

Electrostatic Hazard Control in Process Industry using Multi Channel Earth Monitor

Basic of Static Electricity

The Generation of Static Electricity and build of its charge is present all around us. Due to build up and accumulation of static charge, a risk of spark due to electrostatic caused ignition is always there. However, if a organization handles, stores, processes any flammable material, the effect due to accumulated charge leads to fire and explosion.

Due to vapor, gases and air borne dust present in atmosphere in any process industry, in many cases, there are always possibility of fire and explosion due to static caused ignition. However, there are various protective measures stated in IS7689 "Guide for Control of Undesirable Static Electricity" and NFPA 77 "Recommended Practice of Static Electricity". By adopting or implementing such control measure as per relevant standard across any process industry those who handles, process, store flammable material, a static caused ignition can be control or eliminated and thus can prevent fire and explosion due to static electricity to the plant equipment and people.

In process industry, paints, coating, corrosive surface, seals and other non conductive materials can make plant equipment insulated from main earth and therefore static charge dissipation path can be broken easily. This broken dissipative path allows static charge accumulation easily and well above minimum ignition energy (MIE) of flammable material.

In process industry, many general solvents used in process are of well below 1 mJ (MilliJoule). If the accumulated charge reaches near to MIE of material used, it is very much seldom that electrostatic caused ignition can occur and can lead to fire and explosion.

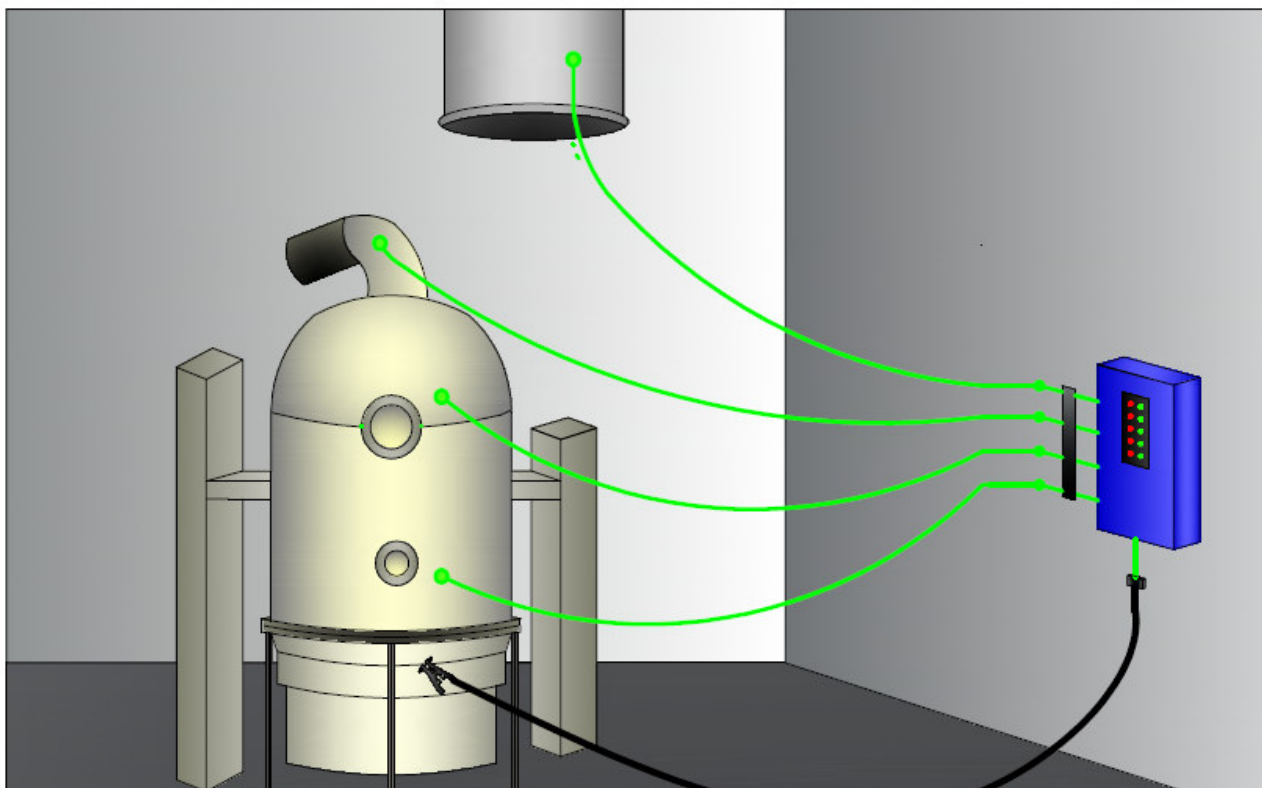
To avoid such electrostatic caused ignition, Static Control Consulting Engineers, Vadodara recently developed "MULTI CHANNEL EARTH MONITOR". The Multi Channel Earth Monitor is most suited for monitoring of static dissipation path of any conductive installation. The Multi Channel Earth Monitor is of intrinsic safe in nature. A typical / possible application / installation of Multi Channel Earth Monitor are as follows.

Electrostatic Hazard Control & Monitoring of Fluid Bed Drier

In Pharmaceutical industries or food industries, Fluid Bed Drier are common plant equipment. There are many interconnected metallic part to Fluid bed drier like bowl, filter, duct etc., which are disconnected on regular basis as per site requirement. This plant may have insulated gasket between them and can isolate that part from main earth. Even in regular maintenance practice it is time consuming to ensure proper dissipation

path. However, many responsible organizations prefer online monitoring system.

It is also stated in IS7689 and NFPA 77 that all conductive plant equipment used in hazardous area must have resistance to earth path less than 10 Ohm all the time.



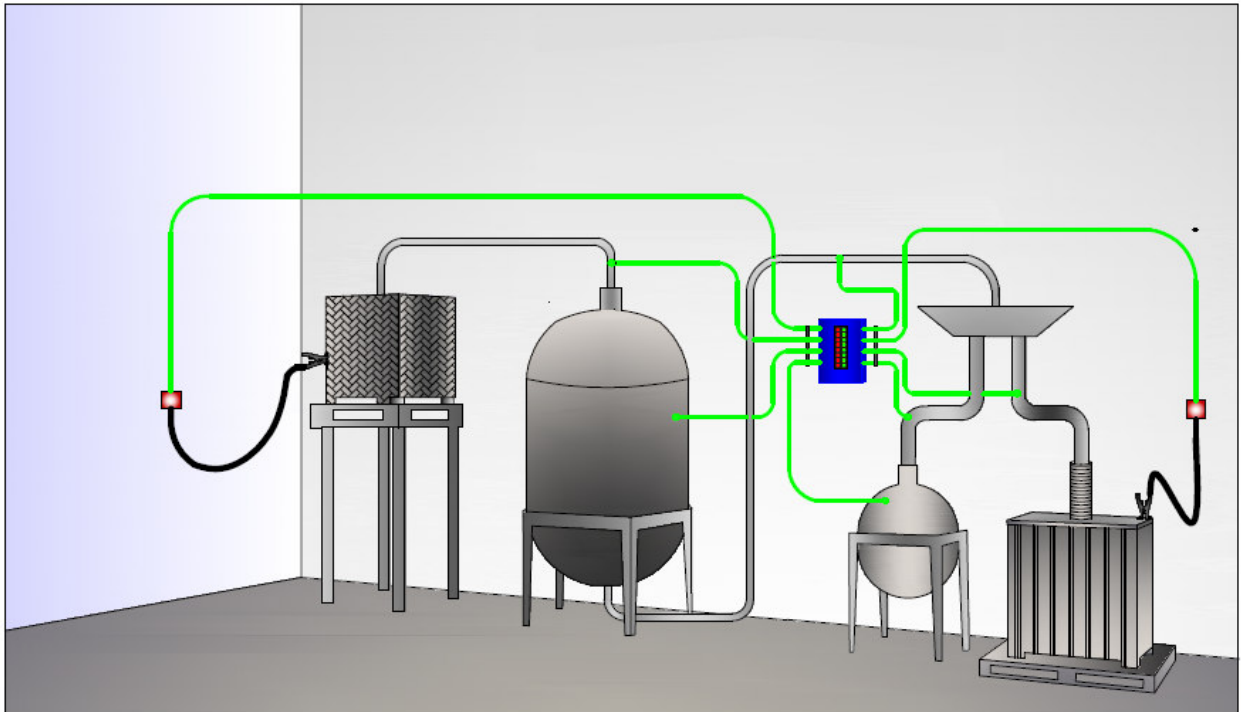
Electrostatic Hazard Control & Monitoring in Clean Room Application

In Clean room of Pharmaceutical industries or food industries, there are many interconnected metallic part to it which are disconnected on regular basis as per site requirement.

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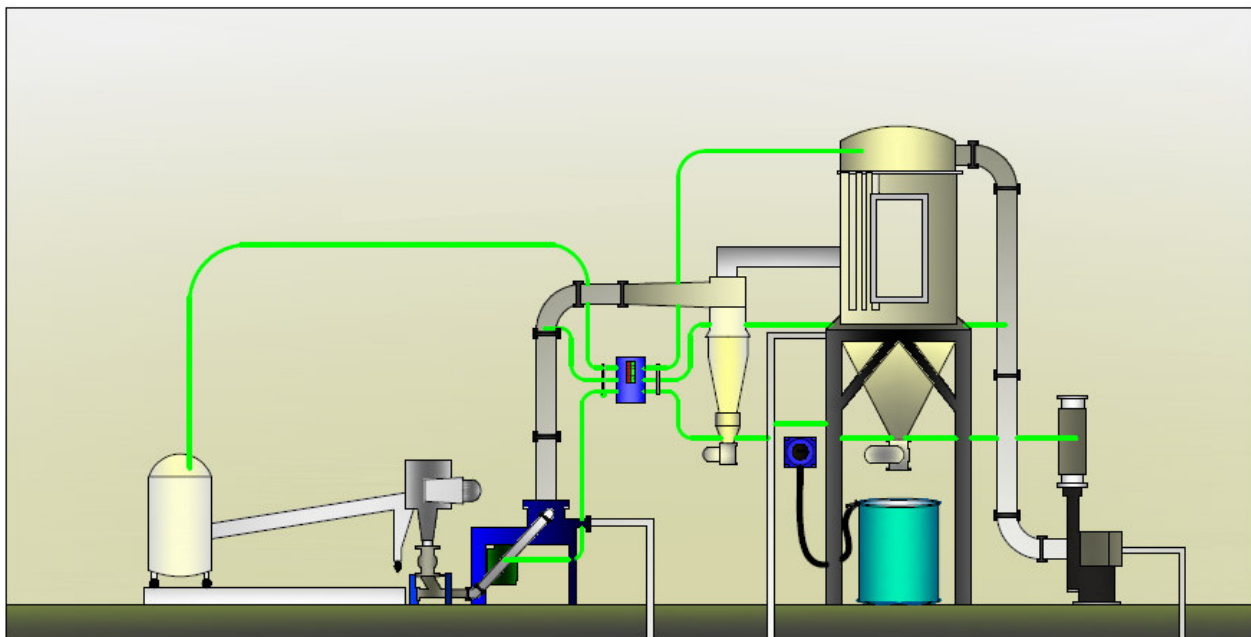
Electrostatic Hazard Control & Monitoring in Powder Processing Area

Many organizations handle powder processing area and may have many interconnected metallic part to it which are disconnected on regular basis as per site requirement.

This plant may have insulated gasket between them and can isolate that part from main earth. Even in regular maintenance practice it is time consuming to ensure proper dissipation

path. However, many responsible organizations prefer online monitoring system.

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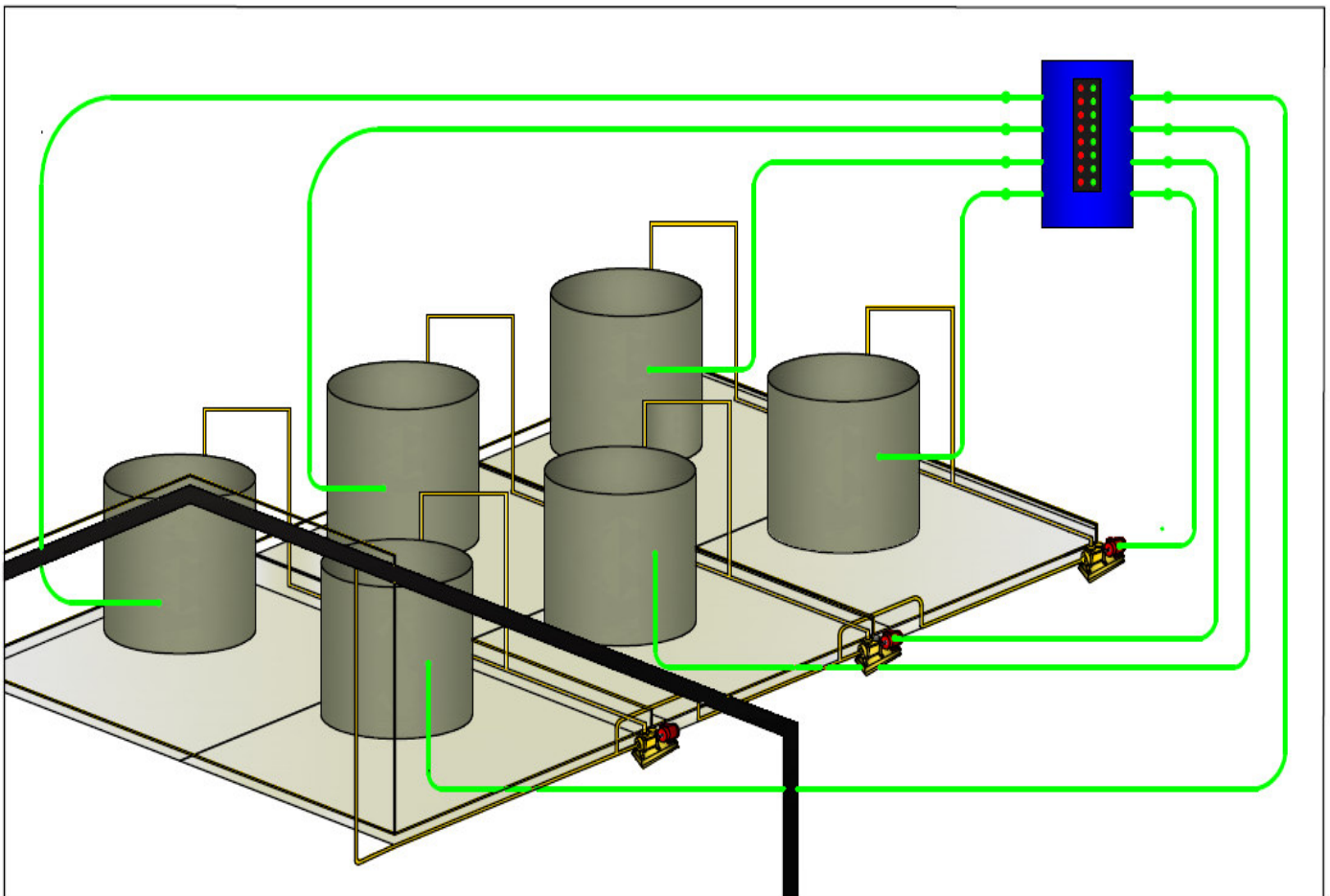


Electrostatic Hazard Control & Monitoring at Storage Tank Farm

In process industry, solvents of low Minimum Ignition Energy are handles, stores, transfers and processes on daily basis. As a good maintenance practice, an online monitoring system can be installed which enhances safety and

engineering practices to responsible organization.

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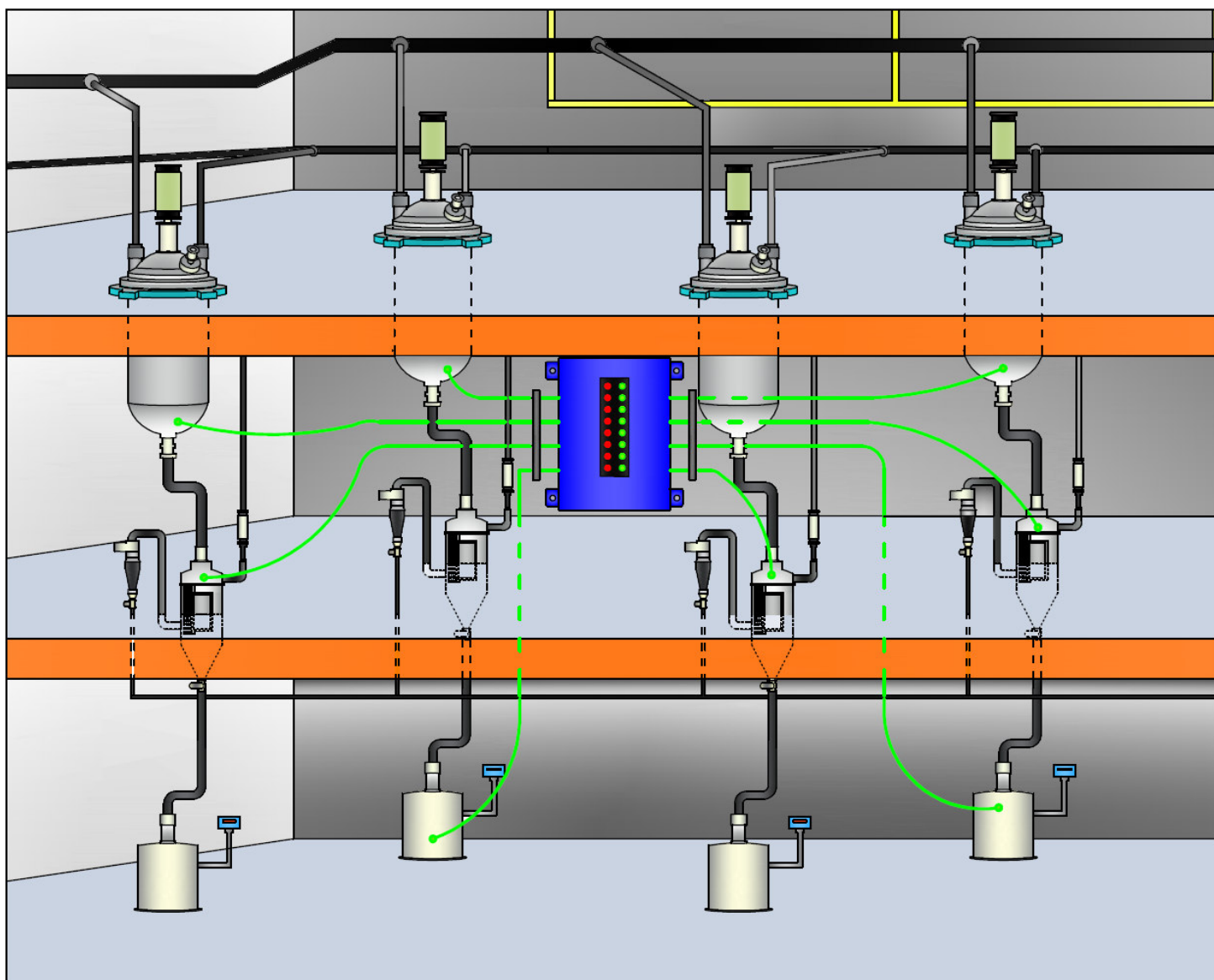
Electrostatic Hazard Control & Monitoring at API Manufacturing

In process industry, solvents of low Minimum Ignition Energy and powders are processes at plant site in various metallic plant equipments. These metallic plant equipments like, reactor, vessels, pipe lines, pumps, centrifuge etc. These plant equipments are often operated in flammable atmosphere.

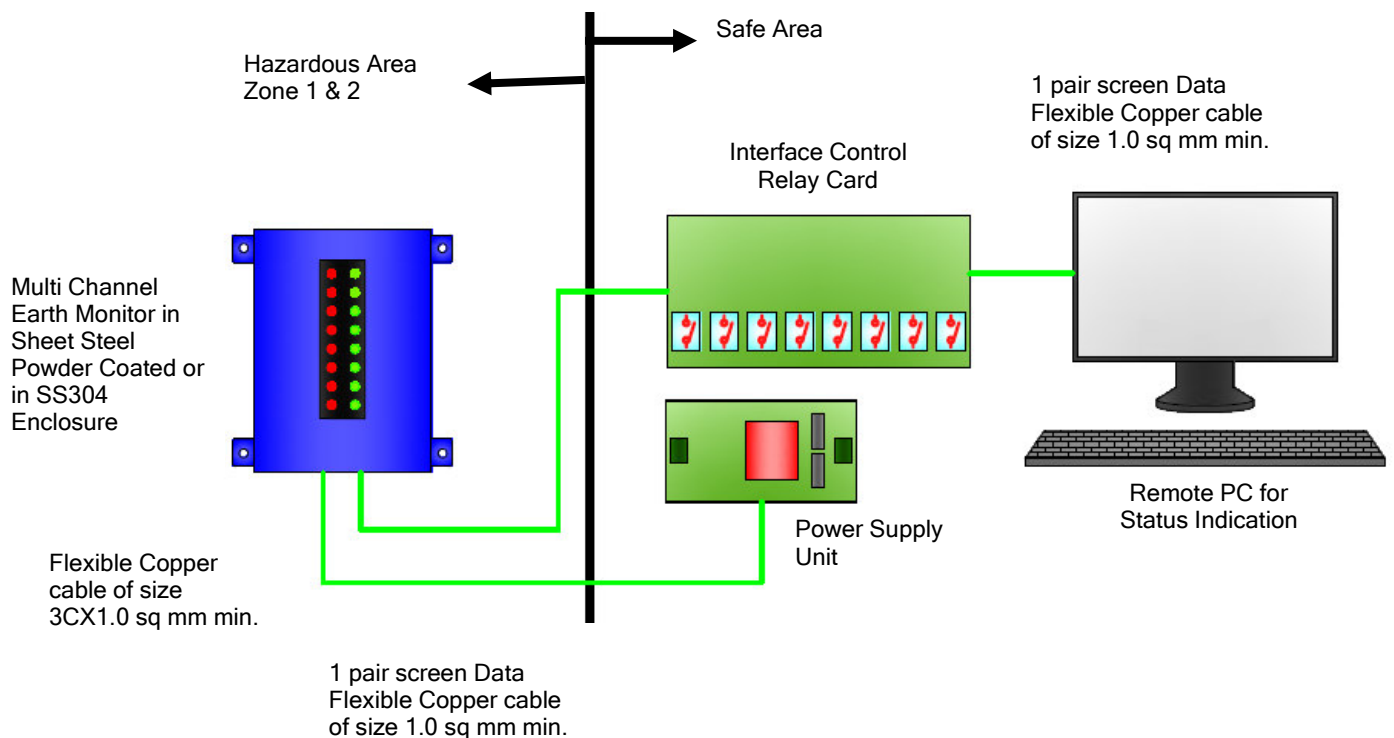
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Typical Installation of Multichannel Earth Monitor



Key Feature :

- Continuous monitoring of static dissipation path of conductive plant equipment located in hazardous area
- Compact design with up to 8 channel scanning at a time
- The entire monitoring installation of intrinsic safe in nature, allow to install controller in Sheet steel or Stainless steel enclosure in hazardous area
- No need of armor cable. The installation can be completed with Flexible cable
- Interface control card are communicated with main controller with RS485 modbus protocol. The interface control card can have up to 8 potential free relay contact.
- A computer interface can be configure with the interface card allow user to check status of plant equipment static charge dissipation path status remotely (Optional)
- On site calibration unit (Optional)
- Available with various monitoring static dissipation path set values - 4 Ohm, 6 Ohm, 8 Ohm (Optional)

SPECIFICATIONS:

- Model : Multi Channel Earth Monitor
- Catalogue no. : SCES-07
- Working Principal : Detection of Earth path of Object under test
- Indication : GREEN LED indicates system healthiness / static dissipation path established
RED LED indicates static dissipation path broken
- Certification : Monitoring circuit Ex ia IIB T6 as per IS/IEC60079-11:2006
- Main Junction box : IP55 as per IS/IEC60079-0:2004 & IS/IEC60529-0:2001
- Operation Temp. : 0 to 85° C
- Storage Temp. : 0 to 85° C
- Humidity : 95% at 25° C (Non- Condensing)
- Response Time : 400 mSec for 8 channel
- Supply Voltage : 230V AC, 50 Hz, 3 Wire
- Output : Potential free contact up to 8 NO output for 8 Channel & on PC (Optional)
- Contact rating : 230V, 5 A, Resistive load
- Mechanical Dim. : 200 mm(H) X 270mm(W) X 85mm (D) for 8 Channel Enclosureenclosure
- Color Shade : Powder coated light grey / Blue paint for Steel Steel Enclosure or SS304
- Monitoring Clamp : Dual / Single circuit clamp (Optional)

For Further information :

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