



The provision of a lightning protection system will not prevent the occurrence of a lightning strike. The purpose of the installation is to direct the current discharged from the strike to earth safely, protecting the structure and its occupants from the effects of the strike. Fires arising from lightning strikes can be minimised by ensuring that the lightning protection system is always in working order.

The continuity of the conductors can be broken during building repairs or ground excavations. As the conductors are often made of copper they are also currently vulnerable to theft. If lightning conductors are disturbed or stolen, they should be repaired immediately. It is worth remembering that places of worship with a faulty lightning protection system are at more risk than those without lightning conductors.

Action point Ideally you should carry out a visual check of your lightning protection system regularly to check that it has not been removed or tampered with. You should also consider having your lightning conductor system independently tested at least once each year.

Testing lightning protection systems

by Christopher J Barsby, CITB and CSCS registered engineer from Barsby Lightning Protection

It is a British and European Standards requirement that all lightning protection systems are tested and inspected annually. The Standard (BS EN 62305-1:2006 Protection against Lightning: General Principles) states that "tests should be repeated at fixed intervals, preferably not exceeding 12 months; it may be advantageous to choose a period slightly shorter than 12 months in order to vary the seasons in which tests are made". This advice is given because earth resistance readings do not simply increase annually, they will invariably rise in summer months as the sub-strata (earth) dries out.

In addition to checking the earth resistance it is also important for a fully qualified Construction Industry Training Board (CITB) registered lightning conductor engineer to check that all joints and bonds are not corroded and still have electrical continuity.

It would be advisable for those commissioning this work to ask to see the engineer's CSCS Card as this is proof of qualification. The **CSCS (Construction Skills Certification Scheme) Card** will feature his or her photograph and CITB registration number. Engineers should not be allowed on any construction site without this card.

The annual testing of lightning protection systems is very important. An air termination rod is a 'capture mechanism' so if there was a lightning strike or static electricity in the vicinity of a poorly maintained system or a defective earth installation this could result in devastating effects for the building and its contents.

Poor joints or high earth resistance readings can result in 'flashover' to other metals within or on the structure. This can even take place without a direct strike - all lightning conductors pick up static even if a storm is four miles distant. It is therefore sensible to ensure that all metal bell frames and other metal objects close to the structure are bonded to the lightning conductor system to prevent flashover taking place.

Testing, inspection and certification for one earth installation and one down conductor is not prohibitively expensive. A Certificate of Compliance to BS EN 62305 is effective for a 12 month period, much like an MOT on a motor vehicle, and is proof of a regular maintenance programme. This may help when dealing with insurance companies in the event of damage caused by a lightning strike.

However it is worth noting that most churches do not have a lightning protection system that meets current BS EN 62305 standards, so becomes even more important to maintain these partial systems. Lightning strikes are no longer a rarity; as a result of climate change we often now have lightning strikes in winter months too.