



EUROGARDIAN

Fire Systems Technology



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TOSCANA

Headquarter
Via D. Alighieri, 12/i
52015 Pratovecchio Stia (AR) - Italy
Tel. +39 0575 583170
Fax +39 0575 504526

Warehouse
Via A. Soldani, 1/3
52015 Pratovecchio Stia (AR) - Italy

LOMBARDIA

Sales Office
Via S. Zenone, 6
24048 Treviolo (BG) - Italy
Tel. +39 035 4327147

EUROGARDIAN srl, skilled in gas fire extinguishing systems, is located in Arezzo. An Italian market presence since 1976, EUROGARDIAN got its start as an installer of fire detection and suppression systems. In 2006, it became a producer company in its own right, exploiting acquired on-the-ground experience and upgrading the technical department. From that moment on, EUROGARDIAN has been designing and producing many of its system components in-house. EUROGARDIAN products are certified under the EN12094-series standards by third-party certification institutes and meet all the requirements laid down by applicable European Directives (CPD and PED). UNI EN ISO 9001 certification guarantees the quality of the services offer.

Thanks to its investments in human and technical resources, EUROGARDIAN srl operates independently throughout the Italian territory, with a branch sales office in Bergamo.

The ample range of products in stock ensure that EUROGARDIAN srl can meet customers' every need, from simple supply of equipment to "turnkey" service. What's more, specialized personnel can provide all those after-sales services – such as recharging with extinguishing gas, periodic inspection and re-certification of gas cylinders, equipment, and software, hydraulics calculations, maintenance, overhaul, technical consulting, risk analysis, project development, training courses, and door fan tests – that are essential for guaranteeing correct system maintenance and performance over time.

The extinguishing agents used in the fire-suppression systems are inert gases (IG-01, IG-100, IG-55, IG-541), halogenated hydrocarbons (HFC227ea, HFC125, HFC23), and carbon dioxide (CO2). The extinguishing agents are all "clean" gases with zero impact on the environment and protected objects. Each "family" of gases acts on fire by different mechanisms (cooling, oxygen depletion, chemical action, etc.) and each has a specific field of application.



EUROGARDIAN srl is an ideal point of reference for technical studios and designers/engineers interested in systems of this type. State-of-the-art design and maintenance of the fire-extinguishing systems makes use of specially-developed system dimensioning software to ensure that the systems meet the requirements of Italian law and the most widely-applied European and international standards and guidelines.

EUROGARDIAN srl recovers Halon 1301 and Naf S III

www.eurogardian.com

Fire Suppression Without Residual

The Company



IG

High Pressure 300 bar



Reference Standards

System design can be conducted in accordance with various international standards, including:

- NFPA 2001 Standard on Clean Agents Fire Extinguishing Systems
- UNI EN 15004 Parts 1, 7, 8, and 9 Installazioni fisse antincendio. Sistemi a estinguenti gassosi (Fixed Firefighting Systems. Gas Extinguishing Systems)
- VdS 2380 Feuerlöschanlagen mit nicht verflüssigten Inertgasen (Fire Extinguishing Systems Using Non-liquefied Inert Gases)
- CEA 4008 Fire Extinguishing Systems Using Non-liquefied Inert Gases. Planning and Installation
- APSAD R13 Règle d'installation. Extinction automatique à gaz (Installation Specifications – Automatic Gas Extinguishing Systems)

Technical Data

Name	IG-01 Argon	IG-100 Nitrogen	IG-55 N2 50% - Ar 50%	IG-541 N2 52% - Ar 40% CO2 8%
Purity	> 99.9%	> 99.9%	> 99.9%	> 99.9%
Density at 15°C and 1013 mbar	1.69 kg/m ³	1.165 kg/m ³	1.41 kg/m ³	1.43 kg/m ³
Density with respect to air	1.38	0.97	1.17	1.19
Cylinder capacity	80 L	80 L	80 L	80 L
External cylinder diameter	267 mm	267 mm	267 mm	267 mm
Cylinder height	1870 mm	1870 mm	1870 mm	1870 mm
Complete cylinder weight	152.5 kg	137.1 kg	144.3 kg	145.3 kg
Volume of extinguishing gas in cylinder with 300 bar charge	22.57 Nm ³	19.89 Nm ³	21.15 Nm ³	24 Nm ³
Weight of extinguishing gas in cylinder with 300 bar charge	40.27 kg	24.88 kg	32.09 kg	33.10 kg
Design concentration Class A and B UNI EN 15004 (% in volume)	41.9% ÷ 51.7%	40.3% ÷ 47.6%	40.3% ÷ 47.6%	39.9% ÷ 48.1%
LOAEL (Lowest Observed Adverse Effect Level)	52%	52%	52%	52%
NOAEL (No Observed Adverse Effect Level)	43%	43%	43%	43%

Description

The IG systems use the inert gases argon and nitrogen as extinguishing agents in TOTAL FLOODING systems. Argon and nitrogen are pure, natural products present in the atmosphere. In contact with flame, they produce no type of chemical reaction and therefore no dangerous and/or corrosive decomposition products. After use, they return to the natural atmospheric cycle, causing no adverse environmental effects.

Argon and nitrogen do not damage delicate materials; they are clean, efficacious agents with no environmental impact in terms of global warming (zero GWP) or depletion of the ozone layer (zero ODP).

The extinguishing action of these gases is based primarily on lowering of the oxygen content in the area to a value of between 10% and 12%; that is, a level at which combustion cannot occur but which does not present a hazard to humans present in the area. Argon and nitrogen are dielectric, do not soil, do not pollute, cause no adverse effects, and ensure safe and efficacious protection for objects and people. Filling the cylinders is a simple matter, since these inert gases are readily available on the market. The heart of the IG fire extinguishing system is composed of one or two batteries of 80-liter high-pressure cylinders filled to a pressure of 200/300 bar.

During discharge, the initial storage pressure is reduced by means of calibrated orifices. The extinguishing gas is discharged into the protected area through a distribution network and low-pressure nozzles. Thanks to the high storage pressure, the cylinders can be positioned at a considerable distance from the areas to be protected and the same battery of cylinders can protect more than one area if suitable directional valves are installed.

Any overpressure that may form in the protected area as the extinguishing agent is discharged is reduced by one or more pressure relief devices. The valves are equipped with mobile blades with calibrated counterweights that open when the pressure inside the protected area rises above a predetermined value and then re-close to guarantee that area remains flooded for at least 10 minutes after discharge.

The integrity of any volume protected by a total flooding system must be checked to locate and efficaciously seal any significant air leaks. Leaks can result in failure to maintain the specified concentration level of the extinguishing agent for the specified period of time. Verification of leaks must be conducted via the "Door Fan Test"

Applications

- Art gallery, museum, archive
- Computer
- Control room
- Record & Storage Facilities
- Petrochemical Installations
- Pharmaceutical & Medical Facilities
- Electronics & Data Processing
- Warehouses
- Flammable liquids
- Areas normally occupied by personnel

Discharge Times

The IG system is designed – using dedicated software for calculating the cross-section diameters of the nozzle passages – to discharge the extinguishing gas into the protected area in 60 seconds. Discharge time is defined as the time needed to reach 95% of minimum design concentration..

CONSTANT PRESSURE DISCHARGE SYSTEM

Advantages:

- Reduced pressure peak during discharge
- Reduced pressure relief area
- Less turbulence, noise, vibration during discharge
- The manifold can be manufactured with SCH40 piping and ASA3000 fittings
- Reduced nominal diameter of distribution piping
- Reduced installation times
- Possibility of conversion of standard systems in constant pressure discharge systems

Advantages

- These are gases present in the atmosphere and thus readily available on the market
- Suitable for protection of occupied areas
- Does not conduct electricity
- Leaves no residues after discharge
- No potential for ozone layer depletion
- Does not contribute to increasing the greenhouse effect
- Forms no decomposition products in contact with flame
- No "fog effect" during discharge
- IG-01: suitable for protection of underfloor areas thanks to its greater density with respect to air
- IG-100, IG-55: greater maintenance time and thus less need to seal the protected area.
- IG-541 suitable for normally occupied enclosures

Certifications

The EUROGARDIAN srl ISO9001-certified quality system guarantees full product traceability. The extinguishing systems meet the requirements of the European Pressure Equipment Directive (PED - 97/23/EC). The components meet the requirements of the TPED 2010/35/UE, of the Construction Products Directive (CPD - 89/106/CE), and of the EN 12094-series standards.



IG

High Pressure 300 bar

