

The School STEM Technician



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Supporting the professional development of
the school technician community in Scotland



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CEO Introduction

Alastair MacGregor, CEO, SSERC



When I came into post at SSERC as CEO I took the opportunity, at my first SSERC Annual Conference in that role, to state my commitment to ensuring that the organisation would continue to support the role of the school technician profession in Scotland through the provision of quality professional development opportunities and the establishment of a forum that would provide advice to SSERC on the development needs to the profession. I restate this commitment and I continue to be impressed by the enthusiasm, commitment and determination of the technician community in Scotland, despite the ongoing challenges it faces.

There continues to be a wide range of different views within the educational landscape of Scotland as to the nature and purpose of practical work. SSERC recognises the educational value of practical work and believes that it should constitute a significant proportion of a learners time when undertaking a STEM-based curriculum.

We believe that practical work serves the following purposes:

- to motivate and engage students
- to teach the principals of STEM inquiry
- to develop specialist skills, e.g. measurement, observation
- to underpin the theory through practical skills
- to develop other skills and attributes such as communication, teamwork, creative thinking.

Practical work has undoubtedly been a casualty of the pandemic. At times, the guidance and statements issued by national education bodies and agencies in Scotland had the potential to erode further the future contribution of practical work in STEM education. SSERC will work with others to ensure that practical work remains a crucial component of STEM-based education in Scotland.

For the newest cohort of STEM teachers entering the teaching profession, the opportunity to acquire and develop practical skills that could be deployed in the classroom may have been negatively impacted. SSERC has reached out to all Scottish Local Authorities to offer support



and assistance. However, might there already be a partial solution in place and in situ in all secondary schools in Scotland?

The role of the school (STEM) technician in many Local Authorities and secondary schools has been poorly considered to date. This has impeded opportunities to offer essential practical work support for STEM teachers, including newly qualified and early careers. In recent years the school technician profession in Scotland has been marginalised via a combination of actions, including:

- a reduction in the number of employed school technicians
- the movement to part-time or term-time contracts
- an increase in the range and diversity of responsibilities; many now have a whole school responsibility
- diminution of opportunity for career progression within the profession.

It would appear that the school technician profession is an 'easy target' when it comes to cost-cutting initiatives, with decisions perhaps being made based on limited knowledge and understanding of the technician's current role in supporting the broader STEM curriculum in schools. Although the school technician's expertise has been externally recognised by SSERC, the technician's profile and

professionalism have been underrated and unacknowledged by others. This poor regard is frustrating and may also have prevented training and mutually beneficial progression of the role. An untapped pool of knowledge and skills exists that could be further utilised and developed to support practical work.

Technicians tend to have the flexibility to manage workloads, as lesson timings do not confine them, and so may be able to provide training in practical work. STEM technicians can offer help and training to all STEM teachers unfamiliar with practical work in the STEM curriculum and, in many cases, already provide this service. Understanding how school STEM experiments work, their health and safety considerations are the main function of their role. So technicians are in an excellent position to offer training for less experienced teachers

and consequently their students. Much more should be made of the skills that this body of people has to offer.

I hope that the launch of 'The School STEM Technician' demonstrates SSERC's commitment to play its role in re-establishing the school technician profession as a key resource within STEM education in Scotland.

Alastair MacGregor
Chief Executive Officer,
SSERC

Welcome Sam McFarlane, Chair, STAC



Welcome to this first issue of 'The School STEM Technician', which I am sure you will find interesting and informative, and hopefully stimulates some professional discussion and debate.

The content for this inaugural issue has been devised to ensure that the technician profession in Scotland is aware of the current development being progressed by SSERC and the Scottish Technicians' Advisory Council (STAC) to support the ongoing professional development of the school technician community in Scotland.

As the Chair of STAC, I cannot stress enough the many benefits of Local Authority school technician representatives meeting regularly (4 times per annum) to discuss the state of the profession and work collaboratively to develop a comprehensive package of professional learning and training opportunities specifically designed to meet the needs of all Science, Technology & ICT Technicians who make up this key group of education professionals. As regards specific Health & Safety training opportunities, STAC members are encouraged

to undertake the various IOSH training courses which are available to all technicians via SSERC's courses registration scheme.

It is equally important that all school technicians have access to a network that supports professional discussion and dialogue and allows for sharing knowledge and resources and hopefully some collaborative working that spans school and local authority boundaries. SSERC, STAC, and I hope Techné will fill this role the same way Synapse, Sputnik and Strontium do for science teachers. As the adage goes...! use it or lose it!

'The School STEM Technician' will be a triannual publication dedicated to supporting school technicians' professional development and encouraging professional discussion and debate. We look forward to hearing from the profession via the 'Technicians' Corner' section of the bulletin. Suggestions relating to potential content for future issues will be warmly welcomed, as will the submission of articles for possible publication. You can do this by using the email bulletin@sserc.scot adding Technician in the subject line.



The Scottish Technicians' Advisory Council (STAC)



School technicians in Scotland are employees of Local Authorities, Independent schools and grant-maintained schools.

SSERC has a long-standing commitment to supporting the professional development of the technician community in Scotland. We provide this support as part of our service to our member local authorities, independent schools and grant-maintained schools.

SSERC has a dedicated technician workstream associated with Vision 2030.

School technicians



To raise the professional status of school technicians and promote the role they play in the education community in Scotland.

This support is currently delivered through the Scottish Technicians' Advisory Council (STAC), which was established to ensure representation from all Local Authorities and the independent sector, which forms part of SSERC's governance and advisory structure ([see Appendix 1](#))

Under the auspices of STAC, we have:

- regular STAC meetings to discuss professional development needs and other relevant topics;
- developed a range of SCQF credit and levelled professional learning courses;
- developed a range of non SCQF credit and levelled professional learning courses;
- an annual technicians conference;
- developed a virtual Technicians professional network called Technē, which is accessible to all school and college technicians in Scotland.

Moving forward, we want to reinvigorate our commitment to supporting the technician profession in Scotland and propose the following:

1. continuation of regular STAC meetings with the decisions from this group shared with the wider technician community;
2. ensure representation on STAC of every Scottish Local Authority;
3. delivery of 6 twilight professional learning webinars, open to any school or college technician to attend, free of charge, which will focus on acquiring and developing new knowledge and skills appropriate to the school or college technician role;
4. continuation of an annual Technician Conference. Linked to this, we will explore opportunities to widen participation;
5. review the current Technē virtual network with a view to relaunch using a platform that promotes easy access and participation;
6. add to the range of professional learning opportunities available to the technician profession in Scotland;
7. develop a National School and College Technician Diploma comprising SCQF credit and levelled professional learning courses.

Appendix 1: Terms of Reference for Scottish Technician's Advisory Council

Aims:

1. To represent the Scottish School Technician professional community and advise SSERC on matters relating to:
 - professional development needs of school technicians;
 - qualification frameworks to support professional development of school technicians;
 - technician based projects and activities.
2. To receive regular reports about the progress of Technician based projects and activities including those relating to professional development and qualification frameworks.
3. To act as moderators for the Scottish School Technician Virtual Network (Techné)
4. To support and to act as advocates for:
 - the Scottish School Technician professional community;
 - the work of SSERC with particular reference to supporting the Scottish School Technician professional community.

Membership:

- Each Scottish Local Authority will have one technician representative on the Council.
- SCIS will have one technician representative.
- Jordanhill College will have one technician representative.
- SSERC will have three representatives: CEO, Technician Project Officer and Technology Education Manager.
- A Chair will be appointed by the Council at its September meeting.
- The SSERC Technician Project Officer will act as secretary to the meeting.

A man and a woman in white lab coats and safety glasses are smiling and looking upwards in a server room. The man is on the left, wearing blue gloves and holding a small object. The woman is on the right, also wearing gloves. The background shows rows of server racks with blue cables.

Professional Learning

Techné

The new technicians' professional network

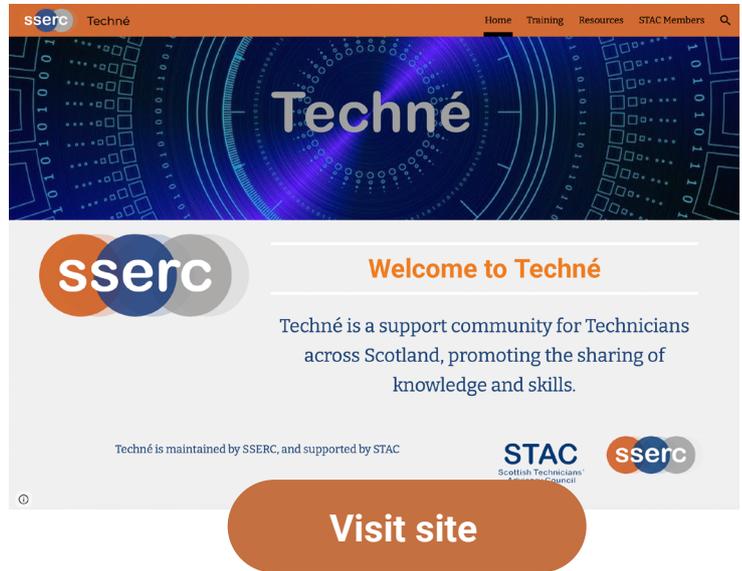


We have just launched **Techné** for technicians in Scotland.

Within this new site, you can find out about training opportunities, download the latest STAC meeting minutes, talk with other technicians in the forum or share some resources you think will benefit the wider technician community.

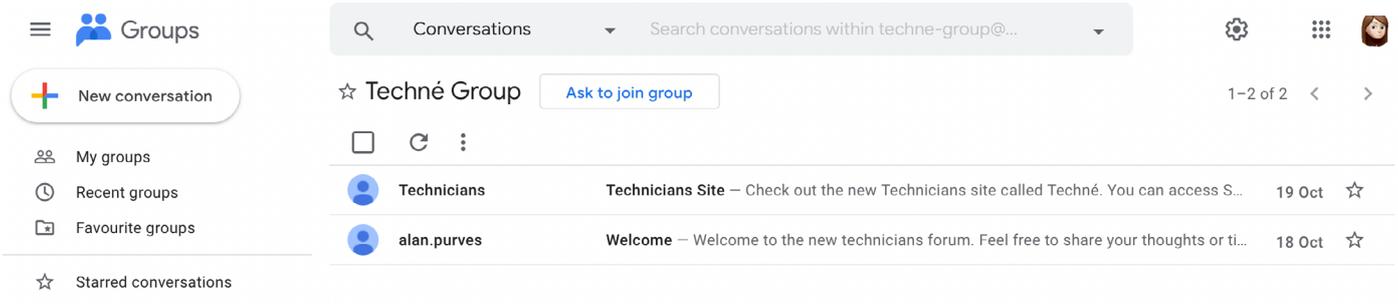
We want this resource to be for technicians by technicians.

The Home page allows you to access resources, discover the **SSERC_TV** YouTube channel, find your Local Authority STAC member and the STAC meeting minutes, amongst other things.



The Techné forum

Use this space to have discussions with fellow technicians. Look out for or let everyone know about new practical ideas and methods, suggest future training opportunities. The options are endless.



Resources

The level of knowledge and experience within the technician community is immense. Imagine starting your journey as a school/college technician and finding a treasure trove of information, hints and tips, sound preparation methods and other bits of wisdom that would make your beginnings as a technician a lot easier to handle.

Use this space to drop off your golden nuggets, and let's build a great resource together.

Training

Access Training information with links to the **sserc website** and details about bespoke training and information opportunities.

Tech_Meets

Why not join us for an online information session and find out about what's hot in the world of educational supplies.

We have **6** sessions in the calendar, each one about a different piece of kit that has raised a lot of enquiries with education suppliers.

Each session will be run using MS Teams with someone from the supplies company presenting live, then answering some questions that have been sent in by technicians. If we can't answer all the questions within the session, we will make sure to get an answer to you after the event.

Session no.	Date	Session
1 Watch now	28th October 2021	PCR with Lucienne from Timstar
2	25th November 2021	Visualise it with Lucienne from Timstar
3	16th December 2021	Prep room modular units from Timstar
4	27th January 2022	Sparkview from Sci Chem
5	24th February 2022	BeeSpi V light gate from Sci Chem
6	24th March 2022	TBC

As with everything that SSERC does, we are always open to suggestions. Put your ideas in an email and send them to alan.purves@sserc.scot.



Professional Learning Courses

SSERC offers a wide variety of meaningful professional learning specifically designed for technicians. The courses opposite are still available for application on our website.

All of SSERC's technician courses are credit and levelled through the SCQF framework. For more information or to apply for a course, follow the link below.

[More info and apply](#)

NOV 9 Tue	Maintenance of Fixed Workshop Machinery Nov 9 – Nov 11 <small>all-day</small>
	Safety in Microbiology for Schools <small>Edit</small> Nov 9 – Nov 11 <small>all-day</small>
NOV 17 Wed	Intermediate Physics Nov 17 – Nov 18 <small>all-day</small>
NOV 26 Fri	Safe Use of Fixed Workshop Machinery (Refresher) Nov 26 <small>all-day</small>
DEC 1 Wed	Safe Use of Fixed Workshop Machinery Dec 1 – Dec 2 <small>all-day</small>
JAN 26 Wed	Safe Use of Fixed Workshop Machinery Jan 26 – Jan 27 <small>all-day</small>
FEB 3 Thu	Safe Use of Fixed Workshop Machinery Refresher Feb 3 <small>all-day</small>
MAR 2 Wed	Electrical Safety and PAT Mar 2 – Mar 3 <small>all-day</small>
MAR 9 Wed	Chemical Handling Mar 9 – Mar 10 <small>all-day</small>
	Safe Use of Fixed Workshop Machinery Mar 9 – Mar 10 <small>all-day</small>
MAR 29 Tue	Safety in Microbiology for Schools Mar 29 – Mar 31 <small>all-day</small>
APR 27 Wed	Safety in Microbiology for Schools Apr 27 – Apr 29 <small>all-day</small>





SSERC Technicians' Conference

Would you like to come along to SSERC in Dunfermline for a day of hands-on free professional learning specifically designed for technicians? Then the SSERC Technicians' Conference is for you.

The conference will take the same form as the previous one with a series of 1-hour long training sessions spread throughout the day. The sessions will cover aspects of the job that our other professional learning courses don't. You will also have the opportunity to network with other technicians from across the country.

Information about how to apply will be available in early 2022.

The sessions from the previous conference included -

- Soldering
- Welding
- Basic electrical theory
- Tool sharpening
- Microscale Chemistry
- Basic Glass work
- SSERC equipment safe use.

Hope to see you there!



If you have any suggestions for future training sessions, send them to alan.purves@sserc.scot.



Technicians' Corner

A Day in the Life of a Science Technician

It's Friday morning already, one of the Biology team have requested the G-1-P starch phosphorylase investigation for Period 1, better make a start on the tatties, get them peeled, liquidized and centrifuge that starch out of them!

Hi, I am a Science Technician at Wallace High School in Stirling, we have a pupil population of c. 1100, the Science team I am supporting has eleven full time teaching staff and a Chemistry probationer this year.

I've made a start on the starch free extract so while that's whizzing I go to check on the other requests for Friday morning: The Van de Graaff requested for period 1 in a Physics lab, (don't forget to move it to Chemistry for Period 3) hope it's behaving today, I'll give the dome a clean and give it a whirl just to check. While I'm here I decide to set up the trolleys, ramps and light gates that are needed later for Higher Physics, the class are moving on to acceleration this week so I can hopefully leave this set up for the week. Mr. B catches me whilst I'm in his room and asks me for any ideas on Peat Bogs, we have several classes from Ochil House (our pupils in Wallace with severe and complex additional support needs) in department this year and he is hoping to deliver some interesting practical work on this topic, I make a mental note to check SSERC website later. Next a flame test demo set up in a Chemistry lab and Investigating enzymes and effect of temperature for Biology and that is period 1, done and dusted.

So, 9.05am and I can look to the rest of the mornings orders, nothing out of the ordinary, a distillation of Crude Oil (fake) for 1st year Earths Materials class, Higher Chemistry are moving onto the Iodine Clock Investigation, the solutions were made up earlier in the week and I just need to make sure they are topped up as required. As I am setting up in the labs I have a catchup with the teaching staff, this is the time I am most likely to be given verbal requests for resources (a technicians' nightmare), unfortunately my memory isn't what it used to be and it is very possible I will be sidetracked before I manage to commit any requests to the online requisition.

Back to the Prep room and I am about to start preparing the nutrient agar plates I will need next week for the classes that are swabbing for microbes. Whilst the autoclave is out I will also prep some yeast glucose agar



plates for the Toilet Roll challenge, oh and I'd better move the portable incubator into the lab that will be using it.

This afternoon, S1 are doing a strawberry DNA extraction, I'll need to put the ice machine on again (one of the chemists just popped in and has taken the last of the ice.....aahhhh) and also the water bath will need to be switched on, I'd better not forget to get the strawberries out the freezer to let them defrost a little before the lesson.

Time to check in online with SSERC, and to my relief there are some resources that we could use, I pass this info to Mr. B who then suggests that it would be great if we could take the pupils out on a Peat Bog visit, we are lucky to have a site nearby so I make a note to contact them and see if we can arrange a visit (hope I get to go along with them, part of the job I really enjoy is going out with the pupils on field work and University lab visits).

As it's Friday I do a general sweep of the labs to clear up anything that will not be used next week, remind the team that next weeks' requisition is about to go 'live' and any further changes will need to be made to me personally (I hate surprises), take a set of heart and lungs out the freezer to defrost for Monday period 2 (probably a good idea to take these home and defrost overnight on Sunday, they can get quite whiffy if left too long). Last minute rush around the prep room to collect resources for a local associated Primary school who are hoping to study electricity next week, I'll drop this off on my way home. Final task for the week is to water the fantastic plant display we have within our department and give them a wee prune.

And that's it, another week and another day in the life of a Science Technician: always different; never dull.

The STEM Ambassador Programme: STEM Ambassadors in Scotland

Getting Started with STEM Ambassadors: requesting support



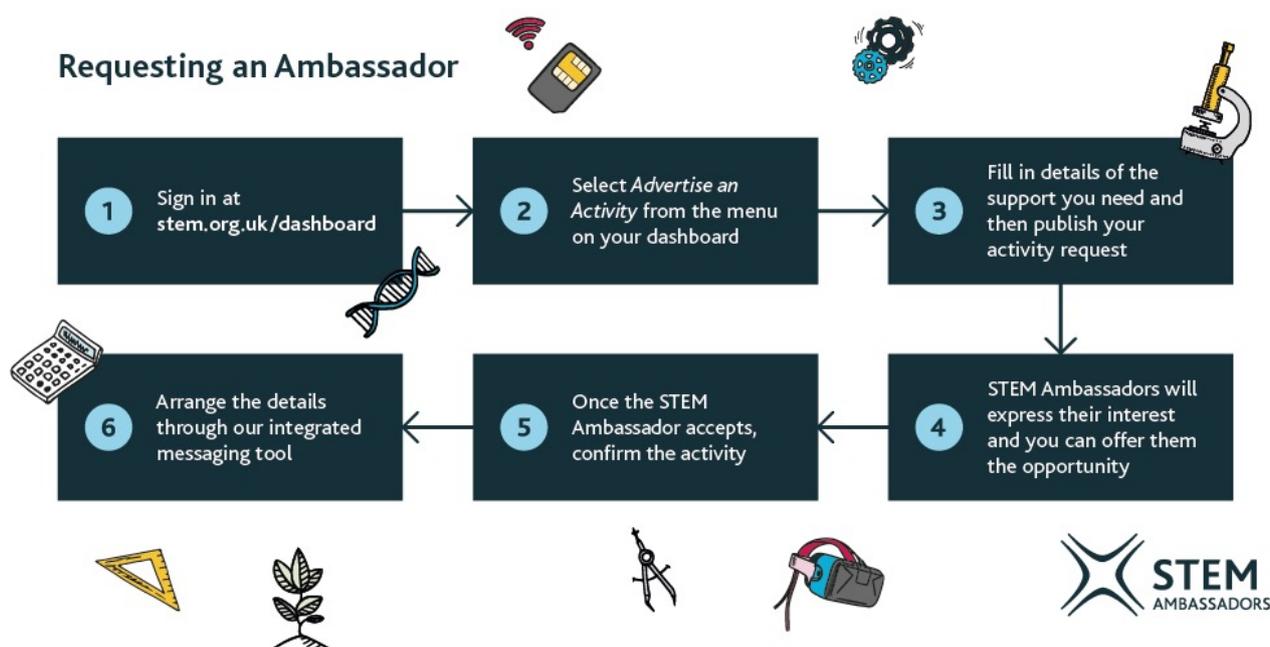
STEM AMBASSADORS IN SCOTLAND

Did you know there are thousands of volunteers in Scotland available to support you with a range of STEM activities in schools?

STEM Ambassadors can join STEM events and activities with young people. They can also support you with activity ideas, designing experiments, or increasing your confidence and understanding of a topic.

Registering to request a STEM Ambassador is simple:

1. Visit the STEM Learning website: www.stem.org.uk/register
2. Register for a new technician account
3. Complete the registration form
4. Registration complete! Place an activity or browse offers



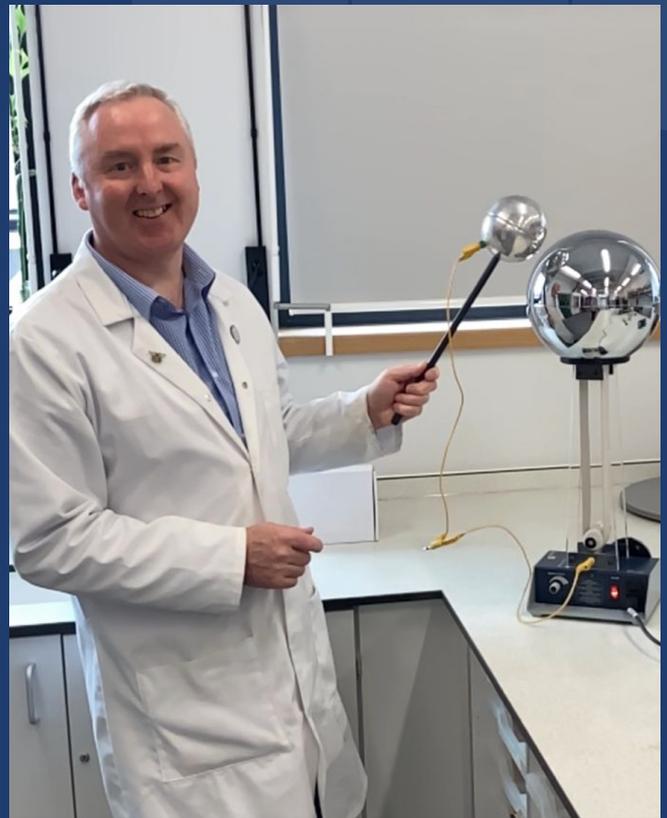
Meet STEM Ambassador and Senior Technician: James Cairney

James, from Cumbernauld Academy, is inspiring young people to find out more about the role of a Technician and the joys of his job by being a STEM Ambassador:

“The beauty of my job is that there is no two days the same and the variety of tasks to do over three disciplines Physics, Chemistry, Biology is plenty. You can be setting up apparatus for a multitude of different experiments or washing up the glassware or sanitising the goggles or filming an experiment or carry out electrical safety test on a piece of apparatus. The list is endless but never boring.”

Read the full Spotlight Profile [here](#).

Would you be interested in becoming a STEM Ambassador and sharing your story? Find out more [here](#).



“Using the Van de Graff generator is also another favourite, for your hair standing up and electric shocks. It is always a winner.”



Health and Safety Update



Electrical Safety and PAT Update

New equipment Class II (FE)

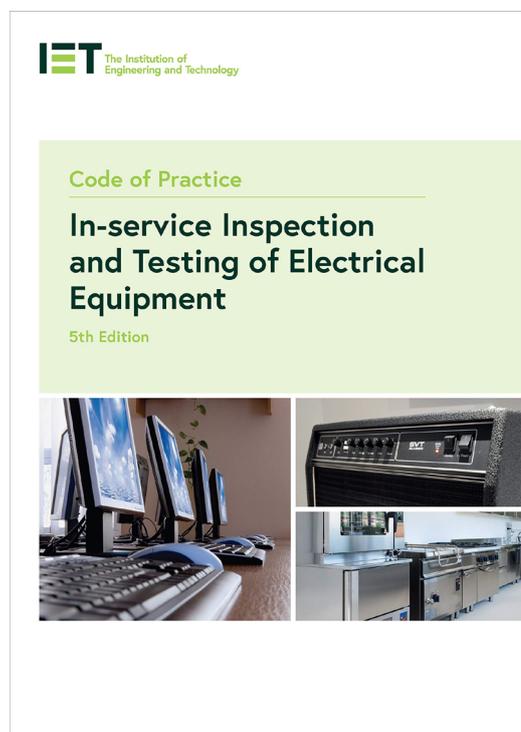
The IET 5th edition In-service Inspection and Testing of Electrical Equipment code of practice has introduced a new equipment classification: Class II (Functional Earth). This new classification is to distinguish items that are considered for electrical safety to fulfil the requirements for Class II, but for functional reasons require a connection to earth.

This means the item will be double insulated but will have a connection to earth on the mains side. In the past such items may have been referred to as Class I Hybrid.

The most common examples of these are switch mode power supplies which are used in a variety of applications especially in IT equipment such as laptop power supplies/chargers.

The symbol for Class II (FE) is shown to the right. Some older equipment with this type of supply arrangement may be marked as ITE. (Information Technology Equipment)

When testing and inspecting such equipment, for electrical safety, they should be treated as any other Class II item.



Hot and Bothered

Prep Rooms

During the recent spell of hot weather, we have been receiving queries from concerned technicians about high temperatures in their chemical stores. The main problem is usually poor building design, which was addressed in a previous **article**¹ which includes issues such as the chemical store having no outside wall or the 'make up' air being drawn from a warm prep-room. The longer, hotter, and more frequent spells of hot weather that will surely come as a result of climate change suggest the situation will only get worse.

It is worth pointing out that there is no maximum temperature in law for a chemical store – surprising to many people. The legislation covering the storage of chemicals, **DSEAR**² and **COSHH**³, addresses the outcomes and leaves the details of how they are achieved up to the organisation.

But high chemical store temperatures are not desirable: it can lead to two main problems from a health and safety perspective:

- 1. Increased evaporation of flammable substances could give rise to an explosive atmosphere.**
- 2. Increased evaporation of hazardous substances could give rise to an atmosphere that is harmful to breathe.**

In both these cases, the issue is excessive vapour in the atmosphere. This can be addressed in two fundamental ways: by reducing the evaporation (reducing the temperature for instance) or by increasing the ventilation.

Reducing the temperature is preferable as it will lead to a longer lifespan of chemicals and prevent 'ballooning' of some bottles amongst other things but, realistically, increasing ventilation is usually a significantly easier (and cheaper) way of achieving the same end, at least as far as air quality is concerned.



Doors

On a not entirely unrelated matter, having doors open is generally an excellent way of improving overall ventilation, and this is even more important nowadays as a mitigation against Covid-19.

However, we have had a few queries recently from people who have been told that they should (or at least could) have prep room doors open to improve the ventilation (and provide some cooling). There are some problems with this. First of all, it is quite likely that prep room doors could be fire doors – in which case they cannot be kept open. Even if not, there is a significant problem with security in having the prep room door kept open. Even though the more hazardous materials and equipment are kept securely, there is still plenty of opportunity for a casual 'visitor' to obtain something that could result in a nasty accident.

SSERC strongly recommends that prep room doors should be kept closed.