



## ELECTRICS IN CHURCHES

For a majority, electricity is a mystery. People make use of it every day in a hundred different ways. Most respect electricity in that they understand that it is dangerous to “fiddle with it”. Relatively few, however, have much knowledge of how electricity works or how it should be installed. Electrical systems are not glamorous, they are not intended to be decorative or indeed on show at all. Nevertheless, the electrical system in every church must play its part in giving glory to Almighty God. It **MUST** be the best we can manage.

### ❖ Safety

#### Testing

Health and Safety legislation (Electricity at Work Regulations 1989) say that every electrical installation must be properly maintained. This legal necessity is common sense. Wiring systems and electrical equipment can and do wear out, develop faults and sustain damage in use. The problem is that a wiring system which has developed some major faults and is potentially dangerous can continue to work. In church buildings which are often used on an occasional basis – perhaps even as little as a couple of hours a week - it can be a long time before anything is found to be wrong. Despite the requirements of the law, many electrical systems are left untended for many years. Architects, when carrying out quinquennial inspections are required to recommend that a test is carried out. Such a recommendation may not be ignored. **A full test must be carried out for every quinquennial.** It is better still for the architect to employ someone on behalf of the parish to carry out such a test and include the electrical report as a part of his full report. The inspection and testing procedure and parameters are set down in the “Recommendations for Electrical Installations” (Wiring Regulations) published by the Institution of Engineering Technology (IET) and is British Standard 7671, and the latest issue should be followed.

This guide does not concern itself with the technicalities of the full test and neither need the architect or other person responsible for arranging such a test. Suffice it to say that the test **MUST** be carried out by a person officially recognised as being qualified to carry out such a test. Only a qualified electrical technician will be able to issue the official Certificate of Inspection. A qualified person means:

A Certificate Holder of the National Inspection Council of Electrical Installation Contracting (NICEIC)

A member of the Electrical Contractors Association (ECA)

A member of the National Association for Professional Inspectors and Tester (NAPIT)

The inspection should comprise "Periodic Inspection and Testing" as set out in "Guidance Note No 3 - Inspection and Testing" in accordance with the 17th edition of the Wiring Regulations issued by the Institution of Engineering Technology or similar document produced by the

NICEIC, ECA or NAPIT. In any case the full test must comply with BS7671. A copy of the test certificate should be in the Quinquennial Inspection report. Any electrician or firm of electricians affiliated to NICEIC, ECA, or NAPIT should be able to carry out (or arrange to be carried out) such a test and issue the certificate.

In the event that an installation fails to come up to the required standards, the certificate will indicate this and will also provide a list of recommended remedial action. It is well worth asking about this when arrangements are being made for the test to be carried out. Failure does not necessarily imply that the electrical installation is unsafe, but it DOES mean that work may need to be done to bring the system up to standard if the system is not safe. A time limit might well be suggested and the technician might well recommend that the test be repeated once any further work is completed. If a system does not fail but in the technician's opinion might fail before the next scheduled test (i.e. within five years), then he may well recommend that the period before the next test is reduced. If Churchwardens or others are in any doubt, they should ask the inspecting technician to clarify whether or not any works are required to render the installation safe, and how quickly any remedial work should be carried out. The parish should then confer with their inspecting architect to seek advice on what to do.

#### Informal Inspection and Regular Maintenance

It is good practice for churchwardens or others concerned with the care and maintenance of church buildings to make regular inspection tours of the building (inspecting not only the electrics but the rest of the fabric as well). Once a quarter, it is a good idea for all the lights and power sockets to be checked to see that they are in good order. Heating appliances need to be checked in the summer to be sure that they will be working effectively and safely for the next winter. Portable appliances e.g. vacuum cleaner, polisher, etc. should be checked to ensure that their plugs, flexes and extension leads are not damaged in any way. Any exposed cables can be checked for damage. Circuit breakers and earth leakage protection devices should be checked for proper operation. Although in most circumstances it is probably impractical for areas such as roof spaces to be inspected on a quarterly basis, it should be possible for them to be checked on an annual basis when other inspections, such as checks against roof leaks, are carried out. The regular checks should of course include areas such as boiler houses and storage areas.

It is good practice for such regular inspections to be written up and kept as a record in the church log book. Any deficiencies or damage should be noted and reported to the inspecting architect. In this way it is possible to find out how and when problems and damage have been caused.

#### Safe use of electrical equipment

One of the chief causes of dangerous defects in electrical systems is abuse. Here are a few examples of how to prevent imprudent usage creating future potential problems:

- Extension leads should never be used on a permanent basis.
- Multi-plug adaptors for sockets should never be used.
- Fuses and their ratings should never be tampered with.
- Lighting circuits should never be used for anything other than lighting and power circuits should not be used for lighting.

- **All power circuits especially those used for portable appliances of any kind should be protected with properly rated earth-leakage circuit breakers, residual current devices, (RCDs)**
- Lamps in light fittings should never be replaced with those of a higher rating or different type without the advice of a qualified electrician.
- Any electrical equipment which does not work properly or is damaged in any way should be taken out of service immediately until it is either replaced or properly and permanently repaired. No "temporary" repairs which all too easily become regarded as permanent should be made. **All repairs need the permission of the Archdeacon.**
- Main switches, circuit breakers etc. should always be installed in a secure place, preferably in a cupboard specially built for the purpose. Such a cupboard should be lockable, but it should NOT be locked at any time when the church is in use - it might be necessary to switch off the electricity quickly in case of emergency.

## ❖ Repairs

### Running Repairs and Renovations

The electrical system will from time to time need some running repairs. Lampholders and light fittings wear out, sockets get broken, and cables become damaged. Such small repairs may safely be put in hand as and when they occur. **However, like all repairs they should be undertaken only by a qualified electrician.**

It is very important to observe the distinction between repair/replacement and alteration, not just for appearance sake, but for safety too. For example, it might appear that to change a single socket to a double or to replace a broken light fitting with one which looks the same but that coincidentally will accommodate a lamp of a higher rating, might seem to be such a small item as to make no difference. However, in both these circumstances the alteration allows the possibility of increasing the power load to a particular circuit - an action which can mean that the circuit becomes overloaded and damage to cabling can result. Such prudence is not over-cautious but in the end makes sense. **It is all too easy to make a safe electrical system an unsafe one.**

Remember, if you have a problem later (for instance a fire or an injury to someone caused by the electrical system) and it is discovered that work to the electrics has been carried out by someone **not** on the roll of NICEIC/ECA/NAPIT, the insurance cover may be compromised.

## ❖ Major repairs – rewires – new installations

There are two main reasons to rewire a church building:

1. The installation fails to come up to the required standards and the remedial works require more than 'repairs'
2. The church is to be altered in some way, by new heating or lighting systems, or by re-ordering, which requires substantial alteration to the electrical system.

Sometimes, there is something of both. It might be that the installation fails - and at that point it seems sensible to consider a change to the lighting/heating. Whatever the circumstances, major work to the electrical system needs careful planning. It is very easy when confronted by an urgent need for action especially if part or even all of the installation has been condemned as dangerous, for the work to be rushed into without proper planning. In such a crisis, the following procedures should help:

1. Find out exactly what needs to be done (a) immediately and (b) as soon as possible
2. Contact the inspecting architect and arrange an early meeting.
3. Contact the Archdeacon - even if you don't have all the details. HE MAY BE ABLE TO AUTHORISE EMERGENCY WORK.
4. Contact the DAC's electrical adviser.
5. If circuits must be disconnected for the sake of safety, do that immediately. If necessary, arrange for TEMPORARY CIRCUITS TO SUPPLY ANY VITAL EQUIPMENT until proper rewiring can be undertaken. In such circumstances, temporary wiring should be made very visible so that it cannot become accepted as permanent! Even temporary wiring should be installed only by qualified electricians.

The emergency action outlined above should avoid any immediate danger and give time for proper planning.

Once such emergency action has been taken then the planning for a rewire is exactly the same as planning for new work.

### ❖ **The new installation**

#### Systems of wiring

IT MUST BE EMPHASISED THAT IT IS NOT THE PURPOSE OF THIS GUIDE TO PROVIDE FULL TECHNICAL GUIDANCE

The systems of wiring which may be permitted are as follows :-

Mineral-insulated metal sheathed cables.

Cables drawn into steel conduit or trunking.

Cables drawn into heavy-gauge high impact plastic conduit.

Other methods of wiring are available.

PVC wiring is not an appropriate material to use in churches.

The choice of a wiring system is made against a background of many varied criteria. Safety is of vital importance, but there are other criteria too, including durability, good value for money, and how the installation looks in the context of the building.

## ❖ **Lighting installations**

The purpose of good lighting is

1. To provide good levels of illumination in order to see things clearly
2. To give appropriate emphasis and modeling to the fabric of the building
3. To emphasise particular points of regard within the sacred space, such as the altar and sanctuary, the pulpit and its occupant, the lectern etc.
4. To display naturally the architecture of the church without distracting attention from the service but working with the music and liturgy in aiding divine worship.

In addition to these, it should be remembered that our churches are increasingly used for concerts, drama and plays and the extent to which provision should be made for these activities should be an important consideration.

Dimmers are useful in varying the balance of lighting during the course of a service and it is important to make proper provision for implementing such changes smoothly and efficiently.

The maintenance of a lighting installation is essential to its continuing efficiency, and this aspect must be kept firmly in mind when a new installation is planned.

In considering a new lighting scheme it is important to consult your inspecting architect at an early stage. He will in all probability wish to consult with a lighting specialist designer.

A thorough knowledge of the architectural requirements of the building and of modern lighting techniques and the equipment and fittings that are available on the market are all essential to ensure a successful installation.

It should be emphasized that few electrical contractors have much knowledge of the art of good lighting and expertise from an experience lighting designer with the advice and assistance of the architect are wise and worthy investments to make as part of your plans.

## ❖ **Architects, Archdeacons, faculties, insurance**

The inspecting architect should always be consulted about **ANY** electrical work. The Architect will be able to advise on the need for a faculty, and will be able to assess the impact the proposed work will have on the general fabric of the building.

A good architect will have access to a qualified electrical adviser and draughtsman. Whenever the architect is employed to oversee or draw up specifications for electrical work, he/she will delegate much of the responsibility for technicalities to the electrical specialist. Parishes must expect to pay for this additional expertise.

No faculty is required for 'de minimis' items. So far as electrics are concerned de minor items may include replacements of individual power or lighting sockets with those of the same type and appearance, replacement of a broken length of cable, where the cable used as a replacement

is of the same type. A faculty is required for any addition to the electrical wiring system, no matter how small. A faculty is required for any work to the electrical system which will substantially alter the circuitry or its appearance, including cases where decoration will be affected or where replacement cables are run in anything other than their existing routes. It is important that the Archdeacon and DAC Secretary are consulted at an early stage.

The DAC will need to know:

1. The name and address of the electrical contractor (who should be enrolled with the National Inspection Council for Electrical Installation Contracting).
2. Complete drawings of the church showing the position of all fittings and distribution fuse boards, switches, the service position and point of entry of the service cable.
3. A specification setting out fully the work to be undertaken, the size and quality of the material to be employed, the proposed system of wiring, and the method of entry of the service cable.
4. Drawings, photographs or marked catalogues showing all proposed fittings with details of the wattages of lamps to be used in each.
5. Current electrical test certificate for existing installation.

The eventual faculty may require that the scheme shall be prepared or approved by an architect and that his certificate be obtained upon completion of the work.

In no circumstances should the Parochial Church Council enter upon any contract until permission to put the work in hand has been granted.

Ecclesiastical Insurance (with whom the church is insured) must be notified before installation is begun, and their approval must be obtained.

In all cases it is not only good practice but a matter of courtesy to send copies of all correspondence, plans etc. to the Archdeacon.