

# A LIVE ISSUE

What do you need to know about  
electrical testing and tagging?

**JACKIE BROWN-HAYSOM** sets out the basics.



**WHAT DOES THE LAW SAY ABOUT TESTING AND TAGGING ELECTRICAL EQUIPMENT?**

- The Electrical (Safety) Regulations 2010 require all electrical equipment and fittings that are available for use in the workplace, in rental or leased accommodation, or are offered for hire, to be electrically safe.
- The only documented method of complying with this requirement is to carry out regular inspection, testing and tagging in accordance with AS/NZS 3760 *In-service safety inspection and testing of electrical equipment and its amendments*.

**WHAT TYPES OF EQUIPMENT DOES THIS APPLY TO?**

- Pretty well anything, from office equipment and kitchen appliances to large lathes and welders, unless they are wired into the building. It includes both single and three-phase connections.
- Even new equipment must be tested and tagged before it is used.
- Testing and tagging must also be carried out before second-hand appliances are offered for sale, and after appliances have had repairs or services that could affect safety.
- Medical equipment, however, has specific safety requirements, set out in AS/NZS 3551:2004 *Technical management programs for medical devices*.

**HOW DO OFTEN DOES TESTING HAVE TO BE DONE?**

- It depends on the type of equipment and where it is being used. Table 4 of the Standard sets out recommended time frames – which range from once in five years for equipment that is not subject to significant wear and tear, nor used in what the Standard calls a ‘hostile environment’, to once every three months for portable hire equipment, or items used on construction or demolition sites. [AS/NZS 3012:2010 contains specific, rigorous, safety requirements for this equipment, but refers back to 3760 for testing and tagging details].
- The Standard makes little reference to specific types of work, so in many cases equipment owners will have to decide for themselves the most appropriate interval for retesting.
- The testing intervals listed in the Standard are only recommendations, so a person with responsibility for equipment can vary the timing [for anything

except hire equipment] if a documented risk assessment suggests it is needed more, or less, frequently.

**ARE THERE ANY ALTERNATIVES TO TESTING?**

- In some situations use of RCDs (residual current devices) will be an acceptable alternative, but the RCDs will themselves have to undergo testing and tagging. This will never be acceptable for construction or demolition sites.

**WHAT ARE THE LEGAL RAMIFICATIONS IF YOU DON'T TEST AND TAG?**

- A failure to test and tag can have consequences under both health and safety law and the Electrical Regulations.
- The Electrical (Safety) Regulations state: ‘A person who owns or operates works, installations, fittings, or appliances must not use, and must not allow any other person to use, [the equipment] if [it] is electrically unsafe.’ Prosecution could result in a fine of up to \$10,000.
- Under health and safety law the standard is higher. Failure to monitor equipment safety is in itself grounds for an improvement notice at best – and untagged equipment will be immediately apparent in a workplace inspection.
- Insurance companies are also starting to ask for evidence of testing and tagging.

**WHAT QUALIFICATIONS DO PEOPLE NEED TO DO TESTING AND TAGGING?**

- Actually, none. The Standard requires the work to be done by a ‘competent’ person, and offers some suggestions about what competency means (Appendix B), but there is no NZQA course for electrical testers, nor a code of practice for training providers.
- It is the responsibility of the person engaging the tester to ensure he or she is sufficiently competent.

**HOW CAN THE COMPETENCY OF THE TESTER BE VERIFIED?**

- This is a critical question, and there is no easy answer. However there are a number of things to look for when engaging a tester, including:
  - a) Does the person have properly calibrated Portable Appliance Testing (PAT) equipment?
  - b) Does he or she have an up-to-date copy

of AS/NZS 3760 (and AS/NZS 3012, if testing construction or demolition equipment)?

- c) Can he or she explain the details of the different tests that may need to be carried out?
  - d) Is the person electrically qualified? This is not a requirement for testers but at least shows they have been trained in electrical safety. A qualified electrician will still need the correct training and testing equipment to do the job effectively however.
  - e) Have tags been incorrectly applied to data cables or ELV (extra low voltage) items, which don't require them?
  - f) How quickly is the testing being done? Mostly it should take at least an hour for every 20 items (this will vary slightly depending on the environment and the type of equipment being tested).
  - g) Is all equipment, including computers, being disconnected before testing? It is not possible to test an appliance without unplugging it.
  - h) Is equipment with internal relays/ soft switching being given a run test to measure current leakage?
  - i) Will the testing company provide test records with numerical values for resistance, leakage and voltage, rather than a simple pass/fail? Reluctance to do this, or a significant extra charge for doing so, is a warning sign. If a number of items are given the same test value this may also be a concern.
- Always review the test results, looking for possible shortcuts. If there are questions about the validity of any results, numerical test records will allow the results to be verified with an independent audit.

**CAN THE PERSON DOING THE TESTING CARRY OUT MINOR REPAIRS IF NECESSARY?**

- No! Not unless they are also electrically qualified. The Standard forbids testers from carrying out any repairs or modifications, including things as simple as rewiring plugs. One testing company was recently prosecuted for breaching this requirement.

**CAN WORKPLACES DO THEIR OWN TESTING AND TAGGING?**

- Yes they can, if they purchase a PAT machine, get training in its use and on how to become ‘competent’ through a reputable provider.
- There are a number of training courses

available, many of them run by testing companies, ranging in length from a couple of hours to three weeks.

- Look for trainers who doesn't just teach the course, but also do testing so they have the necessary experience to answer practical questions and provide ongoing back up.

### WHAT DOES THE TESTING PROCESS INVOLVE?

- A thorough visual mechanical inspection checks for damage, wear and modifications, correct safety labelling and a plug that matches the amount of current used in normal operation.
- Equipment that passes this inspection is connected to a PAT machine to check resistance and insulation/leakage.
- Earthed (Class I) equipment undergoes an earth-bond test, measuring the resistance of the earth conductor in the cable (a pass mark should be below 1 Ohm).

- Both Class I & Class II items will have either a 500 volt insulation resistance test or a leakage test at mains voltage to ensure insulation isn't breaking down.
- For extension leads and other cables, a polarity check is also performed to ensure correct wiring at both ends.
- Equipment that passes is tagged with the date of testing, the date for retesting, and the name of the tester.
- Equipment that fails is tagged as dangerous and must be removed from service until it is repaired.

### WHAT SORTS OF FAULTS DOES IT IDENTIFY?

- Most problems are found during the visual inspection. These include damage to cords and cables, missing guards, and general wear and tear.'
- Faults that can only be detected with testing equipment include things like manufacturing defects, insulation break-down or earth current leakage.

### WHAT SORTS OF PROBLEMS CAN ARISE IF FAULTY EQUIPMENT IS NOT IDENTIFIED?

- Many workplace fires are the result of electrical faults, but the root cause, as it relates to electrical safety practices, is not always investigated.
- Since the introduction of testing and tagging 20 years ago the number of appliance-related fires has declined significantly, however.
- Users are also exposed to the risk of a serious – or fatal – electric shock. ■

Thanks to Grant Anderson, NZ divisional manager of Jim's Test and Tag; Steve Hodgson, Ferrymead franchisee, Jim's Test and Tag; and Mark Goldthorpe, director, Metrotest and member of the AS/NZS3760 Standards Committee.

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**Safety Is Not An Option. It's a necessity.**



# Industry concerns

The absence of mandatory standards for test and tag operators is harming the industry, and potentially also its customers.

**JACKIE BROWN-HAYSOM** reports.



This extension lead has been tagged at each end, with different appliance numbers. Paid by the tag, perhaps?



An "electrically qualified" person tagged this data lead unnecessarily.



Don't plug heaters into power boards. A fire can result.

**T**ake care when choosing a test and tag service, and don't always opt for the cheapest price – that's the advice from the industry in an environment where established operators are increasingly concerned about the number of unskilled, and sometimes fraudulent, test and tag providers.

"You need to be sure you're getting what you're paying for," says Metrotest director and Standards committee member Mark Goldthorpe. "Because you don't need any qualifications to do the work, anybody can get into the industry, and with no legal requirement to keep records it's almost impossible to audit their work when they do."

Many in the testing and tagging industry are calling for mandatory training and a licencing system to protect consumers.

Goldthorpe, a member of the AS/NZS3760 committee since 1998, says the problem is serious, with end-users inadvertently putting themselves and their workers at risk if they pick the wrong provider.

"I was doing a training course at an Auckland hotel recently and got talking to the manager about their office equipment. She said a company had come in and tested all the stuff in the offices without shutting the computers down – but you can't test anything without unplugging it, so obviously they were just putting tags on."

Blatant breaches of this sort are not rare events, however. Steve Hodgson, a Canterbury franchise holder with Jim's Test and Tag, has a "black museum" of equipment that was tagged – by apparently competent testers – despite having significant safety issues.

He urges people to ask for proof of training and experience when they engage a tester, and to carefully review the completed work.

"It's a concern to me that there aren't unit standards covering test and tag, both for appliances, and for construction and demolition site equipment, which has different requirements," he says. "It's my belief that a code of practice for training providers, and a

licence system similar to that developed for forklift operators, is what we need to ensure some uniformity."

Goldthorpe suggests in-house testing as one way of assuring the job is done right.

"They'll need good training and good gear, but once you've got that you'll be able to schedule the testing around your other business activities – and with your own staff you can be confident they won't take shortcuts."

For those using external testers, however, he stresses the need to request written records that include numerical values for the test results.

"If they won't give you those I wouldn't touch the company with a barge pole. If you don't have those records there is no way you can be sure they're not just putting tags on [without testing the equipment]."

"There should be very little extra cost for this too – if they say it's going to cost a heap more to provide you with the figures, I would be quite concerned." ■

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