



PPM Testing and Inspection Regime for Lightning Protection Systems

Equipment Covered

Structural Lightning Protection systems, Air Termination Networks, Down Conductors, Earth Termination Network and Bonding.

Applicable Legislation

The testing, inspection, recording and certification of the above equipment are completed in line with manufacturer's recommendations and the following legislation:-

- **Electricity at Work Regulations; 1989, set out a legal responsibility to have your system tested and inspected every year.**
- **BS 6651: 1999 Protection of structures against lightning.**
- **BS 7430: 1998 Code of practice for earthing**
- **For systems installed since 2006 or that have required significant upgrading or modification then the requirements of : BSEN 62305 : 2006 ammended 2012 are applicable.**

Schedule of Requirements

BS 6651: 1999 Clause 31 Inspection – All lightning protection systems should be visually inspected by a competent person during installation after completion and after alteration or extension, in order to verify that they conform to the recommendations off this code. Visual inspections should be repeated at fixed intervals, preferably not exceeding 12 months.

In addition the mechanical condition of all conductors, bonds, joints and earth electrodes (Inc reference electrodes) should be checked and the observations noted and recorded.

During periodic inspection of the lightning protection system, the bonding of any recently added services should be checked to ensure it is in accordance with the recommendations of this code.

BS 6651: 1999 Clause 32 Testing – The following Isolated and combined measurements and or checks should be made and the results recorded in a lightning protection system logbook.

-The resistance to earth of each electrode and in addition the resistance of the complete air termination system.

-Each local electrode should be measured in isolation with the test point between the down conductor and earth electrode in disconnected position (isolated measurement).

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-A further measurement should be taken with the test point in connected position (combined measurement).

-The results of the visual check of all conductors, bonds and joints or their measured electrical continuity will also be noted in the test report or log book.

If the resistance of the lightning protection system exceeds 10Ω , the value should be reduced. If the resistance is lower than 10Ω but significantly higher than the last result then this should be investigated and any necessary remedial action taken.

Tests should be repeated at fixed intervals not exceeding 12 months, once annually, however it may be advantageous to choose a period slightly shorter, say 11 months, in order to vary the season in which tests are made.

Brief resume of works completed during the above

- Is safe access too and from the area possible.
- Is a permit to work system in operation
- PPE Available?
- Inspection of all system components – including Air Termination Networks, Down Conductors, Earth Termination Network and Bonding
- Use approved calibrated load test equipment to complete earth tests of all earth terminations.
- Where applicable – inspection of the main equipotential bonding
- Sketch layout and basic design of the installed system
- Supply of detailed report

Within 14 days of the above a report of the engineer's findings will be produced detailing the results of the earth resistance results, if they are within compliance and what if any remedial works are recommended.

BS EN 62305-2: contains a series of National Annexes, from which individual countries, like the UK, have used their own interpretation and perception of risk to compile parameters for certain elements of the risk assessment.

The first stage of the risk assessment is to identify the types of loss that a structure and its contents can incur. There are four types of loss defined in BS EN 62305, compared with the one – risk of death/injury – considered in BS 6651.

These risks are:

I R1 – loss of human life

I R2 – loss of service to the public

I R3 – loss of cultural heritage (ie. of historic buildings or monuments)

I R4 – loss of economic value, considers the cost of the physical loss of equipment. It does not, however, take into account the economic value of consequential losses from system downtime.

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BS 6651 recommends the inspection of any LPS annually. BS EN 62305-3 goes further, categorising inspection into visual inspection, complete inspection and critical systems complete inspection, whose frequency depends on the Lightning Protection Level (LPL) in force, based on the result of the risk assessment.

Whilst the new standard is not retrospective if it is apparent that the systems currently installed would in many cases fall very short of the required measures to comply with the new standard and the risk is deemed to be high with the existing system, we will bring this to client's attention in our report following inspection and testing.

If you have any question or wish to discuss any of the above please do not hesitate to contact us.

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