

EBA contribution to EGFTF report

Abbreviations and costs

Abbreviations

As explained at the meeting of EGFTF on 10 September, EBA prompts using terminology that deals with biomethane clearly as its own, independently from natural gas. As regards abbreviations, the terminology adopted by IEA Bioenergy¹, containing the abbreviations like CBG (compressed biomethane), LBG (liquefied biomethane) and Bio-SNG (Synthetic Natural Gas from Biomass) should be used.

The IEA Bioenergy study also gives the following definitions that EBA supports:

Biomethane: Biomethane is defined as methane produced from biomass (source: ISO DIS 15669, in preparation), with properties close to natural gas. It can be produced by thermochemical conversion (see bio-SNG) or biochemical conversion (see biomethane from biogas upgrading).

Biomethane from biogas upgrading: Biomethane from upgraded biogas describes the production of biomethane by microbiological processes. The initial product is raw biogas which must be cleaned (normally called upgrading) to reach the high methane content

Bio-SNG: Bio-SNG stands for biological synthetic natural gas and is a methane rich gas. It is produced via gasification of lignin rich feedstock like wood followed by methanation.

Total capital expenditure

Typical investment costs of network connection stations as a function of feed-in capacity

Total capital expenditure (CAPEX) (€/year) including compression, regulation and grid connection: 1 720 000 for a capacity of 700 m³ STP/h.²

Source: W. Urban (2013) The Biogas Handbook: Biomethane injection into natural gas networks. P. 399

¹ Thrän et al. (2014). Biomethane – status and factors affecting market development and trade. IEA Task 40 and Task 37 Joint Study. September 2014. <http://www.bioenergytrade.org/downloads/t40-t37-biomethane-2014.pdf>

² (m³ at standard temperature and pressure, per one hour)

Total operational expenditure

Typical investment costs of network connection stations as a function of feed-in capacity

Total operational expenditure (OPEX) (€/year): 274 400 for a capacity of 700 m³ STP/h

Source: W. Urban (2013) The Biogas Handbook: Biomethane injection into natural gas networks. P. 399

OPEX according to plant operators

Installation size in m ³ _{i.N./h}								
Operational costs in €/p. a.	250	350	400	500	700	1400	2000	2800
Axiom	-	-	220.000	-	339.100	-	-	-
Carbotech	-	-	154.500	-	238.500	386.000	501.000	598.000
Greenlane	-	-	153.990	-	251.200	349.600	449.800	542.800
Haase	118.000	-	-	182.300	246.900	421.800	543.900	663.000
Malmberg	-	137.100	-	-	227.700	393.800	486.400	-
MT Biomethan	-	-	-	246.700	333.700	607.500	824.800	-

Source: Adler et al. (2014). Leitfaden Biogasaufbereitung und –einspeisung. 5. Vollständig überarbeitete Auflage. Fachagentur Nachwachsende Rohstoffe e.V. (FNR). P.108

http://mediathek.fnr.de/media/downloadable/files/samples/l/e/leitfaden_biogaseinspeisung-druck-web.pdf

Total OPEX broken down into maintenance costs, operating costs and energy costs

Installation size in m ³ _{i.N./h}								
Maintenance costs in €/p. a.	250	350	400	500	700	1400	2000	2800
Axiom	-	-	70.000	-	90.000	-	-	-
Carbotech	-	-	55.000	-	75.000	90.000	120.000	140.000
Greenlane	-	-	22.690	-	31.700	36.300	42.800	49.800
Haase	21.500	-	-	31.600	37.700	45.800	53.900	64.000
Malmberg	-	25.600	-	-	38.700	62.300	79.900	-
MT Biomethan	-	-	-	56.200	68.700	96.700	114.800	-

Installation size in m ³ _{i.N./h}								
Operating costs in €/p. a.	250	350	400	500	700	1400	2000	2800
Axiom	-	-	31.000	-	49.600	-	-	-
Carbotech	-	-	5.500	-	5.500	11.000	11.000	11.000
Greenlane	-	-	4.300	-	5.500	8.300	11.000	14.000
Haase	11.500	-	-	14.700	18.200	31.000	42.000	57.000
Malmberg	-	11.500	-	-	14.000	16.500	17.500	-
MT Biomethan	-	-	-	11.500	14.000	22.800	30.000	-

Energy costs in €/p. a.	Installation size in m ³ i.N./h							
	250	350	400	500	700	1400	2000	2800
Axiom	-	-	119.000	-	199.500	-	-	-
Carbotech	-	-	94.000	-	158.000	285.000	370.000	447.000
Greenlane	-	-	127.000	-	214.000	305.000	396.000	479.000
Haase	85.000	-	-	136.000	191.000	345.000	448.000	542.000
Malmberg	-	100.000	-	-	175.000	315.000	389.000	-
MT Biomethan	-	-	-	179.000	251.000	488.000	680.000	-

Source: Adler et al. (2014). Leitfaden Biogasaufbereitung und –einspeisung. 5. Vollständig überarbeitete Auflage. Fachagentur Nachwachsende Rohstoffe e.V. (FNR). P.108

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Total production costs (CAPEX + OPEX)

Total production costs are as a rule a function of installed feed-in capacity.

Biomethane production costs 400 Nm³ /h 7-9 €/kWh

Biomethane production costs 700 Nm³ /h 6-8€/kWh

Source: FNR: Faustzahlen Biogas: <http://biogas.fnr.de/daten-und-fakten/faustzahlen/>