Types of person and the requirements of the Wiring Regulations

by Jon Elliott

BS 7671 contains requirements for the design and construction of electrical installations with the intention of producing an installation which is both safe to use and which is capable of being employed for its intended purpose (120.1 refers). The scope of installation types covered by BS 7671 is very broad. Indeed, the ever increasing complexity of installations and the continuing development and subsequent recognition of technical innovations and products necessitates the inclusion of additional requirements. To illustrate this, the scope of BS 7671 has been expanded in the 17th Edition to include requirements relating to installations in Marinas, Exhibitions, Shows and Stands, Solar Photovoltaic supply systems and Mobile and Transportable units and, indeed, will expand still further when amendment one is released mid 2011.

It is not uncommon for the design, construction and initial verification of a small domestic, industrial or commercial installation or additions or alterations on such installations to be carried out by one and the same person. However, the design of more complex or specialist installations will typically be carried out by a number of individuals given specific duties or areas of responsibility or by design consultancies. The actual installation process will then often be performed by a specialist electrical contractor as will the required inspection, testing and certification. It is also not uncommon for a separate body to be taken on to commission the installation prior to handover. Increasingly, different aspects of the overall project such as the installation of fire protection and fire alarm systems, lightning protection and, indeed, items of complex or specialist production equipment will be dealt with by separate contractors.

BS 7671 also contains requirements for the inspection, testing and certification of the installation both during the initial verification process and periodically throughout the life of the installation. As mentioned above, the person or company carrying out initial installation work must also be capable of inspecting, testing and certificating the work that they have carried out. However persons or companies carrying out periodic inspections and producing reports on the condition of an existing installation, whether or not
originally installed by them, need to look at the installation in a different way. They are in effect commenting upon the continuing suitability for use of the installation based upon their observations and the results of a range of tests which they have performed. However unlike when performing initial verification, they need to bear in mind when the installation was first installed and hence what requirements were in force at that time. They also need to apply judgement as virtually all installations will, with the passage of time, show some signs of damage, deterioration and general wear-and-tear which may or may not have diminished the safety of the installation.

The issue of maintainability of an installation is also addressed within BS 7671 albeit briefly. Persons maintaining an installation may require either basic or in-depth knowledge of the installation or the equipment therein dependent upon the duties they are required to perform and their level of responsibility. In larger, more complex installations a person or persons will be required to have oversight of and responsibility for the work activities carried out by the maintenance staff in their employ.

Upon completion the installation has to perform properly the tasks for which it is designed. However, persons making use of, or operating the installation will require different capabilities depending upon the nature and complexity of the premises and its intended purpose. In domestic premises, a user should be able to operate the switchgear to control lighting and other final circuits within the installation, periodically press the integral test button on residual current devices, reset overcurrent protective devices and possibly replace fuses. In a factory environment a machine operator should be sufficiently knowledgeable to use those pieces of equipment to which they have been assigned such that they are safe and productive. This will require guidance of both what should be done and what should not. A deep knowledge or understanding of the workings of the machinery may not be necessary. However, the operator will need to be aware of their limitations and as such when it will be necessary to call on persons with greater expertise for assistance.

BS 7671 also contains a number of limitations as to what class of person may perform particular activities covered by the requirements therein. These limitations are put in place either on account of particular hazards which might only be avoided by a person possessing a requisite level of knowledge, such as for example the use of protective measures where obstacles or placing out of reach is to be used to provide basic protection (417.1 refers) or where continued monitoring of the effectiveness of the supply and earthing arrangements is necessary to ensure safe use (717.411.4 refers).

It can be seen therefore that:
- there are many different types of installation covered by the scope of BS 7671
- electrical installations are designed, constructed, inspected, tested, certificated, used and maintained by a diverse range of people
- these people will need different skills sets depending upon how they are involved with the construction, use or upkeep of the installation.

BS 7671 recognises three types of person which are defined in Part 2:

**Ordinary person.** A person who is neither a skilled person nor an instructed person.

**Instructed person.** A person adequately advised or supervised by skilled persons to enable him/her to avoid dangers which electricity may create.

**Skilled person.** A person with technical knowledge or sufficient experience to enable him/her to avoid dangers which electricity may create.

Some clarification of what is meant by these definitions is given in Appendix 5 which classifies external influences and is expanded upon below.

**Ordinary person**
Being neither electrically skilled nor instructed, ordinary persons do not have sufficient knowledge, experience or supervision to avoid the dangers which electricity may create. Residents of domestic premises and the users of caravans, boats and leisure craft are typical examples as are employees within the workplace unless specifically identified as being skilled or instructed in connection with their work activities. It should be noted at this point that all domestic premises should be designed to be suitable for use by ordinary persons. As such, it is neither here nor there whether the current or prospective occupier is other than an ordinary person.

**Instructed person**
Both persons with some electrical knowledge and those with none may be classified as instructed persons.

This would include for example operators of machinery in an industrial environment and some grades of maintenance staff employed to carry out specific duties for which they have received specific and sufficient instruction. It would also by necessity include trainees and apprentices who have to be given increasing opportunities, albeit whilst suitably supervised, in order to allow them to become skilled themselves in time.

At the other extreme it is necessary from time to time for electrical plant rooms to be cleaned or redecorated. At such times the decorators should be informed of particular hazards which may exist in the particular locations in which they are working. Nevertheless supervision by a suitably skilled person may still be necessary in some circumstances even when basic instruction has been given. Clearly in such cases it will fall upon someone to carry out a risk assessment...

**Skilled person**
Persons become skilled as a result of a number of factors including guided learning achieved from completion of appropriate education and training within a further or higher education establishment and supervised work experience within the work environment in which they wish to become skilled. Generally speaking, becoming skilled takes a considerable period of time during which a transferable skills and underpinning knowledge base is developed which can then be applied to differing situations as the trainee is given ever more practical experience. On completion of a number of predefined objectives, which typically include both practical and theoretical tests, a person is judged to be skilled at a particular level such as electrician, approved
Capability of persons

| BA1 | Ordinary | Uninstructed persons |
| BA2 | Children | Children in locations intended for their occupation |
| BA3 | Handicapped | Persons not in command of their physical and/or intellectual abilities |
| BA4 | Instructed | Persons adequately advised or supervised by skilled persons to enable them to avoid dangers which electricity may create |
| BA5 | Skilled | Persons with technical knowledge knowledge or sufficient experience to enable them to avoid dangers which electricity may create |

NOTE - This class does not necessarily apply to family dwellings

Nurseries Requirement for inaccessibility of electrical equipment. Limitation of temperature of accessible surfaces

Hospitals Requirement for inaccessibility of electrical equipment. Limitation of temperature of accessible surfaces

Electrical operating areas

Closed electrical operating areas

Extract from Appendix 5 of BS 7671 (Concise list of external influences)

electrician, electrical fitter, technician or the like.

However it should always be borne in mind that there are many aspects in which persons may be skilled within a particular occupation and as such when a person considers their suitability or that of their staff to perform particular tasks they should be considering whether the required skills are possessed in order to complete the task in hand properly and safely. An electrician for example who since their initial training has always worked in domestic premises and is fully conversant with the range of activities typical to such premises may be completely out of their depth if placed in an industrial or commercial installation. Similarly although many of the skills picked up by an electrician during their training and day-to-day work experience will be transferable to new situations it may on occasion be necessary for additional skills to be learned to enable particular specialised equipment to be installed and/or maintained; or to attend subject updating activities in order to refresh or update their knowledge. This brings us to the issue of competency.

Competency

The publication of the 17th Edition saw the introduction of a definition of competent person:

Competent person. A person who possesses sufficient technical knowledge, relevant practical skills and experience for the nature of the electrical work undertaken and is able at all times to prevent danger and, where appropriate, injury to him/herself and others.

The wording of this definition is very closely based upon the content of Regulation 16 of the Electricity at Work Regulations 1989 and the guidance provided on this regulation by the Health and Safety Executive in their publication HSR25 Memorandum of guidance on the Electricity at Work Regulations 1989. It is very similar to the definition of skilled person. Regulation 16 of EWR 1989 is reproduced below:

No person shall be engaged in any work activity where technical knowledge or experience is necessary to prevent danger or, where appropriate, injury, unless he possesses such knowledge or experience, or is under such degree of supervision as may be appropriate having regard to the nature of the work.

Looking at this it can be seen that Regulation 16 recognises that competency may be achieved from an individual having sufficient knowledge and experience to avoid danger or injury, or from their being supervised to some extent by someone having such knowledge and experience. As such it can be seen that either a skilled or an instructed person and indeed even an ordinary person, may in some circumstances, be considered to be competent.

However an extremely important aspect of competency, too frequently overlooked, is the need for persons to know the limits of their ability and technical knowledge. This failure is clearly demonstrated by the unacceptably high number of deaths and injuries that occur to persons employed to work on or near electrical installations and persons under their control or indeed to persons using installations designed or installed by someone purported to be competent. It is inevitable that a person will experience new situations, products and working practices in the course of their career, however they must always work within their limits and where necessary either complete the necessary subject updating or engage the services of a specialist possessing the required competencies to carry out the work on their behalf.

In the next edition of Wiring Matters we will look at particular requirements within BS 7671 where the type of person involved is of some significance.