

SURGE PROTECTION



The background of the slide is a photograph of an offshore oil rig at sea. The rig is a complex structure of metal platforms and pipes, supported by several legs extending into the water. The sky is overcast and grey, and the water is dark with some ripples. The rig is positioned on the right side of the frame, with its structure extending towards the center.

Intrinsically safe Surge Protection Devices

Surge protection

Overvoltages

POSSIBLE CAUSES



- Atmospheric discharge
- Electrostatic discharge
- Failures, loads switching of industrial processes

Surge Protection Solutions

Why not fuses?

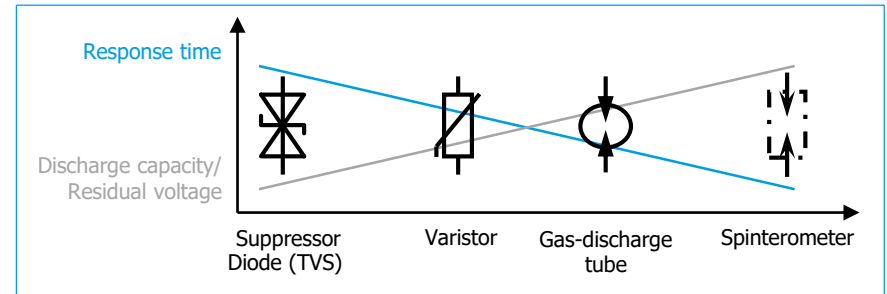
- 1) Fuses are not fast enough: Response time in milliseconds (ms)
 - Discharge occurs in microseconds (μs - 1000 time faster)
- 2) Application stops after the event. Replacement needed
 - Normally closed circuit
 - SPDs are normally open



Other protection types

A combination of different protection typologies grants:

- Better response time
- Higher discharge capacity
- Automatic reset



Overvoltages

PROTECTION SYSTEMS

The LPS (Lightning Protection System) consisting of ground connections and shielding used to protect the buildings, does not protect electronic devices.

A Surge Protection Device (SPD) has to be installed.

An SPD protects against:

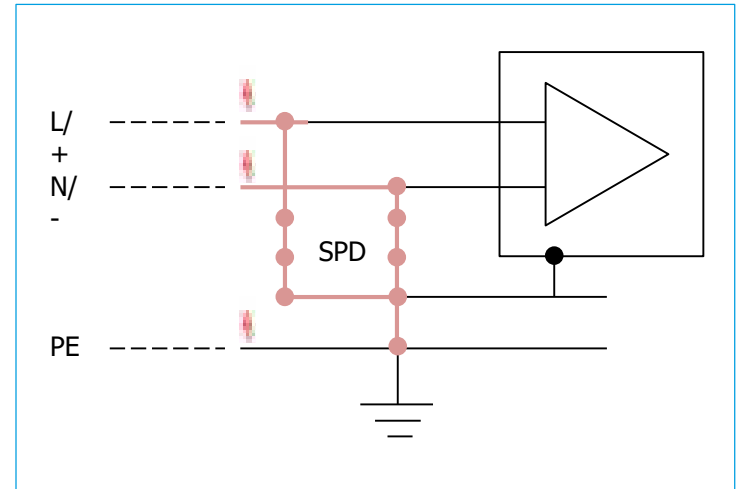
- Overvoltages caused by lightnings, direct or indirect through connection cables
- Overvoltages caused by magnetic coupling with other apparatus

Intrinsically Safe Surge Arrester

HOW DOES IT OPERATE

It works as a switch that turns off the surge voltage for a brief time. By doing so, a sort of short circuit occurs surge currents can flow to ground or to the supply network.

This short circuit only lasts for the duration of the surge voltage event, typically a few microseconds. The equipment to be protected is thereby safeguarded and continues to work unaffected.



Isolators and/or SPD?

SPD

Suppresses a surge and dissipates it before it reaches and destroys critical components.



Isolators

Isolators stop transients even if a very powerful transient can still damage the isolator.
It blocks the DC component of the surge.



The use of SPD depends on application, such as distance from the sensor, location etc.

For total protection both isolator and SPD must be used.

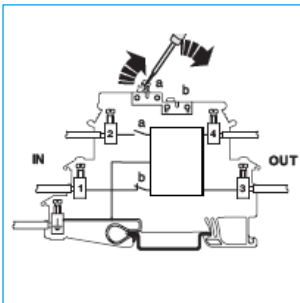
Intrinsically safe Surge Protection Devices

D9000 Series



Intrinsically Safe Surge Arrester

D9024, DIN-RAIL MOUNTING



- **Easy maintenance:** Integrated knife disconnection technology for each channel
- **Quick wiring:** Grounding path via contact to DIN rail
- **Reduced spare inventory:** Surge protection for most I/O signals; AI, AO, DI, DO. Nominal 24V DC, maximum 36V (Both I.S. And N.I.S.)
- **Increase discharge capacity and reduce response time:** 2-stage protective circuit (Diode, Gas-Discharge Tube)
- **Unlimited IS applications:** Input from Zone 0 (Zone 20), installation in Zone 1 and 2
- **Fits in any SIL loop:** SIL3 Certification
- **Protection Level:** up to 20 KA
- **Local & remote faster maintenance reaction time:** Versions available with fault indication

Intrinsically Safe Surge Arrester

D9034, DIN-RAIL MOUNTING



- **Easy maintenance:** Integrated knife disconnection technology for each channel
- **Quick wiring:** Grounding path via contact to DIN rail
- **Reduced spare inventory:** Surge protection for most I/O signals; AI, AO, DI, DO. Nominal 24V DC, maximum 36V (Both I.S. And N.I.S.)
- **Increase the Discharge capacity and reduce the response time:** 2-stage protective circuit (Diode, Gas-Discharge Tube)
- **Unlimited IS applications:** Input from Zone 0 (Zone 20), installation in Zone 1 and 2
- **Fits in any SIL loop:** SIL3 Certification
- **Protection Level:** up to 20 KA
- **Simple testing and documentation, reduced downtime:** Hot Swap Plug module
- **Safe disconnection and signaling in case of overload**

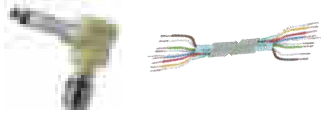





Intrinsically Safe Surge Arrester

D9324, FIELD MOUNTING



- **Full protection for the sensor:** Provides surge protection for floating I/O signal circuits in screw-on modules with IP67 protection for sensor heads. Connection 1/4 NPT
- **Reduced spare inventory:** Surge protection for most I/O signals: AI, AO, DI, DO. Nominal 24V DC, maximum 36V
- **Increased Discharge capacity and reduced response time:** 2-stage protective circuit (Diode, Gas-Discharge Tube)
- **Fits in any SIL loop:** SIL3 Certification
- **Protection Level:** up to 20 KA
- **Local & remote Faster maintenance reaction time:** Versions available with Fault Indication

When to use what

	Hazardous Area	Safe Area
<p>Long distance Both Sensor and DCS sides are protected</p>	 <p>Field Sensor with screw-on SPD + Interconn. cables</p>	 <p>SPD (DIN-Rail) + I.S. Barrier</p>
<p>Long distance Both Sensor and DCS sides are protected</p>	 <p>Field Sensor + SPD (DIN-Rail) + Interconn. cables</p>	 <p>SPD (DIN-Rail) + I.S. Barrier</p>
<p>Short distance Just DCS side is protected</p>	 <p>Field Sensor + Interconn. cables</p>	 <p>SPD (DIN-Rail) + I.S. Barrier</p>

Technology for safety

GMI company profile



Safety, performance and reliability

OUR PRODUCTS, OUR COMMITMENT

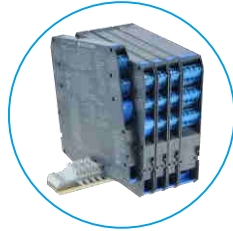
GM International designs, engineers and manufactures a complete range of **Intrinsically Safe and SIL Certified Devices**.

For automation packages, DCS - ESD - FGS - BMS - HIPPS - PLC - SCADA - MARINE,

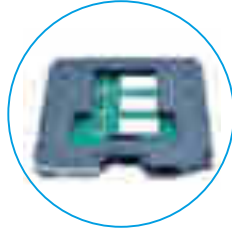
in several industrial sectors: Oil and Gas, Petrochemical, Pharmaceutical, Fertilizer, Mining, Food.

- **40 years of Experience**
founded in 1993,
former Elcon Instruments
- **100% Internal Production**
in State-of-the-Art facilities
near Milan, Italy
- **Global Player**
with presence in 5 continents

GMI Safety Solutions



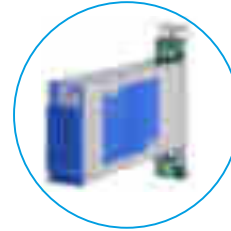
IS barriers



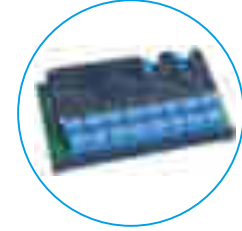
Safety Relays



Isolators



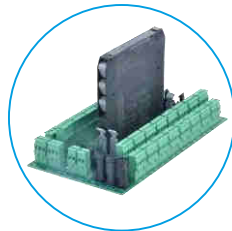
Power supplies



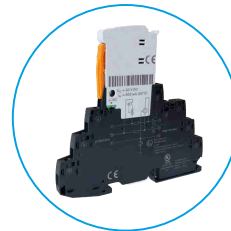
Multiplexers



Termination
Boards



HART Multiplexers



Surge protectors



Loop indicators



FS Training
and Services

Think local, act global

WORLDWIDE PRESENCE



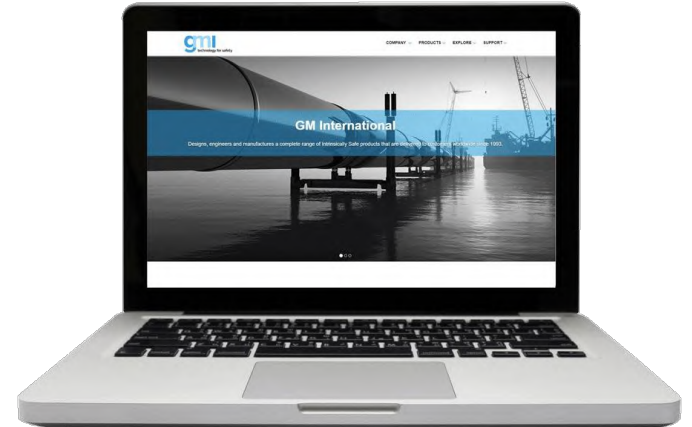
08	direct subsidiaries
78	local authorized distributors
200	total Staff
18	FSE courses per year
1000_s	of installations in all continents

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