

DIN EN 12819:2019-06 (E)

LPG equipment and accessories - Inspection and requalification of LPG pressure vessels greater than 13 m³

Contents		Page
European foreword		5
Introduction		6
1	Scope	7
2	Normative references	7
3	Terms and definitions	7
4	Safety	8
4.1	Safety precautions	8
4.2	Unsafe conditions	8
4.3	Leak	8
5	Written scheme	9
6	Pressure vessel inspection, requalification and recommissioning	10
6.1	Routine inspection	10
6.2	Periodic inspection	10
6.3	Requalification	10
6.3.1	Requalification of aboveground pressure vessels	10
6.3.2	Requalification of underground pressure vessels	10
6.3.3	Recommissioning	11
7	Inspection of pressure vessel and pressure vessel fittings	11
7.1	Pressure vessel	11
7.2	Pressure vessel fittings and immediate pipework	11
7.3	Valve cover	11
7.4	Bonding	11
7.5	Pressure relief valve	12
7.6	Pressure gauge	12
7.7	gauges	12
7.8	Shut-off valves	12
7.9	Studs, bolts, nuts, and washers	12
7.10	Emergency valves	12
7.11	Gaskets	13
7.12	Pressure switch	13
7.13	Temperature gauge	13
7.14	Remotely operated valves	13
7.15	Corrosion protection system	13
7.16	Piers and foundations for aboveground pressure vessels	13
8	Competence	13
8.1	General	13
8.2	Routine inspection competence	13
8.3	Periodic inspection competence	13
8.4	Requalification competence	14
9	Records	14
9.1	Pressure vessel data	14

9.2	Reports	14
Annex A (informative) Visual inspection		15
A.1	Internal and external visual inspections	15
A.2	Inspection techniques	15
A.2.1	External visual inspection	15
A.2.2	Internal visual inspection	15
A.2.3	Records	15
A.3	Additional inspection	15
Annex B (normative) Hydraulic pressure test		17
Annex C (normative) Acoustic emission testing		18
C.1	Scope	18
C.2	Testing procedure	18
C.3	Instrumentation	18
C.3.1	Sensors	18
C.3.2	Acquisition and evaluation system	18
C.4	Testing	18
C.4.1	Test instruction	18
C.4.2	Safety precautions	18
C.5	Sensor location	19
C.5.1	Overground pressure vessels	19
C.5.2	Underground or mounded pressure vessels	19
C.5.3	Pressurization	21
C.6	Data evaluation and analysis	22
C.6.1	Evaluation criteria	22
C.6.1.1	General	22
C.6.1.2	Overground pressure vessels	22
C.6.1.3	Underground and mounded pressure vessels	22
C.6.2	Real time control and stop criteria	22
C.6.2.1	Overground pressure vessels	22
C.6.2.2	Underground and mounded pressure vessels	23
C.6.3	Post test analysis	23
C.6.4	Pressure vessel grading	23
C.7	Data storage and reporting	24
Annex D (informative) Ultrasonic thickness test		25
D.1	General	25
D.2	Apparatus setting	25
D.3	Control measurement	25
D.4	Shell thickness measurements	25
D.5	End thickness measurements	25
D.6	Interpretation	25
D.7	Rejection criteria	25
Annex E (informative) Monitoring cathodic protection with sacrificial anodes for underground pressure vessels		26
E.1	General	26
E.2	Records	26
E.3	Procedure	26
E.4	Measurement of the galvanic current	26
E.5	Measurement of the potential difference of the pressure vessel to the reference electrode	26
E.6	Results	27
Annex F (informative) Evaluation of coating condition of underground pressure vessels (cathodic protection by impressed current)		28

F.1	General	28
F.2	Apparatus	28
F.3	Conditions	28
F.4	Isolation resistance of the coating	28
F.4.1	Procedure	28
F.4.2	Calculation	29
F.5	Results	29
F.6	Checking intervals	29
Annex G (informative) A-deviations		30
Bibliography		31