

10 MISCONCEPTIONS ABOUT OVER-VOLTAGE PROTECTION

Protecting large structures such as pipelines, tank farms and airport fueling systems is a multi-faceted challenge. It requires a solution that not only enhances cathodic protection but also protects against AC faults and AC induction.

Here are 10 popular misconceptions about over-voltage protection that you should be aware of.



Lighting behaves similar to other AC and DC signals. Actually, it has a unique waveform with profound magnitude and a fast duration. That's what makes it so deceptively dangerous.

Conductor length doesn't matter. Actually, it does. Short conductor lengths limit voltage spikes when current abruptly changes – such as lightning strikes.

All grounding mats provide the same over-voltage protection. Spiral and looped designs only provide protection from AC faults, whereas properly designed grid style gradient control mats also provide protection from lightning strikes..



AC steady-state induction is not related to AC fault phenomena: Incorrect. Both can be induced. AC induction always brings fault risk to an application. If an AC fault occurs, it can cause arcing and pipeline damage.

You can provide fault protection by electrically isolating pipeline segments: Actually it's quite risky to let structures electrically "float." It can introduce new risks, such as arcing, ignition of the material in the pipe and shock hazards.

Monolithic joints don't need protection. Yes, they do. If they're exposed to a high voltage, arcing and pipeline damage can occur – just at a higher voltage than flanged joints.

Decouplers are one-way devices that keep AC faults off of pipelines. Wrong. Decouplers are bi-directional devices that conduct in both polarities to keep voltage limited to safe levels during an AC fault.



It's OK to remove equipment grounds from a structure to improve cathodic protection: Equipment grounds must be left in place for safety. They cannot be cut under any circumstances. Plus, it's a violation of electrical codes.

My decoupler isn't adequately mitigating induced voltage: It's the grounding system, not the decoupler. More grounding material or a lower resistance system will further mitigate the induced voltage.

Gradient control mats can substitute for an AC mitigation grounding system: Mats are necessary for personnel protection but are located at shallow depths or in high resistivity fill. Therefore, they are not a replacement for steady-state mitigation grounding. Both are required.



Sources:

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