WIRING MATTERS

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Brief Introduction to The Deployment of Medical IT Systems

By Al Rufaie

Safety concepts

Patients undergoing acute care in healthcare establishments (such as hospitals) require enhanced reliability and safety of the electrical installation as well as the safe and reliable operation of the medical electrical (ME) equipment used. This is to provide security of supplies and minimize the risk of electric shock.

In medical locations the risk to patients is increased due to:

- the reduction in body resistance, since the skin is often cut or broken or their defensive capacity is either reduced by medication or nullified while anaesthetized. These conditions increase the possible consequence of an electric shock under fault condition.
- the threat to the safety of the patient from failure of the supply especially to life-supporting equipment.

The presence of liquids such as blood and saline solutions will also add to the risk, because of increased conductive area and subsequent lower body resistance. The prolonged loss of the mains supply to life-supporting ME equipment may put the patient's life at risk. This equipment must have secure supplies to provide adequate safety.

The introduction of medical IT systems has eliminated the operational hazards listed above. Earth fault currents in a medical IT system depend only on the capacitive coupling between the line conductors and earth. As these capacitances are quite low in value, the resultant capacitive coupling current is quite low, i.e. not dangerous. Similarly, a single earth fault will not cause a trip, it just creates a reference to earth (as in a TN system) so continuity of supply is present.

Shock hazards due to bodily contact with both AC and DC electric currents are well known and documented in *(*IEC/TR2 60479-1 *Effects of current on human beings and livestock – General aspects).* This Technical Report indicates that, depending on skin resistance, path and area of contact, impedance of the human body, environmental conditions and duration, currents of the order of 10 mA passing through the human body can result in muscular paralysis followed by respiratory paralysis. Eventual ventricular fibrillation can occur at currents just exceeding 20 mA.
In a normal environment, the average body impedance may be assumed to be 2 kΩ but in a medical location, where ME equipment is being used, the value given in BS EN 60601-1 (medical electrical equipment – part 1: general
requirements for basic safety and essential performance) is only 1 kΩ. Therefore, the risk in medical locations is increased, which is why the conventional touch voltage in medical locations of Group 1 and Group 2 is reduced from 50 V AC to 25 V AC.

Currents of the order of 10 µA have a probability of 0.2 % for causing ventricular fibrillation or pump failure when applied through a small area of the heart. At 50 µA, the probability of ventricular fibrillation increases to the order of 1 % *(BS EN 60601-1).*

Historical background

Since the early 1920s, appropriate safety measures for electrical installations in medical locations have been accorded considerable importance throughout the world.

International development of unearthed power supply (IT) systems in medical locations

The use of unearthed power supply systems *(isolated terra – IT)* in hospitals commenced in the **USA** between 1920 and 1930. During this period some very high-profile cases involving explosions and fires in operating theatres, in which combustible anaesthetic gases where used, such as cyclopropane and anaesthetic Ether. In 1939, this prompted the National Fire Protection Association (NFPA) in 1939 to begin to develop guidelines with regard to the safe use of electrical engineering in hospitals. The first Regulation was published in the USA in 1944 *Safe Practice in Hospital Operating Rooms.* Further guidelines, NFPA 56, were published in 1949, recommending the use of unearthed power supply systems in all rooms where combustible gases are present. This then became the basis of NFPA 99, 'The American Standard'. In 1959, the NFPA Standard was incorporated into the *National Electric Code (NEC).* Further developments of this Standard took place-resulting in the publication of NFPA 70 National Electrical Code – NEC in 2017. Within this code, Article 517 covers the requirements for Healthcare Facilities.

As in all IT systems, an insulation monitoring device (IMD) is incorporated to indicate a first earth fault. Within the USA, this function is carried out by a line isolation monitor (LIM).

During this period of development, other countries were looking at other safety aspects, not only fires and explosions, but the risk of electric shock and continuity of supplies.

The **Canadian** Standard Association (CSA) published Standard Z 32 in 1963 under the title *Code for Prevention of Explosion and Electric Shock in Hospital Operation Rooms*. By 1970, this Code specified the installation of unearthed power supply systems for all "anaesthetizing locations".

In **Germany** specification for electrical installations in hospitals (DIN VDE 0170) were first published in 1962. An unearthed system with appropriate insulation monitoring devices (IMD) were recommended for certain rooms such as operating theatres and intensive care units.

In **Italy**, the Associazione Elettrotecnica Italiana (AEI) introduced a Standard *Impianti elettici in locali adibiti – (Electrical installations in locations for medical use)*. This standard recommended the deployment of unearthed power supply systems, including monitoring, in operating theatres.

In the **Netherlands,** unearthed power supply systems were introduced in 1975 under the Standard NEN 3134 *The Guide for Electrical Installation in Medically Used Rooms.* This called for these systems to be installed in operating theatres and other surgical rooms. It stipulated that the power rating of a transformer should not exceed 1.6 kVA and the leakage current to not exceed 35 µA. Special requirements were imposed on the monitoring device.

In **Australia**, Code AS 3033 was published in 1976, *Rules for Electrical Wiring and Equipment in Electromedical Treatment areas of Hospitals*. Here again, the unearthed power system with appropriate monitoring devices for the overall impedance of the system with ELCB and load monitoring of the transformers were also specified.

Spain published its Standard UNE 20-615-788 *Systems with isolating transformers for medical applications and control and protective equipment associated therewith* in 1978.

Similar recommendations for unearthed power supplies with monitoring was introduced in **Chile** a year later, NSEG 4.E.P *"Power supply for medically used rooms"* and in **Japan** in 1982.

The Electrotechnical Council of **Ireland** published the standard Technical Committee (TC 10) six years later. As well as the unearthed system, special emphasis was placed on equipotential bonding and the use ECLB.

Switzerland followed by publishing its installation Standard for medically used areas, Med 4818/10.89 *Regulation for electrical installation in medically used rooms*. It contained a clear explanation of the unearthed power supply system and resistive insulation monitoring.

All the above codes and standards for medical locations initially followed the recognised recommendations for sub-dividing the medical rooms into groupings (G0, G1 and G2) depending on the type of activity and any requirement where continuity of supply is essential in case of a first fault. Also, do note that the prevention of electric shock in G2 locations is the most onerous. Refer to BS 7671:2018 for definitions of these groupings. All countries standards recommended using an IT transformer with associated insulation monitoring for G2 locations-to supply life-support ME equipment.

Throughout the years mentioned above, the requirements for medical transformers and insulation monitors were not specified in the international standard, so each country listed its own requirements for transformer ratings and leakage currents including temperature/load monitoring. These requirements varied from 1.6 kVA in the Netherlands to 10 kVA in the USA. Transformer leakage currents varied from 15 µA in Canada, 100 µA in Japan and 500 µA in France and Germany. Transformer temperature/load monitoring were recommended by Germany and Australia only.

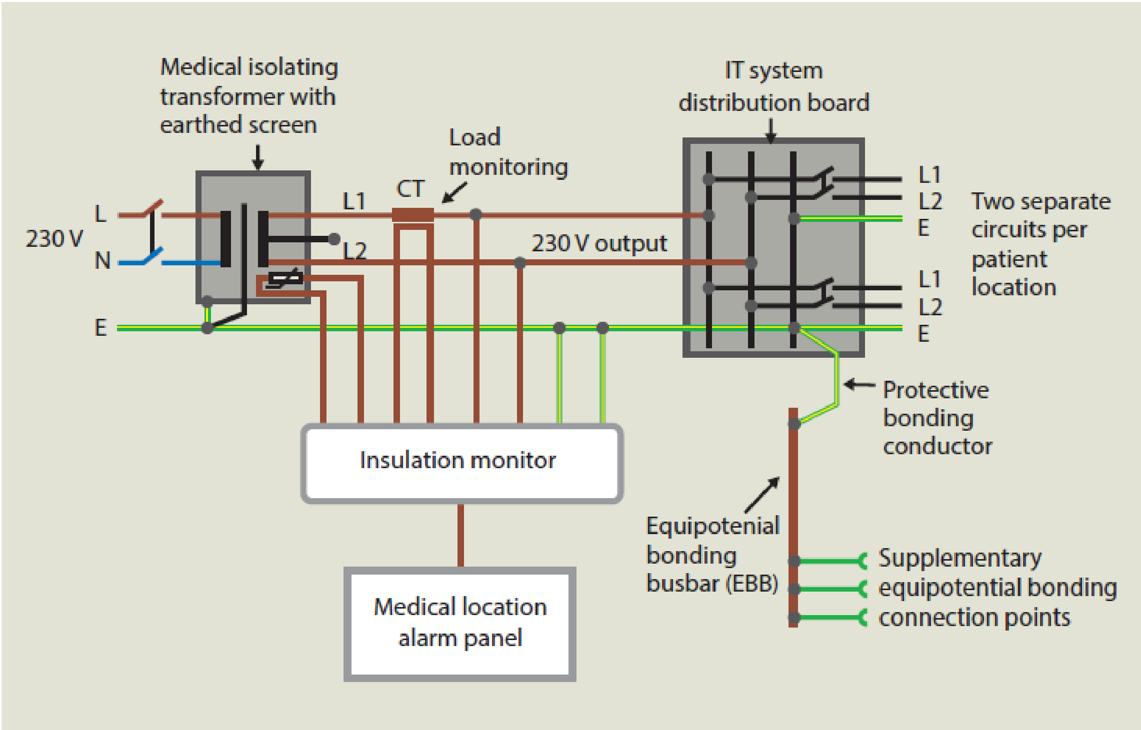
Development of the IEC Regulations for medical locations

In the mid-1980s, the IEC proposed a unified international standard to cover installations in Medical Locations. This task was first offered to IEC TC 62 (Electrical equipment in medical practice). This was passed onto Sub Committee, SC 62A (Common aspects of electrical equipment used in medical practice), in particular Working Group (WG) 2. After some discussions, both at national and international levels, this project, having been recognised as an installation standard, was passed on to TC 64 (Electrical installations and protection against electric shock). A new *WG* (26) was formed under IEC TC 64 to continue with this task. The initial title of the proposed document was *Electrical Installations in Medical Locations and Associated Areas* and later on to *Medical Locations*. On completion, it was to be incorporated in Part 7, Special Locations (Section 710) of IEC 364 (currently IEC 60364).

Subsequently, international standards for the medical IT transformer and associated IMDs were developed and published, these are titled:

IEC 61558-2-15 (BS EN 61558-2-15: 2012) *Particular requirements and tests for isolating transformers for the supply of medical locations* and IEC 61557-8 (BS EN 61557-8: 2015), Annex A and Annex B (MED-IMD *Medical insulation monitoring devices for IT systems*).

The standard for medical IT transformers unified the requirements for its rating (0.5 kVA to 10 kVA) and its leakage current not to exceed 0.5 mA. Overload monitoring is required and achieved by incorporating an over temperature monitor. Various other requirements such as rated frequency, supply voltage, inrush current and voltage regulation were also specified. It is interesting to note that the 0.5 mA leakage current is equivalent to types B and BF patient leakage currents of medical electrical equipment (BS EN 60601-1), under single fault condition (SFC).



Introduction of the Medical IT system to the UK

Within the **UK,** guidance on electrical installations in hospitals (healthcare facilities) had been published by the Department of Health (DoH) in various publications such as Health Guidance Notes (HGN) and Health Technical Memorandums (HTMs). In particular in HTM 7 circa 1960s *Electrical Services Supply and Distribution*. This HTM was updated to HTM 2007 (circa 1996). Two further updates took place, HTM 06-1 (circa 2007) and HTM 06-01 (circa 2017).

As the international development of the standard for installations in medical locations was assigned to IEC TC 64, the logical progression for this work within the UK was assigned to JPEL/64 in the late 1980s.

In 1988, the IEE (later the IET) approached the chief engineer at the DoH, requesting a nominee from the Department to join WG 26 at IEC level. The undersigned was nominated by the DoH and joined IEC TC 64 WG 26 in 1988.

In the IEE Wiring Regulations Sixteenth Edition (BS 7671:1992), Part 6 was assigned to “Special Installations or Locations” and Part 7 assigned to “Inspection and Testing”. Section 610 of Part 6 was reserved for future use, i.e. for “Medical Locations”. Later Part 6 was aligned with the IEC/CENELEC numbering system and Medical Locations became Section 710.

WG 26 of IEC TC 64 commenced drafting Section 710 in 1988 (over 31 years ago). Various Committee Drafts (CDs) were published over the next 14 years. Eventually the first IEC Standard (IEC 60364-7-710) for Medical Locations was published in 2002.

The first time the DoH made a brief reference to special requirements for medical locations was in HTM 2007 (circa 1996) based on one of the CDs of WG 26. At IEE level, the first publication to include a reference to medical locations was in Guidance Note 7, *Special* Locations, Chapter 10 published in 1998.

Part of the discussions at WG 26 focused on the allocation of loading associated with various Group 2 locations to assist with the sizing of the medical IT transformer. This was to be included in an Informative Annex:

Allocation of recommended loads associated with Group 2 locations

Group 2 location	**Recommended loads**
Thoracic Theatre	5.5 kVA / Theatre
Cardiac Theatre	7.5 kVA / Theatre
Intensive Care Unit	3 kVA / Bed
Recovery Room	2.5 kVA / Bed
Paediatric ITU (ICU)	3 kVA / Bed
Ear Nose and Throat (ENT) Theatre	5.5 kVA / Theatre
Neonatal Unit	3 kVA / Bed
Paediatric Theatre	5.5 kVA / Theatre

However, this was omitted as different countries applied their own individual requirements.

It took another 10 years of discussions when the CENELEC (HD) Standard was published in 2012. The Medical Locations Standard (Section 710) was first incorporated in the IET Wiring Regulations, BS 7671:2008+A12011.

Currently these standards, (IEC 60364-7-710/CLC 60364-7-710) are being revised and updated at international level with a possible publishing date marked for some time in 2020.

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August 2019

BS 7671:2018 Frequently Asked Questions

By Geoff Cronshaw

The IET's technical helpline receives a wide range of frequently asked questions. Here are just a few of the common questions received.

Room containing a bath or shower

Socket-outlets

Are 230 V socket outlets permitted in a room containing a bath or shower?

230 V 13 A socket-outlets are allowed but only if they are at least 3 m horizontally from the boundary of zone 1.

Plate switches

Are 230 V lighting switches (plate switches) permitted in a room containing a bath or shower?

A plate switch is allowed **outside** the zones of a bathroom. A switch must be suitable for the location. The cords of cord-operated switches are allowed in zones 1 and 2 and are recommended for bathrooms and shower rooms.

Luminaires (light fittings)

Are 230 V light fittings permitted above a shower or bath (zone 1) in a room containing a bath or shower?

Yes, 230 V fittings may be installed above a shower or bath, but they must be at least IPX4.

Extractor fans

Are 230 V extractor fans permitted in zones 1 and 2 of a room containing a bath or shower?

Yes, a suitable 230 V extractor fan may be installed in zones 1 and 2, and outside the zones. If an extractor fan is installed in zone 1 or 2 it must be protected against the ingress of moisture to at least IPX4.

An extractor fan supplied from a lighting circuit for a bathroom without a window should have its own means of isolation, as otherwise replacement or maintenance of the fan would have to be carried out in the dark. An isolation switch for a fan with an overrun facility will need to be triple-pole (switch wire, line and neutral), and must be installed outside zones 0, 1 and 2.

Supplementary bonding

Does supplementary bonding need to be installed?

Regulation 701.415.2 (last paragraph) allows supplementary bonding to be omitted where the location containing a bath or shower is in a building with a protective equipotential bonding system in accordance with Regulation 411.3.1.2 and provided all of the following conditions are met:

- All final circuits of the location comply with the requirements for automatic disconnection according to Regulation 411.3.2.
- All final circuits of the location have additional protection by means of an RCD in accordance with Regulation 701.411.3.3.
- All extraneous-conductive-parts of the location are effectively connected to the protective equipotential bonding according to Regulation 411.3.1.2.

Sockets in kitchens

How far away can a socket outlet be from a kitchen sink?

Equipment must be suitable for the environment it is installed in and whilst BS 7671 does not give a distance the IET *Electrician's Guide to the Building Regulations*, 5th Edition recommends a minimum of 300 mm from the edge of the sink unit to the socket outlet.

Buried cables

How deep should cables be buried in the ground?

Buried cables, conduits and ducts shall be at sufficient depth to avoid being damaged by any reasonably foreseeable disturbance of the ground. A depth of less than 0.5 m is usually inadvisable. See Regulation 522.8.10 of BS 7671 for more information.

Earthing at lighting points

Is a circuit protective conductor required at a lighting point?

Regulation 411.3.1.1 states: "a circuit protective conductor shall be run to and terminated at each point in wiring and at each accessory except a lampholder having no exposed-conductive-parts and suspended from such a point." See BS 7671 for more information.

Steel wired armoured cables

Can the armour of a steel wired armoured cable be used as a CPC?

Regulation 543.2 lists types of protective conductor.

543.2.1 A protective conductor may consist of one or more of the following:

(i) A single-core cable

(ii) A conductor in a cable

(iii) An insulated or bare conductor in a common enclosure with insulated live conductors

(iv) A fixed bare or insulated conductor

(v) A metal covering, for example, the sheath, screen or armouring of a cable

(vi) A metal conduit, metallic cable management system or other enclosure or electrically continuous support system for conductors

(vii) An extraneous-conductive-part complying with Regulation 543.2.6.

Note: The designer will still need to determine if the armour is suitable to be used as a CPC.

Meter tails

How long can consumers meter tails be?

Where consumers tails are protected against fault current by the distributors cut-out, the method of installation, maximum length and minimum cross-sectional area (csa) of the tails must comply with the requirements of the distributor.

More information is given in the IET *On-Site Guide* (BS 7671:2018), 7th Edition.

Conclusion

This article is just a brief overview of some typical queries that we receive on the IET's technical helpline. For the exact requirements please refer to BS 7671:2018. More information is available in the IET Guidance Notes, the IET Electricians Guide to the Building Regulations and On-site Guide (BS 7671:2018), 7th Edition.

Setting the Standard

By Steven Devine

This article explores a brief history of standardization, the current process of standardization and why it is so important for our industry today.

The first UK Wiring Rules

FIRST WIRING RULES

Society of Telegraph Engineers and of Electricians

RULES and REGULATIONS for the prevention of Fire Risks arising from Electric Lighting, recommended by the Council in accordance with the Report of the Committee appointed by them on **May 11, 1882**, to consider the subject.

The Wiring Regulations have been around since 1882, when the first version was published by The Society of Telegraph Engineers and of Electricians. The fundamental principle of these rules was to provide minimum safety standards for the use of electricity for lighting circuits to reduce the risk of fire.

Of course, over the one hundred and thirty-seven years that have passed since the 'First Wiring Rules', the rules have changed significantly. The way in which we now use electricity has also changed dramatically, especially in the last thirty-forty years with the inrush of electronic devices and we are now in the era of prosumer's installations and electric vehicles that require a huge amount of energy in comparison to common household appliances, so we can expect the requirements to be amended further.

Global standardization

Since the discovery of electricity and the creation of electrical equipment, the farthest corners of the world have been drawing nearer and nearer, naturally, this has led to global trade of products and equipment. However, it was not always possible to deal internationally in the way we do today. This was primarily due to different products and equipment having different characteristics and supply requirements (different standards).

Let's first go back to 1882 when the first version of what we call today 'The IET Wiring Regulation' was published. At this time, there were scientists all over the world experimenting with electricity, trying to harness its power to use in various applications. This is great for discovering new ways in which electricity can be used but not necessarily when it came to where it can be used. This led to the emergence of regional electrotechnical societies. From 1870 to 1890 there was a significant growth in learned societies. In 1871 the Society of Telegraph Engineers was founded in London, by 1880 they expanded to become the Society of Telegraph Engineers and Electricians and in 1888 the name had changed to The Institution of Electrical Engineers and in 2006 the IEE merged with the Institute of Incorporated Engineers to become the Institution of Engineering and Technology.

Even today we can still see the drawbacks of working in isolation. From something as simple as having to have an adapter so you can use your appliances abroad to some more complex issues arising from varying supply frequencies, voltages and even earthing arrangements.

The complications of differing global standards first came to light at a meeting of the delegates to the International Electrical Congress, held in St. Louis, USA in 1904. It is documented in the report that "…steps should be taken to secure the co-operation of the technical societies of the world, by the appointment of a representative Commission to consider the question of the standardization of the nomenclature and ratings of electrical apparatus and machinery."

The International Electrotechnical Commission (IEC) was officially founded at the inaugural meeting at the Hotel Cecil (see the picture at the end of this article) in London in June 1906 and by 1914 there were four technical committees responsible for developing international electrotechnical standards. Despite some interruption to the progress of IEC work due to the First World War, by 1923 there were ten IEC technical committees. The IEC currently has 207 technical committees developing standards for a wide range of equipment from switches to lasers. A full list of the committees and its members can be found here. The IEC is also responsible for developing Electropedia: The World's Online Electrotechnical Vocabulary where you can find the definition of any electrical term used in international standardization.

IEC Technical Committee 64 (IEC TC 64)

TC 64 is responsible for IEC 60364, which is the standard for electrical installations and protection against electric shock. Essentially it is the international version of BS 7671. When developing an international standard, the requirements have to be applied to countries all over the world, it is therefore essential that requirements aren't too restrictive and that they can be introduced without having a detrimental impact on the electrical industry in a particular country. If there are IEC standards that national committees are unable to adopt the national committee can request A Some Countries Note (SCN). Unlike BS 7671, the IEC 60364 series is sold in separate parts, so if you want Chapter 53 you will have to buy IEC 60364- 5-53, for €300

At IEC level the first draft of an amendment or new standard is made available to national committees is as follows:

> "Committee Draft (CD). National committees are invited to submit comments and any requests for SCNs on this draft for consideration by international experts. Depending on the complexity of the subject and the number of initial comments it may be necessary to issue a 2nd or 3rd CD to develop the technical requirements.
>
> Committee Draft for Vote (CDV) national committees are invited to submit a positive or negative vote on this document and provide comments of a non-technical nature. It is expected that comments of a technical nature will have been addressed at CD stage.

Final Draft International Standards (FDIS). National committees are invited to submit a positive or negative vote. This is the last opportunity for national committees to comment before it becomes an international standard."

CENELEC Technical Committee 64 (CLC/TC 64)

Central European Normalization Electrotechnique (CENELEC) is the European committee for electrotechnical standardization. Designated as a European Standards Organization by the European Commission, CENELEC is a non-profit technical organization set up under Belgian law. It was created in 1973 as a result of the merger of two previous European organizations: CENELCOM and CENEL.

CLC/TC 64 is the technical committee responsible for HD 60364, which is the European standard for Electrical installations and protection against electric shock. This is essentially the European version of BS 7671. The difference between the HD and the IEC publications is that the HD is normative in the UK. This means that electrical installations in the UK are to meet the technical intent of HD 60364. Any technical amendments at a European level must be adopted at a national level. Often (similar to IEC 60364) there are requirements that cannot be easily met and conflict with national standards. If this happens then the national committee of that country can request a Special National Condition (SNC) once the SNC has been included in the HD the requirements detailed in the SNC become normative for that country rather than informative. When a section of a standard is normative it is expected that the information is used in a similar way to a requirement. When the information is informative it is for information and guidance.

At CENELEC level the first draft series of drafts made available to national committees is as follows:

> "Committee Draft (CD). National committees are invited to submit comments and any requests for SCNs on this draft for consideration by international experts
>
> Committee Draft for Vote (prEN) CENELEC members national committees are invited to submit a positive or negative vote on this document and provide comments of a non-technical nature. It is expected that comments of a technical nature will have been addressed at CD stage
>
> Final Draft Harmonized document (FprEN). CENELEC member national committees are invited to submit a positive or negative vote. This is the last opportunity for national committees to comment before it becomes a HD."

Joint Power and Electrotechnical Committee (JPEL/64)

JPEL/64 is a joint committee managed by BSI and the IET responsible for the development of BS 7671 (The IET Wiring Regulations). Members of JPEL/64 are representatives from a wide range of UK organizations integral to the electrical industry. Many of the requirements that we have in BS 7671 have the same technical intent as the CENELEC HDs. Requirements that are UK specific and not derived from HD 60364 can be identified by the number 200, 201, 202 etc. For example, Regulation 412.1.201:

> **"421.1.201** Within domestic (household) premises, consumer units and similar switchgear assemblies shall comply with BS EN 61439-3 and shall:
>
> (i) have their enclosure manufactured from non-combustible material, or
>
> (ii) be enclosed in a cabinet or enclosure constructed of non-combustible material and complying with Regulation 132.12."

This requirement is UK only and cannot be found in either IEC 60364 or HD 60364.

When BS 7671 is reviewed and amended a draft for public comment (DPC) is issued to the public so that they can comment on amended and new requirements. The DPC is made available for a period of three months where comments can be submitted for consideration by JPEL/64. As a CENELEC member we are required to adopt HD requirements. This is essentially what drives the BS 7671 review cycle.

UK involvement with IEC and CENELEC standards

The UK has many experts that sit on the international and European committees to contribute to the development of standards. The combined global knowledge and expertise is essential to align standards across the world and in Europe. In addition to UK experts attending IEC and CENELEC meetings, the UK national committee JPEL/64 review, submit comments and votes on relevant electrotechnical standards. This provides an opportunity for the UK industry to consider the implications that new or amended HD and CENELEC standards may have on the industry at a national level. When the draft standards are made available for comment or vote, it is at this time that JPEL/64 have the opportunity to suggest any modifications or corrections and to consider whether a SNC or SCN is required.

What is important to remember is that the UK have a very strong influence on IEC and CENELEC standards development long before the requirements are implemented in the UK. This allows ample time for organizations represented on JPEL/64 to advise and inform their members of any relevant upcoming changes.

The importance of standards

Standardization is important for several reasons. BS 7671 is first and foremost a safety standard to provide a framework for the electrical industry in the UK and many other countries that have adopted the requirements of BS 7671. Earlier, I mentioned that the first edition of the wiring rules was intended primarily to reduce the risk of fire. However, the focus is now on the whole of product and installation safety and international compatibility. The benefit of standards extends beyond safety and plays an important role for EU and international trade of equipment and materials. In order for designs to be compatible, manufacturers need to design to a common standard so that their designs can be installed in accordance with installation standards of the countries they intend to market their products to. As installation standards and product standards are intertwined with one another it is therefore essential that the standards are aligned for practical application.

The process of standardization that we currently work to provides the opportunity around the world, especially in Europe, to trade goods and materials without the need to have them repeatedly verified every time they are supplied to a country with a different standard. This comes back to the fundamental principle of standardization, cooperation of the technical societies of the world.

CENELEC and Brexit

There have been many discussions about the impact of Brexit on UK standards. I am happy to reassure that regardless of the outcome on the 31st October 2019 the UK will remain members of CENELEC and standards development will continue as usual. For more information on Brexit and CENELEC please visit the following page on the BSI website https://www.bsigroup.com/en-GB/about-bsi/uk-national-standards-body/standards-policy-on-the-uk-leaving-the-eu/

In summary

To summarize we have three tiers of standardization in the UK; at the top there is IEC who are responsible for global standards, next in line is CENELEC who are responsible for European standards and finally we have JPEL/64 responsible for UK national standards.

At each stage there is a rigorous process for our national electrical installation standard (BS 7671) which requires any new and amended requirements to be reviewed and agreed by all JPEL/64 members, experts and during the DPC period, the general public. The DPC period is a window of opportunity for the those interested to see the proposed changes to a version of a standard and make comments. This version is made available publicly on BSI's standards development website https://standardsdevelopment.bsigroup.com/ . There are also equivalent BSI bodies for other UK electrical standards, such as FSH/12 for BS 5839 for Fire Alarms. (JPEL/64 isn't responsible for all UK standards!)

It can sometimes take many years to implement an IEC or CENELEC requirement at a national level. This, however, provides our national committees with plenty of time to prepare our industry for any upcoming changes.

Solar & Storage Live

We are pleased to announce that the IET is partnering with Solar & Storage Live again this year (17th – 19th September, NEC Birmingham).

You will have the chance to hear from Nadee Wickramasinghe from our Energy Sector Executive Committee, speaking in the Responsive Power stream at 11:45 – 12:05 on 19th September, as well as 250+ other energy industry experts over the three days. The show also includes 100+ exhibitors and an all-new start-up Innovation Zone.

Come and see the IET on stand P26 to catch up with what we are doing in the areas of electric vehicle charging, energy storage and Solar PV. Talk to our experts and sign up to take part in Drafts for Public Comment for some of our upcoming guidance titles.

The show will provide a cross-sectoral experience, bringing together the entire energy value chain and has a particular focus on solar, storage and EVs as key enabling technologies for the energy transition.

Key themes for the show are:

- Responsive Power
- Future Power networks and markets
- Energy Storage
- Solar Tech & Installation
- EV & Infrastructure

Each of the above themes has an entire dedicated stream of content running over the 3 days, so whatever your niche within energy and renewables, there will be something for you.

Register for your free visitor badge at https://www.terrapinn.com/exhibition/solar-storage-live/index.stm

Hope to see you there, on stand P26.

IET announces new amendment to BS 7671 (IET Wiring Regulations)

- The amendment follows advances in technology enabling a more practical solution for electric vehicle charging installations

The IET has announced a new amendment to BS 7671:2018 (IET Wiring Regulations 18th Edition). The national Wiring Regulations committee, JPEL/64, today agreed the publication of Amendment 1, which will consist of a stand-alone update to Section 722: Electric Vehicle Charging Installations.

The amendment, which is due to publish in early 2020, will be free to view on the IET website, and only form part of a consolidated new Regulations following the next major amendment to BS 7671, expected in 2022.

The amendment follows advances in technology that were not available when BS 7671:2018 published, enabling a more practical solution for the installation of charging points. Functionality built directly into charging equipment uses existing technology, but employed in a new way, allowing charging points to be deployed more widely than ever before.

The updated Section 722 will make installing charging points quicker and easier, and will reduce the cost of installations for both installers and consumers.

The UK government is investing £400 million to accelerate the roll-out of charging infrastructure to help meet its target of at least 50% of new car sales to be ultra-low emission by 2030*.

Mark Coles, Head of Technical Regulations at the IET, is proud of the way that JPEL/64 has been able to respond to the changes in technology. He explains: “JPEL/64 has been able to address a new opportunity for electric vehicle charging equipment that provides a practical, cost-saving solution benefiting industry, consumers and government alike, to help the UK lead the way in the roll-out of infrastructure to support the electric vehicle revolution.

“This update to the IET Wiring Regulations puts the electrical industry at the forefront of driving technological innovation to ensure the installation of practical, safe charging points that are accessible to all.

“By producing Amendment 1 to BS 7671:2018 as a stand-alone, free-to-view document, this updated Section 722 will reach industry much quicker than a full, consolidated amendment would allow, enabling installers to take advantage of BS 7671:2018+A1:2020 as soon as possible.”

Keep an eye on theiet.org/updates to for information on the Draft for Public Comment and publication information.

Proposed timeline

04 September 2019:	Amendment 1 approved by JPEL/64
October 2019:	The Draft for Public Comment for Amendment 1 will be available for 60 days to allow industry to respond to the proposed changes (see theiet.org/updates for details)

January 2020: Amendment 1 will publish as a free-to-view document on the IET website and come immediately into effect, eschewing the usual 6-month adjustment period to ensure industry can immediately take advantage of the changes

*Government stats taken from https://www.gov.uk/government/news/government-launches-road-to-zero-strategy-to-lead-the-world-in-zero-emission-vehicle-technology