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Code of Practice 333: Earthing Design for 11/6.6kV Distribution Substations and Equipment

ICE ICP/IDNO Expert Panel Briefing

17 October 2018

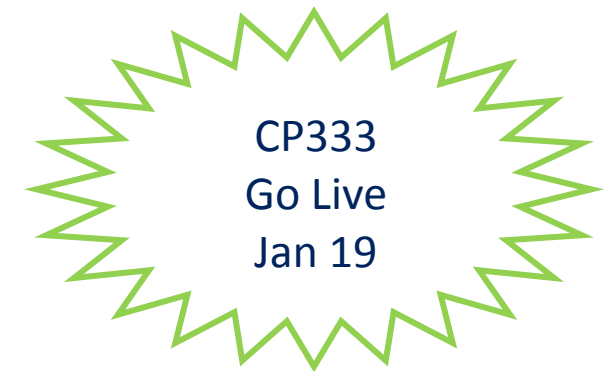
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- A Reminder of ENWL's obligations:
 - EREC S34 & ENATS 41-24 – Licence requirement
 - The ESQCR, in particular Regulation 8 (b) the earth electrodes are designed, installed and used in such a manner so as to prevent danger occurring in any low voltage network as a result of any fault in the high voltage network; and
 - Many other Acts and Regulations apply, for example H&S at Work
- Current approach in Code of Practice 333 has gaps
- CP333 completely re-written
 - 3 methods of assessment introduced - design effort appropriate to situation
 - Greater detail provided where required
 - More information on site measurements
 - Currently out for review by Expert Panel, then wider IDNO/ICP audience





- Tick box exercise
- Simple, quick – no detailed design
- Global Earthing System concept
- Final site measurement after installation
- Already implemented – summer 2017
- Now includes subs with steel doors
- Expected use – cities, towns

Requirements for Type 1 Assessment:

- Surrounded by urban / built up area
- Cable fed
- New substation is Standard ENWL Design
- Primary transformers impedance earthed
- Local ground R is 300 ohm m or better (data may be from on-line sources such as BGS)
- IDNO designs included if all touch voltages safe for EPR up to 2kV (demonstrated by modelling)



- For sites failing the GES criteria
- Design effort minimised – can use some assumed values
- Desktop exercise where possible
- Look up tables provided in CP333 – standard designs in lieu of bespoke studies
- Use on line sources – BGS
- Site measurements not required if Cold

Type 2 expected to be the usual method for suburban to rural mixed networks



- Full design study
- Site measurements required
- Unavoidable to ensure safety
- Expected requirement for upland areas such as Lake District



- Guidance on measurement techniques, eg Wenner
- Suite of standard ENWL substation designs
- Look up tables for touch voltages
- Look up tables for earth electrode resistances
- Decision tree to guide assessment type selection
- Worked examples
- Guidance for Hot & Cold HV metered connections
- ES333 re-written – guide for IDNOs – out 21/11/18

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Electricity Specification ES333
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**Earthing Design for 11/6.6kV
Distribution Substations and
Equipment**
for
ICPs and IDNOs

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Approved for issue by the
Technical Policy Panel

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Questions

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