Ten tips to working safe

The pressures on electricians are many and varied from paying the bills and staff to complying with the rules and the law, to meeting customer expectations, etc. Chris Halliday details his top 10 tips for electricians to keep them on track and out of trouble.

With all of the pressure that electricians already face on a day-to-day basis, I thought it was timely to offer 10 tips to help ease the burden. It's all about working smarter, not harder.

1 Work de-energised

Working de-energised is not only a legal requirement but makes good sense, too. You must isolate the electricity supply for all electrical work regardless of the time pressures you and your staff are under.

Are the few minutes you might save by working live worth it? Definitely not! The electrocution of an employee is not only expensive in time and money but emotionally as well.

Once isolated you will need to 'lockout and tag out' and 'test before you touch'. These little sayings are so important to ensure you and your staff get home at the end of the day.

You might like to read or re-read our article on page 30 of the Autumn 2013 edition of *Eletcrical Connection* on testing and working de-energised.

2 Test after wiring

Ticking the boxes on the 'Notice of Compliance,' or whatever the post inspection form is called in your state, should never be a tick and flick exercise. No, testing after the installation is completed is the most important part of the whole job because it ensures the work has been carried out successfully and the installed equipment is suitable for energising.

Proper testing also ensures safety after you leave the site and that you don't get hit with a hefty law suit. Actual test results helps to demonstrate that you did 'real' tests and didn't just tick the boxes. Using a proper test methodology, such as that provided in AS/NZS3017 *Electrical installations – Verification guidelines*, helps to ensure that you did all things within reason for safety.

Using good quality test gear helps – remember that you get what you pay for. Testing neutral integrity and voltage before leaving any electrical premise is always a good idea to help ensure safety at the site.

A visual inspection forms an essential part of a full electrical inspection.

3 Inspections for older installations

Recommending full electrical inspections and testing for older premises is a good idea to help ensure safety and to value add for you and your client. For businesses, a full inspection helps to protect workers and prevent downtime. For domestic customers a full inspection helps to prevent nuisance interruptions and ensure loved ones are safe.

I remember hearing about one electrician that found himself on the coroner's stand for the best part of day. He had done exactly what the owner and real estate agent had asked for at a particular premise, such as replacing a faulty socket outlet and fixing a faulty light fitting. But, after the resident died, the electrician spent a gruelling day in the coroner's court and contributed to an out-of-court settlement in the hundreds of thousands of dollars. Supposedly his insurance company covered this expense, but the lost time and emotional drain was all because he hadn't recommended to his client that a full electrical inspection should be carried out.

4 Discuss options with your client

Talk to your client about their options. This will help to ensure that disputes don't occur, especially if things go wrong like RCDs regularly tripping because they opted for the cheapest option.

The cheapest quote is not always the best.

Explain to your client why your quote may be higher than others. By doing so you might just get the job that would otherwise have gone to the cowboy with the cheapest quote that was only going to half the job.

There are very few things in the Wiring Rules that are only a recommendation. Things such as fitting a Type S 100-300mA RCD as a main switch in domestic installations to protect against the initiation of fire (Rule 2.6.2.3). But, if it's good enough for the Wiring Rules then it's good enough for you to recommend to your client.

Another recommendation is provided in Rule 2.8.1 in relation to undervoltage protection. The Rule starts by saying that undervoltage shall be installed but then adds the exception of where damage to electrical equipment is considered an acceptable risk. You could be taking a risk yourself if you don't discuss this option with your client.

Under- and overvoltage protection relays

with **Chris Halliday**

are relatively cheap and start somewhere around $100. Of course, the protective relay will need to control a contactor and this is where a fair bit more expense comes in, depending on the size of the load. Protection could be for a single piece of equipment or, better still, for the whole installation.

Clause 2.7 discusses protection for overvoltage transients such as those that come from switching or lightning. But the rule is written so this protection is not mandatory. Transient protection, or surge protection as it is more commonly called, should be installed wherever sensitive or expensive equipment is installed. It should be installed on the incoming supply, at sub-boards supplying sensitive equipment and also at the sensitive equipment itself. Surge filters are best but more expensive. Appendix F of the Wiring Rules provides excellent guidance on the installation of surge protection.

Discussing options with your client will help cement your relationship, build trust and keep your client coming back time and time again. Also, you and your staff must never lie or fib to your client. Nothing is more effective at destroying the trust and relationship you may have been built over many years.

5 Be safe

As discussed in Tip 1, going home safely at the end of the day is important. And it really is a right of employees. Having all your Workplace Health and Safety (WHS) requirements in place will help to prevent disaster for you, your staff and clients. Policies, procedures, work instructions and the like can be tedious, expensive to write and expensive to implement, but they are essential to a safe working environment and are a legal requirement.

AS/NZS4801 *Occupational health and safety management systems* and its associated handbook provide guidance on the requirements for a safety management system. Safety is an ongoing part of the work, just as doing the actual work is.

Safety culture is also very important. Leadership must come from the highest level in your company and you must walk the talk, i.e. set an example and follow all WH&S requirements. Looking after workmates is then just a part of the everyday work.

6 Install RCDs at every opportunity

Rewireable fuses and circuit breakers, which offer poor protection, should be replaced with RCDs at every opportunity. Replacing them not helps to save lives but can also add to your bottom line.

Rule 2.6 of the Wiring Rules details where RCDs are required, but RCDs can be installed on almost every circuit and for every piece of equipment. In fact, Rules 3.9.4.3.2 and 3.9.4.4 could be construed to mean that all thermoplastic sheathed circuits should be fitted with an RCD – check it out yourself. Notwithstanding this, WH&S legislation talks about ensuring the safety of workers and therefore it would seem that every circuit should be protected by RCDs.

Testing and tagging RCDs is also a requirement of AS/NZS3760 *In-service safety inspection and testing of electrical equipment*. If you test and find an RCD that is faulty, then replace it immediately or isolate, lock and tag the circuit. RCDs are essential safety equipment and cannot be left in circuit when inoperative. >

7 Avoid temporary repairs

I hate doing temporary repairs but sometimes this may be necessary. Temporary repairs can be forgotten or your client might refuse to fund the permanent repairs. If so, this can leave you in a terrible bind.

Always use genuine parts for repairs or new installations wherever possible that are made to Australian Standards by reputable companies. Never use cheap clones, forgeries or copied components such as those from overseas. If it seems too cheap then it probably is, and it may cost you thousands.

8 Proper planning

Proper planning and design of an installation can save installation costs and return visits.

Make quotes subject to the relevant approvals and get those approvals before starting work. And choosing the correct sized wiring to ensure ratings aren't exceeded so voltage is supplied within the required voltage drop are just a few things to consider.

9 Manage arc blast/flash

Prevention is always better than a cure so installing equipment that minimises the risk of arc blast/flash is the best option. Don't install equipment that has bare busbar or large exposed terminals. Arc contained switchboards and arc flash protection is sensible.

Safety procedures and arc flash clothing will be necessary where equipment must be operated or worked on 'live.' Again, proper planning is key.

"If it's good enough for the Wiring Rules then it's good enough for you to recommend to your client."

10 Professional development

Knowing what you are doing and staying abreast of changes is essential in this modern day and age. As an example, the Wiring Rules are constantly evolving to improve safety. Your 2007 book must now include Amendment 1 and 2 or you are behind the eight ball.

Attending trade shows to see the latest equipment, being part of member organisations and reading magazines such as *Electrical Connection* all helps you develop professionally.

CONCLUSION

These ten tips for sparkies are just my thoughts. Much could be said of staying out of trouble but hopefully you are already following many of my top 10 tips. If nothing else, I hope these tips get you thinking and discussing such things with your colleagues or workmates. ■

Disclaimer: This article is written on behalf of the Institute of Electrical Inspectors, although the views expressed are not necessarily those of the institute. Any information in this article is given in good faith and is not all-encompassing. Likewise the author is not a legal practitioner, although legal issues may have been discussed. Electricians should make their own decisions based on legislative requirements, Standards, codes of practice, risk assessment, knowledge, etc. Otherwise seek further assistance.

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