

CURRENT Knowledge

Expert PAT & 17th Edition news and advice

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Issue 4 February 2011

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TO TEST OR
NOT TEST



The Common Sense Approach

Free
Guide to PAT Testing
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Everything a PAT technician wants. Everything a PAT business needs.

The PrimeTest 250 is a godsend for anyone involved in PAT testing. Its simple push button interface makes child's play of complicated test procedures; ideal for technicians after an easy life.

While for businesses looking for better

profits, its superior technologies shorten working hours through faster, more efficient testing.

It is the only handheld manual tester with a complete set of in-service safety tests too. Including RCD trip time, alternative leakage, protective current/touch

current, IEC lead tests and three phase earth leakage.

Add to that, mains supply check, earth continuity and insulation resistance at 250V and 500V and you can see why the PrimeTest 250 is so desirable.

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Experts in what we do.

Welcome to Issue 4

In this issue we continue the Portable Appliance Testing theme by considering some of the broader aspects of ensuring the electrical safety of workplace equipment.

In particular we take the opportunity to highlight the importance of a 'common sense' approach to reaffirm the importance of electrical testing, whilst at the same time stressing the value of a realistic and pragmatic approach.

This has prompted our 'Common Sense' campaign which seeks to reaffirm the importance of electrical testing, but at the same time stresses the value of a realistic and pragmatic approach.

On a more practical note, ensuring that you have the right PAT tester for the job is naturally a priority for everyone, but in the interests of maintaining adequate test records it is equally important that the tester can be linked to an effective test results collection and management system.

Even results from manual testers can be recorded efficiently by PC record systems, and we explain this further with an overview of the main features of PAT data software programs and their vital role in improving testing regimes.



Jim Wallace
Editor

On a similar theme we also launch a new concept that makes it easier to ensure that the right type of PAT equipment is available for different test needs. As the name implies, the new range of PATBags incorporates a tester alongside other accessories in a range of all inclusive kits designed for different types of user.

Elsewhere in this issue, those involved in installation testing will be interested in a new smart test solution being used by Amec and we round things up with our usual collection of answers to PAT questions raised by readers.

In this special issue of Current Knowledge we hope that you will find all kinds of tips and information that will help you to build a better understanding of all that's new in the field of electrical safety testing.

Best regards

Jim Wallace, Editor, Current Knowledge

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What's

Elx shows

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www.elxshow.info

Opening hours for all exhibitions are
10.00am to 4.00pm each day

10/11th March, Yorkshire Event Centre,
Harrogate

5/ 6th May, Westpoint, Exeter

15/16th September, Ricoh Arena, Coventry

10th/11th November, Sandown Park, Surrey

Health & Safety Shows

More details at
www.healthandsafetyevents.co.uk

1/2nd March, Sandown Park, Esher

7/8th September, Royal Highland Centre,
Edinburgh

5/6th October, Reebok Stadium, Bolton

16th/17th November, National Show Centre,
Dublin

NICEIC TechTalk Events

To book a place call 0843 290 3502 or
email techtalk@niceic.com

Liverpool, Aintree Racecourse
Tuesday 8th February

Manchester, City of Manchester Stadium
Wednesday 9th February

Belfast, Stormont Hotel
Thursday 24th February

Newcastle, St James Park
Wednesday 23rd March

Carlisle, Carlisle Racecourse
Thursday 24th March

Glasgow, Celtic Park
Tuesday 5th April

Dundee, Odeon Cinema
Wednesday 6th April

SUPPORT FOR ESC's RCD CAMPAIGN



The Electrical Safety Council (ESC), in partnership with a range of leading electrical wholesalers, is launching a special RCD campaign 'toolkit' for electricians.

Designed to help contractors communicate the benefits of RCD protection to customers, the pack is part of the ESC's flagship Plug into Safety campaign. Special packs containing key information about the

importance of RCD protection will be available from leading wholesalers throughout the UK and two million leaflets will be distributed via retail and trade outlets.

The Plug into Safety campaign aims to reduce the number of electrical accidents in the home by encouraging the installation and habitual use of RCDs. Every year in the UK about 70 people die and 1.2 million are injured in electrical accidents at home.

Phil Buckle, Director General at the Electrical Safety Council, said: "We want to support the industry in leading the way in encouraging householders to install RCDs and take basic safety measures to ensure their homes and families are protected from the potential dangers of electricity. "To encourage and support this, we've produced these easy-to-use packs to help electricians communicate how crucial RCD protection is to their customers." More details at www.esc.org.uk/plugintosafety

NEW INTERACTIVE SITE PROVIDES MAJOR T&M INFORMATION RESOURCE

To mark the creation of the new integrated Seaward brand, an interactive new website has been developed to provide a wealth of test and measurement instrumentation information at the touch of a button. The comprehensive new site, at www.seaward.co.uk, includes enhanced navigation and a host of user friendly features.

For example, for fast and easy Seaward product selection, special product filters enable users to select from a menu of operating features to quickly match performance requirements with specific test instruments.

Also included is a discussion forum, where Seaward product users can

exchange information and raise questions on technical issues, and a special resources section offering free downloads of data sheets, application notes and other useful test guides.

Visitors to the site can also view and book places on Seaward training courses, find out about special events, exhibitions and seminars. In addition Seaward customers also have the opportunity to use the special 'my account' section of the site to register products and sign up to receive regular news alerts. All of this information is freely available at www.seaward.co.uk at the click of a mouse.

visit www.seaward.co.uk

ECA Skills Shortage Warning

Speaking after her inauguration as the first female President of the ECA, Diane Johnson gave a stark warning about the skills shortage in the UK:

Diane warned that the country was sitting on a ticking time bomb and warned about the future consequences of failing to develop home grown talent.

She said: "All too often the valuable role of our tradespeople is ignored. When we are no longer able to call on a qualified

electrician, plumber or joiner, for example, to carry out essential work in our homes and businesses, because they are in such short supply, it will be too late. I worry about what the landscape will look like in 10 years and who will be teaching our future captains of industry.

"For too long now the emphasis in the UK has been on University education rather than on-the-job skills training, with the craft route often seen as a lesser option. But I have young graduates

knocking on my door with increasing regularity asking for the chance to learn a trade as their degree has proved almost worthless in the job market.

"What people often forget is that qualified tradespeople will often go on to set up their own businesses and become employers themselves. Without this natural pattern of events taking place the future looks very bleak."



New NICEIC Solar PV course

NICEIC has introduced a new Solar PV course to support its Microgeneration Certification Scheme (MCS) for Installers. The course provides electrical contractors with valuable knowledge and skills about this important energy generating technology.

The new course will cover the majority of small scale systems currently being installed in the UK and provide an overview of the design, installation, commission and service of Solar PV systems.

"NICEIC is at the forefront in promoting microgeneration and we encourage all electrical contractors to get involved with this growing sector," says Wayne Terry, NICEIC's Head of Energy and Environment.

"NICEIC's new Solar PV course provides an excellent way to acquire the necessary skills and knowledge to maximise the revenue generating opportunities microgeneration offers."

More details at www.niceic.com

HSE fine for electric shock incident

A Staffordshire company has been fined a total of £3,000 after one of its employees suffered a serious electric shock from one of its machines.

The Health and Safety Executive (HSE) prosecuted an engineering company after one of its workers was taken to hospital suffering from burns to his legs, chest, fingers and wrist.

The steel fabrications company pleaded guilty to breaching Regulations 4(2) and 6(a) of the Electricity at Work Regulations 1989.

The worker was helping to manually load the

saw before his colleague cut a length of metal handrail. He was not involved in the operation of the machine, which wasn't even switched on at the time, yet he still suffered an electric shock.

Following the hearing the HSE inspector involved said:

"Ben Roberts was very lucky as faulty wiring and electricity can kill. Every year there are around 1,000 incidents reported to HSE involving electric shocks or burns, around 30 of them fatal.

"One of the main causes of incidents involving electricity, as it was in this case, is the use of poorly-maintained equipment.

"The cable was too long, allowing it to droop onto the workshop floor without any protection, where metal filings were present. The design of the machine was not suitable for the conditions of the workshop, and in many respects this was something just waiting to happen."



Getting technical

with Jim Wallace

Work smarter with PAT test record programs

Jim Wallace looks at developments in PAT data management programs.

In very basic terms PAT testers might be regarded simply as test data collection tools that measure and check the safety of electrical appliances. For fully effective risk management and workplace safety protocols, how this data is acquired, managed and presented takes on even greater importance.

As a result, considerable work has also gone into the development of software systems capable of enabling the user to build and maintain computerised records of test results so that the collected data can be interrogated and used to control electrical safety programmes more efficiently.

In addition, the HSE Memorandum of Guidance on the Electricity At Work Regulations advises that records of maintenance and test results should be kept throughout the life of the equipment.

Software controlled safety testing record systems enable 'real-time' records to be maintained, which are easily amended and updated. This enables new equipment to be added and the movement of equipment from one location to another to be tracked and advance re-test periods to be properly managed.

Manual data entry systems

Because most entry-level PAT testers provide simple pass/fail readings and do not have an internal memory for results storage, complementary software programs at this level permit manual entry of results.

However, once data has been entered there can be a range of data manipulation options available that allow different test report templates to be produced – for example, as PDF, TIF or Jpeg files.

In addition some of these basic level programs also allow different reporting options including the presentation of test histories for individual appliances for comparison or trend analysis purposes.

More elaborate entry level packages also have the ability to link testing carried out to the automatic generation of invoices – including the option to include the costs of any repairs carried out.

It is also possible to produce special 'certificates of testing' that can be displayed in workplaces to highlight the electrical safety measures undertaken.

Direct data download

For those PAT testers equipped with a memory

to record results, basic software packages are also available that enable the direct download of test results into database systems.

One of the most important considerations for users of PAT testers incorporating an internal memory is the compatibility between the test instrument and the PC program. Most software packages are compatible with different safety tester output formats – although as the range of test instruments has increased over the years it is worth checking with the supplier of your preferred results recording program that your tester will be compatible.

Some of these types of programs allow both manual and direct download input of data and in broad terms provide the same range of test report options and administrative functions as those described earlier.

However there are some differences that may be attractive to different types of PAT contractor or user.

For example some programs enable test results to be downloaded into existing customer or site specific files – while some download programs produce multiple databases with new results listings being created every time a new set of results is entered.



Uploading test data

As testers have become more sophisticated, some have the ability to 'pre-program' the instrument with a special testcode (a test routine defined by a numeric sequence) at the start of the working day.

This is referred to as an upload capability and involves the ability to send an appliance number and testcode from PAT records held on a PC program to the instrument. By uploading this information into the tester, re-testing can be speeded up considerably and detailed test histories can be maintained very easily.

As a result software programs that combine data upload and download features can be used to create fairly sophisticated asset registers for customers, grouping appliances by type or location and helping to track the movement of equipment between departments or different parts of a building.

Such high level programs also come with a host of

other functions and test templates – including the inclusion of 'view only' files that enable others to have copies of test records from a parent program that can be viewed without having a copy of the original record-keeping program.

Other features include sophisticated presentation and reporting options and the ability to link electrical safety testing records with other asset management or maintenance functions - extending the use of these programs for more general facilities management tasks.

Networking options have also been developed for these higher level PAT programs - enabling more than one user to access the program at the same time.

Special programs

In addition to the range of record keeping database programs a number of special software packages are available to provide specific PAT functions.

One example is an e-scheduler that systematically interrogates the PAT test database and automatically identifies when equipment will be overdue for re-test – issuing e-mail alerts to notify customers or departments immediately of all re-test requirements or overdue warnings.

Another example of ancillary software is a time manager function that allows analysis of the use of a tester and verification that tests have been carried out. This type of software provides clear information on the test activity of users – providing such details as duration of testing, number of tests undertaken and time between jobs.

At all levels PAT record keeping programs provide real benefits – improving efficiency, increasing productivity and bringing a more professional approach to PAT data management.

Free 14 Day Trial

To mark the launch of Seaward's new PATGuard Elements software program, a free 14 day evaluation offer is available. The new software is specifically designed to enable test results taken with manual PAT testers to be incorporated into a formal PC-based record keeping system.

www.seaward.co.uk/free-trial for more information



Common Sense Approach Should Be Way Forward



A new campaign seeks to promote a pragmatic approach to PAT in an effort to clarify and improve workplace understanding of electrical safety testing.

Everyone would acknowledge that businesses and organisations should not be overwhelmed by health and safety regulations, but at the same time it is vital that the important role played by basic safety standards is not overlooked.

The Common Sense approach now being promoted by Seaward recognises this fact and seeks to provide a balanced approach to portable appliance testing.

As part of the campaign, a new free booklet is now available for PAT service users that explains how workplace electrical inspection and testing regimes can be implemented sensibly. The main messages in the booklet are also expanded in a special Common Sense seminar presentation which can also be made

available to interested groups.

The guide recognises the vital role that electrical inspection and testing plays in identifying many situations where defective equipment could have caused electrocution or fire and explains how in the vast number of cases the cost of taking an inspection and testing approach can be lower than that associated with other forms of assessing risk.

In reality a duty holder can demonstrate compliance with the various regulations by a variety of means of which inspection and testing is one. However, guidance from the Health and Safety Executive and The Institution of Engineering and Technology are to all intents and purposes recommendations and it is the duty holder who makes the decision as to how to demonstrate compliance in relation to the risk posed in their own particular environment.

In this way the new guide will help those with responsibility for health and safety in

companies and organisations to understand the importance of taking realistic and adequate electrical safety precautions which are in proportion to the particular risk provided in their own situation.

If such common sense principles can be adopted, then, rather than run the risk of exposing workers and premises to an increased risk of unsafe appliances, the way forward can be one of common sense with a realistic, pragmatic and cost effective approach to electrical testing in the workplace.

New free booklet: A Common Sense Approach to Electrical Safety in The Workplace

To request your copy email info@seaward.co.uk quoting 'Current Knowledge – Common Sense Approach guide'

NEW PATBags for Easy Test Kit Selection



A new test-kit concept enables anyone responsible for electrical safety testing of equipment used in the workplace to meet their electrical safety responsibilities in a safe, simple and effective manner.

The new Seaward PATBags are special all-inclusive equipment packages designed to provide the right PAT tester and accessory combination to meet the requirements of different test needs.

Specially designed to support fast and efficient electrical safety checking and testing routines, each PATbag comprises an easy to operate portable appliance tester with a test guide and training DVD alongside a log book for test results and a supply of ready-made pass/fail labels.

Also included is a specialist Business Builder CD to provide business development advice for those already involved in the PAT industry and also for anyone thinking of setting up a new testing business. Divided into four sections, the guide provides an overview of main PAT business development activities alongside useful marketing tips and guidance.

In total six different kit combinations are now

available to meet all PAT needs.

The PATBags are based on Seaward's range of manual handheld PAT testers. Starting with the entry level PrimeTest 50 or PrimeTest 100 testers for fundamental in-house safety checks on electrical equipment, appliances and power cords.

For more demanding safety testing requirements the PrimeTest 250 PATBag includes the most comprehensive handheld portable appliance tester available – it is capable of all of the safety tests required by the IEE Code of Practice including three phase testing.

In all cases, the all inclusive packages can be extended with the optional addition of the appropriate PAT results record keeping software – with specialist programs available to support both manual testers and more advanced downloading models with an internal results memory.

All the electrical test equipment, accessories, software and supporting documentation is incorporated in a purpose-designed and lightweight carrying bag.

More from www.seaward.co.uk/patkits

Seaward PATBags include:

Quick and easy to use PrimeTest PAT tester

Business Builder CD

PATGuard Elements rapid manual data entry software (optional)

Training DVD & online exam with certificate

Guide to Portable Appliance Testing Test Reference Card

Portable Appliance Register and Test Record

500 Pass Labels

500 Fail Labels

110V Adaptor

Smarter Electrical Testing At AMEC



AMEC's Power and Process Europe business, provider of engineering services to the nuclear and clean energy sectors, is using advanced test instrumentation from Seaward to improve the compliance testing of its own electrical installations.

As part of its own facilities management arrangements at two of its largest sites at Birchwood Park, Warrington and Booths Park, Knutsford, the company is using a PowerPlus 1557 combined electrical testing and certification system to ensure that new

electrical installations comply with the 17th Edition wiring regulations.

The PowerPlus 1557 is a new concept in electrical test instrumentation and combines the functions of a conventional multifunction electrical installation tester with a data logger to enable test certificates to be created as testing is undertaken.

It does this by storing an electronic version of the test certificate within the tester, eliminating the need for 'dummy' certificates and manual or PDA recording of test results.

Test data is automatically entered into the correct certificate fields as testing is undertaken and can be validated on-site without the need for repeat visits.

When inspection and testing is complete, the certificate held inside the PowerPlus 1557 tester is transferred to PC software for output and/or storage as electronic data files.

At AMEC the testing is carried out on site by specialist electrical contractors and when complete the data is output onto NICEIC test certificates as proof of compliance with the 17th Edition wiring regulations.

The system enables formal records to be maintained very easily to ensure that test certificates and audit trails of all electrical systems are available for external inspection.

Peter Smith, Facilities Officer, Electrical and Mechanical, at AMEC's Power and Process Europe's business, said: "The new electrical test and certification system has improved our testing and record keeping systems considerably.

"The test process itself is much more streamlined and we now have both paper and electronic records of all installation and periodic testing undertaken on both sites along with the necessary test certification.

"This has made it much easier to demonstrate our compliance with the necessary wiring regulations and prove to electrical inspectors and external auditors that everything is as it should be."

Among the latest technical advances now built-in to the PowerPlus 1557 is the ability to download and merge data from multiple testers used by different engineers on large premises into a single certificate.

The specially developed software program incorporated in the tester includes all required 17th edition certification and can print onto ECA, NAPIT and NICEIC stationery.

Full details of the PowerPlus 1557 are available at www.seaward.co.uk/powerplus.

Q&A

Need to know something? Then Bob's the man to ask.

Q Is it ok to test a class 1 appliance that is made entirely from plastic, with a screwdriver jammed in the earth pin of the appliance (probe test) in order to gain a reading from the tester? If not what are the options available?

A The IET defines within its code of practice that the Earth Bond test must be carried out on accessible metal parts. In reading your post I am assuming that you intend to probe somewhere internally on the unit via a grate or mesh.

What we are trying to achieve by performing an earth bond test is ensuring that any part a user can touch has a sound connection to earth, so in the case of a fault that metal part cannot become live and give the user a shock. Therefore if you cannot get a connection with your probe, it is probably also true that a human finger cannot contact this metal part.

You really have two options at this point - contact the manufacturer of the equipment and ask them how they recommend the item to be tested or test the item as a class 1 product but omit the Earth Bond test from the sequence. Do not test the item as Class 2 as the limits are different. However when omitting the Earth Bond test, ensure that your notes state that you have no accessible metal parts, and that an Earth Bond test was not suitable.

Q Is it really necessary to actually test IT equipment as well as carry out a 'formal visual inspection'? The reason I ask is at college we were told not to bother testing IT, only do a 'FVI' as the risk of damaging IT is expensive.

A Using the appropriate test settings will avoid damage to IT equipment. Formal visual inspection is essential but won't necessarily pick up all problems, such as a poor earth connection. For example it should be possible to carry out a Earth Bond test at 100mA at a 0.50 ohm limit and test the IEC lead separately as normal.

Q How do I recognise a device with no insulation (NI) when I am out testing?

A The NI tests are performed on an appliance where an insulation test is not appropriate. There are various factors which may determine an insulation

resistance test ineffective. As a general rule an appliance must be switched on in order to correctly perform an Insulation Resistance test, otherwise the test is only performed up to the switch and not the whole appliance. Therefore we have no idea if the insulation is sound. A leakage test in these circumstances can be performed in its place. An appliance failing an insulation test will also give a failed leakage test.

Manufacturers are frequently adding electronic switches to devices now and unless power is applied to the unit the switch cannot be closed. Therefore an insulation test is not really appropriate when testing such appliances, and a leakage test is much more appropriate.

IT Equipment that does not comply with BE EN 60950 may also be damaged by a 500V Insulation Test and in these circumstances a test with no insulation may also be more appropriate.

Q I am responsible for arranging inspection and testing of all equipment in the offices where I work. I have checked past test records and every office item has been tested every year including stationary and IT equipment. However, according to the IEE Code of Practice the recommended interval for the next test is up to 2 years for a formal visual inspection and 4 years for a combined test and inspection. Is an annual inspection the norm or should I be testing more frequently?

A You are correct that the suggested initial frequency of inspection and testing for office IT equipment recommended by the IEE Code of Practice ranges between 24 and 48 months, depending on the class of construction.

The IEE Code does point out that this is the "initial" frequency and that the frequency of inspection testing depends upon the environment, the user and the equipment. The reality is that this is a judgement call - there are no right or wrong answers.

The Electricity at Work Regulations (which is the legislation we must comply with) says that we must take "reasonably practicable steps so as to prevent danger" so must decide, normally by risk assessment, what is reasonable. We might argue that IT equipment sitting in an office is unlikely to develop a dangerous fault - the problem arises when you add people into the equation - a cup of coffee spilt on the desk, cables moved around, wedged under a desk leg.

Why not contact the company who do your testing, tell them that your understanding is that the IEE recommend testing every 24-48 months for your

particular equipment and ask for their views.

Q What is the situation with test periods for different products? I know PCs are ok for at least 2 years, but not the extension leads to which they are connected. Also most B&B do not believe they have to have appliances tested at all - is this really the situation?

A The IEE Code of Practice for In-Service Inspection & Testing 3rd edition recommends the frequencies of inspection and electrical safety testing for different sectors of industry. For example, items in B&B rooms are classed 'Items Used by the Public' and for handheld items such as a hair dryer, for example, normally a Class 2-combined visual inspection and test would be required every 12 months. A formal visual record of the equipment condition should be made every month.

If staff in the B&B use electrical equipment such as a floor cleaners (and other 'portable appliances') a combined visual record and test must be taken every 24 months and a formal visual record every 12 months.

A record of all results should be recorded and kept for the life of the equipment; that way whoever is carrying out the PAT testing can see if there is any deterioration in the appliance insulation, or plug condition etc.

It is not necessary by law to have items PAT tested, However if there was a fault in the equipment which led to an injury or death, as the business owner you would have to prove to the HSE or the Courts that your maintenance regime for electrical equipment is better than or is equal to that laid out by the IEE Code of Practice and the HSE Guidance Notes. When it comes to Health & Safety YOU have to prove your innocence - by showing that all reasonable steps have been taken to avoid injury or accident.

Thanks for some great questions - Keep them coming and look out for future TechTalk articles covering these topics.

Got a question?
Send it to: letters@current-knowledge.com

Improvements here ►



mean improvements here ►



resulting in improvements here ►



17th Edition test professionals will love the improvements we made to the PowerPlus 1557 handheld multifunction tester and software.

Like the new multi-worker feature that allows several people to simultaneously work on one certificate from separate testers.

And the cloning feature that duplicates certificates from user templates.

The automatic format facility will bring a smile to their faces too. It ensures any entries are formatted to fit the allocated space available on preprinted certificates. Handy, don't you think?

Especially when you consider just how much time and effort will be saved. And how much more profit can be made. Obviously, improvements go a long way.

For your free Guide To 17th Edition Testing call +44 (0) 191 586 3511 or email info@current-knowledge.com and quote **CK17**

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Experts in what we do.