TECHNOLOGY FACTSHEET



SMALL-SCALE ANAEROBIC	/IONO-MANURE DIGEST	ION FOR EL	ECTRICITY	AND HEAT	r produc	TION (CHE	P)				
Date of factsheet	3-9-2018										
Author	Agriculture: Other										
Sector	Refers to green gas production from manure in the Netherlands.										
ETS / Non-ETS	Non-ETS										
Type of Technology	Biomass										
Description	The data refers to small scale 1009	6 manure installa	ations. The man	ure, at the farm	n level, is fern	nented in an ar	naerobic digest	ion installation	to produce bi	ogas. The biog	gas is fed into a
	hydrogen sulphide (H2S), and water.										
	Digestate is often separated into a thick and thin fraction. The thick fraction can then be hygienized to make it safe for use or export as a fertilizer. The hygienisation prior to export is										
	mandatory. During hygienisation,	he digestate is k	ept at a temper	rature of at lea	st 70°C for one	e hour. The thir	n aqueous fract	ion can be furt	her purified to	a concentrate	ed fraction and
TRL level 2020	TRL 9										
	AD technology is a widely applied	commercial tech	nology.								
TECHNICAL DIMENSIONS	Functional Unit						Johnsond Done				
Capacity	MWth	Value and Range									
			0.12 -								0.12
	MWth		Current			2030			2050		
Potential			ļ,		-			-		Т	-
Market share	0/		Min	-	Max	Min	-	Max	Min	-	Max
	%		Min	_	- Max	Min	_	- Max	Min		- May
Capacity utlization factor			171111	_	IVIUX	171111	_	IVIUX	1		IVIGA
Full-load running hours per year									8,000		
Unit of Activity											
Technical lifetime (years)									15		
Progress ratio									-		
Hourly profile	Both the capacity and the potentia	l refers to MWth	n hingas Thus t	he notential is	nresented as h	ningas notentia	ol of manure an	d it is the same	e for all small s	scale mono ma	anure digestion
	related pathways. Since the focus	s on farm level r	mono-manure ir	nstallations we	don't consider	r any possibiliti	es to import m	anure. The figu	ires from Elbe	rsen et al, (202	15) refer to
	liquid whereas DNV GL refers to be	othliquid and sol	id manure. We,	therefore, ass	umed that 90%	6 of the total re	efers to liquid n	nanure in the D	ONV GL study.		
COSTS											
Year of Euro	2015	L		Comparet			2020			2050	
Investment costs	min £ / MWth	Init		Current	3 26		2030	3 04		2050	2.86
			2.77	-	3.26	2.60	-	3.04	2.29	-	2.93
Other costs per year	mln. € / MWth				-			-			-
			Min	-	Max	Min	-	Max	Min	-	Max
Fixed operational costs per year	mln. € / MWth				0.19			0.19		Т	0.18
(excl. fuel costs)	$m \ln \epsilon / M//th$		0.11	-	0.19	0.10	-	0.19	0.09	-	0.18
Variable costs per year	min. €/ www.in		0.01	-	0.01	0.01	_	0.01	0.01	_	0.01
	U.UI - U.UI - U.UI - 0.01 - 0.01 - 0.01 - 0.01 MWth refers to MWth biogas input. Feedstock price at the port is assumed as zero. The CAPEX and OPEX includes all the percessary processes to produce biogas and the correspondention										
	tecnnology is implemented there can be some cost reductions. ETRI indicates cost reduction for AD to be in the range of 2,1%-0,5% per year for the first 5 years and 0,1-0,6% per year for the following years. We apply the baseline cost reduction rates of ETRI to SDE+2019 data. It is important to highlight that ETRI does not distinguish between mono- all digestion. Next to that, they only refer to AD related CAPEX and OPEX, whereas we also include further processing of biogas into green gas. ETRI indicates cost reduction for AD to be in the range of 2,1%-0,5% per year for the first 5 years and 0,1-0,6% per year for the following years. We apply the baseline cost reduction for AD to be in the range of 2,1%-0,5% per year for the first 5 years and 0,1-0,6% per year for the following years. We apply the baseline cost reduction rates of ETRI to be in the range of 2,1%-0,5% per year for the first 5 years and 0,1-0,6% per year for the following years. We apply the baseline cost reduction rates of ETRI for small scale mono digestion. It is important to highlight that ETRI does not distinguish between mono- all digestion. Next to that they only refer to AD related CAPEX and OPEX, whereas we also include the cogeneration unit. The generic biomass input and techno-economic data in the SDE are as follows. Biomass energy content: 0,63 GJ/ton; net price of feedstock at the gate is assumed as zero. Other necessary utility costs (i.e. electricity) are covered within the fixed O&M costs.										
Costs explanation	for the following years. We apply to Next to that, they only refer to AD range of 2,1%-0,5% per year for the important to highlight that ETRI do cogeneration unit. The generic bio	he baseline cost related CAPEX a e first 5 years an bes not distinguis mass input and t	reductions. En reduction rates nd OPEX, where d 0,1-0,6% per y sh between mor techno-economi	s of ETRI to SDE eas we also inc year for the fol no- all digestion ic data in the S	E+2019 data. If lude further pr llowing years. N n. Next to that DE are as follo	t is important t rocessing of bic We apply the b they only refer ws. Biomass er	to highlight that ogas into green baseline cost rea r to AD related hergy content: (t ETRI does not gas. ETRI indic duction rates o CAPEX and OP 0,63 GJ/ton; ne	a tor the mot cates cost redu f ETRI for sma EX, whereas w t price of feed	etween mono- uction for AD Il scale mono o ve also include Istock at the g	all digestion. to be in the digestion. It is the ate is assumed
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