Newson Gale
HOERBIGER Safety Solutions

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TECHNICAL ARTICLE

Passive vs. active ground monitoring

For years now simple passive grounding has been used throughout industry as a low-cost safety measure and protection against fires and explosions caused bv static electricitv but is it as safe as you thinl

Intrinsically safe, heavy duty, dual core static grounding clamp

Passive grounding clamps

Passive grounding clamps and cables are only suitable if the metallic object to be grounded has a bright clean surface. This allows even a poorly designed passive grounding clamp to make a low resistance connection to the metal object.

An example of a passive grounding clamp

However, not every industrial environment has a bright clean metal surface available, as mild steel usually needs painting to prevent rust and corrosion. This is clearly a physical barrier between the metal surface and the passive grounding clamp.

Paint is the number one enemy of successful and reliable passive grounding. The other main enemy is the product itself causing a barrier between the metal and the clamp with passive grounding, even bright clean stainless steel can be affected by product coatings.

Active grounding clamps

So, what is the alternative to passive grounding clamps and cables? Well, it is active grounding clamps and cables. When you use passive grounding clamps how do you know that you have made a good low resistance connection to the metal object and the local site ground point? You do not, you just cross your fingers!

Active grounding with the Hazloc certified Bond-Rite® CLAMP

Active grounding clamps, which are part of a ground monitoring system, contain intrinsically safe circuits that measure the resistance from between its teeth and the local site ground point to be 10 ohms or less. This metal to metal 10 ohms or less resistance level is enshrined in International guidance and recommend practice documents like **NFPA 77 "Recommended Practice on Static Electricity**", **IEC TS 60079-32-1 "Electrostatic hazards, guidance**", and **API RP 2003 "Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents**".

This 10 ohms or less connection with an active grounding clamp is confirmed to the user by a high intensity flashing green LED. So use of active grounding clamps and cables, takes the guesswork out of safety, allowing you to uncross your fingers and most importantly be safe.

What are the differences between passive and active grounding clamps and cables?

Passive monitoring clamp and cables

- A metallic earthing clamp designed to provide a resistance of 10 ohms or less.
- If there is a 'break' in the connection or the resistance to earth rises above 10 ohms when using a passive clamp, there is no way of knowing during the operation.
- Unable to confirm a good earth connection before the process begins.

Active monitoring clamp and cables

- Provides a resistance of 10 ohms or less as indicated via a high intensity flashing green LED within the system enclosure or on the **Bond-Rite® CLAMP**.
- The green 'GO' indication aids the SOP, e.g., do not proceed until the LED has gone green.
- Operators and plant personnel are accountable and secure about their working environment. Provides confidence that the process is reliably earthed before the operation commences.
- Performance is continuously monitored throughout the duration of the operation.

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