



SPE ELECTRICAL – EARTHING



Power system earthing is one of the most deceptively complicated areas in electrical engineering and is frequently misunderstood, or poorly designed. A correctly functioning earthing system is essential for both the safe operation of the system and to protect personnel and livestock against electric shock. SPE is one of the few companies in the UK to possess the industry standard CDEGS grounding software suite and have the knowledge and expertise to use it correctly.

Earth Potential Rise and Touch and Step Voltage Calculations

An Earth Potential Rise (EPR) Calculation, (also known as Rise of Earth Potential - ROEP) and the associated touch and step voltage calculations are of key importance to ensure correct design of an earthing grid. We have frequently encountered engineers who believe that if they have a 'good' earth impedance of a few ohms their system is safe – which couldn't be further from the truth. Power system earthing is a complex, iterative design process which needs to consider the soil resistivity, fault levels and metallic return paths; only then can the associated EPR and touch and step voltages be calculated. If these values are too high then there is a very real safety risk to personnel both in the substation and nearby, as well as any locally situated livestock. In this instance the design must be developed further.

Generator and Transformer Neutral Earthing Configuration

SPE can provide detailed advice on how to connect transformers and generators neutral points into the power system and give guidance on the implementation of the G59 standard. This is essential for the safe operation of a power system, which is earthed in a specific way, as it is of fundamental importance in ensuring the systems performance, protection operation and safety. SPE can provide guidance on the various earthing strategies, such as resistance earthing, reactance earthing, zig-zag grounding transformers, Petersen coils and even operating unearthed.

Earthing Design & Conductor Sizing

SPE can undertake a complete earthing design for any power system, with the aim of ensuring that all items of equipment are correctly earthed with the right sized conductor and optimise the earth nest layout to suit the site conditions and reduce costs. SPE has detailed knowledge of all aspects of power system earthing design and can provide guidance on optimising earthing layouts to help reduce costs and ensure that all equipment, personnel and livestock are fully protected.

SPE Electrical

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