

electrical focus

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Proposed 'safe electrical work practices' regulations

Readers may recall earlier information in Energy Bulletin No. 27 (April 2003) about a review of the Part IX "General safety requirements for electrical work" of the *Electricity Regulations 1947*. The review was necessary to address an increasing number of serious electrical accidents by electrical workers.

The outcome of the review showed that in some cases, work practices in the electrical industry are exposing electrical workers to the risk of injury or death by working 'live' unnecessarily on 240/415 volt equipment. Following industry

consultation, a series of recommendations has been prepared to improve the safety of electrical work practices.

The cornerstone of the recommendations is that electrical work on or close to live electrical parts needs to be handled much more carefully, to effectively manage the safety risk. To achieve this outcome, it is planned to amend the now outdated Part IX of the *Electricity Regulations 1947*.

Energy Safety is now finalising the proposed amendments, in anticipation of the regulation changes taking place during 2005.

Unenclosed joints constitute a defect

In November 2002, a licensed electrical mechanic was electrocuted when he inadvertently cut into live conductors in a roof space of a shopping centre in South Hedland.

The State Coroner conducting an inquest into the fatality made specific comment on the dangerous environment in which the deceased was working:

- He was unnecessarily working on live conductors
- He was working alone in a large and unfamiliar environment and his movements were not being monitored
- The area was not lit
- There was a proliferation of unenclosed joints in insulated cables
- Some joints were not insulated in that they were covered using a non-electrical type tape.

In concluding his findings, the State Coroner made a number of recommendations, including:

- Where work is being carried out in areas where the quality and extent of

the electrical work is unknown or difficult to assess, electricians should either:

- work at a time when the power can be turned off; or
- take the necessary precautions to avoid contact with live parts, ensure the area is well lit and work in conjunction with another person.

- Where there are unenclosed joints in insulated cables, junction boxes should be installed before electrical work is commenced.

Energy Safety agrees and has therefore established the policy that ...

unenclosed joints in insulated cables constitute a defect and must be corrected.

Electrical contractors and electricians carrying out new electrical work or alterations to existing work must therefore ensure that joints in insulated cables are enclosed.

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Energy Safety



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If, during the course of their work, electrical contractors / electricians become aware of unenclosed joints in insulated cables, then in line with Regulation 62 of the *Electricity (Licensing) Regulations 1991*, they are required to report the matter to the owner/occupier of the installation. The defects should then be corrected.

If the owner/occupier of the installation will not authorise these defects to be corrected, electrical contractors must then report the matter to the relevant network operator (or Energy Safety if the network operator cannot be identified).



Importance of the integrity of MEN connections

Missing MEN connections pose a significant potential risk of electric shock.

Several fatalities over the past few years have been attributed to missing MEN connections.

Of particular concern are installations that have a remote main switchboard (containing metering equipment and an MEN link) and a dwelling sub-board some distance from the main switchboard.

At installations where, from the main switchboard, only the active(s) and neutral conductors supply the sub board (a common arrangement in WA), the sub board must have an MEN link and one or more driven electrodes (refer to Figure 5.2, Clause 5.4 and 5.6.6 of the Wiring Rules and page 2 of Electrician's Newsletter No. 1 for specific details).

Recently, Western Power, at the request of Energy Safety, carried out a random sample inspection of 405 rural / semi rural dwellings to gauge the extent of missing MENs.

The results confirmed Energy Safety's concerns – one installation did not have an MEN link and there were some other non-compliance issues with installation earthing arrangements.

Electrical contractors and their electrician employees are reminded of the importance of checking for MEN links at installations on which they are working, particularly sub-boards in rural / semi rural areas of WA. Where it is revealed that an MEN link is found missing, it is essential that repairs are effected immediately, to ensure the safety of the installation.

Imitation miniature circuit breakers

Electrical contractors are advised to be wary of cheap imitation miniature circuit breakers that may be on the local market. Typically the equipment is manufactured in China and has all of the markings and appearance of an identical European-made product, even to the extent of including the European manufacturer's trademark and safety approval stamp.

The imitation miniature circuit breakers are an inferior product that fail to meet the required standards of performance specified in the IEC and Australian Standards. The failures occur during the short circuit current test. In some instances, the tips of the contacts have been literally blown off.

Of real concern is the fact that the devices do not always fail in a 'safe' manner. This has serious safety ramifications not only for installers / commissioning staff but also for other personnel who may be in close proximity to the devices during fault conditions.

Miniature circuit breakers are prescribed items and must have an Australian approval number stamped on them. This number commences with a 'S', 'Q', 'V' or 'N' letter and is followed by several numbers.

Energy Safety recommends electrical equipment be purchased from reputable suppliers. If there is any doubt about the equipment, purchasers should request the supplier to produce evidence in the form of an approval certificate and test report.

Quality concerns with imported TPS cable

A recent report from the New Zealand electricity regulator has highlighted serious concern that a batch of imported TPS cable failed to meet the requirements of the Australian / New Zealand Standard AS/NZS 5000 "Electric cables – polymeric insulated".

The cable failed the aging test. Also, the cable is claimed to be V90 rated but when tested to the V90 requirements, the insulation material crumbled.

The cable was imported from Taiwan and manufactured by BANKO. It is suspected the cable is also being sold in Australia. Unfortunately the cable does not have any sheath markings.

Electrical contractors are urged to ensure the cable they purchase conforms to AS/NZS 5000. This can be proved by a supplier producing evidence in the form of an independent test report certifying compliance to the standard.

Electrical safety warning – Kleenmaid hotplates

During December 2004, the Office of the Technical Regulator [South Australia] issued an electrical safety warning about a potential electrical hazard in some models of Kleenmaid hotplates.

In the affected models, the terminal diagram has been placed upside down on the enclosure. An electrician connecting to the diagram may incorrectly connect the LINE wire to the earth terminal, resulting in the metal enclosure becoming live.

The markings on the affected models are:

TYPE OF EQUIPMENT: Range, drop-in hotplate, 4 elements under glass, sensor touch

BRAND/TRADE NAME: Kleenmaid

MODEL/CATALOGUE NO: CH605CE

APPROVAL MARKING, LA OR CS No IF APPLICABLE RCM (believed approved ESOQ)

VOLTS: 240 V, ac, 50 Hz, 6.3 kW

OTHER MARKING: Type SVK67TS, S/N 44730081

Electrical contractors and electricians should be on the alert for any of the above models of Kleenmaid hotplates that are affected.

Electrical safety warning – Switchgear installed in the 1960s

During January 2005, the Office of the Chief Electrical Inspector [Victoria] issued an electrical safety warning of a potential fault within a type of switchboard manufactured in the 1960s.

The warning follows an incident where it appears cables within the combined fused switch carriage shorted to earth, causing a severe electrical fault and fire at a major public institution.

In the warning, the Office of the Chief Electrical Inspector recommended that these switchboards be subjected to regular inspections and maintenance to prevent similar incidents.

The Office of the Chief Electrical Inspector recommends that all

electrical installations that contain switchgear as shown below be inspected for damage as soon as practicable to ensure that similar incidents are avoided. Particular attention should be given to:

- Broken and deteriorated tension springs
- Damaged cables within the combined fused switch carriage
- Heat damage to connection points
- Foreign and loose items within the combined fused switch carriage.

Further information on this alert is available from the Office of the Chief Electrical Inspector [Victoria], Installation Safety Section by telephoning (03) 9203 9700.



The type of switchboard that is subject to this electrical safety warning



Heat damage causes tension springs to fail

Disciplinary action taken by the Electrical Licensing Board

1 January 2005 to 31 March 2005

The Electrical Licensing Board dealt with three operatives during this period.

Formal proceedings

One operative attended formal proceedings:

- George Riding (EW 105370) [and Phase Five Electrical (EC 001167)]

Competency assessments

Two operatives were required to complete a competency assessment to demonstrate their knowledge and ability to carry out electrical work in a safe and satisfactory manner:

- Robert Campbell EW 116211
- Alan Woodhead EW 121793

Both operatives failed to complete the competency assessment successfully. The Board suggested that the operatives undertake refresher training (the Electrical

Trades Licensing Course), as their electrical worker's licenses would be cancelled if they could not pass the assessment.

George Riding (EW 105370) (EC 001167)

As an electrician, Mr Riding carried out electrical installing work that did not comply with AS/NZS 3000:2000 at two separate properties. Both electrical installations were left in an unsafe condition likely to endanger person/s and property.

As an electrical contractor, Mr Riding (the only nominee for Phase Five Electrical):

- for one property, submitted a Notice of Completion to Western Power Corporation for electrical installing work that was not completed. There were nineteen defects detected (with ten being serious defects).
- for the other property, failed to submit a Preliminary Notice or a

Notice of Completion for the electrical installing work that he had carried out.

At formal proceedings on 18 January 2005, the Electrical Licensing Board ordered that the electrical worker's licence in the name of George Riding be cancelled immediately and the electrical contractor's licence in the name of Phase Five Electrical also be cancelled immediately. Mr Riding is the only nominee for the company. Mr Riding must undertake and successfully complete the Electrical Trades Licensing Course and the Electrical Contractor Training Programme before the Board will consider reinstating his licences.

Note: Future cases of this type will be handled by the State Administrative Tribunal.

Prosecutions for breaches of Legislation

1 January 2005 to 28 February 2005

<i>Breach</i>	<i>Name (and suburb of residence at time of offence)</i>	<i>Licence No.</i>	<i>Fine (\$)</i>	<i>Court Costs (\$)</i>
<i>Carried out electrical work without holding an electrical workers licence Regulation 19(1) E(L)R</i>	<i>Michael Jelly (Waikiki)</i>	<i>NA</i>	<i>1,000.00</i>	<i>333.45</i>
<i>Employed/instructed an unlicensed person to carry out electrical work Regulation 53(2) E(L)R</i>	<i>Richard MacFarlan (Derby)</i>	<i>EW 127512</i>	<i>1,200.00</i>	<i>343.45</i>

Legend:

NA Not Applicable – No Licence Held

E(L)R Electricity (Licensing) Regulations 1991

Note: There was one other prosecution (2 breaches) finalised in this period. The detail of this prosecution is not included above as it resulted in a spent conviction order being issued.

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