06667
5	5	200	800	0.96	1.09	1.36	1.13667
6	5	200	700	1.07	1.29	1.14	1.16667
7	5	300	900	1.64	1.69	1.76	1.69667
8	5	300	800	1.81	1.84	1.83	1.82667
9	5	300	700	1.84	2.06	2.04	1.98000

Lampiran 4 Data beserta grafik untuk hubungan antara *feed rate* dan *spindle speed* dengan kekasaran permukaan pada pemakanan *conventional* dengan masing - masing kemiringan pahat

No	Kemiringan Pahat (°)	Spindle Speed (rpm)	Feed Rate (mm/min)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	1	700	100	0.61	0.62	0.81	0.68000
2	1	700	200	1.12	1.45	1.24	1.27000
3	1	700	300	2.09	1.80	2.14	2.01000
4	1	800	100	0.62	0.78	0.55	0.65000
5	1	800	200	0.98	1.34	1.31	1.21000
6	1	800	300	1.82	2.15	1.62	1.86333
7	1	900	100	0.66	0.48	0.72	0.62000
8	1	900	200	0.91	1.27	1.39	1.19000
9	1	900	300	2.04	1.63	1.83	1.83333

No	Kemiringan Pahat (°)	Spindle Speed (rpm)	Feed Rate (mm/min)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	3	700	100	0.83	0.66	0.42	0.63667
2	3	700	200	1.28	1.08	1.17	1.17667
3	3	700	300	2.17	1.91	1.87	1.98333
4	3	800	100	0.65	0.35	0.90	0.63333
5	3	800	200	1.08	1.17	1.24	1.16333
6	3	800	300	2.11	1.71	1.71	1.84333
7	3	900	100	0.45	0.61	0.75	0.60333
8	3	900	200	1.24	1.09	1.02	1.11667
9	3	900	300	1.63	1.50	2.09	1.74000

No	Kemiringan Pahat (°)	Spindle Speed (rpm)	Feed Rate (mm/min)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	5	700	100	0.76	0.55	0.56	0.62333
2	5	700	200	1.07	1.29	1.14	1.16667
3	5	700	300	1.84	2.06	2.04	1.98000
4	5	800	100	0.60	0.61	0.65	0.62000
5	5	800	200	0.96	1.09	1.36	1.13667
6	5	800	300	1.81	1.84	1.83	1.82667
7	5	900	100	0.59	0.56	0.61	0.58667
8	5	900	200	1.00	1.05	1.15	1.06667
9	5	900	300	1.64	1.69	1.76	1.69667

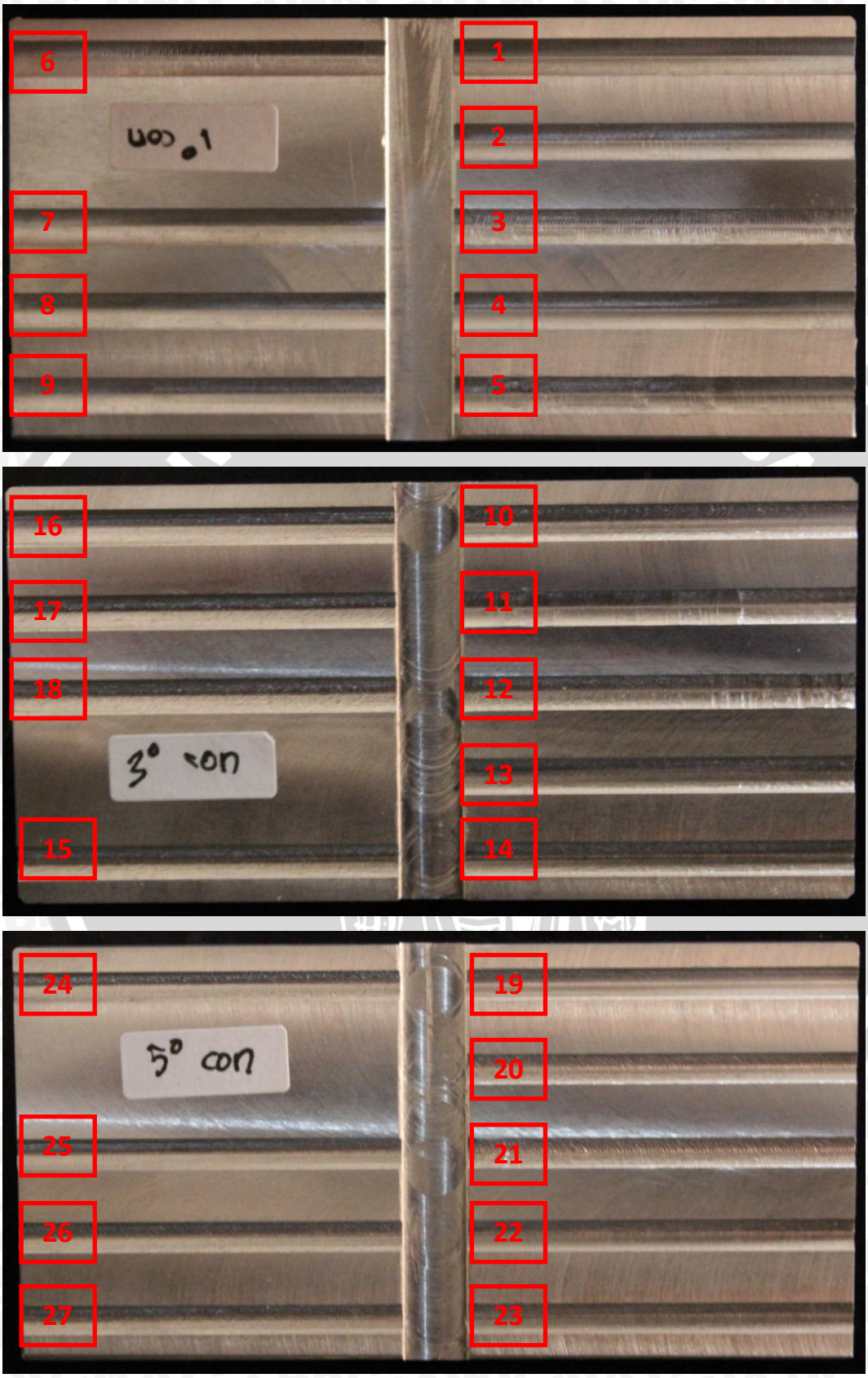
Lampiran 5 Data beserta grafik untuk hubungan antara kemiringan pahat dan *spindle speed* dengan kekasaran permukaan pada pemakanan conventional dengan masing - masing nilai *feed rate*

No	Feed Rate (mm/min)	Spindle Speed (rpm)	Kemiringan Pahat (°)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	100	700	1	0.61	0.62	0.81	0.68000
2	100	700	3	0.83	0.66	0.42	0.63667
3	100	700	5	0.76	0.55	0.56	0.62333
4	100	800	1	0.62	0.78	0.55	0.65000
5	100	800	3	0.65	0.35	0.90	0.63333
6	100	800	5	0.60	0.61	0.65	0.62000
7	100	900	1	0.66	0.48	0.72	0.62000
8	100	900	3	0.45	0.61	0.75	0.60333
9	100	900	5	0.59	0.56	0.61	0.58667

No	Feed Rate (mm/min)	Spindle Speed (rpm)	Kemiringan Pahat (°)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	200	700	1	1.12	1.45	1.24	1.27000
2	200	700	3	1.28	1.08	1.17	1.17667
3	200	700	5	1.07	1.29	1.14	1.16667
4	200	800	1	0.98	1.34	1.31	1.21000
5	200	800	3	1.08	1.17	1.24	1.16333
6	200	800	5	0.96	1.09	1.36	1.13667
7	200	900	1	0.91	1.27	1.39	1.19000
8	200	900	3	1.24	1.09	1.02	1.11667
9	200	900	5	1.00	1.05	1.15	1.06667

No	Feed Rate (mm/min)	Spindle Speed (rpm)	Kemiringan Pahat (°)	Kekasaran Permukaan (µm)			
				Ra 1	Ra 2	Ra 3	Rata - rata
1	300	700	1	2.09	1.80	2.14	2.01000
2	300	700	3	2.17	1.91	1.87	1.98333
3	300	700	5	1.84	2.06	2.04	1.98000
4	300	800	1	1.82	2.15	1.62	1.86333
5	300	800	3	2.11	1.71	1.71	1.84333
6	300	800	5	1.81	1.84	1.83	1.82667
7	300	900	1	2.04	1.63	1.83	1.83333
8	300	900	3	1.63	1.50	2.09	1.74000
9	300	900	5	1.64	1.69	1.76	1.69667

Lampiran 6 Gambar Hasil Proses Pemakanan

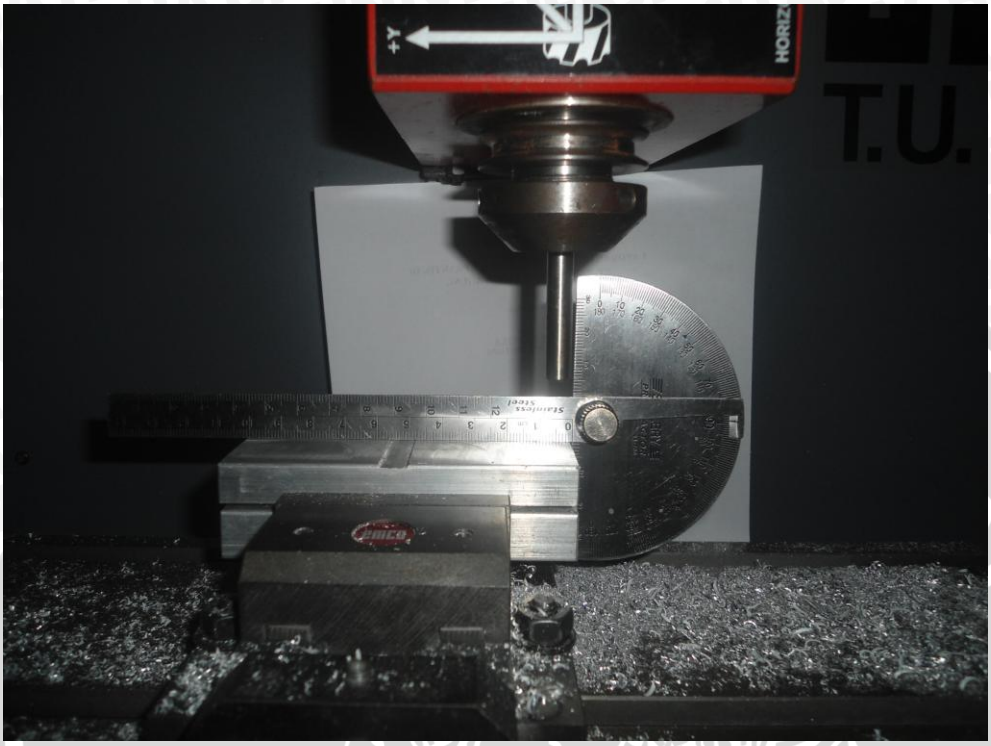


Keterangan Proses

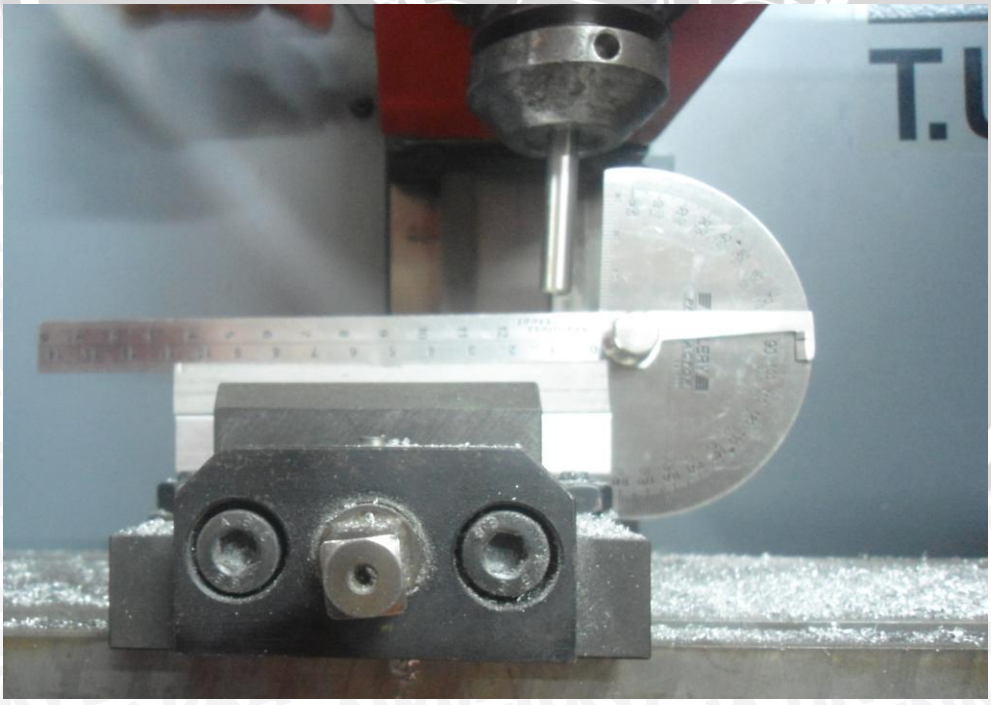
No	Kemiringan Pahat	Spindle Speed	Feed Rate
	(°)	(rpm)	(mm/min)
1	1	700	100
2	1	700	200
3	1	700	300
4	1	800	100
5	1	800	200
6	1	800	300
7	1	900	100
8	1	900	200
9	1	900	300
10	3	700	100
11	3	700	200
12	3	700	300
13	3	800	100
14	3	800	200
15	3	800	300
16	3	900	100
17	3	900	200
18	3	900	300
19	5	700	100
20	5	700	200
21	5	700	300
22	5	800	100
23	5	800	200
24	5	800	300
25	5	900	100
26	5	900	200
27	5	900	300

Lampiran 7 Gambar Proses Kemiringan Pahat

Kemiringan Pahat 1°



Kemiringan Pahat 3°



Kemiringan Pahat 5°

Lampiran 8 Tabel Uji t

Titik Persentase Distribusi t (df = 1 – 40)

Pr	0.25	0.10	0.05	0.025	0.01	0.005	0.001
df	0.50	0.20	0.10	0.050	0.02	0.010	0.002
1	1.00000	3.07768	6.31375	12.70620	31.82052	63.65674	318.30884
2	0.81650	1.88562	2.91999	4.30265	6.96456	9.92484	22.32712
3	0.76489	1.63774	2.35336	3.18245	4.54070	5.84091	10.21453
4	0.74070	1.53321	2.13185	2.77645	3.74695	4.60409	7.17318
5	0.72669	1.47588	2.01505	2.57058	3.36493	4.03214	5.89343
6	0.71756	1.43976	1.94318	2.44691	3.14267	3.70743	5.20763
7	0.71114	1.41492	1.89458	2.36462	2.99795	3.49948	4.78529
8	0.70639	1.39682	1.85955	2.30600	2.89646	3.35539	4.50079
9	0.70272	1.38303	1.83311	2.26216	2.82144	3.24984	4.29681
10	0.69981	1.37218	1.81246	2.22814	2.76377	3.16927	4.14370
11	0.69745	1.36343	1.79588	2.20099	2.71808	3.10581	4.02470
12	0.69548	1.35622	1.78229	2.17881	2.68100	3.05454	3.92963
13	0.69383	1.35017	1.77093	2.16037	2.65031	3.01228	3.85198
14	0.69242	1.34503	1.76131	2.14479	2.62449	2.97684	3.78739
15	0.69120	1.34061	1.75305	2.13145	2.60248	2.94671	3.73283
16	0.69013	1.33676	1.74588	2.11991	2.58349	2.92078	3.68615
17	0.68920	1.33338	1.73961	2.10982	2.56693	2.89823	3.64577
18	0.68836	1.33039	1.73406	2.10092	2.55238	2.87844	3.61048
19	0.68762	1.32773	1.72913	2.09302	2.53948	2.86093	3.57940
20	0.68695	1.32534	1.72472	2.08596	2.52798	2.84534	3.55181
21	0.68635	1.32319	1.72074	2.07961	2.51765	2.83136	3.52715
22	0.68581	1.32124	1.71714	2.07387	2.50832	2.81876	3.50499
23	0.68531	1.31946	1.71387	2.06866	2.49987	2.80734	3.48496
24	0.68485	1.31784	1.71088	2.06390	2.49216	2.79694	3.46678
25	0.68443	1.31635	1.70814	2.05954	2.48511	2.78744	3.45019
26	0.68404	1.31497	1.70562	2.05553	2.47863	2.77871	3.43500
27	0.68368	1.31370	1.70329	2.05183	2.47266	2.77068	3.42103
28	0.68335	1.31253	1.70113	2.04841	2.46714	2.76326	3.40816
29	0.68304	1.31143	1.69913	2.04523	2.46202	2.75639	3.39624
30	0.68276	1.31042	1.69726	2.04227	2.45726	2.75000	3.38518
31	0.68249	1.30946	1.69552	2.03951	2.45282	2.74404	3.37490
32	0.68223	1.30857	1.69389	2.03693	2.44868	2.73848	3.36531
33	0.68200	1.30774	1.69236	2.03452	2.44479	2.73328	3.35634
34	0.68177	1.30695	1.69092	2.03224	2.44115	2.72839	3.34793
35	0.68156	1.30621	1.68957	2.03011	2.43772	2.72381	3.34005
36	0.68137	1.30551	1.68830	2.02809	2.43449	2.71948	3.33262
37	0.68118	1.30485	1.68709	2.02619	2.43145	2.71541	3.32563
38	0.68100	1.30423	1.68595	2.02439	2.42857	2.71156	3.31903
39	0.68083	1.30364	1.68488	2.02269	2.42584	2.70791	3.31279
40	0.68067	1.30308	1.68385	2.02108	2.42326	2.70446	3.30688