



BioExtruder

Unlock the Biogas Potential of Straw

Straw Pilot Plant Data - (Fraunhofer Institute, Dresden, Germany)

Feedstock: Barley Straw
Pilot Test Period: 115 Days

1. No enzymes/unsealed hydrolysis stage

Mass Balance

	kgFM/d	DM	oDM	FM kg/d	oDM kg/d
Straw	35	93.40%	93.40%	32.7	30.5
Recyclate	340	8.4	80.1	28.6	22.9
Fresh Water	100				
Total	475			61.3	53.4

Gas Yields

		Hydrolysis Tank	Fermenter 1	Fermenter 2	Total
System Volume	m3	0.7	4.9	4.9	10.5
Retention time	days	1.5	10.3	10.3	22.1
	days	5.2	36.3	36.3	77.8
Biogas Production	m3/day		9.27	5.94	15.21
Specific Biogas Yield	l/kgVS		304	195	499
Specific Biogas Yield	l/kgFM				435
Methane	%		53.10%	53.20%	53.20%
Specific Methane Yield	l/kgVS		161.22	103.50	265.30
Loading rate	kgVS/M3d		6.23		2.9

2. Sealed hydrolysis stage + Enzymes

Mass Balance

	kgFM/d	DM	oDM	FM kg/d	oDM kg/d
Straw	35	94.00%	94.40%	32.9	31.1
Recyclate	340	8.2	82.1	28.7	23.5
Fresh Water	120				
Total	495			61.6	54.6

Gas Yields

		Hydrolysis Tank	Fermenter 1	Fermenter 2	Total
System Volume	m3	0.7	4.9	4.9	10.5
Retention time	days	1.4	9.7	9.7	20.8
	days	4.5	31.6	31.6	67.7
Biogas Production	m3/day	2.47	10.9	5.25	18.62
Specific Biogas Yield	l/kgVS	80	351	169	599
	l/kgFM				531
Methane	%	28.30%	54.10%	53.10%	49.80%
Specific Methane Yield	l/kgVS	22.51	189.87	89.76	298.16
Loading Rate	kgVS/M3d	44.4	6.34		3