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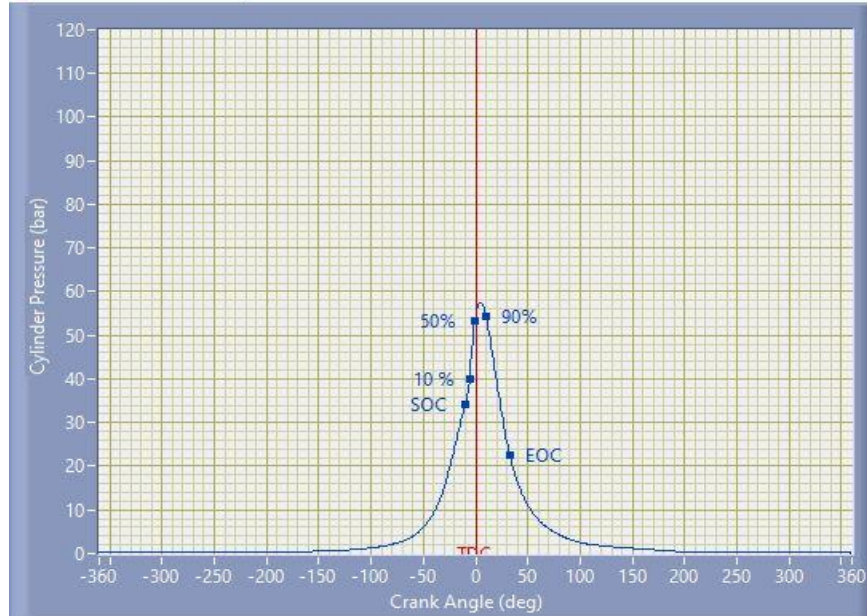
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## LAMPIRAN

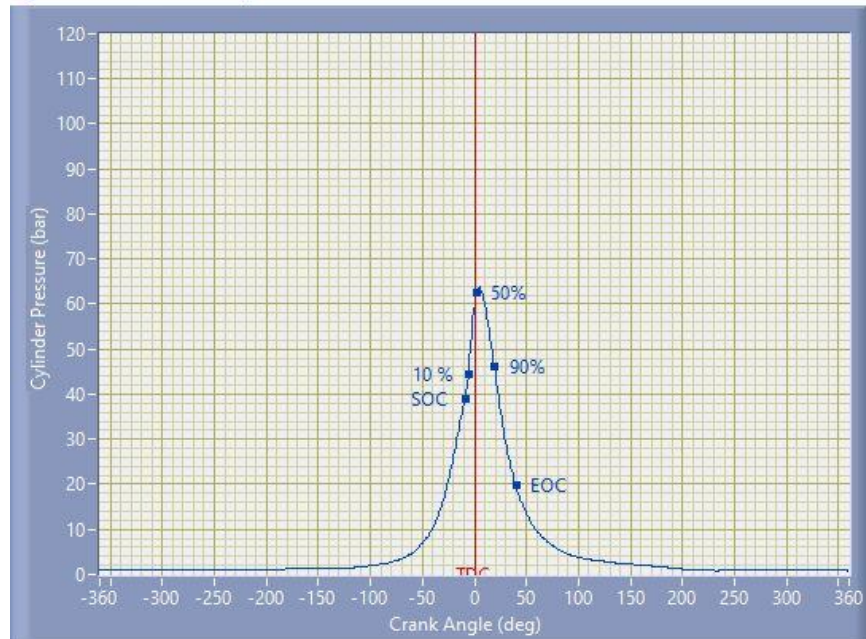
### TAMPILAN GRAFIK KINERJA PEMBAKARAN

Cylinder Pressure Graph



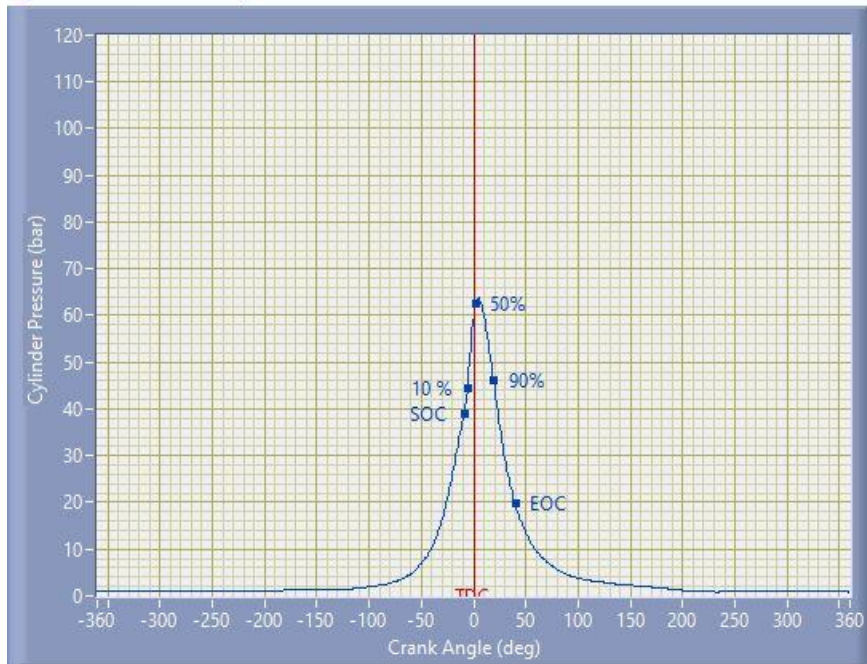
Tekanan silinder terhadap sudut engkol pada rasio kompresi 18 beban 9 kg menggunakan B30 sebelum ozonisasi dan ionisasi

Cylinder Pressure Graph



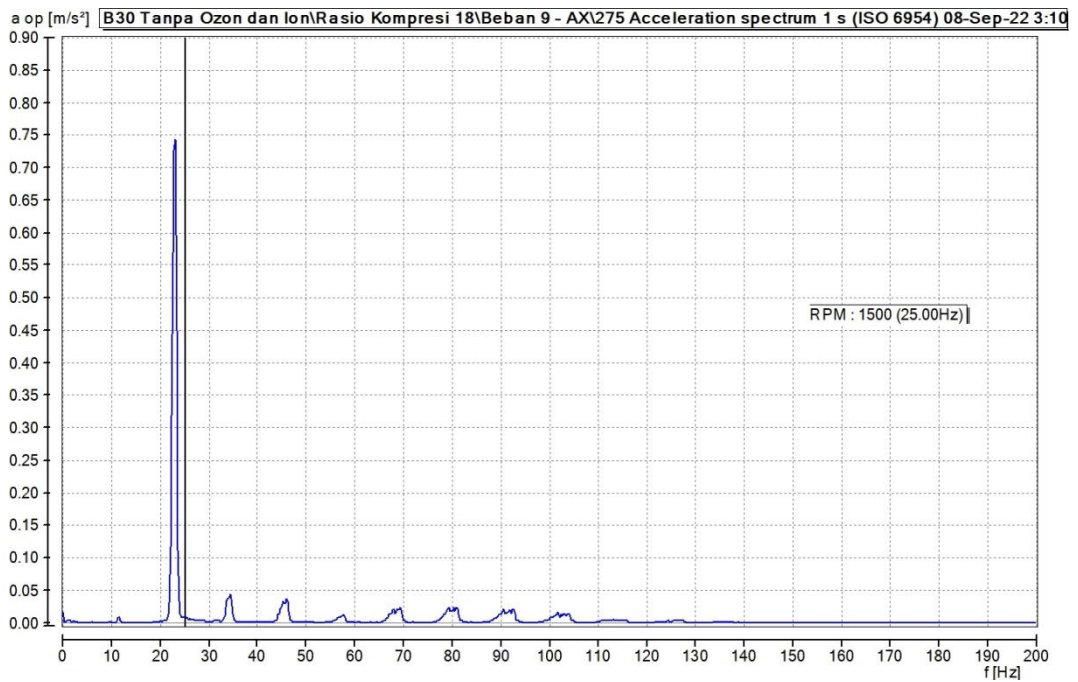
Tekanan silinder terhadap sudut engkol pada rasio kompresi 18 beban 9 kg menggunakan B30 setelah ozonisasi

Cylinder Pressure Graph



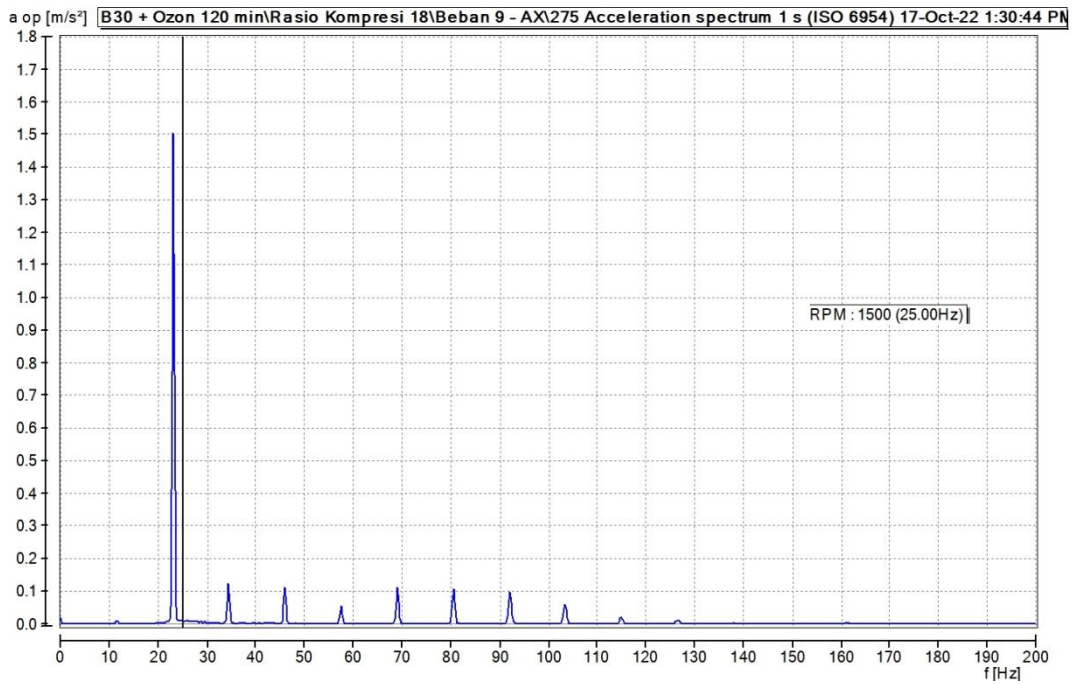
Tekanan silinder terhadap sudut engkol pada rasio kompresi 18 beban 9 kg menggunakan B30 setelah ionisasi

### TAMPILAN PENGUJIAN GETARAN

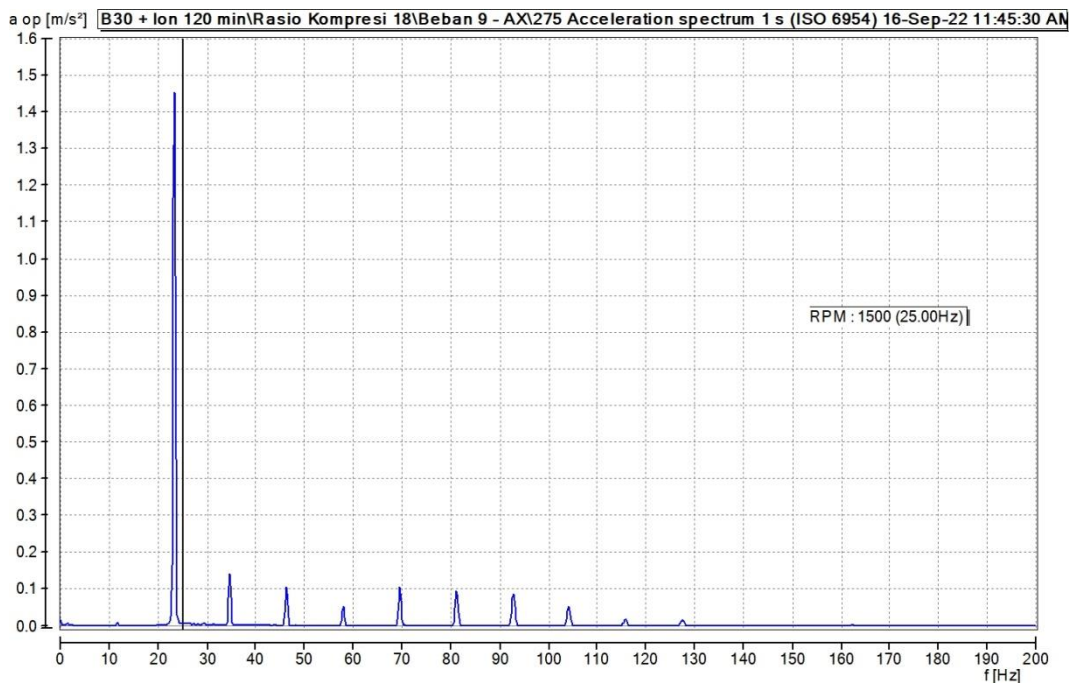


Tampilan grafik getaran *spectrum* B30 rasio kompresi 18 beban 9





Tampilan grafik getaran *spectrum* B30 setelah ozonisasi 120 menit rasio kompresi 18 beban 9



Tampilan grafik getaran *spectrum* B30 setelah ozonisasi 120 menit rasio kompresi 18 beban 9

## DATA PERHITUNGAN

B30 Tanpa Ozon dan Ion																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	pud	LVHbb	vs	$vs \times 10^{-3}$	Qtot
14	3	1408	5,450	0,803	0,352	0,438	2,374	3,060	23,056	32,667	65,587	70,580	23,969	7	0,007	0,837	50,350	1,17	34315	0,661	0,0007	3,351
	6	1395	11,010	1,608	0,502	0,312	2,990	3,890	22,694	32,366	45,189	70,118	33,582	10	0,010	0,837	48,780	1,17	34315	0,661	0,0007	4,787
	9	1372	16,480	2,367	0,653	0,276	3,394	4,490	22,179	31,832	33,972	69,675	38,029	13	0,013	0,837	46,590	1,17	34315	0,661	0,0007	6,223
16	3	1406	6,020	0,886	0,352	0,397	1,844	2,380	22,955	32,621	65,300	70,371	26,438	7	0,007	0,837	49,910	1,17	34315	0,661	0,0007	3,351
	6	1371	10,820	1,553	0,653	0,420	2,485	3,290	22,460	31,809	34,403	70,611	24,950	13	0,013	0,837	47,780	1,17	34315	0,661	0,0007	6,223
	9	1375	16,400	2,360	0,603	0,255	3,129	4,130	22,286	31,902	36,980	69,858	41,088	12	0,012	0,837	47,040	1,17	34315	0,661	0,0007	5,744
18	3	1420	5,460	0,812	0,352	0,433	1,604	2,050	23,354	32,946	66,435	70,888	24,218	7	0,007	0,837	51,660	1,17	34315	0,661	0,0007	3,351
	6	1406	11,030	1,623	0,452	0,278	2,223	2,870	23,066	32,621	51,032	70,708	37,676	9	0,009	0,837	50,390	1,17	34315	0,661	0,0007	4,308
	9	1390	16,290	2,370	0,653	0,275	2,711	3,540	22,603	32,250	34,622	70,089	38,084	13	0,013	0,837	48,390	1,17	34315	0,661	0,0007	6,223

B30 Ozon 30 Menit																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	pud	LVHbb	vs	$vs \times 10^{-3}$	Qtot
14	3	1403	5,630	0,827	0,554	0,671	2,651	3,430	23,241	32,551	41,921	71,399	15,125	11	0,011	0,840	51,160	1,17	35494	0,661	0,00066	5,466
	6	1380	10,820	1,563	0,605	0,387	3,208	4,220	22,861	32,018	37,799	71,402	26,209	12	0,012	0,840	49,500	1,17	35494	0,661	0,00066	5,963
	9	1371	16,290	2,338	0,756	0,323	3,762	4,980	22,545	31,809	29,821	70,876	31,361	15	0,015	0,840	48,140	1,17	35494	0,661	0,00066	7,454
16	3	1409	5,290	0,780	0,504	0,646	2,290	2,950	23,216	32,690	46,064	71,018	15,700	10	0,010	0,840	51,050	1,17	35494	0,661	0,00066	4,969
	6	1392	10,820	1,576	0,554	0,352	3,029	3,950	22,928	32,296	41,356	70,993	28,840	11	0,011	0,840	49,790	1,17	35494	0,661	0,00066	5,466
	9	1381	16,120	2,330	0,756	0,324	3,606	4,740	22,645	32,041	29,954	70,676	31,260	15	0,015	0,840	48,570	1,17	35494	0,661	0,00066	7,454
18	3	1426	5,650	0,843	0,504	0,598	3,504	4,460	23,391	33,085	46,410	70,699	16,970	10	0,010	0,840	51,820	1,17	35494	0,661	0,00066	4,969
	6	1409	10,830	1,597	0,605	0,379	3,175	4,090	23,079	32,690	38,160	70,600	26,785	12	0,012	0,840	50,450	1,17	35494	0,661	0,00066	5,963
	9	1397	16,320	2,386	0,706	0,296	3,648	4,740	14,010	32,412	19,855	43,224	34,302	14	0,014	0,840	18,590	1,17	35494	0,661	0,00066	6,957

830 Ozon 60 Menit																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	pod	LVHbb	vs	$vs \times 10^{-3}$	Qtot
14	3	1435	5,640	0,847	0,398	0,470	2,301	2,910	23,302	33,294	58,561	69,991	21,686	8	0,008	0,829	51,430	1,17	35340	0,661	0,0007	3,906
	6	1420	11,000	1,635	0,497	0,304	2,895	3,700	22,831	32,946	45,901	69,299	33,483	10	0,010	0,829	49,370	1,17	35340	0,661	0,0007	4,883
	9	1372	16,290	2,339	0,597	0,255	3,432	4,540	22,328	31,832	37,408	70,144	39,924	12	0,012	0,829	47,220	1,17	35340	0,661	0,0007	5,859
16	3	1394	5,470	0,798	0,398	0,499	1,974	2,570	23,146	32,342	58,166	71,564	20,431	8	0,008	0,829	50,740	1,17	35340	0,661	0,0007	3,906
	6	1373	11,010	1,582	0,448	0,283	2,542	3,360	14,178	31,855	31,672	44,509	36,004	9	0,009	0,829	19,040	1,17	35340	0,661	0,0007	4,395
	9	1364	16,300	2,327	0,547	0,235	3,329	4,430	22,594	31,646	41,295	71,395	43,326	11	0,011	0,829	48,350	1,17	35340	0,661	0,0007	5,371
18	3	1421	5,650	0,840	0,398	0,474	1,754	2,240	23,476	32,969	58,997	71,207	21,513	8	0,008	0,829	52,200	1,17	35340	0,661	0,0007	3,906
	6	1418	10,830	1,607	0,497	0,309	2,469	3,160	23,139	32,899	46,519	70,332	32,919	10	0,010	0,829	50,710	1,17	35340	0,661	0,0007	4,883
	9	1387	16,270	2,362	0,597	0,253	2,980	3,900	22,634	32,180	37,920	70,334	40,311	12	0,012	0,829	48,520	1,17	35340	0,661	0,0007	5,859

830 Ozon 90 Menit																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	pod	LVHbb	vs	$vs \times 10^{-3}$	Qtot
14	3	1416	5,810	0,861	0,448	0,520	2,715	3,480	23,191	32,853	51,805	70,591	20,112	9	0,009	0,829	50,940	1,17	34431	0,661	0,0007	4,281
	6	1418	10,820	1,606	0,497	0,310	3,320	4,250	22,981	32,899	46,202	69,852	33,757	10	0,010	0,829	50,020	1,17	34431	0,661	0,0007	4,757
	9	1385	16,280	2,360	0,647	0,274	3,853	5,050	22,585	32,134	34,927	70,283	38,161	13	0,013	0,829	48,310	1,17	34431	0,661	0,0007	6,184
16	3	1402	5,640	0,828	0,398	0,481	2,966	3,840	23,146	32,528	58,166	71,156	21,747	8	0,008	0,829	50,740	1,17	34431	0,661	0,0007	3,806
	6	1381	10,860	1,570	0,497	0,317	3,660	4,810	14,415	32,041	28,980	44,989	32,997	10	0,010	0,829	19,680	1,17	34431	0,661	0,0007	4,757
	9	1370	16,150	2,316	0,547	0,236	4,438	5,880	22,563	31,786	41,239	70,987	44,254	11	0,011	0,829	48,220	1,17	34431	0,661	0,0007	5,233
18	3	1425	5,860	0,874	0,398	0,455	5,943	7,570	23,305	33,062	58,566	70,489	22,966	8	0,008	0,829	51,440	1,17	34431	0,661	0,0007	3,806
	6	1416	10,740	1,592	0,497	0,312	3,885	4,980	23,027	32,853	46,294	70,091	33,460	10	0,010	0,829	50,220	1,17	34431	0,661	0,0007	4,757
	9	1378	16,310	2,352	0,597	0,254	3,925	5,170	13,736	31,971	23,013	42,963	41,208	12	0,012	0,829	17,870	1,17	34431	0,661	0,0007	5,709



B30 Ozon 120 Menit																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	pud	LVHbb	vs	$vs \times 10^{-3}$	Qtot
14	3	1402	5,670	0,832	0,347	0,417	6,774	8,770	22,997	32,528	66,289	70,699	24,312	7	0,007	0,826	50,090	1,17	35514	0,661	0,0007	3,422
	6	1399	10,990	1,609	0,446	0,277	7,646	9,920	22,912	32,458	51,367	70,588	36,572	9	0,009	0,826	49,720	1,17	35514	0,661	0,0007	4,400
	9	1375	16,470	2,370	0,595	0,251	8,030	10,600	22,559	31,902	37,932	70,714	40,401	12	0,012	0,826	48,200	1,17	35514	0,661	0,0007	5,867
16	3	1393	5,660	0,825	0,396	0,480	2,364	3,080	23,125	32,319	58,326	71,552	21,099	8	0,008	0,826	50,650	1,17	35514	0,661	0,0007	3,911
	6	1376	10,860	1,564	0,446	0,285	4,685	6,180	22,766	31,925	51,041	71,312	35,546	9	0,009	0,826	49,090	1,17	35514	0,661	0,0007	4,400
	9	1364	16,290	2,326	0,496	0,213	7,349	9,780	22,491	31,646	45,381	71,069	47,568	10	0,010	0,826	47,910	1,17	35514	0,661	0,0007	4,889
18	3	1412	5,450	0,805	0,396	0,492	5,570	7,160	23,175	32,760	58,452	70,743	20,593	8	0,008	0,826	50,870	1,17	35514	0,661	0,0007	3,911
	6	1404	11,030	1,621	0,496	0,306	6,436	8,320	23,022	32,574	46,453	70,676	33,153	10	0,010	0,826	50,200	1,17	35514	0,661	0,0007	4,889
	9	1376	16,290	2,346	0,545	0,232	3,464	4,570	22,592	31,925	41,440	70,765	43,624	11	0,011	0,826	48,340	1,17	35514	0,661	0,0007	5,378

B30 Ion 30 Menit																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	pud	LVHbb	vs	$vs \times 10^{-3}$	Qtot
14	3	1406	5,660	0,833	0,353	0,424	2,107	2,720	23,130	32,621	65,560	70,905	24,312	7	0,007	0,840	50,670	1,17	34960	0,661	0,0007	3,426
	6	1373	10,810	1,553	0,454	0,292	2,012	2,660	22,643	31,855	49,918	71,081	35,267	9	0,009	0,840	48,560	1,17	34960	0,661	0,0007	4,405
	9	1358	16,300	2,317	0,504	0,218	3,112	4,160	22,309	31,507	44,265	70,808	47,337	10	0,010	0,840	47,140	1,17	34960	0,661	0,0007	4,894
16	3	1399	5,840	0,855	0,403	0,471	1,981	2,570	23,239	32,458	57,636	71,596	21,840	8	0,008	0,840	51,150	1,17	34960	0,661	0,0007	3,916
	6	1367	11,190	1,601	0,454	0,283	2,478	3,290	22,701	31,716	50,047	71,576	36,347	9	0,009	0,840	48,810	1,17	34960	0,661	0,0007	4,405
	9	1374	16,300	2,344	0,605	0,258	3,013	3,980	22,524	31,878	37,242	70,655	39,912	12	0,012	0,840	48,050	1,17	34960	0,661	0,0007	5,873
18	3	1436	5,260	0,791	0,403	0,510	1,337	1,690	23,298	33,317	57,782	69,928	20,191	8	0,008	0,840	51,410	1,17	34960	0,661	0,0007	3,916
	6	1414	10,810	1,600	0,454	0,284	2,173	2,790	23,043	32,806	50,800	70,239	36,320	9	0,009	0,840	50,290	1,17	34960	0,661	0,0007	4,405
	9	1392	16,280	2,372	0,554	0,234	2,784	3,630	22,720	32,296	40,981	70,349	44,056	11	0,011	0,840	48,890	1,17	34960	0,661	0,0007	5,384

830 Ion 60 Menit																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	puđ	LVBbb	vs	$vsx10^{-3}$	Qtot
14	3	1401	5,460	0,801	0,402	0,502	2,161	2,800	23,006	32,505	57,195	70,777	20,343	8	0,008	0,838	50,130	1,17	35224	0,661	0,0007	3,936
	6	1372	10,750	1,544	0,453	0,293	2,721	3,600	22,545	31,832	49,821	70,824	34,866	9	0,009	0,838	48,140	1,17	35224	0,661	0,0007	4,428
	9	1366	16,500	2,359	0,553	0,234	3,387	4,500	22,198	31,693	40,135	70,041	43,593	11	0,011	0,838	46,670	1,17	35224	0,661	0,0007	5,412
16	3	1375	5,460	0,786	0,352	0,448	1,871	2,470	22,990	31,902	65,320	72,065	22,818	7	0,007	0,838	50,060	1,17	35224	0,661	0,0007	3,444
	6	1401	10,740	1,575	0,402	0,255	3,057	3,960	23,123	32,505	57,485	71,137	40,016	8	0,008	0,838	50,640	1,17	35224	0,661	0,0007	3,936
	9	1362	16,290	2,322	0,553	0,238	3,234	4,310	22,585	31,600	40,834	71,470	42,912	11	0,011	0,838	48,310	1,17	35224	0,661	0,0007	5,412
18	3	1394	5,440	0,794	0,402	0,507	1,743	2,270	23,262	32,342	57,830	71,923	20,167	8	0,008	0,838	51,250	1,17	35224	0,661	0,0007	3,936
	6	1414	11,220	1,661	0,402	0,242	2,508	3,220	23,323	32,806	57,982	71,092	42,192	8	0,008	0,838	51,520	1,17	35224	0,661	0,0007	3,936
	9	1397	16,470	2,408	0,553	0,230	2,763	3,590	14,260	32,412	25,783	43,996	44,501	11	0,011	0,838	19,260	1,17	35224	0,661	0,0007	5,412

830 Ion 90 Menit																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	puđ	LVBbb	vs	$vsx10^{-3}$	Qtot
14	3	1419	5,650	0,839	0,403	0,480	2,072	2,650	23,451	32,922	58,233	71,233	21,308	8	0,008	0,839	52,090	1,17	35205	0,661	0,0007	3,938
	6	1402	10,850	1,592	0,503	0,316	2,588	3,350	22,999	32,528	45,688	70,706	32,342	10	0,010	0,839	50,100	1,17	35205	0,661	0,0007	4,923
	9	1378	16,320	2,354	0,604	0,257	3,394	4,470	22,601	31,971	37,414	70,692	39,846	12	0,012	0,839	48,380	1,17	35205	0,661	0,0007	5,907
16	3	1408	5,850	0,862	0,403	0,467	2,063	2,660	23,330	32,667	57,930	71,416	21,891	8	0,008	0,839	51,550	1,17	35205	0,661	0,0007	3,938
	6	1401	10,830	1,588	0,503	0,317	2,686	3,480	23,045	32,505	45,779	70,897	32,260	10	0,010	0,839	50,300	1,17	35205	0,661	0,0007	4,923
	9	1382	16,270	2,353	0,604	0,257	3,312	4,350	22,717	32,064	37,607	70,850	39,839	12	0,012	0,839	48,880	1,17	35205	0,661	0,0007	5,907
18	3	1424	5,640	0,841	0,403	0,479	1,851	2,360	23,492	33,038	58,333	71,105	21,345	8	0,008	0,839	52,270	1,17	35205	0,661	0,0007	3,938
	6	1414	11,020	1,631	0,503	0,309	2,329	2,990	23,266	32,806	46,218	70,920	33,130	10	0,010	0,839	51,270	1,17	35205	0,661	0,0007	4,923
	9	1389	16,100	2,341	0,604	0,258	2,916	3,810	22,706	32,226	37,587	70,457	39,622	12	0,012	0,839	48,830	1,17	35205	0,661	0,0007	5,907

B30 Ion 120 Menit																						
Rasio Kompresi	Beban (kg)	Putaran (rpm)	Torsi (Nm)	BP (Kw)	FC (kg/h)	SFC (kg/kW.h)	IP	IMEP	Ma (kg/h)	Mth (kg/h)	AFR	$\eta_{vo}$ (%)	$\eta_{th}$ (%)	fuel	$10^{-3}$	pf	ho	pud	LVHbb	vs	$vs \times 10^{-3}$	Qtot
14	3	1425	5,670	0,846	0,454	0,536	2,285	2,910	23,391	33,062	51,567	70,749	18,837	9	0,009	0,840	51,820	1,17	35630	0,661	0,0007	4,489
	6	1404	10,950	1,609	0,504	0,313	2,808	3,630	23,027	32,574	45,688	70,690	32,259	10	0,010	0,840	50,220	1,17	35630	0,661	0,0007	4,988
	9	1389	16,300	2,370	0,605	0,255	3,382	4,420	22,556	32,226	37,296	69,994	39,589	12	0,012	0,840	48,190	1,17	35630	0,661	0,0007	5,986
16	3	1397	5,450	0,797	0,403	0,506	1,893	2,460	23,318	32,412	57,833	71,943	19,970	8	0,008	0,840	51,500	1,17	35630	0,661	0,0007	3,991
	6	1382	10,840	1,568	0,554	0,354	2,596	3,410	22,868	32,064	41,248	71,320	28,577	11	0,011	0,840	49,530	1,17	35630	0,661	0,0007	5,487
	9	1374	16,290	2,343	0,605	0,258	3,157	4,170	22,580	31,878	37,334	70,831	39,137	12	0,012	0,840	48,290	1,17	35630	0,661	0,0007	5,986
18	3	1429	5,850	0,875	0,403	0,461	1,685	2,140	23,438	33,154	58,130	70,693	21,926	8	0,008	0,840	52,030	1,17	35630	0,661	0,0007	3,991
	6	1408	10,810	1,593	0,504	0,316	2,195	2,830	23,104	32,667	45,842	70,727	31,937	10	0,010	0,840	50,560	1,17	35630	0,661	0,0007	4,988
	9	1376	16,290	2,346	0,554	0,236	3,464	4,570	22,592	31,925	40,750	70,765	42,757	11	0,011	0,840	48,340	1,17	35630	0,661	0,0007	5,487

### DATA HUBUNGAN ANTARA GETARAN, TEKANAN SILINDER DAN KEBISINGAN

Rasio	Beban	Pengujian	B30	O30	O60	O90	O120	I30	I60	I90	I120
14	3 kg	Getaran	1,063	1,104	0,593	1,094	1,033	1,005	0,515	1,016	1,101
		Tekanan Silinder	40,68	45,88	43,63	44,34	43,98	43,48	39,77	44,93	46,33
		Kebisingan	86,43	85,57	88,27	86,5	86,83	83,07	83,43	81,2	80,17
	6 kg	Getaran	0,774	0,929	1,076	1,041	0,736	0,939	0,634	0,978	0,984
		Tekanan Silinder	43,76	48,08	46,62	48,09	46,67	47,54	43,71	47,99	49,86
		Kebisingan	85,53	86,07	87,63	87,17	88,2	83,73	82,13	78,43	82,53
	9 kg	Getaran	0,701	0,929	0,996	1,107	1,005	0,887	0,643	0,991	0,995
		Tekanan Silinder	43,71	48,37	48,44	48,72	50,51	48,94	45,23	51,35	51,3
		Kebisingan	84,6	86,57	88,13	86,1	87,5	83,47	80,73	76,8	83,3

Rasio	Beban	Pengujian	B30	O30	O60	O90	O120	I30	I60	I90	I120
16	3 kg	Getaran	1,101	1,086	1,091	1,067	1,102	0,992	1,085	1,074	1,057
		Tekanan Silinder	44,97	47,07	49,6	48,27	47,76	49,06	46,05	47,5	50,4
		Kebisingan	83,97	88,43	87,5	86,77	87,97	79,83	77,37	79,6	82,47
	6 kg	Getaran	0,994	1,127	0,977	1,046	1,066	0,762	1,082	1,004	1,024
		Tekanan Silinder	48,06	49,81	52,11	50,81	51,23	50,5	50,58	49,91	52,93
		Kebisingan	84,17	89	88,13	87,07	88,33	82,37	76,67	79,8	83,7
	9 kg	Getaran	0,903	1,005	0,922	1,051	1,057	0,972	0,886	1	0,906
		Tekanan Silinder	48,83	51,03	53,32	53,51	52,42	51,47	50,9	52,07	54,08
		Kebisingan	83,73	88,7	88,03	87,17	87,97	82	76,73	80,67	84,07

Rasio	Beban	Pengujian	B30	O30	O60	O90	O120	I30	I60	I90	I120
18	3 kg	Getaran	1,039	0,976	0,937	0,936	0,953	0,766	1,072	1,037	1,011
		Tekanan Silinder	51,78	58,1	59,08	58,48	58,14	55,69	52,68	58,78	57,91
		Kebisingan	84,07	79,37	88,6	87,7	88,77	78,43	81,87	78,43	81,93
	6 kg	Getaran	1,065	1,117	1,067	1,075	0,885	0,854	0,997	1,025	1,01
		Tekanan Silinder	55,64	58,56	63,86	60,45	62,44	59,08	53,31	60,01	60,32
		Kebisingan	83,93	84,03	88,57	88,57	88,67	81,43	80,5	77,7	83,23
	9 kg	Getaran	0,531	1,055	1	1,08	1,08	1,144	1,002	1,024	1,044
		Tekanan Silinder	57,52	60,87	63,99	62,93	63,77	63,07	53,87	63,19	63,77
		Kebisingan	83,33	86,27	88,8	87,57	88,93	84,23	78,47	77,97	83,37

### DATA KINERJA MESIN

DAYA EFEKTIF (BP)										
Rasio	Beban	B30	lon 30	lon 60	lon 90	lon 120	Ozon 30	Ozon 60	Ozon 90	Ozon 120
14	3 kg	0,803	0,833	0,801	0,839	0,846	0,827	0,847	0,861	0,832
	6 kg	1,608	1,553	1,544	1,592	1,609	1,563	1,635	1,606	1,609
	9 kg	2,367	2,317	2,359	2,354	2,370	2,338	2,339	2,360	2,370
16	3 kg	0,886	0,855	0,786	0,862	0,797	0,780	0,798	0,828	0,825
	6 kg	1,553	1,601	1,575	1,588	1,568	1,576	1,582	1,570	1,564
	9 kg	2,360	2,344	2,322	2,353	2,343	2,330	2,327	2,316	2,326
18	3 kg	0,812	0,791	0,794	0,841	0,875	0,843	0,840	0,874	0,805
	6 kg	1,623	1,600	1,661	1,631	1,593	1,597	1,607	1,592	1,621
	9 kg	2,370	2,372	2,408	2,341	2,346	2,386	2,362	2,352	2,346

TORSI										
Rasio	Beban	B30	lon 30	lon 60	lon 90	lon 120	Ozon 30	Ozon 60	Ozon 90	Ozon 120
14	3 kg	5,450	5,660	5,460	5,650	5,670	5,630	5,640	5,810	5,670
	6 kg	11,010	10,810	10,750	10,850	10,950	10,820	11,000	10,820	10,990
	9 kg	16,480	16,300	16,500	16,320	16,300	16,290	16,290	16,280	16,470
16	3 kg	6,020	5,840	5,460	5,850	5,450	5,290	5,470	5,640	5,660
	6 kg	10,820	11,190	10,740	10,830	10,840	10,820	11,010	10,860	10,860
	9 kg	16,400	16,300	16,290	16,270	16,290	16,120	16,300	16,150	16,290
18	3 kg	5,460	5,260	5,440	5,640	5,850	5,650	5,650	5,860	5,450
	6 kg	11,030	10,810	11,220	11,020	10,810	10,830	10,830	10,740	11,030
	9 kg	16,290	16,280	16,470	16,100	16,290	16,320	16,270	16,310	16,290

KONSUMSI BAHAN BAKAR SPESIFIK (SFC)										
Rasio	Beban	B30	lon 30	lon 60	lon 90	lon 120	Ozon 30	Ozon 60	Ozon 90	Ozon 120
14	3 kg	0,438	0,424	0,502	0,480	0,536	0,671	0,470	0,520	0,417
	6 kg	0,312	0,292	0,293	0,316	0,313	0,387	0,304	0,310	0,277
	9 kg	0,276	0,218	0,234	0,257	0,255	0,323	0,255	0,274	0,251
16	3 kg	0,397	0,471	0,448	0,467	0,506	0,646	0,499	0,481	0,480
	6 kg	0,420	0,283	0,255	0,317	0,354	0,352	0,283	0,317	0,285
	9 kg	0,255	0,258	0,238	0,257	0,258	0,324	0,235	0,236	0,213
18	3 kg	0,433	0,510	0,507	0,479	0,461	0,598	0,474	0,455	0,492
	6 kg	0,278	0,284	0,242	0,309	0,316	0,379	0,309	0,312	0,306
	9 kg	0,275	0,234	0,230	0,258	0,236	0,296	0,253	0,254	0,232



EFISIENSI VOLUMETRIK										
Rasio	Beban	B30	lon 30	lon 60	lon 90	lon 120	Ozon 30	Ozon 60	Ozon 90	Ozon 120
14	3 kg	70,580	70,905	70,777	71,233	70,749	71,399	69,991	70,591	70,699
	6 kg	70,118	71,081	70,824	70,706	70,690	71,402	69,299	69,852	70,588
	9 kg	69,675	70,808	70,041	70,692	69,994	70,876	70,144	70,283	70,714
16	3 kg	70,371	71,596	72,065	71,416	71,943	71,018	71,564	71,156	71,552
	6 kg	70,611	71,576	71,137	70,897	71,320	70,993	44,509	44,989	71,312
	9 kg	69,858	70,655	71,470	70,850	70,831	70,676	71,395	70,987	71,069
18	3 kg	70,888	69,928	71,923	71,105	70,693	70,699	71,207	70,489	70,743
	6 kg	70,708	70,239	71,092	70,920	70,727	70,600	70,332	70,091	70,676
	9 kg	70,089	70,349	43,996	70,457	70,765	43,224	70,334	42,963	70,765

EFISIENSI THERMIS										
Rasio	Beban	B30	lon 30	lon 60	lon 90	lon 120	Ozon 30	Ozon 60	Ozon 90	Ozon 120
14	3 kg	23,969	24,312	20,343	21,308	18,837	15,125	21,686	20,112	24,312
	6 kg	33,582	35,267	34,866	32,342	32,259	26,209	33,483	33,757	36,572
	9 kg	38,029	47,337	43,593	39,846	39,589	31,361	39,924	38,161	40,401
16	3 kg	26,438	21,840	22,818	21,891	19,970	15,700	20,431	21,747	21,099
	6 kg	24,950	36,347	40,016	32,260	28,577	28,840	36,004	32,997	35,546
	9 kg	41,088	39,912	42,912	39,839	39,137	31,260	43,326	44,254	47,568
18	3 kg	24,218	20,191	20,167	21,345	21,926	16,970	21,513	22,966	20,593
	6 kg	37,676	36,320	42,192	33,130	31,937	26,785	32,919	33,460	33,153
	9 kg	38,084	44,056	44,501	39,622	42,757	34,302	40,311	41,208	43,624

## LAMPIRAN DATA PENGUJIAN KEBISINGAN

B30 SEBELUM OZONISASI DAN IONISASI					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	86,5	87,6	85,2	86,433
	6 kg	84,8	86,5	85,3	85,533
	9 kg	84,4	85,2	84,2	84,600
16	3 kg	84	84,4	83,5	83,967
	6 kg	83,9	84,6	84	84,167
	9 kg	83,6	84	83,6	83,733
18	3kg	84,3	84,4	83,5	84,067
	6 kg	83,2	84,6	84	83,933
	9 kg	82,4	84	83,6	83,333

B30 SETELAH OZONISASI 30 MENIT					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	86	86,4	84,3	85,567
	6 kg	86,5	86,7	85	86,067
	9 kg	86,6	87,3	85,8	86,567
16	3 kg	89,1	89,3	86,9	88,433
	6 kg	89,2	89,8	88	89,000
	9 kg	88,9	89,3	87,9	88,700
18	3 kg	81,2	79,5	77,4	79,367
	6 kg	85,4	84,2	82,5	84,033
	9 kg	86,7	86,8	85,3	86,267

B30 SETELAH OZONISASI 60 MENIT					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	91,1	88	85,7	88,267
	6 kg	87,4	88,8	86,7	87,633
	9 kg	90,7	87,2	86,5	88,133
16	3 kg	89,6	87,7	85,2	87,500
	6 kg	89,5	88,6	86,3	88,133
	9 kg	89,6	88	86,5	88,033
18	3 kg	89,4	89,9	86,5	88,600
	6 kg	89,1	89,2	87,4	88,567
	9 kg	90,6	88,2	87,6	88,800

<b>B30 SETELAH OZONISASI 90 MENIT</b>					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	87,2	87,6	84,7	86,500
	6 kg	87,9	88,1	85,5	87,167
	9 kg	85,9	87,3	85,1	86,100
16	3 kg	87,5	87,7	85,1	86,767
	6 kg	87,4	87,7	86,1	87,067
	9 kg	88,6	87,1	85,8	87,167
18	3 kg	88	88,5	86,6	87,700
	6 kg	89,1	88,9	87,7	88,567
	9 kg	87,2	88,5	87	87,567

<b>B30 SETELAH OZONISASI 120 MENIT</b>					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	87,4	88,1	85	86,833
	6 kg	88,5	88,7	87,4	88,200
	9 kg	86,9	89,1	86,5	87,500
16	3 kg	88,9	88,1	86,9	87,967
	6 kg	88,6	88,8	87,6	88,333
	9 kg	87,5	89,5	86,9	87,967
18	3 kg	90	89,4	86,9	88,767
	6 kg	88,1	89,4	88,5	88,667
	9 kg	90,1	88,9	87,8	88,933

<b>B30 SETELAH IONISASI 30 MENIT</b>					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	83,2	83,7	82,3	83,067
	6 kg	84,5	83,6	83,1	83,733
	9 kg	84,1	84,1	82,2	83,467
16	3 kg	80,7	80,2	78,6	79,833
	6 kg	83,3	82,5	81,3	82,367
	9 kg	82	82,5	81,5	82,000
18	3 kg	79,4	78,7	77,2	78,433
	6 kg	82	81,6	80,7	81,433
	9 kg	84,5	84,4	83,8	84,233

<b>B30 SETELAH IONISASI 60 MENIT</b>					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	83,2	84,4	82,7	83,433
	6 kg	82	82,6	81,8	82,133
	9 kg	80,5	81,2	80,5	80,733
16	3 kg	77,4	77,5	77,2	77,367
	6 kg	77	76,7	76,3	76,667
	9 kg	76,8	77,1	76,3	76,733
18	3 kg	81,4	81,2	83	81,867
	6 kg	80,1	80,9	80,5	80,500
	9 kg	77,8	79	78,6	78,467

<b>B30 SETELAH IONISASI 90 MENIT</b>					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	80,7	81,6	81,3	81,200
	6 kg	78,2	78,5	78,6	78,433
	9 kg	76,7	77	76,7	76,800
16	3 kg	80,7	79,7	78,4	79,600
	6 kg	80,3	80	79,1	79,800
	9 kg	82,7	80,3	79	80,667
18	3 kg	78,1	78,5	78,7	78,433
	6 kg	78	77,8	77,3	77,700
	9 kg	78,1	78,4	77,4	77,967

<b>B30 SETELAH IONISASI 120 MENIT</b>					
Rasio	Beban	Depan	Belakang	Samping	Rata-rata
14	3 kg	81,7	80,4	78,4	80,167
	6 kg	83,5	82,6	81,5	82,533
	9 kg	84,2	83,5	82,2	83,300
16	3 kg	83,5	82,9	81	82,467
	6 kg	84,3	83,9	82,9	83,700
	9 kg	84,9	84,3	83	84,067
18	3 kg	82,5	82,2	81,1	81,933
	6 kg	83,6	83,5	82,6	83,233
	9 kg	83,5	83,5	83,1	83,367

## DOKUMENTASI

Proses Ozonisasi



Hasil B30 setelah Ozonisasi



Proses Ionisasi



Hasil B30 setelah Ionisasi



Pengujian nilai kalor bahan bakar

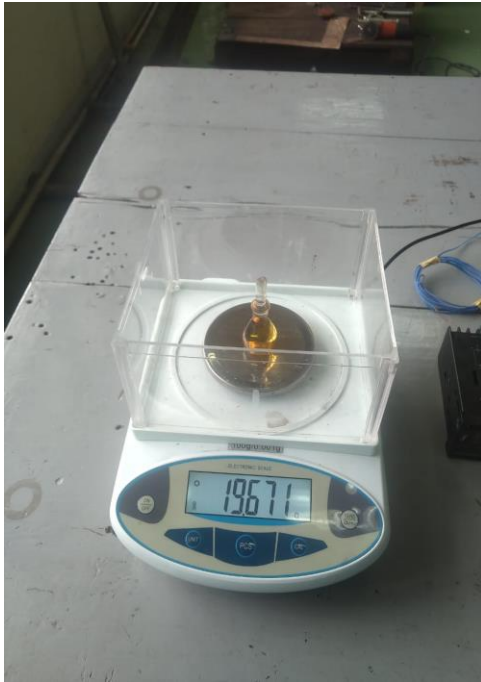


Pengujian titik nyala





Pengujian densitas



Pengujian viskositas



Pengujian getaran



Pengujian kebisingan



