Emergency stop function of the machines: the UNI EN ISO 13850: 2015

The new edition of the UNI EN ISO 13850: 2015 specifies the principles of the design of the emergency stop regardless of the type of energy used (electric, pneumatic or hydraulic) and, as such, represents the current state of the art applicable. This standard introduces a number of changes from the previous edition and introduces some important aspects of the design in relation to the emergency stop function for sets of machines.

MTM Consulting LTD It is able to follow the manufacturers of machines in the drafting of the technical file and, in particular, of the risk assessment, ensuring a continuous and effective regulatory update in order to identify the best technical solutions and representative of the prior art that they can reduce the risk of the use of the machine.

Recently it has been published the new edition of the UNI EN ISO 13850: 2015 relating to the emergency stop function design principles. This rule, since last May 31, 2016 replaces the previous edition of 2008 and give a presumption of conformity with the essential safety requirement 1.2.4.3 of the Machinery Directive 2006/42/EC.

The requirement 1.2.4.3 of Annex I of the Legislative Decree no. 17/2010, Italian transposition of Directive 2006/42 / EC says "the machine must be fitted with one or more emergency stop devices to enable it to avoid situations of danger which might arise in the imminence or be averted."

The only machines to be excluded from this requirement are:

- *"Machines in which an emergency stop device would not lessen the risk, because it does not reduce the time to get the normal shutdown or because it does not allow to take specific measures that the risk requires;*
- *seals portable machines and / or hand-guided*".

These concepts are also contained in the UNI EN ISO 13850: 2015: where there should be an emergency stop on the machine is necessary to refer to the contents of the technical standard analyzed here, so you have the presumption of conformity with the obligations set from the requirement.

The emergency stop function must be available and operational irrespective of the mode of operation of the machine (for example, the machine in operation, or turned on but not working) and must be implemented by a single human action (pressure of an emergency button, crossing of a security barrier, shot by a safety rope, etc.).

In designing the emergency stop function is necessary to consider all the potential dangers that could be generated consequently to an emergency stop of the machine: for example, you may need to assess the danger of entrapment in the case of machines where the operator stations on them (think of the equipment dedicated to the people) lifting; it is also important to evaluate the stopping time of moving parts and, therefore, assess whether to implement a stop category 0 (uncontrolled stop: is released immediately power to the motors and the moving parts are stopped by inertia) or a stop of Category 1 (stop controlled: they send braking engines and then you go off the power). In any case, the emergency stop condition must always be maintained by engagement of the emergency stop device until its release. Unlocking of the latter can be achieved only by an appropriate operator's manual operation (for example, by turning the dial as shown on the button or by pressing the reset button of a safety rope) and must not restart the machinery but only permit restarting function. Ultimately, the unlocking of the emergency stop device must always be the result of a specific voluntary action from the operator.

In the case of sets of machines (plant) design of the emergency stop function it must be assumed that you may not need a single emergency stop of the entire set; for some configurations may be necessary to provide more emergency stops, each relating to a specific set area. In this regard, the issues to consider are as follows:

- whole layout and thus a chance to see the affected area from emergency from the control point;
- production process: in some cases an emergency shutdown of the whole set could result in costly machine stops, hence the need to foresee emergency stop "partial";
- the expected exposure to the dangers: the emergency stop of the entire set could result in additional risks to the operator (for example, switching off the intake system of a treatment tank may present a risk due to the fumes and / or vapors that are generated from the tub for the operator which may be taken in that area).

The UNI EN ISO 13850: 2015 gives the basic requirements for emergency stops localized to parts of a complete system:

- each emergency stop localized to a certain area of an entire system must be clearly identified: within the instructions for use, by means of labels affixed at the actuators on the machine, etc.
- The emergency stop function of the plant area should not cause additional hazard in the remaining areas of the system or increase the risks to the already dangerous situation.
- The emergency stop function of the plant area must not cause the emergency shutdown of other plant areas.