

BS 7671: the 18th Edition report

With the 18th Edition to the Wiring Regulations not too far off (it's due to publish 1st July 2018), Nicole Whitton looks at what is being discussed at committee level now and what changes are likely to be included in what will be BS 7671:2018.

As Leon Markwell discussed in his [March 2016 blog post](#), four panels inform JPEL/64, the decision-making committee of BS 7671:

- Panel A – covers verification and inspection and testing (Part 6 and Appendix 6 of BS 7671) plus any work relating to Parts 1, 2 and 3 of BS 7671.
- Panel B – covers cable sizing and installation and related matters (some of Parts 4 and 5, Appendices 3 and 4 and some Part 7 items of BS 7671).
- Panel C – covers earthing installations and related matters (some of Parts 4 and 5 and some Part 7 items of BS 7671).
- Panel D – covers the remainder of Parts 4 and 5, some Part 7 items and some Appendices of BS 7671).

There are two standard setters that we work with: the IEC (International Electro-technical Committee) and CENELEC (European Committee for Electrotechnical Standardization). Mark Coles explains the working relationships with these standard setters in more detail in his [October 2015 blog](#), and also provides instructions on how to gain access to the various topics being discussed for inclusion in the 18th Edition.

Significant changes

Protection against overvoltages

Geoff Cronshaw discussed the work being undertaken on this change in the [Spring 2013 issue of Wiring Matters](#). I summarise the likely changes here.

Clause 443 is likely to be significantly revised based on the recently published IEC and CENELEC standard. However, the exact requirements will have to be agreed by the UK national committee. Assuming BS 7671 follows the IEC and CENELEC standard the AQ criteria (conditions of external influence for lightning) for determining if protection against transient overvoltage is needed would no longer be included in BS 7671. Instead, protection against transient overvoltage would have to be provided where the consequence caused by overvoltage affects:

- human life, e.g. safety services, medical care facilities;
- public services and cultural heritage, e.g. loss of public services, IT centres, museums; and
- commercial or industrial activity, e.g. hotels, banks, industries, commercial markets, farms.

For all other cases, a risk assessment would have to be performed in order to determine if protection against transient overvoltage is required. If the risk assessment is not performed, the electrical installation would have to be provided with protection against transient overvoltage.

However, an exception not to provide protection is included for single dwelling units where the total economic value of the electrical installation to be protected is less than 5 times the economic value of the SPD located at the origin of the installation.



Protection against switching overvoltages should still be considered.

Protection against fire

Protection against fire resulting from the electrical installation and the use of the electrical installation has been necessary ever since electricity was first introduced into buildings. Chapter 42 contains the requirements for the protection of persons, livestock and property against fire caused by electrical equipment, against burns and overheating and for including precautions where particular risks of fire exist.

It is recognised that RCDs can reduce the likelihood of fires associated with earth faults. However, whilst RCDs can detect earth faults they aren't able to reduce the risk of electrical fire due to series or parallel arcing between live conductors because there is no leakage current to earth. Also, it is understood that the impedance of a series arc fault reduces the load current, which will keep the current below the tripping threshold of the circuit-breaker and the circuit-breaker may therefore not operate to disconnect the circuit.

For this reason details will be included in BS 7671:2018 for the installation of arc fault detection devices (AFDDs) to mitigate the risk of fire in final circuits of a fixed installation due to the effect of arc fault currents.

Changes to Section 753

The scope of Section 753 has been extended to apply to embedded electric heating systems for surface heating. They also apply to electric heating systems for de-icing or frost prevention or similar applications, and cover both indoor and outdoor systems. These include heating systems for walls, ceilings, floors, roofs, drainpipes, gutters, pipes, stairs, roadways and non-hardened compacted areas (for example, football fields, lawns). Heating systems for industrial and commercial applications complying with IEC 60519 and IEC 62395 are not covered. The IEC standard covers issues such as surface temperatures and refers the reader to the appropriate IEC guide.

Documentation is also covered. The designer will be required to provide appropriate information about approved substances in the surroundings of the heating units. For wall heating systems (which are more vulnerable than floors and ceilings from penetration) the standard contains additional requirements to protect against the effects of overheating caused by a short-circuit between live conductors due to penetration of an embedded heating unit. In the case of heating units that are delivered from the manufacturer without an earthed conductive shield, a suitable conductive covering, for example, a mesh metallic grid, with a mesh size of not more than 3 mm for wall installations, shall be provided on site and connected to the protective conductor of the electrical installation. In addition, the IEC standard requires that electric heating systems shall be selected and erected so as to avoid any harmful influence between the heating system and any electrical or non-electrical installations envisaged.

New section – energy efficiency

The worldwide need to reduce the consumption of energy means that we have to consider how electrical installations can provide the required level of service and safety for the lowest electrical consumption. The draft proposals enable a client to specify the level of energy efficiency measures applied to an electrical installation. Installations can also be awarded points for energy efficiency performance levels, for example, transformer efficiency. These

points can be added together with points for efficiency measures to give an electrical installation an efficiency class, ranging from EIEC0 to EIEC4, depending on the number of points awarded.

The new section will cover several energy efficient areas, such as electric vehicles, lighting, metering, cable losses, transformer losses, power-factor correction, and harmonics.

We will be featuring a more detailed article about energy efficiency in a forthcoming issue of Wiring Matters, and will continue to provide as many updates to our readers about the work being undertaken on the 18th Edition to the Wiring Regulations. Please ensure that you have [subscribed to Wiring Matters](#) to ensure that you receive notification of new issues of the magazine.