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Insight & Expertise

A Guide to Earthing

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What is Earthing?

The topic of Earthing Systems covers a wide range of issues. Here we discuss some of the general requirements of Earthing Systems.

At first glance, this may seem like a rather odd question. Power users require Earthing systems to be designed for their installations and take comfort in knowing that their Earthing system will prevent persons on their premises from receiving an electric shock should a fault or lightning strike occur. It must be noted that different Earthing systems are designed to address different hazards and meet varying criteria and one system alone does not necessarily provide a panacea for preventing danger by electric shock or fire from all causes.

What is it required?

Earthing systems are specifically required to address the following factors and one size does not necessarily fit all and we briefly discuss a few of these below;

Power Earthing

To provide dedicated earth return path to ensure that should an earth fault occur then an adequate earth return path is provided to ensure reliable operation of protective relays and to ensure that no excessive touch and step potentials occur.

Equipotential Bonding

To ensure that all metalwork and non-current carrying metalwork is securely bonded together so that in the event of a fault, nobody touching an exposed item of metalwork will receive an electric shock

Static Earthing

Where various items of steelwork, both structural and process related are in proximity, it is important to ensure that all such steel work is effectively bonded together to avoid generation of a sparking hazard which could ignite a flammable gas or vapour.

Lightning Protection

To ensure that under stormy conditions any lightning discharge will be diverted safely to earth without causing danger to personnel or any structural damage.

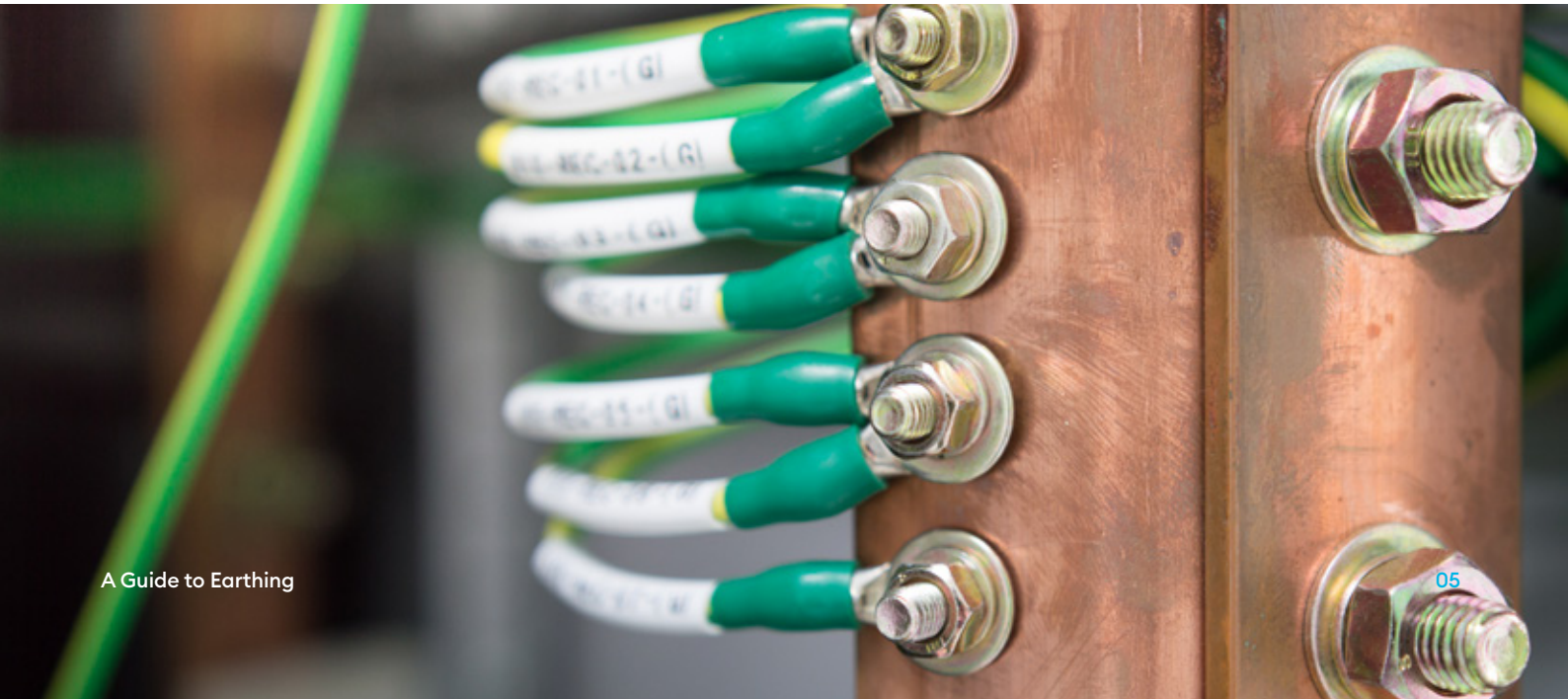
What needs to be considered?

Although having the common title of Earthing, it should be understood that each of the above systems are designed and maintained for a particular purpose and that any one of these systems will not fulfil the functions of any of the others. Each system must comply with different design standards, designed to different criteria and must be capable of being maintained and tested in its own right.

The purpose of any Earthing or lightning protection system is to fulfil the following criteria;

- To prevent danger to persons or livestock
- To prevent damage to plant or structures
- To ensure continuity of supply
- To prevent fire or explosion.

Correct application and maintenance of Earthing and lightning protection schemes designed to fulfil the various considerations and needs outlined above ensures that the factors noted are addressed understanding that one combined system will not address all of the above.



What should I be doing?

You should understand what Earthing arrangements are in place, what documents are required, what reviewing and testing regimes are required and above all, you need to be clear that any mitigation you have in place is sufficient. If you don't, then seeking the advice and support would be a great place to start.

Above all, always remember that the Earthing of electrical systems serves an invaluable purpose to keep both people and equipment safe.

Can I do this myself?

There are some basic steps that you can take to understand the level of risk associated with your Earthing systems but remember that what we are discussing covers a broad range of requirements. Some of these steps include;

- Categorise your Earthing systems as defined above
- Collate the documentation needed to provide evidence of design and testing
- Verify that the intent of the system is being met (through design, testing, maintenance)
- Provide improvements/recommendations for each system and implement an action plan

Where Covol can help

At Covol, we undertake studies and site assessments to determine the overall effectiveness of the various Earthing systems to satisfy the requirements of the appropriate British Standards.

To find out more about how we can help your company engineer change, get in touch today.

Ready to engineer change and progress in your business?

Get in touch to speak to our experts

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