



A high tech product cannot be created simply by relying on inspired design or optimisation of costs but must meet certain basic requirements of an ever more sophisticated and demanding society if it is to secure a place on a highly developed market:

- unswerving compliance with current legislation
- optimisation of production and logistic processes
- low environmental impact and energy saving

Drawing on its long-term experience in the automation components sector, New Elfin has designed and constructed a new modular system for lighting and safety signalling of electric equipment.

This new safety system has been designed paying particular attention to recent European regulations taken from Machinery Directive 89/392/EEC and subsequent amendments, enacted by Presidential Decree No. 459 of July 24 1996, from current legislation Presidential Decree 547/55, Decree Law 626/94, Decree Law 242/96 which specify certain important parameters that must be complied with.

Below, we will try to establish the main objectives to be achieved.

VOLUNTARY COMPLIANCE WITH REGULATIONS

Compliance with regulations is not mandatory but voluntary. Nonetheless, it is assumed that whoever follows the indications and normative prescriptions complies with essential safety requirements, guaranteeing that the product has the necessary prerequisites to measure up to the demands of a modern market. In the case of safety lighting and signalling devices, it is worth remembering that **passive** safety barriers are used which, as opposed to **active** safety barriers, must be able to interpret, highlight, monitor and prevent hazardous situations.

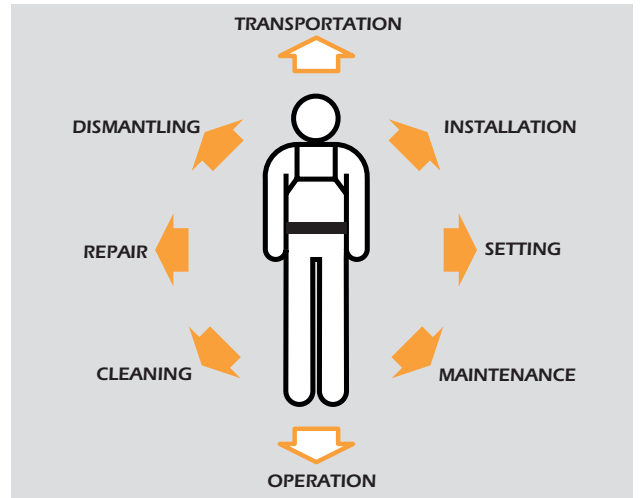
TYPES OF BARRIERS	barrier restricting access	covers, movable guards, segregation cabinets	APPLICATIONS
	containment barrier	tank, pipe, sealed duct	
	damage restriction barrier	emergency stop control	
	dose reduction barrier	gas and fume extractors, ear protectors, sound-proofing	
	behaviour type barrier	information and personnel training	
	warning barrier	safety signalling	
	alarm barrier	automatic alarm and pre-alarm systems	
	preventive barrier	preventive and/or on condition type maintenance procedures	





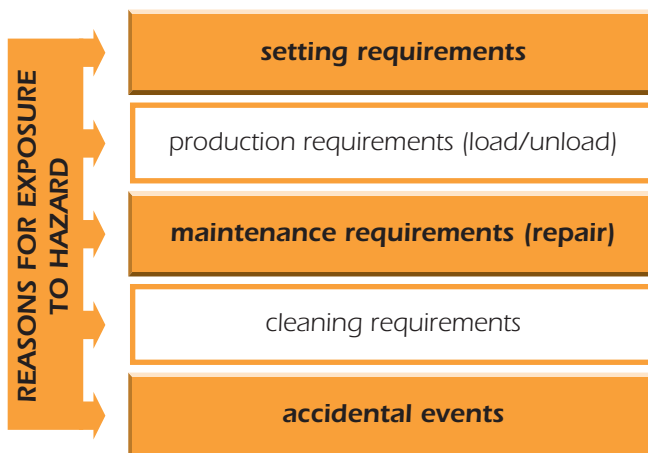
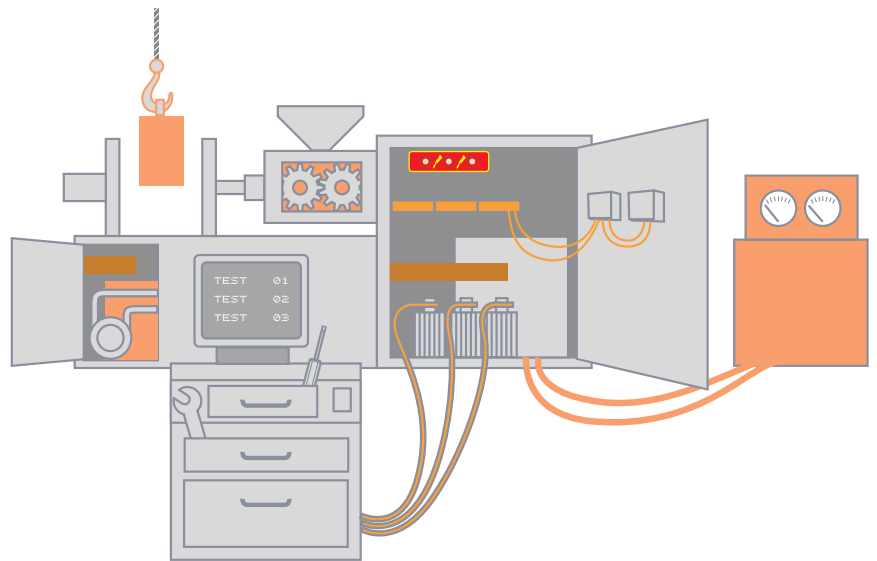
MAN- MACHINE INTERFACE

At the moment in which he prepares to use the machine, the operator needs and has the right to be in the best conditions which implies, for example, transparent interfaces (i.e. easy to understand and unambiguous), complete instructions for each operation (setting, operation, maintenance, cleaning, etc.), compliance with human engineering principles (good lighting, comfort, accessible controls and mechanisms, etc.). The Machinery Directive and Technical Regulations establish that the general term "operator" means a set of persons with different levels of culture, knowledge and method of approaching the machine¹⁾.



FACTORS OF RISK - ADDITIONAL PRECAUTIONS

Each manufacturer certifies that all levels of safety have been achieved at the end of the project, i.e. when the machine is ready to be sold after attentive assembly and searching inspection. It must be remembered however that, for unavoidable reasons of industrialisation, not all the safety devices are working in these phases and the operators are therefore exposed to unforeseeable factors of risk.



FACTORS OF RISK EXPOSURE TO HAZARD

Exposure to hazard depends on the time during which a person remains exposed to the possibility of being involved in a source of hazard or according to the frequency with which the person accesses the machine danger zone. In each case, there is a reason why this exposure occurs which may depend on the method of operation of the machine or on the need for setting and maintenance.

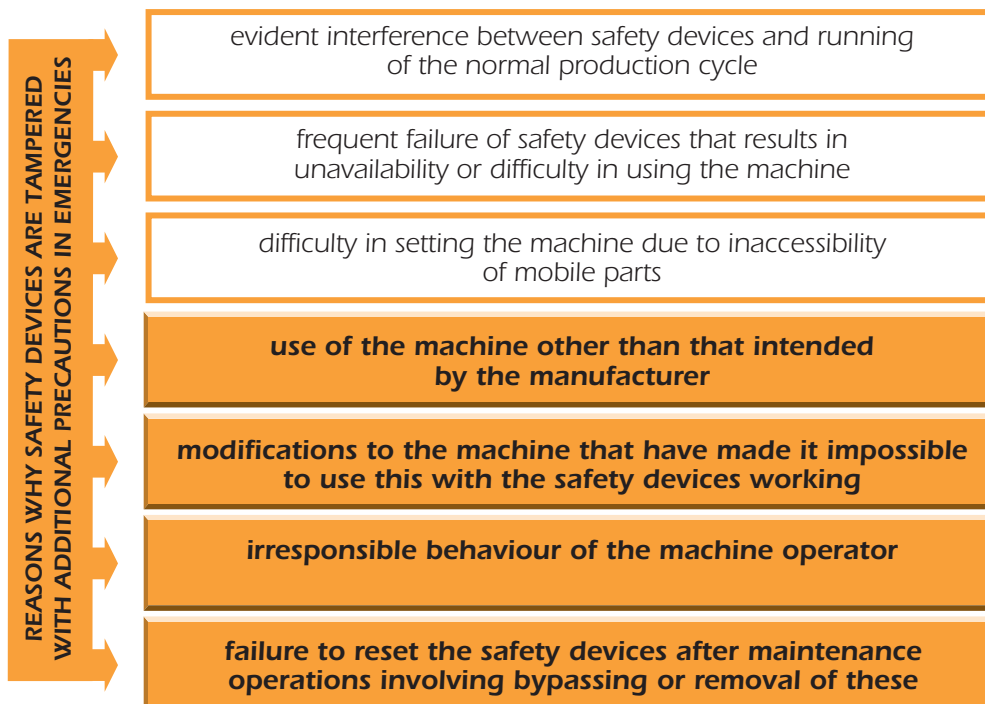
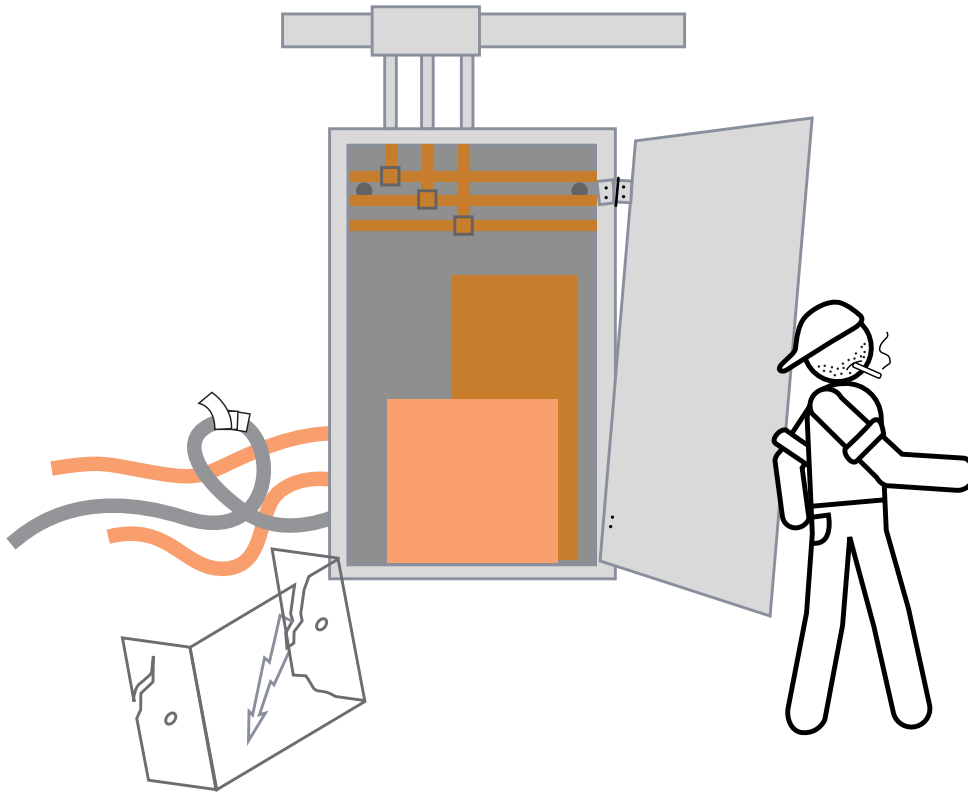


1) Annex 1 (Article 1.1.1. Section 3) Machinery Directive Article 3.21 UNI EN 292-1



THE POSSIBILITY OF TAMPERING WITH SAFETY DEVICES

On any machine, there is also the risk that the safety devices may be defeated or even removed. The reasons for these actions (none of which can be excused) include machine design and construction defects; errors in selecting the machine (not suitable for the processes for which it has been acquired); improper adaptations by the user; bad habits that are ingrained in operators and serious shortcomings in the maintenance phase.





ADDITIONAL PRECAUTIONS IN EMERGENCIES

facilitate maintenance as regards:

- accessibility to inside parts
- ease of movement according to human capacity
- appropriate selection of working positions
- restriction of the number of tools and of special equipment
- ease of supervision

isolation of energy sources and dissipation of energy stored:

- isolating the machine from all sources of energy and from other services; the isolation must be visible (visible interruption of continuity of energy supply) or guaranteed through control of the position of the control device of the isolator with clear indication of which areas of the machine have been isolated
- locking if necessary (e.g. on large machines or installations, isolators in the circuit "isolated" position)
- taking steps to guarantee, downstream of the isolation points:
 - absence of potential energy
 - absence of kinetic energy
- checking the effects of the measures applied through a safe working procedure

application of measures that ensure safe handling of the machine and of heavy parts of this such as:

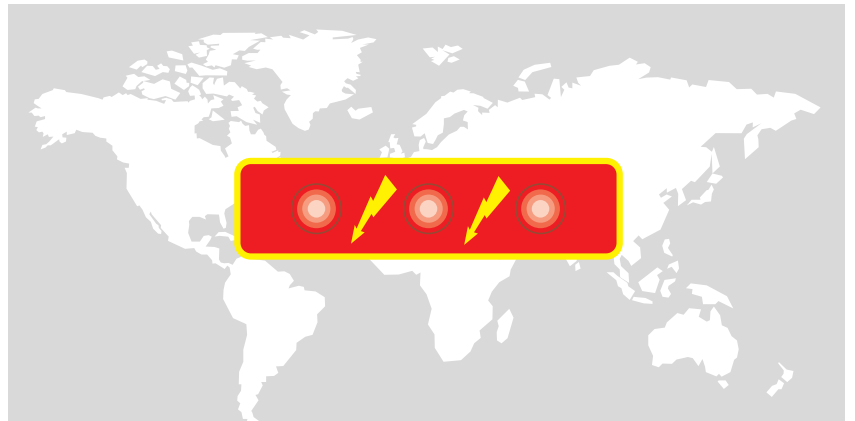
- use of standard attachments for lifting gear with slings, hooks, eyebolts or threaded holes for fastening of these attachments
- lifting gear that permits automatic attachment using a lifting hook when the attachment point is not accessible from the ground
- fork insertion compartments for machines that must be transported using fork-lift trucks
- indication on the machine or on some of its parts that cannot be removed of their weight in kilograms
- lifting gear and equipment integrated in the machine

measures intended to guarantee safe access for setting and maintenance (platforms, non-slip ladders, handrails, etc.)

self-test systems or assistance in locating faults and hazards

measures intended to guarantee static and dynamic stability of the machine

Installation of the Flashing Safety Device makes it possible to prevent accidents by alerting the operator, with the flashing, that the electrical system is live. DSL flashing safety devices are installed in a position where they are immediately visible on opening the door of the cabinet and are connected directly downstream of the main circuit breaker. Flashing of the three red lights highlights the power on hazard condition. The DSL devices are suitable for connection to three-phase lines with or without neutral and to single-phase lines. Use of three red flashing



lights and the yellow lightning symbol on a red background ensure that the message is conveyed immediately and is readily understood, thus overcoming possible linguistic or cultural barriers.

