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SUBSTATION PRIMARY INSULATION (AIR/SF₆)

PURPOSE AND SCOPE

This policy defines the type of primary insulation to be used in National Grid substations taking into account environmental conditions and project drivers. The policy applies to applications which form part of, or affect the integrity of, the National Grid (Electricity) Transmission system.

PART 1 – POLICY

1 GENERAL REQUIREMENTS

- 1.1** Outdoor Air Insulated Switchgear (AIS) will be used at pollution severity Class III (or less) sites, except where other elements of this policy are overriding.
- 1.2** The selection criteria process for substation insulation is illustrated in Appendix A of this policy statement.
- 1.3** Gas Insulated Switchgear (GIS) substations shall only be considered where lifetime related conditions (such as pollution, permanent space restriction or public visual amenity) preclude the use of open terminal equipment and the terms of this policy are met.
- 1.4** New GIS substations will be installed indoors.
- 1.5** Class IV pollution severity sites may utilise the following technologies, listed in order of preference:
- a) Indoor GIS.
 - b) Indoor AIS or hybrid AIS/GIS solution.
 - c) Outdoor AIS or hybrid AIS/GIS solution.
- Any equipment installed outdoors must incorporate features to mitigate the effects of severe pollution e.g. extended creepage, additional weather seals etc.
- 1.6** Sites in the following locations shall be considered to be IEC pollution severity Class IV, unless confirmed otherwise by pollution severity monitoring or previous site experience:
- a) Within 5km of the coast or saline estuary, unless the site is reliably (and demonstrably) afforded protection from on-shore winds by hills or structures.
 - b) Within 10km downwind of a low stack, coal-fired power station.
 - c) Adjacent to a chemical plant with halide emissions.
 - d) Adjacent to low-level wet cooling towers.
- 1.7** GIS technology may only be considered, where it offers the lowest lifetime cost solution (based on a minimum 40 years). It must be demonstrated that a balanced review of safety, environmental implications, project delivery and whole life costs has been considered.
- 1.8** The refurbishment or extension of existing pollution severity Class IV sites may utilise similar insulation to that originally installed where the equipment performance has been confirmed as satisfactory.