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LAMPIRAN

Lampiran 1. Data pengujian proksimat

Sampel	A (g)	B (g)	C (g)	D (g)	TS (%)	VS (% TS)
Kotoran sapi	46,15	44,20	54,36	45,095	19,19	54,10
Inokulum	46,58	44,48	54,68	45,186	20,59	66,38
Jerami padi	47,73	45,82	47,90	46,245	91,83	77,75

1 g VS Rice Straw =	1,414	g FM
1 g VS Cow Dung =	9,708	g FM
1 g VS Inoculum =	7,316	g FM

1 gr FM Rice Straw	0,707	g VS
1 gr FM Cow Dung	0,103	g VS
1 gr FM inoculum	0,136	gr VS
810 gr Inoculum	110,646	gr VS

Ket :

A : berat sampel setelah kering + cawan (g)

B : berat cawan (g)

C : berat sampel segar + cawan (g)

D : berat residu + cawan setelah dibakar (g)

Digester	berat cawan (g)	berat sampel (g)	berat cawan+sample setelah dibakar (g)	berat sampel setelah dibakar (g)	gVS / g slury
D1	25,454	13,297	26,281	0,827	0,06219448
D2	25,495	14,516	26,392	0,897	0,061793883
D3	26,506	7,51	26,909	0,403	0,053661784
D4	24,891	10,771	25,47	0,579	0,053755454
D5	24,816	10,028	25,55	0,734	0,073195054

Digester	RS : CM	VS sebelum AD (g)	VS substrat (g)	VS setelah AD (g)	VS terurai (g)
D1	1:1	127,988	17,342	48,021	10,84
D2	1:2	146,458	35,812	64,765	19,98
D3	2:1	145,822	35,176	61,820	20,26
D4	1:0	145,996	35,35	61,502	20,45
D5	0:1	146,284	35,638	68,589	18,94

Lampiran 2. Desain Eksperimental

Digester	JP : KS	JP (g)	KS (g)	Air (g)	Inokulum (g)	Berat Total (g)	Berat total tanpa air (g)
D1	1:1	12	86	440	810	1350	908
D2	1:2	17	231	292	810	1350	1058
D3	2:1	33	115	390	810	1350	958
D4	1:0	50	0	489	810	1350	860
D5	0:1	0	346	194	810	1350	1156

Lampiran 3.Produksi biogas harian dari setiap digester (ml)

Hari	D1 (1:1)			D2 (1:2)			D3 (2:1)			D4 (1:0)			D5 (0:1)		
	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	45	49	47	181	145	163	39	36	37,5	37	29	33	69	176	122,5
2	260	251	255,5	616	478	547	75	77	76	90	71	80,5	275	369	322
3	373	380	376,5	718	589	653,5	271	291	281	201	146	173,5	489	667	578
4	504	512	508	777	500	638,5	695	379	537	278	210	244	568	787	677,5
5	481	479	480	720	611	665,5	702	498	600	298	250	274	659	812	735,5
6	406	409	407,5	730	712	721	830	523	676,5	465	265	365	632	746	689
7	294	315	304,5	609	597	603	667	696	681,5	556	355	455,5	543	613	578
8	318	318	318	533	553	543	723	837	780	643	551	597	483	642	562,5
9	270	330	300	463	442	452,5	440	621	530,5	586	651	618,5	326	575	450,5
10	253	327	290	441	415	428	402	389	395,5	641	532	586,5	385	589	487
11	250	251	250,5	428	379	403,5	483	455	469	565	519	542	341	493	417
12	226	194	210	349	376	362,5	357	378	367,5	509	471	490	355	410	382,5
13	216	210	213	333	349	341	330	341	335,5	526	419	472,5	381	437	409
14	183	175	179	324	318	321	366	377	371,5	482	353	417,5	356	376	366

15	184	181	182,5	303	265	284	328	342	335	447	315	381	366	327	346,5
16	186	190	188	305	264	284,5	245	222	233,5	278	281	279,5	398	290	344
17	157	168	162,5	255	241	248	280	265	272,5	345	231	288	353	322	337,5
18	147	131	139	251	232	241,5	232	256	244	392	215	303,5	295	289	292
19	150	158	154	230	213	221,5	207	242	224,5	298	171	234,5	308	251	279,5
20	141	140	140,5	229	189	209	210	213	211,5	241	198	219,5	377	287	332
21	133	145	139	208	178	193	191	231	211	204	203	203,5	221	223	222

Lampiran 4 Produksi biogas kumulatif (ml)

Hari	D1 (1:1)	D2 (1:2)	D3 (2:1)	D4 (1:0)	D5 (0:1)
0	0	0	0	0	0
1	47	163	37,5	33	122,5
2	302,5	710	113,5	113,5	444,5
3	679	1363,5	394,5	287	1022,5
4	1187	2002	931,5	531	1700
5	1667	2667,5	1531,5	805	2435,5
6	2074,5	3388,5	2208	1170	3124,5
7	2379	3991,5	2889,5	1625,5	3702,5
8	2697	4534,5	3669,5	2222,5	4265
9	2997	4987	4200	2841	4715,5
10	3287	5415	4595,5	3427,5	5202,5
11	3537,5	5818,5	5064,5	3969,5	5619,5
12	3747,5	6181	5432	4459,5	6002
13	3960,5	6522	5767,5	4932	6411
14	4139,5	6843	6139	5349,5	6777
15	4322	7127	6474	5730,5	7123,5
16	4510	7411,5	6707,5	6010	7467,5
17	4672,5	7659,5	6980	6298	7805
18	4811,5	7901	7224	6601,5	8097
19	4965,5	8122,5	7448,5	6836	8376,5
20	5106	8331,5	7660	7055,5	8708,5
21	5245	8524,5	7871	7259	8930,5

Lampiran 5 *Biogas yield* (ml/gVS)

Hari	D1 (1:1)	D2 (1:2)	D3 (2:1)	D4 (1:0)	D5 (0:1)
0	0,0	0,0	0,0	0,0	0,0
1	4,3	8,2	1,9	1,6	6,5
2	27,9	35,5	5,6	5,5	23,5
3	62,6	68,3	19,5	14,0	54,0
4	109,5	100,2	46,0	26,0	89,8
5	153,8	133,5	75,6	39,4	128,6
6	191,4	169,6	109,0	57,2	165,0
7	219,5	199,8	142,6	79,5	195,5
8	248,8	227,0	181,1	108,7	225,2
9	276,5	249,6	207,3	138,9	249,0
10	303,3	271,1	226,8	167,6	274,7
11	326,4	291,3	249,9	194,1	296,7
12	345,7	309,4	268,1	218,1	316,9
13	365,4	326,5	284,6	241,2	338,5
14	381,9	342,5	303,0	261,6	357,8
15	398,7	356,8	319,5	280,2	376,1
16	416,1	371,0	331,0	293,9	394,3
17	431,1	383,4	344,5	308,0	412,1
18	443,9	395,5	356,5	322,8	427,5
19	458,1	406,6	367,6	334,3	442,3
20	471,1	417,0	378,0	345,0	459,8
21	483,9	426,7	388,4	355,0	471,5

Lampiran 6. Tekanan digester (cmH_2O)

Hari	D1 (1:1)			D2 (1:2)			D3 (2:1)			D4 (1:0)			D5 (0:1)		
	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	50	49	49,5	181	145	163	41	36	38,5	43	29	36	69	176	122,5
2	234	251	242,5	616	478	547	75,5	77	76,25	93	71	82	275	369	322
3	398	380	389	718	589	653,5	277	291	284	217	146	181,5	489	667	578
4	541,5	512	526,75	777	500	638,5	681	444	562,5	425,5	210	317,75	568	787	677,5
5	502	479	490,5	720	611	665,5	713	532	622,5	607	250	428,5	659	812	735,5
6	431	409	420	730	712	721	798	700	749	694	265	479,5	632	746	689
7	314	315	314,5	609	597	603	681	696	688,5	655,5	355	505,25	543	613	578
8	347	318	332,5	533	553	543	719	837	778	726	551	638,5	483	642	562,5
9	297	330	313,5	463	442	452,5	440	621	530,5	702	651	676,5	326	575	450,5
10	220	327	273,5	441	415	428	411	389	400	635	606	620,5	385	589	487
11	272	251	261,5	428	379	403,5	482,5	455	468,75	627,5	519	573,25	341	493	417
12	240	194	217	349	376	362,5	359	378	368,5	505	471	488	355	410	382,5
13	225	210	217,5	333	349	341	344	341	342,5	526	419	472,5	381	437	409
14	200	175	187,5	324	318	321	380	377	378,5	484	353	418,5	356	376	366

15	203	181	192	303	265	284	267	342	304,5	447	315	381	366	327	346,5
16	200	190	195	305	264	284,5	245	222	233,5	427	281	354	398	290	344
17	157	168	162,5	255	241	248	277	265	271	412	231	321,5	353	322	337,5
18	159	131	145	251	232	241,5	239	256	247,5	405	215	310	295	289	292
19	158	158	158	230	213	221,5	202	242	222	396	171	283,5	308	251	279,5
20	142	140	141	229	189	209	207	213	210	363	198	280,5	377	287	332
21	133	145	139	208	178	193	183	231	207	346	203	274,5	221	223	222

Lampiran 7 Tekanan digester (psi)

Hari	D1 (1:1)	D2 (1:2)	D3 (2:1)	D4 (1:0)	D5 (0:1)
0	0,00	0,00	0,00	0,00	0,00
1	0,70	2,32	0,55	0,51	1,74
2	3,45	7,78	1,08	1,17	4,58
3	5,53	9,29	4,04	2,58	8,22
4	7,49	9,08	8,00	4,52	9,64
5	6,98	9,47	8,85	6,09	10,46
6	5,97	10,26	10,65	6,82	9,80
7	4,47	8,58	9,79	7,19	8,22
8	4,73	7,72	11,07	9,08	8,00
9	4,46	6,44	7,55	9,62	6,41
10	3,89	6,09	5,69	8,83	6,93
11	3,72	5,74	6,67	8,15	5,93
12	3,09	5,16	5,24	6,94	5,44
13	3,09	4,85	4,87	6,72	5,82
14	2,67	4,57	5,38	5,95	5,21
15	2,73	4,04	4,33	5,42	4,93
16	2,77	4,05	3,32	5,04	4,89
17	2,31	3,53	3,85	4,57	4,80
18	2,06	3,43	3,52	4,41	4,15
19	2,25	3,15	3,16	4,03	3,98
20	2,01	2,97	2,99	3,99	4,72
21	1,98	2,75	2,94	3,90	3,16

Lampiran 8. Konsentrasi gas metan (CH_4)

Hari	D1 (1:1)			D2 (1:2)			D3 (2:1)			D4 (1:0)			D5 (0:1)		
	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata	1	2	Rata-rata
0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	35%	37%	36%	38%	35%	37%	35%	36%	36%	31%	30%	31%	35%	34%	35%
6	60%	59%	60%	61%	60%	61%	65%	66%	66%	61%	58%	60%	64%	65%	65%
9	69%	66%	68%	63%	62%	63%	66%	62%	64%	62%	62%	62%	68%	67%	68%
12	72%	66%	69%	63%	62%	63%	65%	63%	64%	63%	63%	63%	64%	64%	64%
15	71%	70%	71%	63%	64%	64%	64%	64%	64%	64%	60%	62%	70%	71%	71%
18	62%	62%	62%	60%	63%	62%	60%	63%	62%	56%	59%	58%	60%	63%	62%
21	64%	63%	64%	63%	64%	64%	60%	63%	62%	59%	59%	59%	63%	64%	64%
Rata-rata	61%			59%			59%			56%			61%		

Lampiran 9. *Methane yield* (ml/gVS)

Day	Methane Yield				
	D1 (1:1)	D2 (1:2)	D3 (2:1)	D4 (1:0)	D5 (0:1)
0	0,0	0,0	0,0	0,0	0,0
3	22,6	24,9	6,9	4,3	18,6
6	113,9	102,6	71,4	34,0	106,4
9	186,6	156,0	132,7	86,1	168,1
12	238,6	193,4	171,6	137,4	202,8
15	281,1	226,5	204,5	173,7	265,1
18	275,2	243,2	219,3	185,6	262,9
21	307,3	271,0	238,9	209,4	299,4

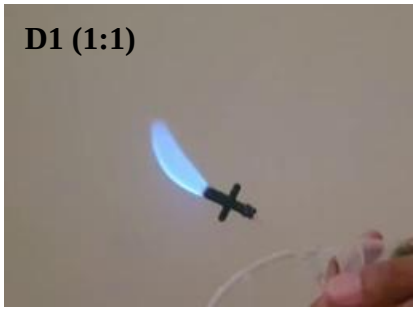
Lampiran 10. Nilai pH

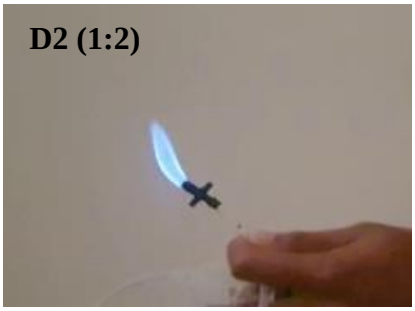
Substrat	1	2	Rata-rata
Kotoran sapi	7,3	7,1	7,2
Inokulum	7,6	7,5	7,55
Air	6,3	6,3	6,3

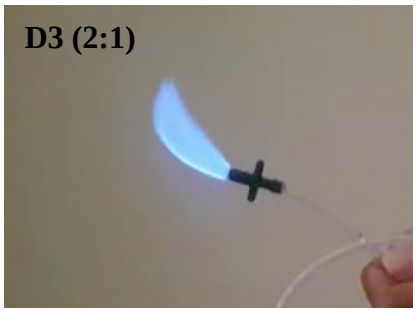
Digester	pH awal			pH akhir		
	1	2	Rata-rata	1	2	Rata-rata
D1 (1:1)	7,1	7	7,1	7,0	7,0	7,0
D2 (1:2)	7,0	6,9	7,0	7,0	7,2	7,1
D3 (2:1)	7,0	6,8	6,9	7,0	7,0	7,0
D4 (1:0)	6,9	6,9	6,9	6,8	7,0	6,9
D5 (0:1)	6,6	6,5	6,6	6,7	7,0	6,9

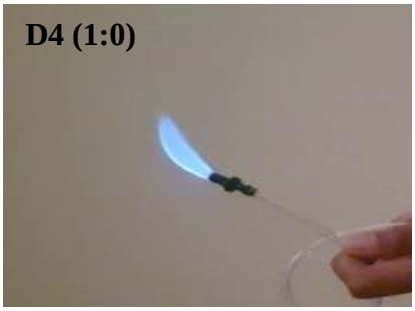
Lampiran 11. Data perhitungan nyala api

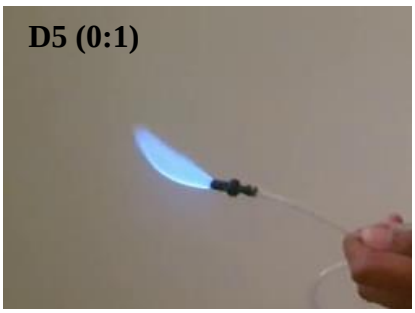
Digester	Durasi nyala api (s)		Durasi rata-rata (s)	Volume *syringe* (L)	Q (L/s)	Faktor pengali	Durasi nyala api (jam/m3)
	1	2					
D1 (1:1)	10	9	9,4	0,06	0,00638	16666,7	43,52
D2 (1:2)	9	9					
D3 (2:1)	9	10					
D4 (1:0)	9	10					
D5 (0:1)	9	10					





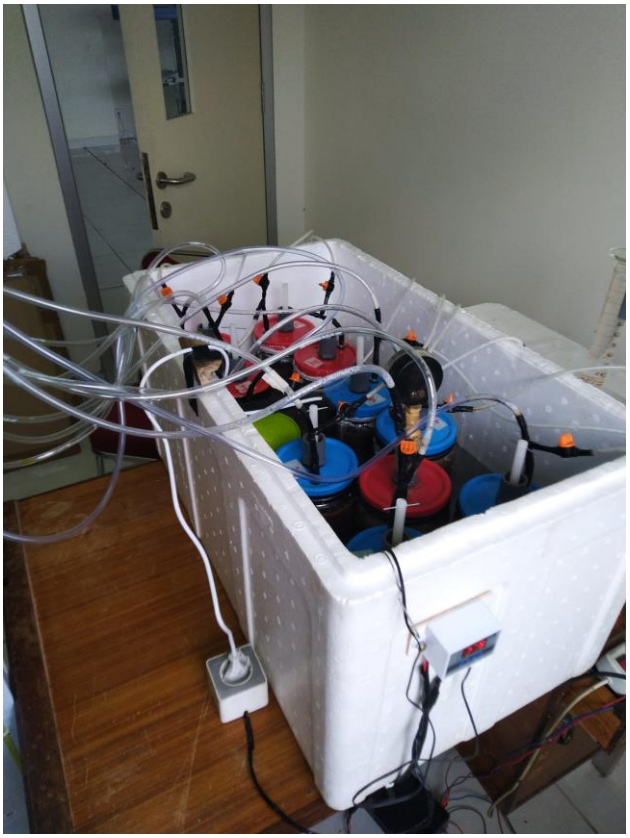






Lampiran 12. Dokumentasi penelitian


D5
D4
D3
D2
D1




D4 : 31/55


D1
D2
D3
D4
D5