

New non-combustible enclosure requirement for consumer units

Amendment No. 3 to BS 7671:2008 (IET Wiring Regulations Seventeenth Edition), which was published in January and comes into effect on 1 July, will include a new regulation requiring consumer units and similar switchgear assemblies in domestic premises to have a non-combustible enclosure.

The wording of the regulation is as follows:

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.

NOTE 1: Ferrous metal e.g. steel is deemed to be an example of a non-combustible material

NOTE 2: The implementation date for this regulation is the 1st January 2016. This does not preclude compliance with this regulation prior to this date.

BS EN 61439-3, mentioned in the regulation, is entitled Distribution boards intended to be operated by ordinary persons (DBO).

Implementation date

As stated in Note 2 to the new regulation, the implementation date for the regulation is 1 January 2016. This is six months later than the coming into effect of the third amendment as a whole.

The purpose of the delay in implementation is to allow a period of co-existence of both metal and plastic enclosed consumer units and allow time for manufacturers to work existing and new products through the supply chain. Nevertheless, as is also indicated in Note 2, the delayed implementation does not preclude compliance with the regulation prior to 1 January 2016.

Reason for the new regulation

Regulation 421.1.201 was introduced because of reports from fire investigators of a recent trend of increasing numbers of fires involving consumer units having a moulded thermoplastic enclosure. See Figures 1, 2 and 3.



Figure 1: A consumer unit located under the stairs in a terraced three-storey house



Figure 2: Typical fire damage to the enclosure of a plastic consumer unit in a fire confined to the understairs cupboard of a two storey house

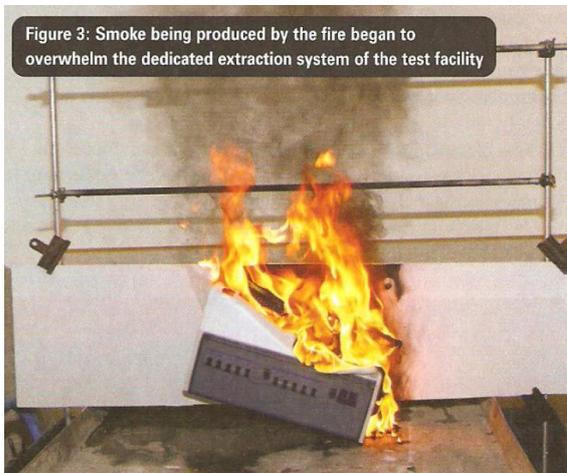


Figure 3: Smoke being produced by the fire began to overwhelm the dedicated extraction system of the test facility

The cause of the fires investigated was almost invariably found to be resistance heating as a result of poor electrical connections due to poor workmanship or lack of maintenance.

Examples of such poor workmanship are thought to include:

- failure to tighten neutral conductor connections to the same torque as line conductor connections due to a misconception that neutral conductors carry less current,
- inadvertently taking cable insulation inside the terminal at a connection, resulting in the securing screw or clamp of the terminal not making proper contact with the conductor,
- failure to check factory installed connections for tightness where required to do so by the manufacturer, and
- tightening connections to an incorrect torque and/or with inappropriate tools.

The crucial importance of checking that all electrical connections are properly made, and of taking remedial action where necessary, should never be forgotten.

Whilst the main cause of fire within plastic consumer unit enclosures is without doubt poor workmanship, other potential causes of fire within plastic consumer unit enclosures are thought to include:

- the type of internal components, such as where terminations have only one securing screw or are of the 'cage clamp' type), and
- where increased heat transfer to the enclosure is caused by the close proximity an internal item, such as a neutral bar or a conductor terminated at the neutral bar and protruding above it.

Intent of the new regulation

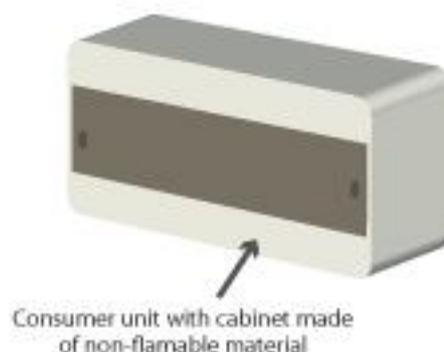
The intent of Regulation 421.1.201 is considered to be, as far as is reasonably practicable, to contain any fire within the enclosure or cabinet and to minimise the escape of flames.

Requirements to be met by the non-combustible enclosure or cabinet

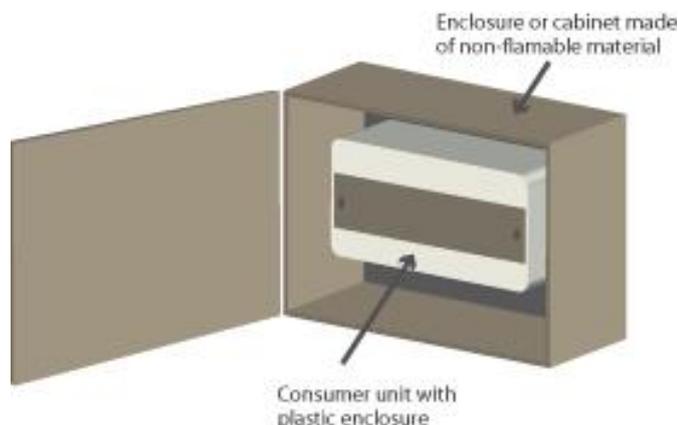
Regulation 421.1.201 gives the choice of either using a consumer unit (or similar switchgear assembly) having an enclosure manufactured from non-combustible material or using a consumer unit having an enclosure made from some other material, such a plastic, and installing it in a cabinet or enclosure constructed of non-combustible material. See Figures 4(a) and 4(b). In either case, certain requirements need to be met by the enclosure or cabinet, as explained below.

Figure 4 – The two ways to comply with enclosure requirements of Regulation 421.1.201

(a)



(b)



There is no published definition for the term 'non-combustible' that aligns with the intent of Regulation 421.1.201. However, as stated in Note 1 to the regulation, ferrous metal, such as steel, is deemed to be an example of a non-combustible material.

Steel will no doubt be the material usually employed in the manufacture of the enclosure or cabinet. Nevertheless, it will be open to manufacturers to offer enclosures or cabinets made from other types of material that they claim to be non-combustible within the intent of Regulation 421.1.201. In this case, however, that manufacturer would have to provide suitable evidence to support the claim of non-combustibility, and it is not presently clear what criteria would be used to judge the non-combustibility of a material other than non-ferrous metal.

The non-combustible enclosure or cabinet must provide a complete envelope (e.g. base, cover, door and any components such as hinges, screws and catches) as necessary to maintain fire containment. All blanks, circuit-breakers and other devices must be contained within the non-combustible enclosure or cabinet. Figure 5 shows an example.

Figure 5 – Example of non-combustible enclosure for consumer unit

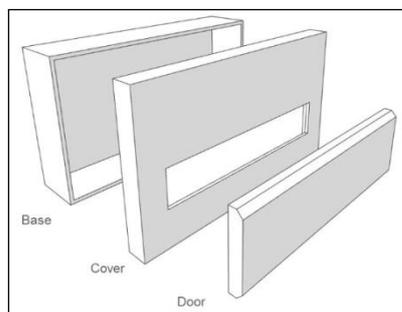


Image reprinted with kind permission from Hagar

Where the option of installing a plastic-cased consumer unit inside a non-combustible cabinet or enclosure is chosen, the non-combustible enclosure or cabinet must be arranged to afford adequate space for the initial installation and later replacement of individual items of electrical

equipment, and accessibility for operation, inspection, testing, fault detection, maintenance and repair, as required by Regulation 132.12.

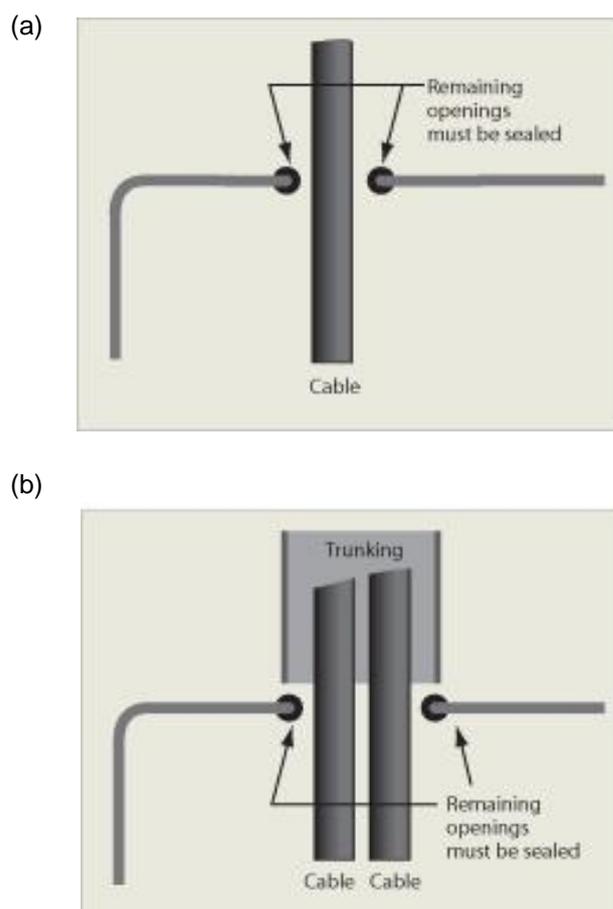
Sealing of wiring entries

It is important for the installer to seal all openings into the enclosure or cabinet for cables, conduits, trunking or ducting that remain after the installation of cables. See Figure 6.

The intent of the sealing is that, as far as is reasonably practicable, any fire is contained within the enclosure or cabinet and the escape of flames to the surroundings of the cabinet or enclosure or into conduits, trunking or ducting is minimised, as intended by Regulation 421.1.201.

Good workmanship and proper materials must be used, and account must be taken of the manufacturer's relevant instructions, if any.

Figure 6 – Sealing of wiring entries



Similar switchgear assemblies

The phrase 'similar switchgear assemblies' in Regulation 421.1.201 means assemblies used for the same fundamental application as a consumer unit. A consumer unit is defined in Part 2 of BS 7671 as: 'Consumer unit (may also be known as a consumer control unit or electricity control unit). A particular type of distribution board comprising a type-tested co-ordinated assembly for the control and distribution of electrical energy, principally in domestic premises, incorporating manual means of double-pole isolation on the incoming circuit(s) and an assembly of one or more fuses, circuit-breakers, residual current operated devices or signalling and other devices proven during the type-test of the assembly as suitable for such use.'

An example of a similar switchgear assembly is a three phase distribution board intended to be operated by ordinary persons. This would have to have isolation that interrupts the three incoming line conductors and the neutral, rather than just double-pole isolation as mentioned in the above definition.

Consumer units in outbuildings or on the outside of a building

Regulation 421.1.201 uses the term 'premises'. The question could therefore arise of whether the requirements of the regulation apply to a consumer unit or similar switchgear assembly within an outbuilding such as a garages or shed, or mounted on the outside of a building.

Some dictionary definitions of 'premises' are 'a house or building, together with its land and outbuildings' and 'the land and buildings owned by someone'. However, Regulation 421.1.201 was principally introduced to cover the interior of a household building and any garage or other outbuildings integral, attached, or close proximity to that building.

Doubt could exist about whether or not a particular outbuilding could reasonably be considered to be in close proximity to the household building. A way of resolving this might be to make a judgement of the likelihood that fire originating inside the enclosure of consumer unit or similar switchgear in the outbuilding might lead to the outbreak of fire in the household building or in any outbuilding integral or attached to it. Relevant factors to consider about the outbuilding about which doubt exists might include whether or not that building or its expected contents are highly combustible.

Regulation 421.1.201 is not intended to apply to a consumer unit or similar switchgear assembly that is not within a building, such as a unit mounted outdoors on the outside of a building.

Residential premises such as care homes

The regulation is not intended to apply to consumer units and similar switchgear assemblies in residential care homes or other premises not intended for household use. The concerns leading to the Regulation 421.1.201 being introduced related specifically to domestic premises, which are not covered by fire safety legislation in the way that premises such as care homes are. The regulation therefore uses the term 'domestic (household) premises'.

Separation from lightning conductors

The Rev Christopher Miles C Eng. FIET takes us through some important points on the requirements of providing separation from lightning conductors.

Because of the complexity of the requirements it is not possible to include full detail here. For more detailed information see the main Standard, BS EN 62305 *Protection against Lightning*. This article, therefore, aims to provide an insight into the separation requirement.

A lightning protection system and a mains electrical system are both concerned with the conduction of electricity. However, they deal with very different parameters. Lightning protection is concerned with very fast rising impulses and very high currents arising from:

- a direct lightning strike to a structure;
- a strike in the vicinity of the structure;
- a direct strike to a service cable supplying the structure; or
- a strike in the vicinity of a supply cable (for example, power supply, telephone, data and radio frequency signals).

Lightning protection is designed to protect:

- the structure;
- its environment;
- equipment in and on the structure; and
- people in, and in the immediate vicinity of, the structure.

On the other hand, a mains power system is designed to provide a constant supply of electricity, usually of alternating current, at a very low frequency and comparatively low voltage, to energise the equipment that provides services to the building.

There is, inevitably, a relationship between the two very different systems, and it is important that the two systems are co-ordinated in a safe manner. Surge protective devices (SPDs) are fitted into the mains system at the intake point, the service point and various other downstream points. SPDs are supported by screening and local bonding and are used to protect both the building from fire caused by sparking and to protect electrical and electronic systems from damaging surges. The two systems are bonded, at least at a low level, to bring them to a common potential at that level. Adequate separation, or separate bonding, should be provided at other levels to minimise the risk of flashover.

Many electricians are unaware that there is a requirement to provide adequate separation between conductors of a lightning protection system and other conducting material, such as electrical wiring. BS EN 62305 contains a simplified method for a formula, which takes into account:

- the number of down conductors on the building;
- the distance along the down conductor from the point where separation is being considered, to the point of connection of the cable that is bonding the lightning protection system to the main earth terminal point;
- the class of the lightning protection system (LPS); and
- the insulation value of the material (air, stone etc.) between the down conductor and the other conducting material being considered.

It is easy to assume that, because the lightning protection system is bonded to the main earth terminal (MET), there is no problem; everything is at the same potential. However, this assumption ignores the self-inductance of the down conductor (about 1 $\mu\text{H}/\text{m}$) and the very high rate of rise of current (perhaps 20 $\text{kA}/\mu\text{sec}$ or even up to 100 $\text{kA}/\mu\text{sec}$). Thus, at a height of 10 m above the bonding point there may be a voltage difference of 200 kV, or even 1 MV, between the LPS and the building wiring, gas pipe, water pipe, telephone cable etc.

I have come across many installations where a TV aerial and its cabling, a telephone cable, wiring for external lamps etc., have been installed, probably for the sake of neatness, beside the lightning down conductor. In such installations, there is a very real possibility of sparking between the LPS and other conducting material during a direct lightning strike if neither the separation requirement is met, nor bonding at that point is applied. The separation requirement is particularly pertinent for buildings that have lightning protection with external conductors, rather than a system using the steel construction, or rebars in reinforced concrete, as down conductors where the lightning current is split into many conducting paths.

As an example, consider the lamp and its cabling on a church tower roof in the photograph below. At its closest point the cable has been routed neatly alongside the lightning ring conductor connecting the tower down conductors.



The formula for the simplified approach is:

$$s = (k_i \cdot k_c \cdot l) / k_m$$

where:

s = minimum separation required.

k_i relates to the class of LPS, 0.04 for LPS classes III and IV, 0.06 for Class II and 0.08 for Class I. Here $k_i = 0.04$ for a class IV LPS.

k_c relates to the number of down conductors.

$k_c = 1$ for $n = 1$, $k_c = 0.5$ for $n = 2$ and $k_c = 0.44$ for $n \geq 3$ with a Type A earthing system, provided the earth resistances are reasonably equal, no more than 2:1, otherwise $k_c = 1$. Here with 4 down conductors $k_c = 0.44$

k_m relates to the insulation value of the separating material, air = 1, stone, bricks and concrete = 0.5. Here $k_m = 0.5$ as it is over stone which is not as good an insulator as air.

l is the down conductor length to the bonding point. Here $l = 18$ m.

As a result, the separation required is given by:

$$s = (0.04 \times 0.44 \times 18) / 0.5 = 0.63 \text{ m}$$

(IEC 62305-3 *Protection against lightning Part 3 Physical damage to structures and life hazard* - clause 6.3).



As another example, consider a church with a broadband relay on the roof of a church tower, as shown in the above photograph.

Features to notice in this installation are:

- (a) In the bottom left hand corner of the photograph the broadband supporting structure, correctly, is bonded to the lightning ring conductor around the inside of the parapet.
- (b) The antenna feed cable is lying on the lead covering of the tower roof. Although not shown in the photograph the lead, correctly, is bonded to the lightning conductors.
- (c) Across the middle of the photograph, the antenna feed cable has been routed along the lightning ring conductor.

During a lightning strike there would be a large voltage between the frame of the antenna and the antenna live feed. At present, the church has two down conductors, on opposite faces of the tower, with neither conductor bonded to the MET. The separation requirement is certainly not being met in this case. Although the requirement is difficult to meet for this installation, one solution is to fit a combined Type 1 and Type 2 SPD between the live feed and the shield (assuming that the shield is bonded to the frame). The SPD could be fitted at the amplifier, situated just inside the stair turret. It would still be good practice to separate the antenna feed from the lightning ring conductor by, for example, 250 mm.

Surge protective devices – especially relating to power circuits

A Type 1 SPD is designed to take partial lightning currents with the energy of a 10/350 μ s waveform, and to protect both the structure from fire arising from sparking and people from electric shock.

A Type 2 SPD, connected downstream of a Type 1 SPD, is designed to handle surges with an 8/20 μ s waveform and to protect electrical and electronic equipment against damaging surges.

In summary:

- at a low level, for example, up to 10 m height, a separation of 0.5 m should be quite adequate.
- in general, seek advice from a lightning protection specialist.
- avoid the neat but possibly dangerous practice of tying cables to a lightning conductor.

This article gives a basic overview of the simple approach to the requirements. For more details see BS EN 62305.

Lightning Surges

Steven Devine, Engineer at the IET, recently visited DEHN and SÖHNE in Germany for the purposes of understanding progress in surge protection devices. Here, he writes about his experience.

I recently had the opportunity to visit DEHN and SÖHNE at their impulse current laboratory in Neumarkt, Germany to witness surge protection devices (SPDs) in action. I was joined by several others from the surge protection industry all eager to see the demonstration. It was made very clear from a short presentation that lightning protection/separation and surge protection go hand in hand with one another. While lightning protection will prevent the integrity of the structure from being damaged, the SPD will provide a measure of protection for electrical equipment within the structure.

Both lightning strikes and electrical switching can inject what are called transient overvoltages into an installation. Transient overvoltages are usually only a few microseconds in duration. However, at their peak value they can reach 6kV. Electrical equipment can be adversely affected from these surges, particularly electronic devices such as computers and servers for data storage.

SPDs, when selected and installed correctly, can significantly reduce the effects of these transient overvoltages. At DEHN laboratories it is possible to test the protective function of SPDs with lightning currents up to 200 kA (10/350 μ s). We were shown four examples of lightning strike surge protection using Type 1 SPDs:

- the first, an older SPD, was subjected to 30KA, however, it had not been designed to withstand the applied force. It reacted as expected, diverting the surge to earth but was damaged beyond repair in the process.
- the second was a fully working SPD with an indicator to show when the device had expired. There was little to see when the surge was induced on this SPD as it functioned correctly, protecting the circuit as it was designed to do. The indicator remained green (still in working order).
- the third was a correctly installed but underrated SPD. The results were astonishing: the SPD itself was obliterated, creating flames and blackening the surrounding area. The installation, however, remained intact.
- the final example used a sufficient but incorrectly installed SPD subjected to a 70KA surge. The SPD suffered from various installation defects that were a result of poor installation techniques and as such it did not comply with the manufacturer's instructions. The results were devastating: the entire housing for the installation was destroyed, the cable was torn from its containment and its conductors split through the insulation and sheathing, creating a significant amount of damage. However, the SPD itself remained intact and in good working order.

It was clear from the demonstration that, provided they are correctly selected and installed according to manufacturer's instructions, SPDs can be a valuable means of protection against lightning strikes.

Interview with Paul Galbraith

Paul Galbraith's six-year tenure as Chair of JPEL/64, the decision-making committee for the BS 7671 Wiring Regulations, came to an end last year. His tenure culminated in a [Leadership Award presented by BSI](#). Here, Paul chats to us about his time as Chair.

Can you please tell us about your career and how the electrical industry has changed?

I served an electrical apprenticeship with Whipp and Bourne Switchgear Limited in Castleton, Lancashire from 1961 to 1966. I was part of their erection, testing and commissioning team from 1966 to 1972, and worked on many prestigious projects, such as, installing low-voltage and high-voltage switchgear on the Cunard passenger liner Queen Elizabeth. I then moved into their sales and contracts department where I specialised in tendering for d.c. traction contracts for Mass Transit Systems globally. Our first major success was a contract with the Illinois Central Gulf Railroad, Chicago in 1976 which was my first of many overseas experiences.

In 1978 I was invited to join a small team who were setting up a wholly owned subsidiary of the French company Merlin Gerin. During my time there I held a number of roles including Technical Manager, Product Manager, Design Manager and Engineering Manager as this organisation grew into the market leader that is now Schneider Electric.

My latest post of UK Manager for the Standards and Certification division, which I gained in 1996, enabled me to participate in National, European and International standardisation on a full time basis.

Throughout my career I have seen many small and medium-sized enterprises (SMEs) in the electrical industry fall by the wayside or become incorporated into larger international organisations such as Schneider Electric, Siemens and ABB.

What is it like being the chair of JPEL/64?

Being the Chair of JPEL/64 is very demanding, whilst at the same time very rewarding. The number one priority for the committee is to ensure that BS 7671 is not compromised in any way. During my two terms of office I have been responsible for the introduction of the 17th Edition and its amendments, including Amendment Nos. 1 and 2 and, of course Amendment No. 3, which was issued in January 2015 and which comes into effect in July 2015.

BS 7671 is based on the international electrical installations and electric shock standard IEC 60364 and the European equivalent HD 60364. As both of these standards consist of numerous separate parts, which are often not totally up to date with each other, it can be very difficult keeping BS 7671 synchronised with them. This is why it is necessary to produce regular amendments and new issues.

JPEL/64 consists of forty-two members and meets approximately five times a year. It is not possible for a single committee to undertake the amount of work needed to cover the many aspects being addressed. For this reason there are four panels, Verification, Thermal Effects, Shock Protection and External Influences, which carry out the work and report back to the main committee. Often the need also arises for the setting up of project teams to deal with a specific topic e.g. the Part 7 section dealing with Electric Vehicles.

This whole process could not function as it does without the secretariat support of the IET and BSI.

You're also the Convenor of an international Working Group – can you tell us more about this?

Being the Convenor of an international Working Group carries similar responsibilities and duties to that of Chairing JPEL/64. However, there are added complications, the first being the different languages and the second the different cultures. I am very fortunate in so much as English is the international language in Standardisation globally. There can, however, be problems with translations, which sometimes hamper reaching a consensus. I find culture to be the most interesting and rewarding part of both International and European standardisation work. I have found that it broadens your horizons and demonstrates that your way is not the only way, and sometimes not the correct way either. Driving on the left is a good example.

What are the future developments in electrical installations standards?

The immediate future development in electrical installations standards will be to consolidate all the constituent parts of IEC 60364 and HD 60364 into a single document. Not only will this make it easier to use, it will also be a perfect opportunity to bring all the different parts up to date. It will then be much easier to mirror those changes in BS 7671.

Historically electrical installation standards have only considered safety related requirements; however, 60364 standards are now introducing new parts that are non-safety related, such as Energy Efficiency and LV requirements with respect to smart grid/micro grid.

What does the future of engineering look like, and what are the more exciting regulations you expect to see debated?

I foresee some very challenging opportunities in the future of electrical engineering; the most exciting being questions around the introduction of renewable energy into the existing electrical infrastructure. Historically in the UK, the electricity supply network has had a limited number of large base loads generated from typically 600 MW power stations that feed the grid twenty-four hours a day. Smaller generating plants with much faster response times are then utilised to support the peak time demand. In contrast, present day renewable energy generation is generally many small loads in the order of kilowatts with no base load capabilities. One big challenge is how the UK will cope with the ever-increasing demand for more electricity as a number of 600 MW power stations are reaching their end of life.

From a standardisation viewpoint, one avenue being pursued is to move from alternating current to direct current generation, which brings me full circle in my career to where I was in the 1970s.

Winners of the 2014 BEC Young Professionals Awards

The [BEC Young Professionals](#) event was held in last year, with Marcin Wloch and Neil Moran winning the opportunity to attend an IEC standard-setting meeting in Tokyo. Here, we catch up with them about their experience and what they learned about global standard setting.

In a nutshell, what was it like attending the IEC global standard-setting meeting? For example, was the structure very formal, or did you get to participate, and did you have time beforehand to understand the issues up for debate?

Neil:

Attending the 2014 Young Professional's Workshop in Tokyo was an amazing experience providing a unique insight into the IEC's operations and processes. The Workshop included a combination of presentations, lectures and more hands on interactive sessions where I got to debate some really important issues such as Smart Energy and how participation in the standardization process can be a strategic business advantage for companies. I was kept informed about the content of the Workshop well in advance so I was able to read up on some of the areas that I'm not involved with on a day-to-day basis, enabling me to get the most out of the workshop.

Marcin:

The structure is very formal, we couldn't participate other than see how it works, although we did have time with the UK national committee to discuss the topics beforehand.

A great many issues must have been debated. What were the top two issues that stood out for you, either in terms of personal interest or in their potential impact to the industry?

Neil:

I found many of the topics being debated very interesting but the first that stood out the most for me was the application, distribution and safety of Low Voltage Direct Current, which in the future could really enhance energy efficiency and our use of electricity. The second topic was Micro Grids for developing countries or grids capable of operating in an isolated mode from a larger interconnected grid.

Marcin:

I enjoyed the standard committee discussion about international standards and requirements of high-voltage switchgear and controlgear, as well as the reactions to the switching process in networks and of other components serving as generating, transmission and load equipment, especially technical standards for HV Switchgear with SF6 circuit breakers.

What surprised you the most about your trip?

Neil:



It was surprising and enjoyable to see and meet so many like-minded and passionate electrotechnical young professionals from across the globe, many with similar views, career paths and aspirations as my own.

Marcin:

1. How good the meetings and the YP workshop were organized – I am amazed how precise meeting schedules worked.
2. Japanese culture, respect and hospitality.

Did you leave knowing anything about the IEC that you hadn't known before?

Neil:

The workshop was filled with information about the IEC and its work; I now have a much more comprehensive knowledge around standardization and, in particular, conformity assessment, which is an area I knew less about.

Marcin:

Yes, in terms of the amount of information I learned about the IEC and the standardization process, this Workshop exceeded my expectations by far. The whole Workshop was very professional and full of useful information.

How do you feel now about the standard-setting process?

Neil:

Now I have a better understanding on the development and usage of standards, there simply can't be a more proficient way of developing international standards than having a group of experts from across the globe coming together bringing their technical knowledge and experience to develop a standard for a product or service.

Marcin:

Standardization is necessary for technological advancement and civilizational progress.

Do you think it might be a career path you may consider?

Neil:

I would like to think that both the usage and development of standards will form an important part of my career for many years to come.

Marcin:

Yes, it now seems an obvious career path.

How do you feel it might benefit you now that you're back in the UK and back to work? And how will your attendance benefit your employer?

Neil:



I believe my employer will gain from me being able to build on the professional networks I have already started to foster by participating in the Young Professionals Workshop, with the company having a representative in external standards development organizations either directly contributing or influencing decisions.

Marcin:

I am working in the power electric industry as a design engineer. It is inevitable that I will use the standards in the design process in the future. I feel that, with extensive knowledge in electrical product development, and an understanding of customer needs and conformity assessment, I could take part in developing standards to deliver cheaper, better and safer products for UK customers.

We're running the next event on 30 April 2015, at the Royal Academy of Engineering. What would you say to those going to the event?

Neil:

My advice for up and coming Young Professionals who want to know more about standardization and the IEC with a thirst to get involved in its activities, is to come along to the event at the Royal Academy of Engineering, attend with an open mind and get involved. It's a very worthwhile experience, you will have the chance to network with fellow Young Professionals and meet some of the experts from our profession.

Marcin:

Be positive and proactive.

Three people attending that event will be chosen to visit Minsk for the next IEC global standard-setting meeting. Would you encourage attendees to apply to attend? If so, what, in your opinion, would be the number one reason to attend?

Neil:

Without question I would encourage the attendees to apply for the opportunity to visit Minsk for the 2015 YPP workshop, there is no better gateway for a young professional to become more involved in the IEC and to have the opportunity to play a part in shaping the future of international standardization and conformity assessment.

Marcin:

It offers an excellent training experience and the opportunity to meet other Young Professionals from around the globe.

... And of course, the question on everyone's lips ... did you get to see much of Tokyo?

Neil:

I got to see enough to know that I need to go back to see the sights! Thankfully there was a small amount of time to spare where I visited the gardens of the Imperial Palace, home to the emperor and empress, and Tokyo's oldest temple the Sensoji Buddhist Temple. Both were

amazing places to visit, but of course no trip to Japan would be complete without sampling a traditional sushi bar.

Marcin:

I did see few things like Imperial Palace and Sensoji Temple, unfortunately not more because our focus was on learning.

Thank you to Marcin and Neil for this interview!

There will be another [Young Engineering Professionals workshop](#) this year, held on 30th April at the Royal Academy of Engineering, London

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