

# SAFEMATIC HP Arnitro

## Fixed Fire Extinguishing System based on inert gases

The SAFEMATIC HP Arnitro **Fixed Fire Extinguishing System** is a high-pressure, fully automated extinguishing system intended for the protection of closed spaces with a high cubic volume. The **SAFEMATIC HP Arnitro** makes use of inert gases, which is why it is completely safe for people, the environment, and sensitive electronic devices.

### APPLICATION

The **SAFEMATIC HP Arnitro** effectively extinguishes group A, B, and C fires in closed spaces by completely filling them with inert gas. The system works best in spaces with a volume of from approx. 400 m<sup>3</sup> to 1000 m<sup>3</sup>, in particular in:

- data centres,
- control rooms and despatching stations,
- control stations and high-voltage switching stations
- hazardous materials and flammable liquids storage areas,
- laboratories,
- museums, archives,
- art galleries,

and everywhere that the use of water-, powder-, or foam-based extinguishing systems would risk causing irreparable material losses and damage to public image or would interfere with running operations.

### CONSTRUCTION AND OPERATION

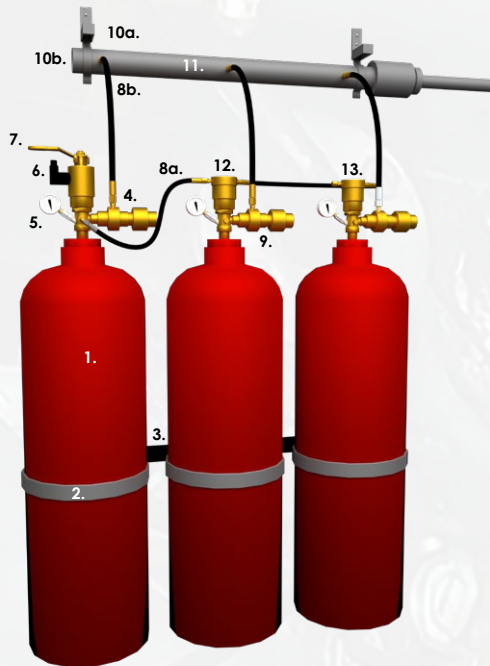
The **SAFEMATIC HP Arnitro** consists of:

- extinguishing agent supply system - reservoirs with extinguishing agent, valve assembly with electromagnetic and manual or pneumatic release; safety plate, flange and protective cap, pressure gauges with or without pressure switches, flexible couplings, adapters and fittings, check valves, collector, extinguishing agent indicators;
- system of fastening of extinguishing agent reservoirs and collector - clamps, rails, fasteners;
- control system - electrical control device including deceleration device, manual starter, manual stop device, non-electrical locking device, flexible couplings on the control line, fittings/connections on the pneumatic release line;
- extinguishing agent feeding system - pipes, couplings and fittings, pipe holders, extinguishing nozzles;
- other elements (signalling devices, information boards, instructions and others).

Each reservoir, **which makes part of the SAFEMATIC HP Arnitro system**, is equipped with constant-flow pressure regulators. These make pressure falling during outflow to a steady level of 60 bar. Such a solution prevents against sudden unloading force and allows to avoid risk of damaging extinguished objects by too high pressure and to reduce sound wave propagating during an extinguishing process. Pressure regulators also allow for use of low-pressure manifolds and pipes, which are more cost-efficient and easier to install.



The **SAFEMATIC HP Arnitro** is initiated automatically at an early stage of by the detection and control system and automated fire detection. After a hazard has been detected and appropriately confirmed by the sensors, the automated fire extinguishing process is begun. The reservoirs release a gas which is spread via dosing nozzles to the interior of the space. Simultaneously, appropriate visual and sound signalling is initiated to inform that an extinguishing operation is under way. It is also possible to manually start an extinguishing process and stop it by means of START / STOP buttons, connected to the extinguishing control system. The control system monitors the system during both standby and extinguishing actions. As an option, the SAFEMATIC HP Arnitro system can be **manually activated bypassing** the extinguishing control system by means of a manual release lever installed on the reservoir valve.



The SAFEMATIC HP Arnitro single-row system configuration

- |   |                                |
|---|--------------------------------|
| 1. extinguishing-agent reservoirs   | 9. pressure regulator          |
| 2. clamping ring on extinguishing-agent reservoirs                                | 10a. bracket for the collector |
| 3. wall-mounted fixing rails  | 10b. clamp for the collector   |
| 4. extinguishing-agent reservoir valve  | 11. collector                  |
| 5. pressure gauge including pressure switch                                       | 12. pneumatic trigger          |
| 6. solenoid trigger   | 13. relief valve               |
| 7. manual trigger   |                                |
| 8a. flexible coupling on the pneumatic (pilot) release line                       |                                |
| 8b. flexible coupling on the extinguishing agent out-flow line + non-return valve |                                |

SAFEMATIC HP Arnitro **fixed fire suppression systems** are designed according to individual requirements of a specific facility and particular needs of a Client. In the course of engineering works, optimum parameters and size of the system are determined, taking into account both safety criteria and economic considerations.

Inert gases are stored in 80l or 140l reservoirs, at 200 or 300 bar pressure (at 15°C). Due to size of an area occupied by the reservoirs, it is preferable to use 140l reservoirs at a pressure of 300 bar. Their large capacity and high operational pressure allow large quantities of inert gas to be stored in a single cylinder. This reduces number of reservoirs for the entire system, thus reducing the size of the area they occupy.

Based on the number of rows of extinguishing agent reservoirs (type of collector), **the SAFEMATIC HP Arnitro** can be a single- or double-row system. Multiple rows are allowed, provided that adequate access is provided for inspection and maintenance works.

Dimensions of piping and arrangement of extinguishing nozzles depend on a type of area to be protected. In high-ceiling rooms or technical-floor spaces, nozzles are installed on two or more planes.

#### TECHNICAL PARAMETERS OF THE SYSTEM

Reservoir emptying time	< 60s or < 120s (as required)
Time to maintain extinguishing concentration	10 min.
Operating temperature range	-20°C to +50°C
Rated voltage of the solenoid coil	24 V
Rated power of the solenoid coil	12 W
Gas operating pressure (in reservoirs)	200 or 300 bar

#### ENVIRONMENTAL WORKING CONDITIONS

SAFEMATIC HP Arnitro Fixed Firefighting Systems **are used in** closed spaces at the temperature range -20°C to +50°C. In a room to be protected, doors must be permanently closed or fitted with self-closing doors or other means to close the door automatically.

Gas reservoirs must be installed at a distance of at least 0.5 m from conventional heat sources and any combustible materials; this is to prevent their exposure on direct fire.

It is recommended that rooms - protected by **SAFEMATIC HP Arnitro** and rooms in which the extinguishing agent reservoirs are located - have been separated in accordance with the fire class of the building within which these are located.

#### EXTINGUISHING AGENTS

Inert gases are extinguishing agents of natural origin. These are gases contained in the air and their mixtures. These effectively extinguish fires of groups A, B and C, including live electrical equipment in large cubic areas (400-1 000 m<sup>3</sup>). Extinguishing with those gases includes filling a space to be extinguished with an inert gas and reducing oxygen content in the air to below 12.50%. Such a low concentration of oxygen makes it virtually impossible to sustain combustion reactions.

The group of inert gases includes:

- IG-01 - 100% of argon;
- IG-100 - 100% of nitrogen;
- IG-55 - 50% of argon, 50% of nitrogen;
- IG-541 - 52% of nitrogen, 40% of argon and 8% of carbon dioxide.

Inert gases of natural origin ensure that they are totally safe for persons and environment. These do not cause fogging in a room during triggering. Once applied, they evaporate, leaving a clean and dry surface. Inert gases do not conduct electricity.



**CERTIFICATES:**

- 1. Technical Approval AT-09-0459/2015**, issued by the Scientific and Research Centre for Fire Protection
- 2. Certificate of Conformity ITB-2425/W**, issued by Certification Department of the Building Research Institute
- 3. National Certificate of Constancy of Performance No. 020-UWB-2425/W**, issued by the Certification Department of the Building Research Institute



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