SWARTLAND MUNICIPALITY
NOTICE
SUPPLY OF ELECTRICITY: DEVIATIONS

Consumers occasionally allege that deviations in the electricity supply cause damage to electrical equipment.
It is emphasized that the standard practise worldwide is that consumers remain responsible to insure their equipment and to ensure that measures are implemented to safeguard equipment against damage which may be caused by deviations in the electricity supply, and that no electricity supply authority can be held liable for such losses or consequential damages.
In terms of both legislation and the municipal by-laws it is the responsibility of consumers to implement precautionary measures to safeguard electrical equipment against certain types of deviations.

The electricity supply is sometimes blamed for damage to electrical equipment connected to the telephone network, while the surges or deviations were introduced via the latter.

Most deviations are beyond the control of the supply authority. Electrical networks are intricate, extensive and are exposed to the elements and damage inflicted by construction works, vehicles, vandalism, natural failures, etc.

The following summary of deviations which may occur gives an indication of precautionary measures which could be implemented by the consumer:

1. **Interruptions**
   Various occurrences such as load control by Eskom or equipment failure may result in power outages. Consumers who cannot tolerate lengthy power interruptions, e.g. hospitals, normally install emergency power generators.

2. **Dips**
   Dips are usually caused by switching and are generally unavoidable.
   Legislation provides directives as to the maximum number and severity of dips allowed on an electrical supply, for example 100 dips of 60% voltage loss and 20 dips of 100% voltage loss per annum are considered acceptable.
   Dips are sometimes blamed for failure of electrical equipment. It is evident that should electrical equipment which could be damaged by dips be used, protective devices, e.g. voltage conditioners or uninterruptible power supplies, etc. should be installed.

3. **Surges**
   Surges normally occur due to lightning or switching, the extent of which is not specifically regulated. Surges are the main cause for failure of electronic equipment and a variety of surge suppressors are available to safeguard all types of equipment.

4. **Voltage regulation**
   A voltage deviation of ±10% from 230V, based on the average over 10 minutes, is allowed in terms of legislation. Consumers must ensure that electrical equipment used can accommodate such voltage regulation.

5. **Single-phasing**
   Three phase equipment, e.g. electrical motors, can be damaged by single-phasing if the necessary safety devices are not installed.

Consumers are responsible, in terms of legislation and the national wiring regulations, to install suitable protective devices, e.g. a starter with protection relay, to safeguard three phase equipment against single-phasing. Single phasing can be attributed to numerous types of incidents beyond the control of the supply authority and responsibility for consequential damages cannot be accepted by the supply authority.

6. **Voltage imbalance**

Voltage imbalances of up to 2% are allowed in respect of three phase supplies. Three phase equipment, such as motors which are not rated for voltage imbalances, must be protected with suitable protection devices.

7. **Harmonics**

Total harmonic distortion is limited to a maximum of 8%.
Harmonics are normally introduced by electrical equipment used in industries, and results in distortion of the sine wave form.
The supply authority may insist that consumers install the required filters or to undertake upgrading to limit the magnitude of harmonic distortion.

8. **Flicker**

Flicker is a rare phenomenon and is normally caused by large industrial loads e.g. electrical furnaces.

9. **Frequency variation**

A maximum frequency variation of ±2,5% is acceptable.
The system frequency is controlled nationally and deviations are exceptional.

10. **Loss of neutral**

In order to limit voltage variations which may occur due to loss of the neutral conductor, is it essential and every consumer is compelled to **provide and maintain an effective electrical earthing point on his/her premises**. The earthing point must be connected to the neutral conductor before the earth-leakage protection device.
Earth conductors are not provided or guaranteed by the supply authority and the consumer is responsible for the effective earthing of the electrical installation on his/her premises.

11. **Earth-leakage protection**

Earth-leakage protection is supplied in order to interrupt the electricity supply in the event of an excessive leakage current, e.g. should the insulation of electrical equipment fails or if a person accidentally comes into contact with a live conductor. Legislation requires that all electrical outlets be protected by means of earth-leakage devices. Consumers are encouraged, in the interest of safety, to ensure that earth-leakage devices are installed and tested regularly by a qualified electrician.

Swartland Municipality gives a high priority to maintain the safety of the electrical network and the quality of supply. All available resources are employed to limit the incidence of deviations in the electricity supply where possible. It is however not technically feasible to prevent such deviations.

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