Automatic Fire Extinguishing System by Gas

Heat Sensing Tube Type

SANGWON Engineering Co.,Ltd.

What is FireDeTec System?

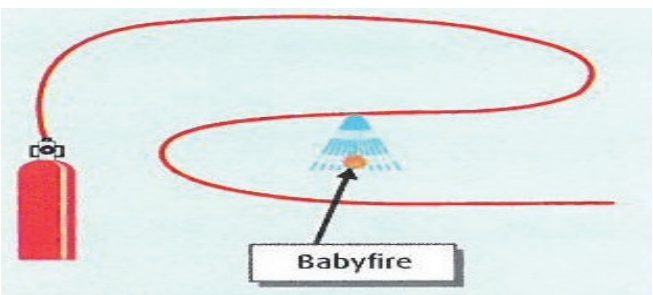
- Detection and fire-extinguishing through linear tube line
- Uses the tube of high-tech polymer material
- Excellent performance under tough environment (Long-time resistance, Flexibility, Temperature sensitivity)
- In case of fire, the tube bursts at the high temperature part and chemical is sprayed Fire suppressed

Advantages of FireDeTec System

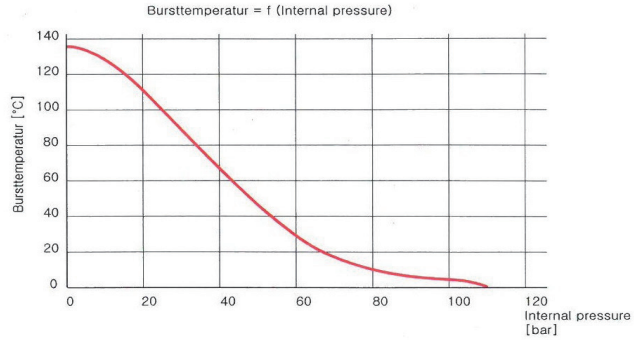
- Protection through linear sensing line
- Quick action
- 24-hour constant protection
- No need for additional power source
- Quick fire-suppression at the early stage by high pressure spray of 16bar
- Flexible tube material enables to apply the product to various places
- Minimizes damages
- Simple maintenance

Direct system

Fire can be extinguished at the early stage by spraying fire extinguishing agent at the high pressure of 16bar accurately at the point of ignition



Burst Temperature per Pressure inside Tube



Special Features of FireDeTec System

- Reduces maintenance cost / Intelligent maintenance
- Minimum installation cost
- Easy-to-install [integrated into the valve body]
- Efficient in maintenance [Easy to calibrate, Easy to read-out]
- Long signal transmission distance
- Highest reliability
- Safe working environment
- Applicable to various spaces [No scales required]

Operating Principles of FireDeTec System

- Initial fire outbreak (5 seconds)
- Sensing by tube and melting, gas emission, action against fire (10 seconds)
- Fire suppression (15 seconds)

Novec-1230 (Characteristics of Fire Extinguishing Agent)

- As Novec-1230 has excellent electrical insulation property at both of the liquid and gas states, the spray of it does not give any damage to electrical or electronic equipment under operation at all.
- **High dielectric constant** - Help with stabilization by reducing strength of electric field
- **Water insoluble** - The fire extinguishing agent has very little water solubility.
- **High insulation factor** - Excellent for blocking high current by higher insulation performance than SF6 gas
- **No toxicity** - No discharge of toxic substances of chemical reaction
- **Nonconductive material** - Nonconductive material with no electrifying

Environmental Properties of Halon 1301 and Alternatives

Properties	Halon 1301	Novec 1230	HFC-125	HFC-227ea	HFC-23
Ozone Depletion Potential(ODP)	12.0	**0.0**	0.0	0.0	0.0
Global Warmig Potential(GWP)	6900	**1**	3400	3500	12000
Atmospheric Life Time(years)	65.0	**0.014**	29.0	33.0	260
Note1) SNAP(Yes/No)	N/A	**Yes**	Yes	Yes	Yes

Note 1) Ozone Layer Depleting Substance Regulation Program of EPA

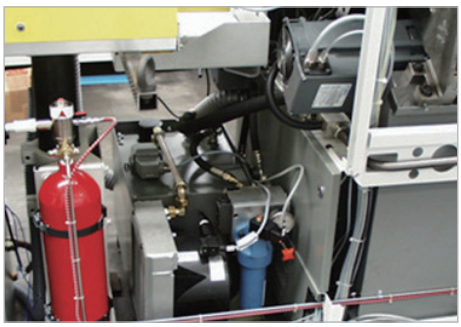
Detailed Structure and Functions of Automatic Fire Extinguishing System

Division	Other Brands	Sangwon Engineering	Improvement Effects
Sensing part	Fire Sensor, receiver and piping are separately needed (multiple path)	Heat sensing tube type (for both purposes of sensing/discharging part)	- No need to install additional operation power source - Operational even at the time of power failure - Minimum false operation
Fire extinguishing agent discharging part	Glass bulb head type		- Prevents damages due to external force
Separation distance from point of ignition	0.5~2m or longer (installed at the upper part of Switchboard)	Within 0.1m	- Thanks to insulation property of the tube, it can be installed inside distribution board - Direct fire extinguishing of point of ignition - Minimizes damages by fire suppression at the early stage
Main power supply shut off function	Not adopted	Shuts off main power supply in the link with sensing part	- Prevents secondary ignition
Installation applicability	space of EPS/TPS	Applicable to whole areas	- Clear the limitation of installation space
Surveillance function	On-site alarm function	On-site/Remote alarm function	- Establishment of one-stop operating unmanned surveillance system - Quick action against fire
Monitoring function	Multiple linkage type (complicated)	Simple all-in-one type	- Easy to check the situation and to act quickly such as sensing/discharging
Fire extinguishing agent used	HFC-227ea HFC-23	3M's Novec-1230	- Minimum atmospheric life time - Minimum global warming potential - High insulation factor
Sensing method	Easy melt metal glass bulb type	Heat sensing tube type	- Improves reliability on operating temperature
System interoperability	No system interoperability	Centralized control through pressure switch and link to external system are available	- Flexibility to existing equipment - Interoperability with central system
Validation of main materials	Type approved by KFI	- Type approved by KFI - UL and FM approved	- Improves reliability for customers

Expanded Application of Automatic Fire Extinguishing System

- **Switchboard and Control Part** – Switchboard, Computer server box, Data processing device
- **Industrial machine and equipment** – EDM equipment, CNC equipment, Lathe, Welding equipment, etc.
- **Large size machine and vehicle** – Inside of different vehicles such as bulldozer, fork lift, ambulance and so on
- **Experimental machinery** – Chemical storage, Chemical storage box, Combustion experiment device and so on
- **Medical Instrument** – Storage places of flammables, places vulnerable to fire and so on

Switchboard and Control Part



Industrial machine and equipment

Large size machine and vehicle

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