

Testing by ‘competent persons’

The rise of testing and tagging as part of a comprehensive electrical safety management program has seen the growth and development of an industry dominated by so-called ‘competent persons’, writes Sarah Allen.

Many electricians I know are not interested in providing a test and tag service to their clients; instead they recommend a service provider with the specific tools and knowledge to provide a cost effective and efficient service.

Others, however, are horrified that ‘competent persons’ are encroaching on the domain of the electrician.

A competent person is defined as a one who has completed the necessary practical and theoretical skills, acquired through training, qualification, experience, or a combination of these. In some States, completion of a nationally-recognised, competency-based training course is also a requirement, as is the use of a Portable Appliance Tester (PAT).

The current Australian Standard, AS/NZS 3760:2003, specifies the tests required to be conducted in order to confirm the electrical safety of an item. While the Australian Standard does not mandate a PAT should be used to conduct these tests, the use of a PAT remains one of the most comprehensive and efficient methods of ensuring an item’s electrical safety.

With a vast range of PATs on the market in Australia, ranging in price from hundreds to thousands of dollars, it is no wonder that some people are confused when it comes to the PAT that is best suited to their requirements. It is therefore vital for extensive research to be conducted prior to the purchase of a PAT as there are still some PATs available that do not adequately perform the tests



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required under AS/NZS 3760:2003.

So, what tests are required under the Standard?

Insulation resistance

This test checks for the integrity of the insulation that is protecting users from the live parts within the appliance. In the majority of cases, a PAT or an insulation resistance tester is used to complete the insulation resistance test on an appliance. The Australian Standard also states that your tester must have an accuracy of +/- 5%, so you should check the manufacturer’s specifications carefully.

Many modern appliances now contain a ‘soft’ switch, which means that current must be applied to the item in order for it to be tested. The correct test to conduct on this sort of appliance is a leakage current test.

Leakage current testing

This test involves “powering up” the appliance and measuring any current leakage. To conduct this test, the tester must be connected to the mains power. As battery powered PATs cannot complete this test, a mains power PAT

or an alternative leakage current tester needs to be used.

Polarity

A polarity test is conducted on a flexible supply cord with a rewireable plug or socket to ensure the active and neutral wires are connected to the correct terminals using a multimeter, insulation resistance tester, or PAT. While testing polarity using a multimeter or insulation resistance tester is slow and complex, a PAT completes this test quickly and efficiently – also testing for short circuits between conductors.

Earth resistance

An earth resistance test will confirm whether the earth connection of the equipment, between the plug and exposed external metal parts, or the plug and the socket, is greater than 1Ω. One method of testing this is to conduct an earth continuity test, which can be conducted using a PAT, multimeter or insulation resistance tester; however, it does not take in to account any damage to the earth connection or conductor and hence could be considered less effective than other methods of measuring earth resistance.

We would recommend an earth bond test be conducted by a PAT that is capable of applying a higher current to determine whether in the event of a fault, the equipment can handle that fault current correctly, and to measure earth resistance.

Visual testing

Approximately 90% of faults are identified during a visual inspection prior to the completion of the required electrical tests. It is important to note that a true visual inspection is not a quick look at an appliance, or the application of a pass tag without even looking at the appliance!

A visual inspection conducted by a reputable service provider involves



a comprehensive inspection of the flexible supply cord, plug, appliance and socket. Covers and guards are checked to ensure they are attached, appliances are checked for rattles indicating the presence of small foreign objects that may interfere with the safety of the appliance, and Class II appliances are checked for deep engraving which may impact on the insulation of the appliance.

Regardless of your service provider, and regardless of the test equipment used to perform the required tests, it is vital to ensure the test equipment employed complies with the requirements of the Australian Standard. A number of testers available on the market do not currently meet the requirements of the Standard and close inspection of the equipment specifications is recommended prior to purchase.

Another aspect to consider is the reporting capabilities of the test equipment employed. At the lower end of the reporting scale are hand written tags, along with a hand written log of tests completed. This method requires the technician to manually record the type of appliance, date of the test, recommended retest date and then simply record whether the appliance passed or failed the testing process. As the test tags associated with this method are also handwritten, errors as a result of poor or rushed handwriting are also commonplace.

Some of the smaller PATs on the market have the ability to produce printed tags via a Bluetooth connection from the PAT to the printer. These PATs are highly portable which makes them ideal for certain environments; however, some printers produce tags which fade in direct sunlight, or turn dark brown when exposed to heat – similar to the old thermal fax rolls! These smaller PATs collect data relating to the tests performed, and therefore electronic test reports can be produced once the data has been processed.

At the top end of the scale are robust PAT and printer combinations. This test equipment is designed to withstand the volumes of testing conducted by test and tag professionals, gives the operator the most efficient method of testing and tagging appliances, and certainly gives the client the most comprehensive result. Electronic data is collected by the test equipment, tags printed automatically by the on-board printer, and following data processing detailed test reports are prepared.

Many PATs also give the operator the ability to standardise asset descriptions. This allows the client to analyse their testing data by developing summary reports for specific asset types, and to identify any trends in failure rates for specific asset types.

Regardless of the test equipment employed, in the event of an accident the ability to refer to the historical detailed test results for an item will be invaluable. This is something that traditionally handwritten logs have not contained, and we firmly believe should be a major consideration when choosing a service provider or test equipment for in-house use. ■

If you would like any further information, contact Sarah on 1300 287 669, by email sarah@atservices.com.au or visit www.appliancetagging.com.au

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