

Safety Warning Notice No 2

Safe Edge Circuit Reaction

There have been several near miss incidents reported to dhf involving pedestrians using automated gate systems. These incidents involved the use of an active safe edge on the leading edge of the gate.

Manufacturers of drive units and control boards have various safety circuits available for safety devices and many are programmable.

One common safe edge response is to have the gate stop, retract slightly and then wait for another command. This configuration has many advantages, not least of which is that the gate only travels far enough to release the problem rather than run a complete open or close cycle. This response is of particular benefit around multiple safe edges on sliding gate support frames and prevents the activation of one safe edge driving the person into the opposing safe edge.

There is however a downside. If this response is used to control a main closing edge safe edge and a pedestrian attempts to squeeze through the barely open gate in the early stages of opening and touches the safe edge, the gate can close and trap the pedestrian against the closing post with potentially disastrous results.

This situation must be seen in light of some other related points:

- The Machinery Directive Essential Health and Safety Requirement 1.1.2 "Principles of Safety Integration" calls for suitable methods of protection taking into account foreseeable misuse.
- BS EN 12453 requires limitation of force in combination with photo beams where impulse activation or automatic activation coincides with untrained users.
- The industry "State of the Art", rightly or wrongly, is that the photo beams used in conjunction with force limitation are often disabled during the opening cycle for the convenience of users.
- It also has to be appreciated that a photo beam cannot prevent the possibility of injury; it can only reduce the probability of injury as it is just too easy to defeat by leaning over or standing over the beam.

Methods for mitigating the possibility of a reoccurrence of these incidents are many, depending on the technology in use, but the following are suggested for consideration:

1. The safe edge is wired to a circuit that is only active in the closing phase.
2. The safe edge is combined with the closing only photo beam - see note 1 below.
3. The safe edge response is programmable to be ignored during opening as part of a monitored multiple device bus system.
4. Reliance on inherent force limitation, possibly with the enhancement of passive safe edges.
5. Use of light curtain or photo scanner (Type E devices from EN 12453).
6. Use of hold to run.

Note: Where combining photo and safe edge circuits, the fault vulnerability of the entire circuit is increased due to the total length of cabling involved and hence should either form part of a fully monitored circuit that can detect all short circuit faults, or be constructed to prevent the possibility of short circuit faults (this will be difficult at best and will limit the possibility of combining Cat.3 systems with photo beams).

The list is not intended to be exhaustive.

Both installing members and component suppliers are urged to consider the risks posed by this scenario and take steps to eliminate the hazard. Component suppliers/manufacturers are urged to assess their systems and communicate workable solutions to their users. Installers are requested to consult with their suppliers to find solutions.



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