

DIN EN ISO 24252:2024-04 (E)

Biogas systems - Non-household and non-gasification (ISO 24252:2021)

Contents		Page
European foreword		5
Foreword		6
Introduction		7
1	Scope	8
2	Normative references	8
3	Terms and definitions	8
4	Abbreviated terms	9
5	Guide for reading this document	9
6	Safety principles	10
7	Safety studies	11
	7.1 General	11
	7.2 Risk assessment and evaluation	11
	7.2.1 Risk assessment construction, start-up and maintenance	11
	7.2.2 HAZOP/HAZID	11
	7.3 Explosion protection document (EPD)	12
	7.4 Environmental requirements	12
8	General design requirements	13
	8.1 Materials and structures	13
	8.1.1 General	13
	8.1.2 Materials	13
	8.1.3 Structures, weight and stability calculations	14
	8.1.4 Use of used materials and equipment	14
	8.2 Process system facilities	14
	8.2.1 General	14
	8.2.2 Gas-side part of the system	14
	8.2.3 Cooling systems	15
	8.3 Pressure protection	15
	8.4 Safety distances	16
	8.5 Electronic monitoring of the process	18
	8.5.1 General	18
	8.5.2 Monitoring of the process	18
	8.6 Buildings and building services	19
	8.6.1 General	19
	8.6.2 Gas detection and electronic monitoring inside buildings	19
	8.6.3 Ventilation	20
	8.7 Noise protection	21
	8.8 Odour prevention	21
	8.9 Soil and surface water protection	21
	8.10 Condensate and particle removal	22
	8.11 Storage of hazardous substances	22
	8.11.1 Storage hazardous substances in general	22
	8.12 Facilities at power failure	22
	8.13 Air pollution control devices for removal of superfluous biogas (flares, thermal oxidizers gas, etc.)	23
	8.14 Unwanted venting and discharges of hazardous gases	24
	8.15 Flame protection and mitigation	24
	8.16 Fire-fighting and extinguishing	24
	8.17 Earthing and lightning protection	25
	8.18 Emergency routing	25

8.19	Anti-collision.....	25
8.20	Access control.....	25
8.21	Electrical, instrumentation and process control.....	25
9	Biogas pipelines for untreated biogas.....	26
9.1	General.....	26
9.2	Materials.....	26
9.3	Civil design.....	27
9.4	Removal of moisture and contaminants.....	27
10	Technical specifications and requirements biogas production.....	27
10.1	General.....	27
10.2	Biomass supply and storage.....	28
10.3	Desulphurization.....	28
10.4	Biogas buffer.....	28
10.5	Storage, removal and stabilizing digestate.....	28
10.6	Specific attention points and requirements landfill sites.....	29
10.7	Specific requirements additional to Clause 8	29
10.7.1	Materials and structures.....	29
10.7.2	Equipment, pipes, valves and other process system facilities.....	30
10.7.3	Pressure protection.....	30
10.7.4	Foam.....	30
10.7.5	Safety distances.....	31
10.7.6	Electronic monitoring of the process.....	31
10.7.7	Buildings and building services.....	31
10.7.8	Noise protection.....	31
10.7.9	Soil and surface water protection.....	31
10.7.10	Condensate and particle removal.....	32
10.7.11	Storage of hazardous substances.....	32
10.7.12	Facilities at power failure.....	32
10.7.13	Air pollution control devices for removal of superfluous biogas (flares, thermal oxidizers gas etc.).....	32
10.7.14	Venting.....	32
10.7.15	Flame protection and mitigation.....	32
10.7.16	Firefighting and extinguishing.....	32
10.7.17	Earthing and lightning protection.....	33
10.7.18	Emergency routing.....	33
10.7.19	Anti-collision.....	33
10.7.20	Electrical, instrumentation & process control.....	33
11	Technical specifications and requirements biogas treatment, CHP, upgrading and liquefaction.....	33
11.1	General.....	33
11.2	Desulphurization.....	33
11.3	Biogas upgrading and liquefaction.....	34
11.4	Process system facilities.....	34
11.4.1	General.....	34
11.4.2	Gas-side part of the system.....	34
11.4.3	Cooling systems.....	34
11.5	Specific requirements additional to Clause 8	35
11.5.1	Materials and structures.....	35
11.5.2	Pressure protection.....	35
11.5.3	Safety distances.....	35
11.5.4	Electronic monitoring of the process.....	35
11.5.5	Buildings and building services.....	35
11.5.6	Noise protection.....	35
11.5.7	Soil protection.....	35
11.5.8	Condensate and particle removal.....	36
11.5.9	Storage of hazardous substances.....	36

11.5.10	Facilities at power failure.....	37
11.5.11	Air pollution control devices for removal of superfluous biogas (flares, thermal oxidizers gas etc.).....	37
11.5.12	Venting.....	37
11.5.13	Flame protection and mitigation.....	37
11.5.14	Fire-fighting and extinguishing.....	37
11.5.15	Earthing and lightning protection.....	37
11.5.16	Emergency routing.....	37
11.5.17	Anti-collision.....	37
11.5.18	Electrical, instrumentation & process control.....	37
12	Construction and testing.....	38
12.1	General.....	38
12.2	Construction.....	38
12.2.1	Safety during construction.....	38
12.2.2	Prefabrication.....	38
12.2.3	Construction on site.....	38
12.3	Testing and commissioning.....	38
12.4	Start-up.....	39
12.5	Requirements for commissioning and start-up of specific systems.....	39
12.5.1	Biogas production systems.....	39
12.5.2	Biogas treatment, CHP, upgrading and liquefaction systems.....	39
13	Operations and maintenance.....	39
13.1	General.....	39
13.2	Supplier of the biogas system.....	40
13.3	System owner.....	40
13.4	Emergency plan.....	41
13.5	Service technician.....	42
13.6	Requirements for commissioning and start-up of specific systems.....	42
13.6.1	Biogas production systems.....	42
13.6.2	Biogas treatment, CHP, upgrading and liquefaction systems.....	42
13.7	Requirements for shut-down of biogas system.....	43
Annex A (informative) Explanation to the scope.....		44
Annex B (informative) Biogas characteristics, processes and classifications.....		47
Annex C (informative) Guidelines to prevent risks from gases and explosive atmospheres in buildings.....		55
Bibliography.....		57