STANDARDIZATION BODIES - RELATIONSHIPS





marcogaz

TECHNICAL STANDARDS FOR USE IN THE EUROPEAN NATURAL GAS INFRASTRUCTURE

The Natural Gas Industry in Europe has always been proactive in ensuring the safety of its pipelines and installations following the principle of "self responsibility" by committing to tailored technical requirements and best practice solutions for all parts of the gas system in the context of standardization at National, European and International levels.

Before the commencement of the European standardization of requirements for the natural gas infrastructure under the CEN (European Committee for Standardization) umbrella, Marcogaz bundled the expertise and experience of the Gas System Operators for informal use within the sector. Since 1990 the Gas Industry, supported by Marcogaz, has contributed its expertise and experience to common functional and detailed European Standards for gas infrastructure by making their experts available for the development of those standards within CEN. The dedicated Technical Committee in this field is CEN/TC 234 "Gas infrastructure".

CEN European Standards are recognized and used by gas companies, contractors and consumers as well as by Authorities and Regulatory Bodies. They are developed through a transparent, open and neutral process. As members of CEN, the Gas System Operators Experts participate as delegates of the National Standardization Bodies.

Legally the application of standards is voluntary; only National or European legislation can give them a mandatory status. However, with the CEN Membership of National Standardization Bodies, member states have de facto an obligation to implement them on a national level and to withdraw conflicting national standards.

For a very long time in Europe gas has been supplied to the consumers by the Gas Companies who have had the comprehensive responsibility for purchasing, selling and transporting gas. Since the end of the 20th century the European Gas Industry has been liberalised and unbundled. Due to the related splitting up of competences and responsibilities new players are now acting as: suppliers, producers, shippers and network operators. With these changes the importance of European Standardization grows significantly.

STANDARDIZATION AND INNOVATION

The mission of the Gas Infrastructure Industry is to transport and to distribute natural gas while preserving the integrity and safety of the gas network, to provide a reliable delivery of natural gas to the consumers and to ensure public safety at acceptable operational





June 2009

costs. Therefore standardization focuses on:

- Safety
- Reliability / availability
- ▶ Total Cost of Ownership (TCO)
- License To Operate (LTO)
- Sustainability

Standardization is a tool which assists in reaching an optimum in these aspects by giving state of the art, best choices and solutions for system and detail engineering. These provisions should be based on but not limited to:

- the best practices,
- the proven technologies,
- the company's experience for many years' standing
- National legislation

The most important factor in this process is that the company makes the application of a framework of standards compulsory!

The use of standards might be seen as restrictive by designers and engineers. But this certainly is not the case, because:

Standardization and innovation are two parallel processes. > Through periodic design reviews, new developments are considered and introduced when safety and reliability have been proven.

The parallel process gives the opportunity to investigate new developments without disturbing the standardization process. New technologies are introduced by pilot projects and when the safety and reliability have been proven, the new development is introduced when revising standards.

As regards gas infrastructure, the Network Operators (gas transmission and distribution companies) are considering themselves responsible for the preservation and maintenance of the current suite of standards and where necessary the development of new ones. To that effect, the following table lists the major European and International Standards to be used when working on gas infrastructure. Additional and more specific standards are referenced within the normative references and bibliographies of these European Standards.

In general, the Natural Gas Infrastructure consists of the gas chain from production up to consumer installations. In this poster the scope has been limited to the transmission and distribution of gas starting from the input of the gas into the network up to the inlet connection of the gas appliances, including all facilities as onshore and offshore pipelines, gas compression, gas storage, LNG terminals, pressure reduction, odorization, blending and gas delivery stations.

EN AND ISO STANDARDS FOR USE IN THE EUROPEAN NATURAL GAS INFRASTRUCTURE



			star star										
Technical	title	51 ⁸⁰ 51 ¹ 51 ² 150											
Committee		EN Standard	থ	~/ J	۵ <u>/</u> ۱	50 60	०/ ४	2 21 M	Pt M	2RS	JS .	standar	d
CEN/TC 72 CEN/TC 72	Fire detection and fire alarm systems - Part 1: Introduction	EN 54-1		✓ ✓	×	< <							
CEN/TC 235	Fire detection and tire atarm systems - Part 7: Smoke detectors; Point detectors using scattered light, transmitted light or ionization Gas pressure regulators for inlet pressures up to 100 bar	EN 334					~		-	.			
CEN/TC 238	Test gases - Test pressures - Appliance categories	EN 437	1		1	1	1	< <	 ✓ 	· ·	 ✓ 		PL = Pipeline
CEN/TC 148	Sealing materials for metallic threaded joints in contact with 1,2 & 3 family gases & hot water parts 1 to 3	EN 741 1-3									_		LNG = Liquified N
CEN/TC 232	rriessuire gauges Compressors and vacuum pumps - safety requirements - Compressors	EN 1012-1				-			·				UGS = Under Gro
CEN/TC 282	Installation and equipment for liquefied natural gas - Design of onshore installations	EN 1473		1									CS = Compress
CEN/TC 74	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 1: Steel flanges Elanges and their joints - Dimensiones of caracter for PN designated flanges	EN 1092-1				✓ ✓	✓ ✓			· · ·		· .	PRS – Pressure
CEN/TC 74	Franges and their joints - billing hours of gaskets for investigated ranges Flanges and their joints - bolling - Part 3: Classification of bolt materials for steel flanges, class designated	EN 1514				· ·	~	· ·		-			VS = Valve Stat
CEN/TC 282	Installation and equipment for liquefied natural gas - Ship to shore interface	EN 1532		1									VSR = Valve Stat
CEN/TC 155	PE piping systems for gaseous fuels supply	EN 1555 1-7						4					
CEN/TC 234 CEN/TC 74	Gas infrastructure - Pipelines for maximum operating pressure over 10 par - Functional requirements Fiances and their icini - Circular flances for pipes, valves, fittings and accessories, Class designated - Part 1: Steel flances, NPS 1/2 to 24	EN 1594 EN 1759-1				•	•	✓ ✓	-	-	•	_	
CEN/TC 234	Gas supply - Gas pipework for buildings - Maximum operating pressure less than or equal to 5 bar - Functional recommendations	EN 1775					1	 ✓ 	 ✓ 				
CEN/TC 234	Gas supply systems - Natural gas measuring stations - Functional requirements	EN 1776					1	1	 ✓ 				
CEN/TC 234	Gas supply systems - Underground gas storage in aquifers Gas supply systems - Underground gas storage in a guifers Gas supply systems - Underground gas storage in a guifers	EN 1918-1			✓ ✓				_		_		
CEN/TC 234	Gas supply systems - Underground gas storage in our and gas retrais Gas supply systems - Underground gas storage in solution-mined salt caverns	EN 1918-3			· ✓				-		_		
CEN/TC 234	Gas Supply Systems - Functional recommendations for storage in rock caverns	EN 1918-4			×								
CEN/TC 234	Gas supply systems - Underground gas storage in surfice facilities	EN 1918-5			 ✓ 			× _					
ECISS/TC29	Steel pipes for pipelines for combustible fluids - Technical delivery conditions - Part 2: Pipes of requirement class A	EN 10208-1			-							·	
ECISS/TC29	Scale pipe of a	EN 10200-2						· · ·			-		
ECISS/TC29	Seamless steel tubes for pressure purposes - technical delivery conditions- part 5 stainless steel tubes	EN 10216-5						1	 ✓ 				
ECISS/TC29	Internal and/or external protective coatings for steel tubes	EN 10240						1	✓		_		
ECISS/TC29	Steel tubes and fittings for on and offshore pipelines - External two layer extruded polyethylene based coatings Steel tubes and fittings for on and offshore pipelines - External two layer extruded polyethylene based coatings Steel tubes and fittings for on and offshore pipelines - External lawo layer extruded polyethylene based coatings	EN 10288			× 			× ×			_		
ECISS/TC29	Steel tubes and fittings for on and offshore pipelines - External induid applied body and body and polyurethane-modified coatings	EN 10289			· •			· ·	-		-		
ECISS/TC29	Steel tubes and fittings for on and offshore pipelines - Internal coating for the reduction of friction for conveyance of non corrosive gas	EN 10301			1			×					
ECISS/TC29	Steel tubes and fittings for onshore and offshore pipelines - External field joint coatings	EN 10329			×	<		× (✓ 	✓	✓	ISO 21809-3	Field joint coatings for pipelines (not to be used
CEN/TC 234	Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar - Part 1: General functional recommendations Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar - Part 2: DF extems	EN 12007-1					~	×			_		
CEN/TC 234	Cas supply systems - Pipelines for maximum operating pressure up to and including 16 bar - Part 3: Steel systems	EN 12007-3											
CEN/TC 234	Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar - Part 4: renovation	EN 12007-4						1					
CEN/TC 262	Cathodic protection - External organic coatings for the corrosion protection of buried or immersed steel pipelines used in conjunction with cathodic protection -	EN 12068			1	1	1	× ×	· ✓	· · · ·	Y		
CEN/TC 191	Lapes and shrinkable materials Evad firefiniting systems - Components for das extinguishing systems - Part 1: Requirements and test methods for electrical automatic control and delay devices	EN 12094-1				1			-		_		
CEN/TC 234	The menging systems - components to gas examplements and estimate and test mends for electrical administration of the systems - Carbon and delay devices - Gas supply systems - Cas pressure regulating stations for transmission and distribution - Functional requirements	EN 12094-1				· •	~		-				
CEN/TC 234	Gas supply systems - Gas pressure regulating installations on service lines - Functional requirements	EN 12279					1	1	·				
CEN/TC 234	Gas supply systems - Pressure testing, commissioning and decommissioning procedures - Functional requirements	EN 12327	1			1	1	✓		· 🗸	✓		
CEN/TC 219	Cathodic protection of submanned pipelines Elannes and their initia: Caskrets for Class-designated flagnes - Part 1: Non-metallic flat naskets with or without inserts	EN 12474 EN 12560-1 to -7	×		1	1		1 1					
CEN/TC 234	r anges and their points' daskes for class designated nanges - rar t. rommetancina gaskes with or without inserts Gas supply systems - Compressor stations - Functional requirements	EN 12583				· •		-	-				
CEN/TC 262	Cathodic protection of steel in concrete	EN 12696	1			1		× _					
CEN/TC 234	Gas Infrastructure - Welding steel pipework - Functional requirements	EN 12732		, ·	✓	 Image: A start of the start of	1	 ✓ ✓ 	✓	· 🗸	✓		
CEN/TC 282	Installations and equipment for inqueried natural gas - Suitability testing of LNG sampling systems Cathodic protection of burled or immersed metallic structures - General principation and application for pipelines.	EN 12838 EN 12954		•	1	1	-				· ·		
CEN/TC 54	Unfired pressure vessels - Part 3: Design	EN 13445			 Image: A start of the start of			 Image: A second s	-				
CEN/TC 282	Installations and equipment for liquefied natural gas - Design of onshore installations with a storage capacity between 5 t and 200 t	EN 13645		1									
CEN/TC 69	Valves for gas distribution systems with maximum operating pressure less than or equal to 16 bar, performance requirements Detroloum and patival aces industrice. Binative transportantes and the second se	EN 13774										160 14242	Pipeline values (not to be used for patural gas a
CEN/TC 69	recoldent and natural gas indexistes - n perime transportation systems - perime varies (100 + 010, 200+, indexied) Valves for natural gas transportation in pipelines - Performance requirements and tests	EN 14141			-			Image: A state of the state	+ ·	-	· ·	130 14313	Tipeline valves (not to be used for hatdrai gas j
CEN/TC 235	Safety devices for gas pressure regulating stations and installations - Gas safety shut-off devices for inlet pressures up to 100 bar	EN 14382				 Image: A start of the start of	✓		1			ISO 15590-1	Pipeline including bends (not to be used for nat
CEN/TC 282	Design and manufacture of site built, vertical, cylindrical, flat-bottomed steel tanks for the storage of refrigerated, liquefied gases with operating temperatures between 0 °C and -165 °C	EN 14620		1									
CEN/TC 12	Petroleum and natural gas industries - inductions bends, fittings and filanges for pipeline transportion systems - Part 2: induction bends (ISO 15590-1:2001, modified) Petroleum and natural gas industries - induction bends, fittings and filanges for pipeline transportion systems - Part 2: Efficient (ISO 15590-1:2001, modified) Petroleum and antaral gas industries - induction bends, fittings and filanges for pipeline transportion systems - Part 2: Efficient (ISO 15590-1:2001, modified)	EN 14870-1 EN 14870-2	¥		▼ ✓			~	-			ISO 15590-2	Pipeline fittings (not to be used for natural gas Pipeline flanges (not to be used for natural gas
CEN/TC 12	Petroleum and natural gas industries - Induction bends, fittings and flanges for pipeline transportation systems - Part 3: Flanges (ISO 15590-3:2004, modified)	EN 14870-3	1		1			1	-		-	ISO 15589-1	Cathodic protection for on-land pipelines (not to
CEN/TC 12	Petroleum and natural gas industries - Cathodic protection of pipeline transportation systems - Part 1: On-land pipelines (ISO 15589-1:2003 modified)	prEN 14919-1			1			× _					
CEN/TC 234	Gas Infrastructure - Gas installation pipework with an operating pressure greater than 0,5 bar for industrial, commercial and non-domestic gas installations - Part 1: Detailed functional	EN 15001-1		1	1	1	 ✓ 		1				
CEN/TC 234	requirements for design, materials, constructions, inspection and testing. Gas Infrastructure - Gas installation pipework with an operation pressure greater than 0.5 bar for industrial, commercial and non-domestic gas installations - Part 2: Detailed functional	EN 15001-2		1	1	-	-		-		_		
	requirements for commissioning, operation and maintenance												
CLC/SC9	Railway applications - Fixed installations - Effects of electromagnetic interference caused by a.c. railway lines on pipelines - Admissible values and protection measures	prEN 50443						 ✓ ✓ 				· •	
CLC/SC31	Electrical apparatus for explosive gas atmospheres - Part 10: Classification of hazardous areas (IEC 600/9-10:2002) Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (IEC 600/9-10:2002) Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (IEC 600/9-10:2002)	EN 60079-10 EN 60079-14		× •	✓ ✓	× ×	✓ ✓		- V		×		
CLC/TC210	Electromagnatic compatibility (EMC) - Part 6-1: Generic standards; Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:2005) /	EN 61000-6-1		1		· •			<u> </u>				
CLC/TC210	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments (IEC 61000-6-2:2005	EN 61000-6-2		1		1							
	Natural gas - Quality designation	EN ISO 13686	1	1	1	1	✓	✓ ✓	✓	· 🗸	✓		
CEN/TC 114	Salety of machinery - Salety-related parts of control systems - Part 1. General principles for design	EN ISO 13849-1	1			•			-		-	ISO 3183	Petroleum and natural das industries - Steel pir
CEN/TC 12	Petroleum and natural gas industries - Pipeline transportation systems (ISO 13623, modified)	EN 14161	1						-			ISO 13623	Petroleum and natural gas industries - Pipeline
CEN/TC 12	Petroleum and natural gas industries - Pipeline transportation systems - Welding of pipelines (ISO 13847:2000, modified)	EN 14163	1									ISO 13847	Petroleum and natural gas industrie - Pipeline t
CEN/TC 12	Petroleum and natural gas industries - Pipeline transportation systems - Subsea pipeline valves Petroleum and natural gas industries - Life cycle costing - Part 1: Methodology	EN ISO 14723	4									ISO 14723	Subsea pipeline valves Petroleum and natural das industries - Life oud
011/10/12		211100 10000-1	1									ISO 15589-2	Petroleum and natural gas industries - Eife Cycl
CEN/TC 12	Petroleum and natural gas industries - Pipeline transportation systems - Reliability-based limit state methods	EN ISO 16708	1									ISO 16708	Petroleum and natural gas industries - Pipeline
CEN/TC 12	Petroleum and natural gas industries - Pipeline transportation systems - Testing procedures for mechanical connectors	EN ISO 21329	1									ISO 21329	Petroleum and natural gas industries - Pipeline
CEN/TC 12 CEN/TC 237	Gaude to the use of too Toody and AlvoirAome of to 1.5 to piping in Europe in compliance with the Pressure Equipment Directive Gas supply systems - Frame of reference regarding Pipeline Integrity Management System (PIMS)	CEN/ TR 14549 CEN/ TS 15173	-					1			-	150 15649	Peuoleum and natural gas industries - Piping
CEN/TC 237	Gas supply systems - Guideline for safety management systems for natural gas transmission pipelinesy designation	CEN/ TS 15174						1					
CEN/TC 237	Gas supply systems - Guideline for safety management systems for natural gas distribution pipelinesy designation	CEN/ TS 15399						1					
CEN/TC 237	Gas meters - Diaphragm meters	EN 1359											
CEN/TC 237	Gas meters - Otradonic domedate gas meters	EN 12480					1		-	-			
CEN/TC 237	Gas meters - Turbine gas meters	EN 12261					1	1	1				
CEN/TC 237	Gas meters - Conversion devices - Part 1: Volume conversion	EN 12405-1					1	1	1			100 007-	
						~		1				ISO 3977	Bas turbines procurement
						1						ISO 13707	Petroleum and natural das industries - Reciprod

marcogaz



ISO TC title Natural Gas terminal ound Storage sor Station very Station Regulation Station tion ation with Remote control TC67 d for natural gas pipelines in Europe) TC 67 pipelines in Europe) TC 67 tural gas pipelines in Europe) TC 67 TC 67 TC 67 pipelines in Europe) pipelines in Europe) o be used for natural gas pipelines in Europe) TC 193 TC 67 TC 67 TC 67 TC 67 pe for pipeline transportation systems e transportation systems transportation systems - Welding of pipelines TC 67 TC 67 TC 67 TC 67 TC 67 TC 67 le costing - Part 1: Methodology e transportation systems -Cathodic protection for offshore pipelines e transportation systems - Reliability-based limit state methods e transportation systems - Testing procedures for mechanical connectors TC 67 TC 138 TC 67