

AKRONEX[®]

INTERNATIONAL



AKRONEX INERT

Fire Suppression Systems

Worldwide Solutions



www.akronex.com



AKRONEX INERT Fire Suppression Systems

With the push toward the environment, inert gases are a good choice as they are the most environmental of all of the Clean Agents. Inert gases are defined as using one or more of the gasses Nitrogen, argon and CO₂ is also found in one of the inert gas blends. Inert gasses work by removing the oxygen in the hazard to a point where it will not support a fire, but still high enough to support life. The refilling cost is more economic than the other extinguishant clean agents due to its advantage of collectability from atmosphere.

AKRONEX INERT Fire Suppression System does not damage the equipment and electronic devices in the environment during the extinguishing process and minimizes the damage after fire. It leaves no residue.

It is one of the most ideal extinguishing systems for the fire safety of especially in the electronic device containing rooms, electrical panel rooms and the museums where the valuable materials are located. AKRONEX INERT Gas Extinguishing Systems are designed in accordance with the TS EN 14005, ISO 14520 and NFPA 2001 standards.

There are 4 Types of mixtures used in AKRONEX Inert Fire Suppression Systems;

- IG-01 Argon 100%
- IG-55 Argon 50%, Nitrogen 50%
- IG-55 Nitrogen 100%
- IG541 Argon 40%, Nitrogen 52%, CO₂ 8%

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It is used for the protection of large spaces such as archives, museums, libraries and warehouses. As a result of the application does not leave toxic substances, is not electrically conductive, does not cause loss of vision during application and does not harm human health.

AKRONEX INERT Gas Extinguishing Systems are available in two different working pressures: 200

bar and 300 bar. The 300 bar system requires fewer cylinders for the same protection . Therefore, the system requires less space.

Rilling of the systems can be easily carried out in gas filling plants worldwide. Multiple spaces can be protected with a single system battery with directional valve connected systems.

Inert Gas Agent Quality Requirements

Composition	Gas	IG - 01	IG - 100	IG - 541	IG - 55
Composition, % by volume	N ₂		Minimum 99.9%	52% ± 4%	50% ± 5%
	Ar	Minimum 99.9%		40% ± 4%	50% ± 5%
	CO ₂			8% ± 1% - 0.0%	
Water content % by weight		Maximum 0.005%	Maximum 0.005%	Maximum 0.005%	Maximum 0.005%

Advantages

- NFPA 2001, ISO 14520 - TS EN 15004, and CEA 4008 compliant design.
- Suitable for use in places with human traffic.
- Provides economical solutions with directional valves in multiple locations.
- Easy to find local facility for refilling.
- Leaves no residue.
- According to EPA data, it does not harm ozone and does not cause greenhouse effect.



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Fire Suppression Systems

Activity Areas

- Data Center, Telecommunication, Information Technologies
- Energy Sector and Auxiliary Industries
- Museums, Libraries, Schools, University Campus
- Health Industry
- Public Institutions
- CCTV Rooms
- Manufacturing Sector, Logistic Centers
- Oil, Gas and Hydrocarbon Industry
- Wind Power Plants, Hydro Power Plants, Solar Power Plants,
- Geothermal Power Plants



It extinguishes the fire by removing the oxygen from the fire triangle. The extinguishing principle is based on the suppression of combustion by reducing the oxygen concentration to 15%. System design calculations are carried out by VDS approved hydraulic calculation software. The extinguishing concentration must be reached within a maximum of 60 seconds. It means that we can increase the distance between the cylinder layout and the nozzle. By using a low pressure switch on each cylinder, the amount of gas in each cylinder connected to the manifold can be monitored continuously. All products used in the system comply with TS ISO 14520 - TS EN 15004. All cylinders are CE marked and “w” marked according to PED and TPED directives.

Physical Properties of Inert Gas Agent (U.S. Units)

Physical Property	Units	IG - 01	IG - 100	IG - 541	IG - 55
Molecular weight	N/A	39.9	28.0	34.0	33.95
Boiling point at 760 mm Hg	°F	-302.6	-320.4	-320	-310.2
Freezing point	°F	-308.6	-346.0	-109	-327.5
Critical temperature	°F	-188.1	-232.4	N/A	-210.5
Critical pressure	psia	711	492.9	N/A	602
Specific heat, vapor at constant pressure (1 atm) and 77 °F	Btu/lb °F	0.125	0.445	0.195	0.187
Heat of vaporization at boiling point	Btu/lb	70.1	85.6	94.7	77.8
Relative dielectric strength at 1 atm at 734mm Hg, 77 °F (N ₂ = 1.0)	N/A	1.01	1.0	1.03	1.01
Solubility water in agent at 77 °F	N/A	0.006%	0.0013%	0.015%	0.006%

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The relief damper quantity and dimensions to be used in the application are determined according to the results of hydraulic calculation depending on the material properties of the structural elements such as walls, doors and similar in the places where the AKRONEX INERT fire suppression system is applied.

Physical Effects of Inert Gas Agents

* Based on Physiological effects in humans in hypoxic atmospheres. These values are the functional equivalents of NOAEL and LOAEL values and correspond to 12 percent minimum oxygen for the no effect level and 10 percent minimum oxygen for the low effect level.

Agent	No Effect Level* (%)	Low Effect Level* (%)
IG-01	43	52
IG-100	43	52
IG-55	43	52
IG-541	43	52

The design of the valves does not allow minor leaks that may occur as a result of accidents to drain the entire system. This feature allows all gas in the cylinder to be tested without discharging when the system is connected to the installation or after filling.

Potential Environmental Impacts

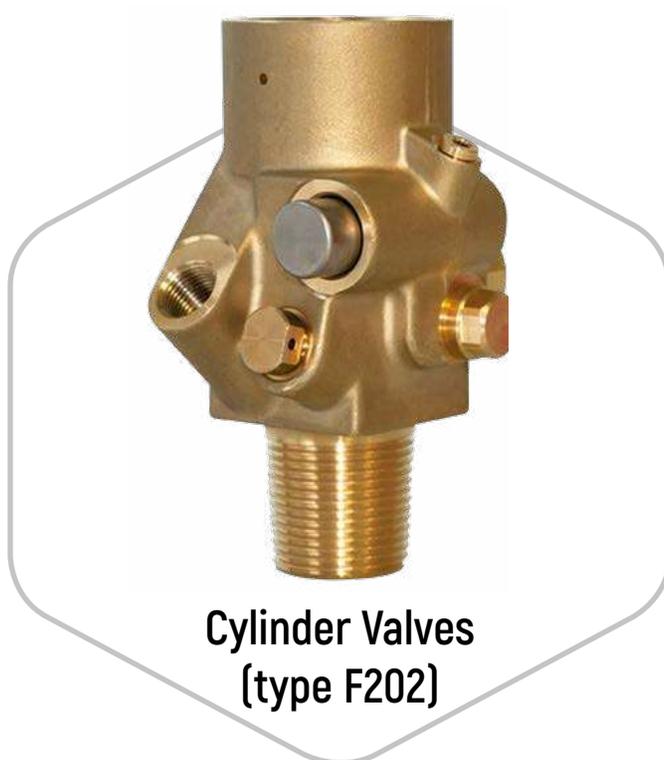
Agent	GWP (IPCC 2013)	ODP
FIC-1311	≤1	0*
FK-5-1-12	<1	0
HCFC Blend A	1500	0.048
HFC Blend B	1400	0
HCFC-124	527	0.022
HFC-125	3170	0
HFC-227ae	2250	0
HFC-23	12,400	0
HFC-236fa	8060	0
IG-01	0	0
IG-100	0	0
IG-541	0	0
IG-55	0	0



Not: GWP is reported over a 100-year integrated time horizon.

*Agent might have a non-zero ODP if released at altitudes high above ground level.

AKRONEX INERT VALVES



* Seat diameter - 12mm

Article no.	System type	Inlet thread	Outlet thread	Burst disc	Gauge port?
F2020xx (ATEX version F2026xxx)	Chemical gases	ISO 11363-1 25 E	W21,8x1/14"	50 bar / 90 bar**	Yes
F2021xx (ATEX version F2027xxx)	Carbon dioxide			190 bar / 250 bar**	No
F2022xx (ATEX version F2028xxx)	Inert gases (200bar) *		W21,8x1/14" or M24x1,5mm	270 bar / 300 bar**	Yes
F2023xx (ATEX version F2029xxx)	Inert gases (300bar) *			405 bar**	

* Variants F2022xxx/F2023xxx are also suitable for Constant Pressure Systems

* Other burst discs on request



AKRONEX INERT VALVES

Solenoid Cylinder Valves / Pilot Valves (Type F203)



Total Discharge Valves:

Article no.	System type	Inlet thread	Outlet thread	Burst didcd	Gauge port?
F20300xx	Chemical gases	ISO 11363-1 25 E	W21,8x1/14"	50 bar / 90 bar**	Yes
F2031xx (ATEX version F20370xx)	Carbon dioxide			190 bar / 250 bar**	No
F20320xx (ATEX version F20380xx)	Inert gases (200bar) *		W21,8x1/14" or M24x1,5mm	270 bar / 300 bar**	Yes
F20330xx (ATEX version F20390xx)	Inert gases (300bar) *			405 bar**	

Total Discharge Valves:

Article no.	System type	Inlet thread	Outlet thread	Burst didcd	Gauge port?
F20305xx	Chemical gases	ISO 11363-1 25 E	W21,8x1/14"	50 bar / 90 bar**	Yes
F20215xx (ATEX version F20375xx)	Carbon dioxide			190 bar / 250 bar**	No
F20225xx (ATEX version F20385xx)	Inert gases (200bar) *		W21,8x1/14" or M24x1,5mm	270 bar / 300 bar**	Yes
F20235xx (ATEX version F20395xx)	Inert gases (300bar) *			405 bar**	

* Variants F2022xxx/F2023xxx are also suitable for Constant Pressure Systems

* Other burst discs on request

AKRONEX INERT VALVES

Actuators (type F112)

Actuators for F202 Valves



A

solenoid actuator

Connection for additional actuators

B

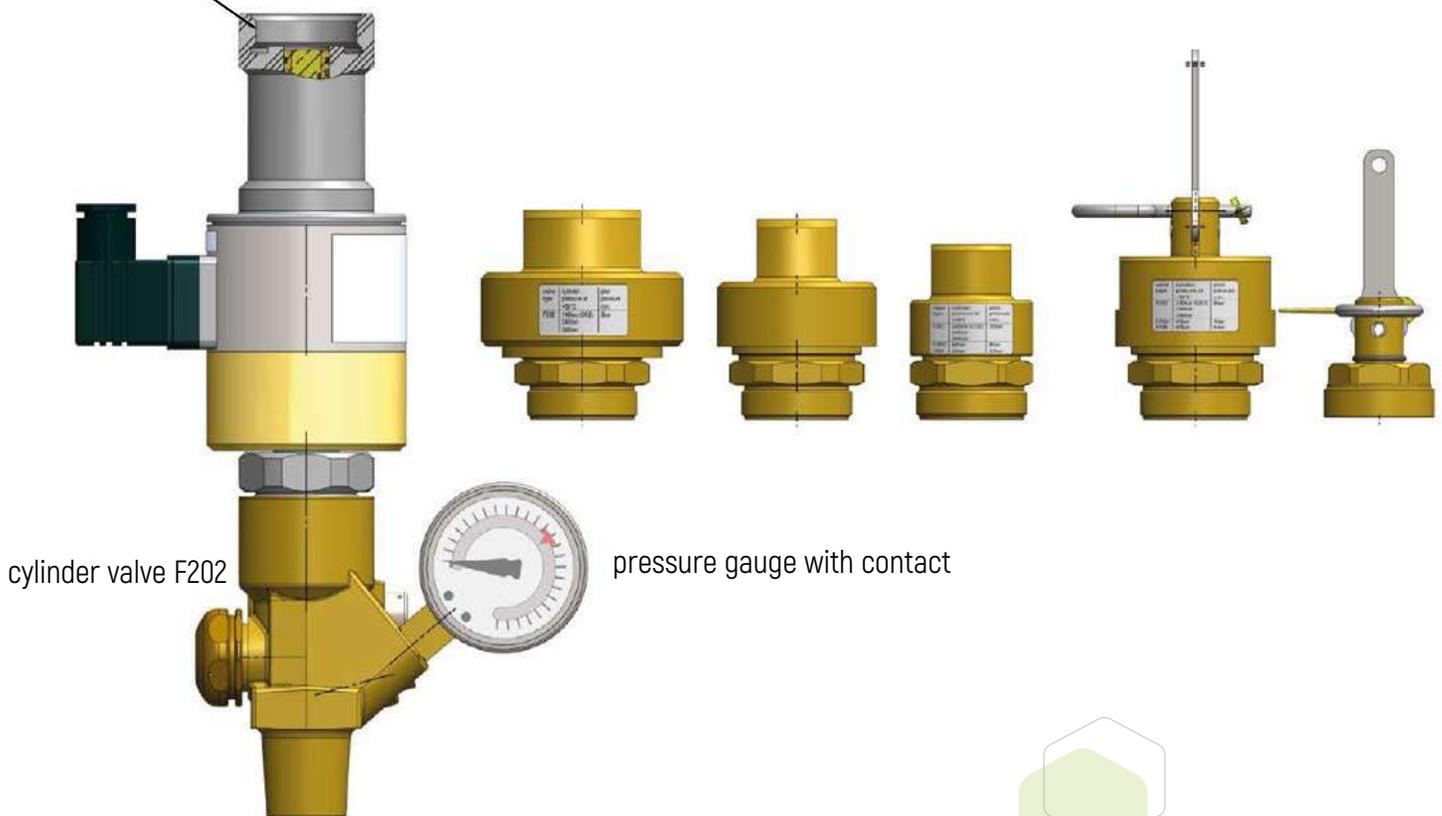
pneumatic release device

C

pneumatic - manual release device

D

manual release device



cylinder valve F202

pressure gauge with contact

AKRONEX INERT VALVES



A



B



C



D

Article no.	Type	Actuation			Remark
F112 0004	A	electrical	Refer to the instruction manual of the electrical actuator for all technical details		
F112 0005	D	manual			
F112 0006	C	pneumatic / manual	minimal (nominal) pilot pressure 8bar (*)	maximum pilot pressure (max. working pressure) 300 bar	
F112 0007	B	pneumatic	minimal (nominal) pilot pressure 8bar (*)	maximum pilot pressure (max. working pressure) 300 bar	
F112 0008	B	pneumatic	minimal (nominal) pilot pressure 5bar (*)	maximum pilot pressure (max. working pressure) 200 bar	
F112 0009	C	pneumatic / manual	minimal (nominal) pilot pressure 8bar (*)	maximum pilot pressure (max. working pressure) 300 bar	1 plug screw
F112 00010	B	pneumatic	minimal (nominal) pilot pressure 8bar (*)	maximum pilot pressure (max. working pressure) 300 bar	1 plug screw
F112 00011	B	pneumatic	minimal (nominal) pilot pressure 20bar (*)	maximum pilot pressure (max. working pressure) 360 bar	

* For system pressure of p1=300 bar (360bar at +50°C)

* Outher burst discs on request

AKRONEX Environment Friendly Fire Extinguishing Systems

While the world is making rapid technological progress, at the same time people are in a race against adverse effects on ecological balance.



AKRONEX International Fire Engineering Inc.

AKRONEX International was established in 2007 and operates in the fire sector, which has become a must in technology age.

Our company, which specializes in "Automatic Fire Extinguishing Systems", attaches great importance to the research and development which is the necessity of information age, and follows the technological developments in the world closely and adopts the principle of producing service with the latest products with international qualifications and approvals.

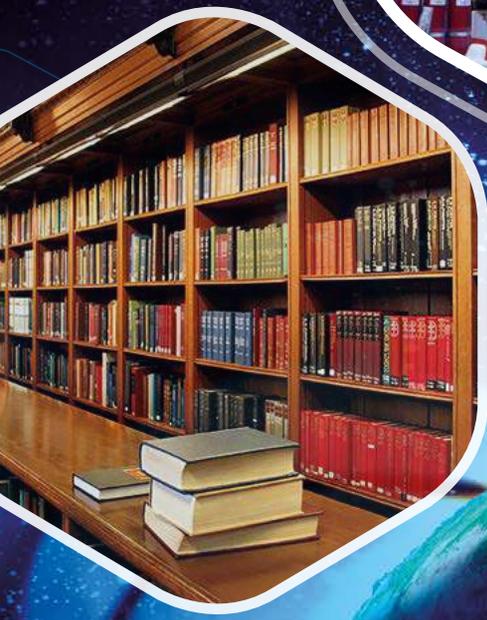
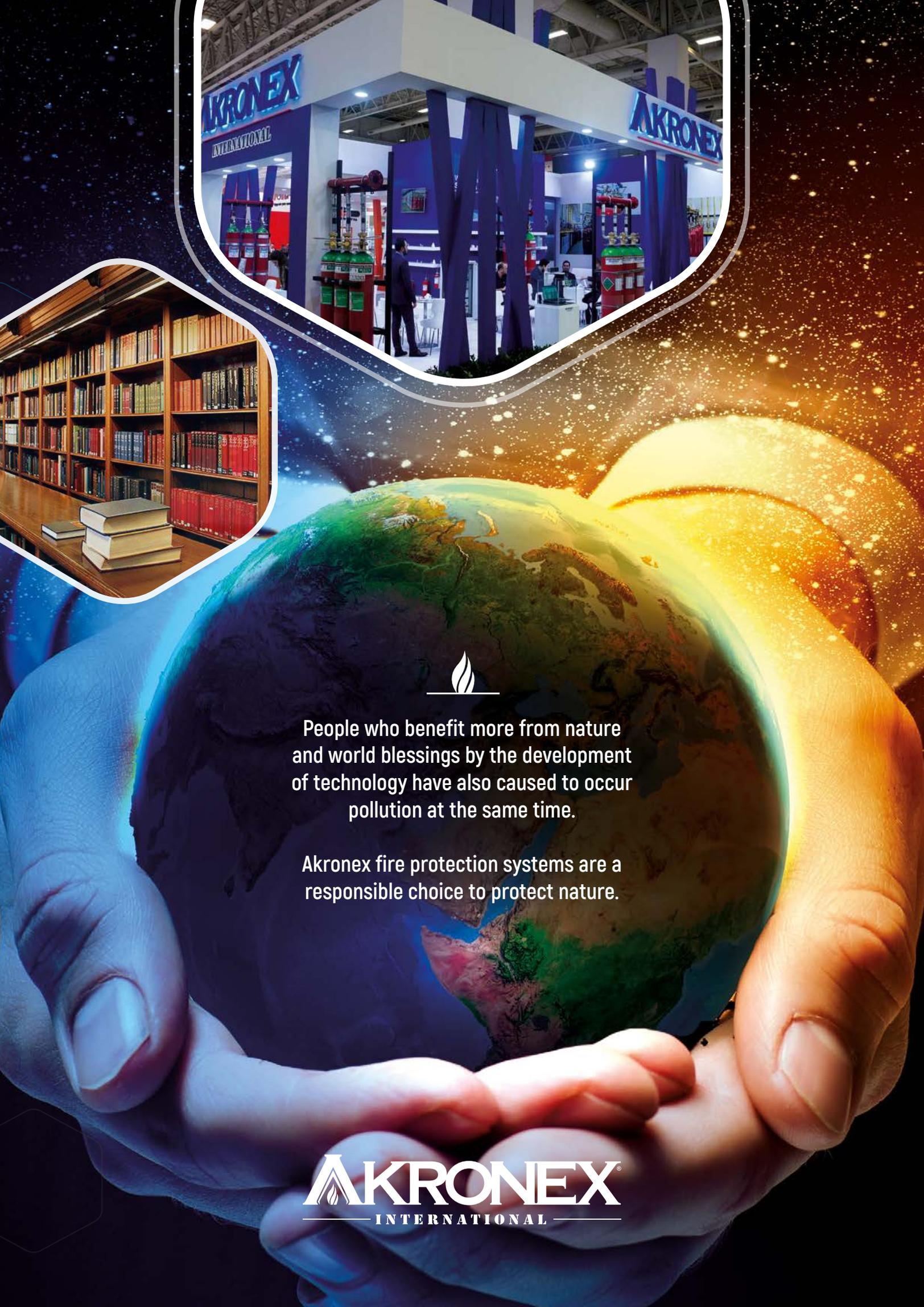
AKRONEX International, which exports to many regions of the world, continues to increase its production and communication through this export network.

OUR MISSION

AKRONEX International has made the principle of producing environment friendly products with constantly thinking of innovation by investing in research and development to make continuous production of national and international standards.

OUR VISION

By providing fully promote our brand communication, strengthened in the international area, Becoming Turkey's leading manufacturers in the production of Automatic Fire Extinguishing Systems and compete with the world-class brands.



People who benefit more from nature and world blessings by the development of technology have also caused to occur pollution at the same time.

Akronex fire protection systems are a responsible choice to protect nature.

