

Hitachi Zosen
INOVA

BioMethan Amine Scrubbing Technology
Biogas Upgrading with a Heat Driven Process



Upgrading Capacity	Nm ³ /h RBG	250	500	700	1,000	1,400	2,000
Technical Data							
Container		Container	Double container	Double container	Double container	Double container	Double container
Length container	mm	12,000	12,000	12,000	12,000	12,000	12,000
Width container	mm	3,000	6,000	6,000	6,000	6,000	7,000
Height container excl. superstructure	mm	3,000	3,000	3,000	3,000	3,000	3,000
Area outdoor installation	m ²	43.2 (7.2 x 6)	75 (7.5 x 10)	75 (7.5 x 10)	130 (10 x 13)	130 (10 x 13)	156 (12 x 13)
Height scrubbing column	mm	12,000	12,000	12,000	12,000	12,000	12,000
Weight	kg	18,900	Cont. 1: 21,400 Cont. 2: 14,300	Cont. 1: 22,200 Cont. 2: 14,300	Cont. 1: 23,800 Cont. 2: 14,300	Cont. 1: 26,600 Cont. 2: 17,900	Cont. 1: 31,000 Cont. 2: 19,600
Connection RBG	DN	150	150	200	200	250	250
Connection BM	DN	100	150	150	150	200	200
Performance Data							
Voltage	V	400	400	400	400	400	400
Frequency	Hz	50	50	50	50	50	50
Scrubbing liquid		MDEA/water	MDEA/water	MDEA/water	MDEA/water	MDEA/water	MDEA/water
Content scrubbing liquid	m ³	2	4	5	6	8	10
Processable RBG		B/W/S	B/W/S	B/W/S	B/W/S	B/W/S	B/W/S
BM quality	Vol % CH ₄	up to 99	up to 99	up to 99	up to 99	up to 99	up to 99
Outlet pressure BM ¹⁾	mbar _g	50 – 150	50 – 150	50 – 150	50 – 150	50 – 150	50 – 150
Dew point BM ²⁾	°C	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Power demand ³⁾	kWh/Nm ³ RBG	0.11	0.11	0.11	0.11	0.11	0.11
Heat demand at 51 Vol% CH ₄ in RBG	kWh/Nm ³ RBG	0.65	0.65	0.65	0.65	0.65	0.65
Max. inlet temperature cooling water	°C	30	30	30	30	30	30
Max. outlet temperature cooling water	°C	40	40	40	40	40	40
Theoretically removable cooling water heat	kW	162.5	325	455	650	910	1,300
Heat extraction secondary 45/55 °C	kW	25	60	84	120	168	240
Water demand	m ³	none	none	none	none	none	none
Condensate ⁴⁾	g/Nm ³	1.5	3	4.2	6	8.4	12
Resulting waste water	m ³	none	none	none	none	none	none
Designed for temperatures	°C	- 20 bis +32	- 20 bis +32	- 20 bis +32	- 20 bis +32	- 20 bis +32	- 20 bis +32
Emissions							
Methane loss	%	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1
Sound pressure level in 10 m distance ⁵⁾	dB(A)	75	75	75	75	75	75
Equipment							
German Water Management Act		FT	FT	FT	FT	FT	FT
Control system		Siemens S7	Siemens S7	Siemens S7	Siemens S7	Siemens S7	Siemens S7
Visualization		WinCC	WinCC	WinCC	WinCC	WinCC	WinCC
Remote access		yes	yes	yes	yes	yes	yes
Gas measurement		RBG/BM	RBG/BM	RBG/BM	RBG/BM	RBG/BM	RBG/BM
Gas analysis		RBG/BM	RBG/BM	RBG/BM	RBG/BM	RBG/BM	RBG/BM

Abbreviations

RBG = Raw biogas B = Biogas
 BM = Biomethane W = Waste gas
 FT = Floor tray S = Sewage gas
 MDEA = Methyldiethanolamin

¹⁾ optional increase possible

²⁾ due to downstream adsorption dryer reduction on dew point up to 40 mg/Nm³ possible

³⁾ at inlet pressure RBG min. 200 mbar and dew point RBG max. 7 °C

⁴⁾ resulting condensate in g/Nm³ raw biogas per hour

⁵⁾ optional reduction possible

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