



GUIDANCE ON ELECTRICAL INSPECTIONS

Electricity

Electricity is a versatile and convenient source of energy. However, it can be potentially dangerous if the system has not been properly designed, installed, operated and maintained.

Invariably electrical installations are modified and extended over time to serve additional equipment and requirements. Frequently these additions were not anticipated in the original design and may affect the integrity of the installation. In addition, electrical installation equipment can deteriorate in time because of unforeseen adverse environmental conditions. Therefore it is essential that all electrical installations are inspected, tested and properly maintained in order that they may operate safely.

Indeed such procedures are now a legal obligation upon all employers. Failure to comply can incur severe penalties and would have an adverse influence upon the defendant's case in any related legal action. The following information is intended to help employers understand the requirements and implications of the legislation and to assist them to meet the obligations which such legislation imposes upon them.

The Law

The Electricity at Work Regulations (EAW) 1989, made under the Health and Safety at Work Act 1974, came into force on April 1st 1990. These regulations require all electrical installations in workplaces to be designed, constructed and maintained in such a manner as to be safe to use at all times.

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| 1 | How can Employers comply with the Law? |
| | The Health and Safety Executive booklet "The Memorandum of Guidance on the EAW Regulations" suggests that in order to comply with the law the condition of the electrical systems should be monitored by regular inspection and testing, maintaining records of the test results. |
| 2 | Why is it necessary to inspect and test installations? |
| | Inspection and testing is necessary to identify any damage to, or defects in, an installation which may give rise to danger, so as to ensure the safety of persons and livestock from the effects of electric shock and burns, and property from the effects of fire and heat, arising from a defective electrical installation. In other words, to ensure that it is SAFE TO USE. |
| 3 | Who is responsible? |
| | <i>EAW Regulation 3</i> |
| | It is the responsibility of the employer (or a self employed person in some instances), to ensure that electrical systems are safe. Employees have a duty to co-operate with the employer in this respect. "Employer" in this sense includes those persons charged with the management of the workplace. |

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| 4 | What premises do the regulations cover? | |
| | All premises and places where people work, for example: | |
| | Public buildings | schools, hospitals, sports and leisure centres, museums, cinemas, theatres, football, cricket and athletic grounds |
| | Residential | residential homes for the elderly, hotels and guest houses |
| | Industrial | factories, farms and construction sites |
| | Commercial | offices, shops and warehouses |

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| 5 | Who should carry out inspection and testing of electrical installations? <i>EAW Regulation 16. HSE Guidance Note GS27 IEE Wiring Regulations</i> | |
| | Inspection and Testing shall be carried out by competent persons who shall have sufficient technical knowledge and experience appropriate to the type of installation and an understanding of the test methods and requirements in order to prevent danger or injury. Since the person must make judgments on the appropriate levels and frequency of testing required, he must have an understanding of the use of the premises concerned, the operating environment and any relevant safety standards or licensing requirements that may be applicable to the premises. The correct instruments must also be used. | |

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| 6 | How frequently should electrical installations be periodically inspected and tested? <i>IEE Guidance Notes on Inspection and Testing</i> | |
| | Public buildings, sports and leisure facilities | every year |
| | Industrial and agricultural | 3 years |
| | Commercial, educational and residential (not domestic) | 5 years |
| | Construction sites | 3 months or as frequent as the testing engineer considers necessary according to the exposure of the installation to deterioration or damage. |

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| 7 | What needs to be inspected? | |
| | The inspection should comprise a careful scrutiny of the installation to ascertain if there has been any deterioration or damage to the installed equipment, or if there are any installation defects that may give rise to danger. Cables, trunking and conduits, switchgear, distribution boards and protective devices, equipment, lighting fittings and accessories, all need inspecting for deterioration; due to age, the working environment, or the affects of heat generated by overloading or loose connections, and for electrical and mechanical damage. | |



| 8 What needs testing? | |
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| Earthing: | The earthing arrangements to ensure that the installation and all metal parts are adequately connected to earth and that all devices for protection will operate within prescribed times when a fault occurs. |
| Polarity: | To ensure that the cables and equipment are not live when switches are in the off position. |
| Insulation: | The resistance of the insulation of cables and equipment to ensure that there are no dangerous leakage currents which may be the cause of a fire or a circuit failure. |
| RCDs: | Residual current devices commonly known as circuit protectors need to have specific tests applied to them to ensure that they will operate and disconnect the circuit within the specified time when required to do so. These devices are installed as supplementary protection against electric shock if a person should touch a live cable or metal that is live because of a fault. Important - It is essential that RCDs are "tested" frequently by the user of the installation so as to ensure that the operating mechanism will move freely and rapidly when required. |

| 9 How should test results be documented? | |
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| <i>EAW Regulation 4(2)</i> | |
| | It is advisable to have a schedule of test results for every distribution board and control panel. The schedule should record information about the supply to the distribution board as well as details of the final circuits. Earth Loop Impedance and Insulation Resistance values should be recorded for every circuit. The test records should be retained for comparison with future test results. |

| 10 What about a certificate of safety? | |
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| | There is no requirement for certification, but the IEE Wiring Regulations require a "Report to be given by the person carrying out the Inspection and Testing, to the person ordering the work". The report should contain a list of any damage to and defects in the installation, and non-compliance with the Regulations, which may give rise to danger. The report should also detail the limitations of the Inspection and Testing. |

Insurer's Expectations

Insurance Surveyors and Risk Managers have generally specified that any requirement for electrical inspections must be in accordance with IEE Regulations and often added the rider that the work should be undertaken by an NICEIC approved contractor. Compared to many, this certification body has 'teeth' and can get things put right, especially in respect of electrical safety. They also have the ability to ensure additional training and inspection of their contractors.

Similarly, a significant proportion of our industry have preferred to avoid the ECA (Electrical Contractors Association) as this organisation was considered to be just that - a Trade Association - without the teeth or comeback that Insurers could rely on.



Further investigations in 2006 led an excerpt from a revised version of FPA Recommendation (RC3 part 6) being made available to City Risk Management, although this was under review and may be re-issued. This was planned to be along the following lines:

6 INSTALLATION AND MAINTENANCE

- 6.1 The components used in electrical protection systems should have been tested and approved by an independent, accredited third-party certification body to relevant standards (refs 1, 2, 3 and 7).
- 6.2 All installation work relating to electrical protection systems should be undertaken by a competent, specialist installation company which has been approved by an independent, accredited third-party certification body.

- In the United Kingdom, the national accreditation body is the United Kingdom Accreditation Service (UKAS).
- The National Inspection Council for Electrical Installation Contracting (NICEIC) is a UKAS-accredited organisation which approves specialist electrical contractors.
- Maintenance companies should qualify for membership of NICEIC or the Electrical Contractors Association (ECA) or the Scottish trade association SELECT.
- The National Association of Professional Inspectors and Testers (NAPIT) and the Safety Assessment Federation (SAFed) are two UKAS-accredited inspection bodies for companies that do not carry out electrical installations/alterations but do perform independent inspection and testing in accordance with the principal standard (ref. 4).

Other options such as Membership of the IEE itself have been suggested whilst a further organisation – ELECSA Ltd (<http://www.elecsa.org.uk>) - was referred to on the Office of The Deputy Prime Minister's website, though this was also in relation to Approved Document Part P.

Examining all of these suggested bodies, City Risk Management came to the conclusion that in providing professional guidance to Insurers and Clients:

1. Only accept UKAS accredited certification schemes would be acceptable. Among those listed as suitable for electrical inspections were:
2. NICEIC Certification Services Ltd which would meet the required criteria for all electrical inspections by electrical contractors.
3. BRE Certification Ltd through their EAS (Electrotechnical Assessment Scheme) scheme which operates in conjunction with the ECA. Having investigated this, there were only around 83 companies throughout the UK who qualify to be listed as competent under this scheme. Though these are listed on their website as being certificated, only 15 have current certificates, the remaining 68 having expired. This is therefore a very limited service and hardly a 'national' standard.
4. BRE Certification Ltd also appears to have a scheme for Certification of Inspectors / Electricians for inspection and testing to BS 7671. This appears to be a scheme restricted to 'individuals' but there appears to be no listing for this and therefore surveyors, risk managers and clients will not be able to determine acceptability of the individuals.
5. Elecsa Limited have a scheme which appears to be restricted to Part P, i.e. installations in dwellings, therefore for the inspection of commercial or industrial risks, this will be of little consequence.



6. NAPIT Certification Ltd appears to be a scheme created for electricians on an individual basis and restricted to those inspections required under Part P, i.e. dwellings. Again of little consequence for commercial risks.
7. SAFed is a UKAS accredited inspection body that doesn't do installation work, but whose members provide an independent inspection service. Their website gives information on 11 members which most Insurers would recognise as the 'insurance inspection / engineering services' of old, operated by Royal Sun Alliance, Zurich Risk Services, etc. These would be acceptable in commercial/industrial inspections as they satisfy the principal standards required.

In view of the above points, our risk improvement point relating to electrical inspections will be amended along the following lines (see below) and would be applicable to most Insurers and indeed commercial/industrial clients. It would however, be feasible to accept NAPIT or ELECSA approved electricians for those risks relating to Student or Professional Lets, but not for other commercial operations.

Insofar as in-house electricians are concerned, these may be competent, but unless an external body is in a position to assess their competence, Insurers would have no guarantees as to the quality of work. Indeed, many of the defects noted in electrical installations over the years have been allowed, tolerated or even created or promoted by in-house electricians. However, a reasonable compromise would be that where the installations are believed to be in reasonably good order, then 'external inspections' would only be required every alternate period. If in-house work has been the standard for a number of years, then an external inspection would be the starting point for such a programme.

Risk Improvement Wording

Fixed Electrical Installations

The electrical installations must be inspected by a competent, independent electrical contractor or inspection organisation and any defects found must be rectified immediately. To satisfy the requirements for competency, the inspection within commercial or industrial premises, must be carried out by one of the following:

- a contractor approved of by NICEIC Certification Services Ltd
- a member of the EAS scheme (Electrotechnical Assessment Scheme) which operates in conjunction with the ECA and is approved by BRE Certification Ltd
- an inspection and testing organisation which is a member of SAFed (The Safety Assessment Federation)

When the inspection has been completed, the a certificate confirming the installation is in accordance with current IEE Regulations must be issued with a copy forwarded to the Insurers for their records.