

ELECTRICITY IN THE FIELD

230VAC Electrical Installations and Appliances

Preamble

The use of 230VAC in the field must be carefully considered and extra precautions taken as the potential for serious or lethal accidents is greater than normally encountered indoors. Please consult an Electrical Registered technician for any advice.

Use of 230V power sources in the field

1) Portable appliances (single phase)

All 230V portable electrical appliances (e.g., power tools) must be served by an isolating transformer or residual current device (RCD) to prevent electrocution. Domestic extension cables and connections are not suitable for work in damp or wet conditions.

2) Generators

Do not fill the fuel tank while generator is running and be careful not to spill fuel on the hot muffler as accidental fire may result.

Operate generators in dry, well ventilated conditions – place the generator where fumes from the exhaust and fuel will dissipate and not affect people in the vicinity. If possible, transport generator and fuel separate to passengers and driver of vehicle.

Keep the exhaust and cooling air inlet free of obstruction (>1 metre) and well clear of combustible materials (>2 metres) to avoid accidental fires and engine overheating.

Do not connect the generator output to a household electrical circuit.

Do not touch the engine-generator assembly when your hands are wet. Electric shock is possible.

3) Power supply installation in the field

All power supplies installed in the field must be completed in accordance with the requirements of current Electrical Regulations and the relevant New Zealand Electrical Code of Practice. In many cases a registered electrical contractor will be required.

12 VDC Supplies and Instruments

Preamble

12 Volt DC power is not likely to cause serious harm by electrocution in most applications seen in SGGES. However there are associated dangers created by misunderstanding and misuse.

1) Rechargeable Batteries

Charging – Use a battery charger that is suited to the battery to be charged. Do not overcharge batteries through using an inappropriate charger or charging for too long on an unregulated charger as this will damage them and may cause them to overheat, distort and leak, or explode.

Handling – Do not allow the terminals or terminal leads of a battery to touch or short circuit as this damages the battery and may cause injury. Avoid handling batteries in areas where flammable gases may ignite.

The electrolyte fluids in batteries are poisonous, highly corrosive and often release flammable gases. Therefore, handle batteries with due care, ensuring that the batteries are well ventilated and isolated from ignition sources. Ensure there is fresh water nearby to flush any splashes from skin or eyes.

Storage – always charge a battery before putting into storage and ensure the area is well ventilated.

Disposal – all batteries should be disposed of properly. Lead acid batteries can usually be disposed of at metal recyclers or battery manufacturers. Do not dismantle, open or destroy any batteries. Unwanted batteries can be left with technical staff in the “battery graveyard” in HSB360 for proper disposal.

2) Solar panels

Keep solar cells covered when working on wiring – solar panel terminals are live when left uncovered, even on dull days. Cover the solar panel with a thick blanket or similar to block out sunlight.

Use a solar regulator – on the larger solar panels, a suitable voltage regulator will need to be installed to protect batteries from being overcharged.

Do not allow power terminals to touch or short circuit.

Contacts

Please refer to Health & Safety contact list for current Electrical Registered Technicians. Contact the Technical Manager for advice.

References

Electricity – University of Auckland Health & Safety Manual
Safety with Electrical Hazards – Faculty of Science Health & Safety Manual
Energy Safety - <http://www.med.govt.nz/energysafety>