

THE DANGERS OF ELECTRICITY GENERATORS

The recent power failures have resulted in many businesses and home owners rushing out to buy generators, and there has been much said recently in the media about the “boom times for generator sales”, but one wonders just how much the layman understands the dangers that can be brought about by incorrect electrical connections to these generators.

Having being involved recently in the investigation into a fatality resulting from the use of a generating set, we feel the urgent need to make users aware of the electrical requirements when these sets are used.

Firstly, it is vitally important to realise that a genset is in itself a separate “supply authority” when used as a standby when the Eskom or municipal supply authorities supply fails. The change over requirements between the two supplies is crucial to the safety of the installation, as an incorrect connection could be potentially fatal.

The South African National Standard for the Wiring of Premises (SANS 10142-1:2003) sub clause 7.12 gives the minimum electrical safety requirements for the use of generating sets. Installations that incorporate generating sets intended to supply, either continuously or occasionally, all or any part of the installation with the following three supply arrangements.

- a) supply to an installation which is not connected to the main supply of a supplier;
- b) supply to an installation as an alternative to the main supply of a supplier; and
- c) appropriate combinations of a&b.

Essentially of major importance are not only the live connections, but especially what happens to the neutral and earth connections during, what is known as the change over or “switching period”. This requires an approved change over switch, which can be operated manually or, in the more sophisticated installations, by an automatic change over switch. These change over switches include a switching contact which is called an “overlapping” or “early make late break” on the neutral pole. The local supply authority must be contacted to ascertain their particular requirements when a Genset is installed in an installation connected to the main supply. Failure to comply with these requirements cannot only damage the generator but is also potentially dangerous and can have fatal consequences.

In the case of the manual switch it will be necessary to switch manually between the suppliers source and that of the generator in the event of a power failure.

In the case of an automatic change over switch, this switching between supplies is done automatically.

Having correctly installed the connection between the two supplies it is then important to establish which parts of the installation will be energized when the genset is in operation. This arrangement will be required at the distribution board.

Very clear labeling and information is required at the distribution board to indicate which circuits are live after the main switch on that board has been switched off, and which parts are alive when the genset is in operation.

The electrical contractor who is registered with the Electrical Contracting Board is the only person permitted to undertake the installation of a genset, and will have estimate the amount of power that it is required to deliver, and must select the correct size generator to be utilized. The appropriate main switch and circuit breakers will also have to be installed to provide electrical protection to the generator.

There are also specific safety requirements for those installations that incorporate Uninterruptible Power Systems (UPS).

It must be re emphasised that the work must to be done by a registered electrical contractor so as to ensure that there is not an unfortunate accident. Further, it is important that only an electrical contractor with experience in connecting these gensets is employed to carry out the work, and that a certificate of compliance is issued for all such work. Failure to obtain such certificate would invalidate any certificate existing on the premises, and could thus invalidate any insurance claims arising as a result of electrical faults or accidents.

Information provided by the Electrical Contractors' Association, serving the industry.

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