

NAFLIC

National Association For Leisure Industry Certification

Standards & Related Documents Sub-Committee

TECHNICAL BULLETIN - AUGUST 1992

031. Electrical Matters

The background information to the following items was submitted to the Committee by Systems and Safety Consultancy.

1) On devices where safety operations to prevent danger are provided solely or in part by a Programmable Logic Controller, certain reservations have been raised by the HSE.

To comply with the HSE's guidance a separate hard wired blocking system, or separate monitoring PLC, must be fitted in these areas to guard against danger following failure of the main PLC's software or hardware.

Further information can be obtained from the HSE Guides PES Parts 1 and 2, which give precise information regarding programmable electronic systems in safety related applications.

It should also be noted that redundancy may be required for sensing devices such as trips, limit switches and proximity devices.

2) Barriers or enclosures, giving protection against direct contact, may have to be fitted to open DC switchgear, such as knife switches and open faceplate starters, to comply with IEE Regulation 471-14, which leads to Regulations that require :-

- a) Live parts shall be inside enclosures or behind barriers providing at least the degree of protection IP 2X (see BS 5490).
- b) The horizontal top surface of a barrier or enclosure which is readily accessible shall provide a degree of protection of at least IP 4X (see BS 5490).
- c) Suitable precautions shall be taken to prevent persons from touching a live part unintentionally.

Protection must also be provided against the possibility of injury being caused by arcing at the knife switch, as covered in the Electricity at Work Regulations.

There are other regulations that may apply to this kind of system that have not been mentioned above.

The above regulations seem to apply to all voltages except SELV which is not applicable in most cases in our industry. It certainly applies to 110 volts DC and also many lower voltage situations.

The open faceplate starter and knife switch does not comply with modern regulations such as the Electricity at Work Regulations 1989.

3) There have been several enquiries regarding the words "ripple free DC" which appear in "Fairgrounds and Amusement Parks - A Code of Safe Practice".

These words, however, are explained at the very end of the Code under "Electrical Definitions NOTE 2" which states :- "DC can only be considered as true DC if provided from a ripple-free source. This source may be a DC generator, a battery or a FULL WAVE 3 phase rectifier. Any other source should be treated as AC".