



INDUSTRIAL GAS INSTALLATIONS

Safety and the environment are important for the future of us, our children and generations that follow. The natural gas industry, providing the lowest carbon emissions fossil fuel, is providing a significant contribution to improve the quality of the environment, and with a continuous strive for quality through innovation and standardisation, the quality of gas installations and energy efficiency of appliances are reaching ever increasing heights.

Gas industry leaders acknowledge the strategic role of European and National Standards. They are making their research, expertise and experience available by sending their experts to Technical Committees to participate in elaborating functional and detailed standards.

European, national legislation and the related framework of standards are complex and changing at an ever increasing pace. For industrial plant engineers, finding these standards can be a difficult task, demands specific knowledge and can consume considerable time. This guideline has been compiled by a Marcogaz Technical Committee to give the reader a clear understanding of the different sections of an industrial gas installation and the related European standards to be applied.

As designers and installers apply the prevailing standards for design, construction, testing and operation of an industrial gas installation, safety not only increases but also the full energy efficiency potential of appliances are utilised. As a result, customers are being stimulated to increase adoption and use of natural gas as the fuel of choice in place of alternative energy sources.



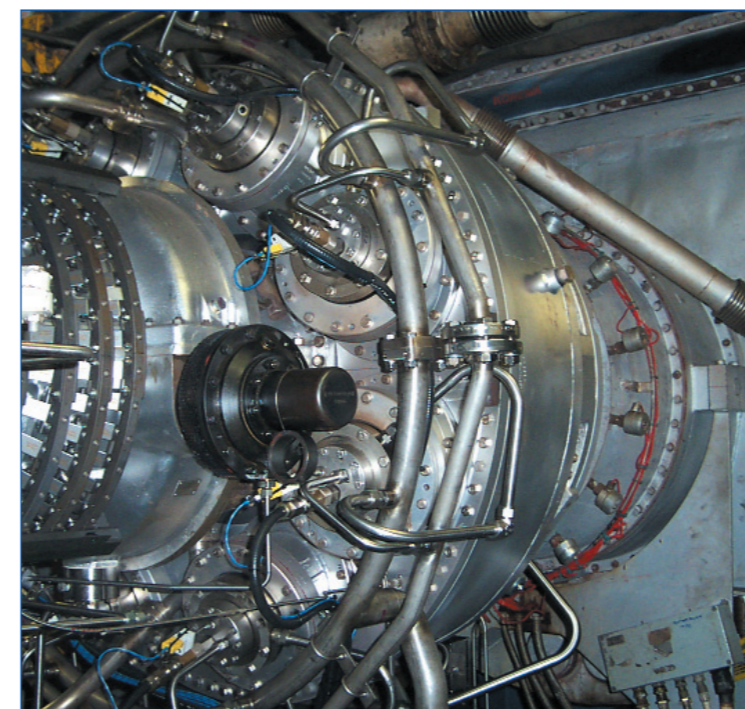
MARCOGAZ

Created in 1968, Marcogaz has developed over the years an efficient reputation with the official bodies in the European Union and other industry partners.

- Marcogaz chief mission is to serve its members as the European window for any technical issue regarding natural gas.
- As the representative organisation of the European Natural Gas Industry, it aims at monitoring and taking influence when needed on European technical regulation, standardisation and certification with respect to safety and integrity of gas systems and equipment, and rational use of energy.
- Environment, Health and Safety issues related to natural gas systems and utilisation are also of paramount importance for Marcogaz.

PRIMARY OBJECTIVES

- to promote safety, reliability, cost effectiveness and environmental advantages of natural gas systems and appliances
- to identify, monitor and take action on technical legislation at EU level
- to promote with the EU institutions fair European legislation reflecting the industry's high safety record and respecting subsidiary
- to actively monitor standardisation activities related to natural gas conducted by CEN, ISO, OIML and others
- to identify appropriate levels of competence for a safe and effective operation of gas systems
- to study any technical subject of interest for its members and promote cooperation with other associations representing the gas industry and manufacturers



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NATURAL GAS APPLICATIONS BY BRANCH

Metal industry

Blast-furnace
Calcining furnace
Casting furnace
Crucible furnace
Forge
Hardening furnace
Melting furnace
Reverberatory furnace
Tempering furnace

Chemical/Process industry

Afterburner
Calcination drum
Catalytic afterburner
Cracking unit
Fermentation
Fluid bed combustor
Incinerator
Perlite furnace
Refinery waste gas flare
Spray dryer
Sterilization food-/pharmaceutical products

Central heat and power

Air heater
Gas turbine
Gas motor
Hot water boiler
Reciprocating engine
Radiation heater
Shell boiler
Steam boiler
Steam generator
Waste gas boiler
Water heater
Water tube boiler

Brickyard

Brick kiln
Dry chambers (dehydrating)
Progressive kiln
Round down-draft kiln
Tunnel furnace

Miscellaneous

Asphalt cooking still (vertical tube type)
Carbon black applications
Continuous band oven
High temperature cement kiln
Make-up air
Oil heater
Rock wool melting furnace
Roll heating (roofing machinery rolls, paper mill rolls)
Rotary oven

Paint drying

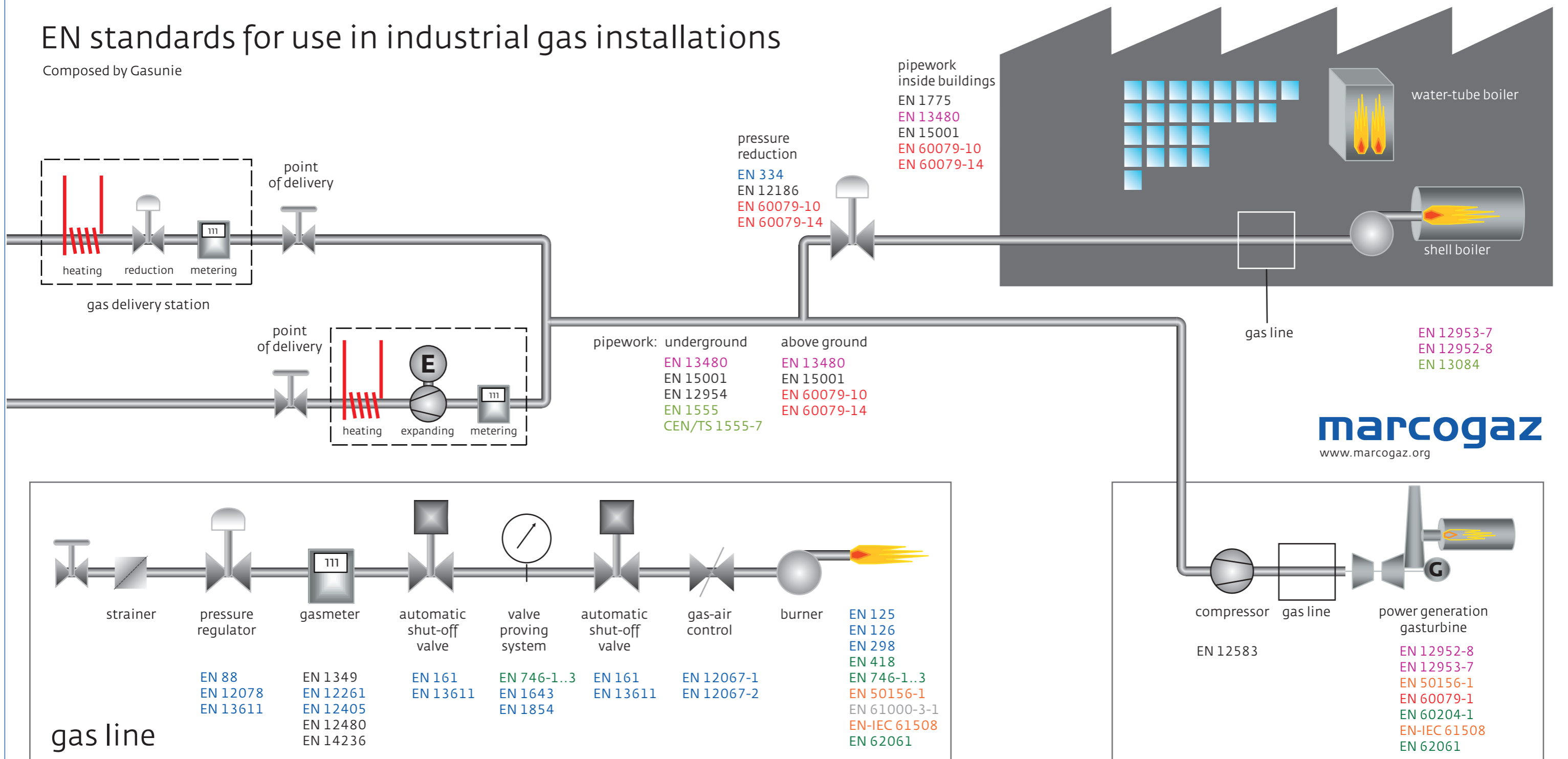
Chamber kiln
Recirculating air heaters
Single-flow dryer

Agricultural

Gluten dryer
Powder dryer

EN standards for use in industrial gas installations

Composed by Gasunie



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Directive/Standard	Description
98/37/EEC MD EN 418 EN 746-1	Machinery Directive Safety of machinery - Emergency stop equipment, functional aspects - Principles for design Industrial thermoprocessing equipment - Part 1: Common safety requirements for industrial thermoprocessing equipment
EN 746-2	Industrial thermoprocessing equipment - Part 2: Safety requirements for combustion and fuel handling systems
EN 746-3	Industrial thermoprocessing equipment - Part 3: Safety requirements for the generation and use of atmosphere gases
EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:1997)
EN 62061	Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)
89/336/EEC EMC EN 61000-3-1 2004/108/EC	Electromagnetic compatibility (EMC) Electromagnetic compatibility (EMC) Electromagnetic compatibility (EMC)
94/9/EC ATEX EN 60079-10 EN 60079-14	Equipment explosive atmospheres (ATEX) Electrical apparatus for explosive gas atmospheres - Classification of hazardous areas Electrical apparatus for explosive gas atmospheres - Electrical installations in hazardous areas
97/23/EEC PED EN 12952-8 EN 12953-7	Pressure Equipment Directive Water-tube boilers and auxiliary installations - Part 8: requirements for firing systems for liquid and gaseous fuels for the boiler Shell boilers - Part 7: Requirement for firing systems for liquid and gaseous fuels for the boiler

Directive/Standard	Description
90/396/EEC GAD EN 88 EN 125	Gas Appliances Directive Pressure governors for gas appliances for inlet pressures up to 200 mbar Flame supervision devices for gas burning appliances - Thermo-electric flame supervision devices Multifunctional controls for gas burning appliances Automatic shut-off valves for gas burners and gas appliances Automatic gas burner control systems for gas burners and gas burning appliances with or without fans Automatic forced draught burners for gaseous fuels Valve proving systems for automatic shut-off valves for gas burners and gas appliances Pressure sensing devices for gas burners and gas burning appliances Gas/air ratio controls for gas burners and gas burning appliances - Part 1: Pneumatic types Gas/air ratio controls for gas burners and gas burning appliances - Part 2: Electronic types Zero governors for gas burners and gas burning appliances Gas meters - Turbine gas meters Gas meters - Conversion devices. Volume conversion Safety and control devices for gas burners and gas-burning appliances - General requirements
EN 126 EN 161 EN 298	
EN 676 EN 1643 EN 1854 EN 12067-1 EN 12067-2 EN 12078 EN 12261 EN 12405 EN 13611	

Directive/Standard	Description
93/38/EEC PPD EN 1775 EN 12186	Public Procurement Directive Gas pipe work for buildings - Maximum operating pressure < 5 bar Gas supply - Gas pressure regulating stations for transmission and distribution - Functional requirements Gas supply systems - Compressor stations. Functional requirements Cathodic protection of buried or immersed metal structures. General principles and application for pipelines pipework MOP 0,5 upto 60 bar for industrial gas installations, design and construction pipework MOP 0,5 upto 60 bar for industrial gas installations, commissioning and maintenance
EN 12583 EN 12954	
EN 15001-1 EN 15001-2	
73/23/EEC LVD EN IEC 61508	Low Voltage Directive Functional safety of electrical/electronic/programmable electronic safety related systems - Part 5: Examples of methods for the determination of Safety Integrity Levels Functional safety - Safety instrumented systems for the process industry sector Electrical equipment for furnaces and ancillary equipment Part 1: Requirements for application design and installation
EN IEC 61511 EN 50156-1	
92/42/EEC BED	Boiler Efficiency Directive Efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels
89/106/EEC CPD EN 13084 EN 1555 1-5 CEN/TS 1555-7	Construction Products Directive Free-standing chimneys Plastic piping systems for the supply of gaseous fuels Polyethylene (PE) Plastic piping systems for the supply of gaseous fuels Polyethylene (PE) Guidance for assessments of conformity