

# *Technology for Safety*

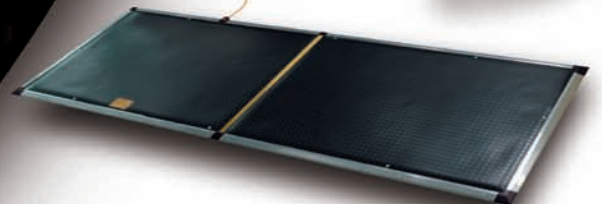
*Safety Light Curtains*

*Safety Mats*

*Safety Modules*

*Safety Bus*

*Safety Switches and Accessories*

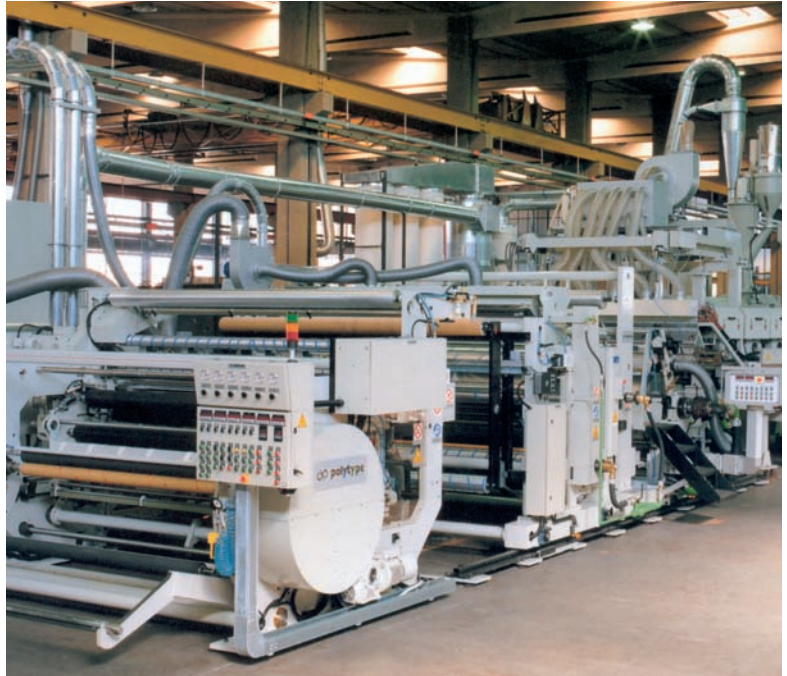






## Safety in Automation

In the world of industrial automation, safety is a real philosophy in machine development, not just a generic concept to make sure that operators and all the people around the machine are safe. The milestones about safety are the European Directives and especially the Machinery Directive (EMD 98/37/CE). Including safety devices in any new project, while developing a new machine, is therefore key to reduce risks.



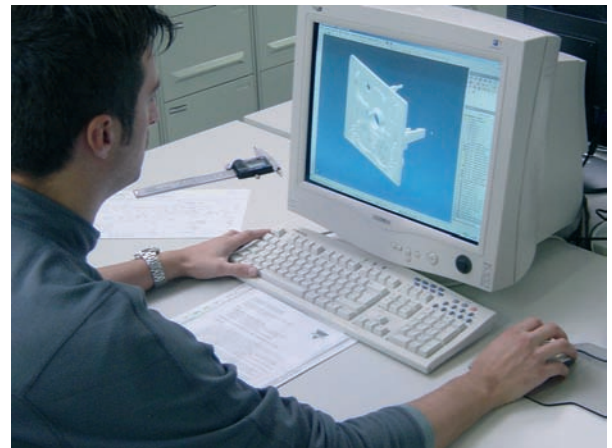
## Providing Solutions for Your Safety

The implementation of safety components is not just a way to comply with rules and obtain approval certificates. Carlo Gavazzi's safety devices are designed to meet user's requirements, considering the place where they will be used. Carlo Gavazzi's products ensue from ideas, they are not a simple connection of components.

Our solutions are studied to allow the end-user to forget about the safety issue, because we are always there to assure the highest safety standard.

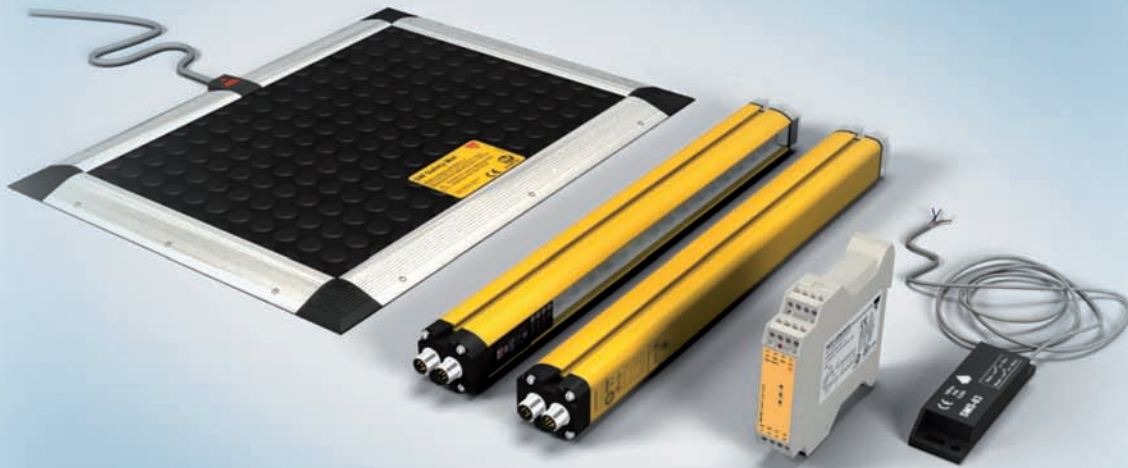
Carlo Gavazzi proposes integrated solutions: our products can be combined to work as the machine safety backbone, with simple and immediate connection procedures. The effectiveness of our devices is assured by our 75-years experience in the safety market and by our ability to always introduce the latest technology and solutions in our products.

The long term relationship with our users – based on listening, communication and reliability – adds value to Carlo Gavazzi's safety devices.



To instantly view a data sheet and specify products, visit [www.GavazziOnline.com](http://www.GavazziOnline.com)

## Risk Reduction Safety Devices from Carlo Gavazzi



### **Safety Limit Switches**

Our PS Series safety limit switches provide information on the status of mobile safety gates, that have to be used to allow access to a dangerous area. If the switches are dirty (i.e.: by food and beverage) or when the application requires the machine to be cleaned up, Carlo Gavazzi's safety magnetic switches provide clean and reliable information on the door status.

### **Safety Light Curtains**

When it is critical to know if personnel have accessed a dangerous area our SB Series safety light curtains provide a wide range of solutions. Devices with different resolutions and sizes succeed in detecting someone entering the dangerous area.

### **Safety Mats**

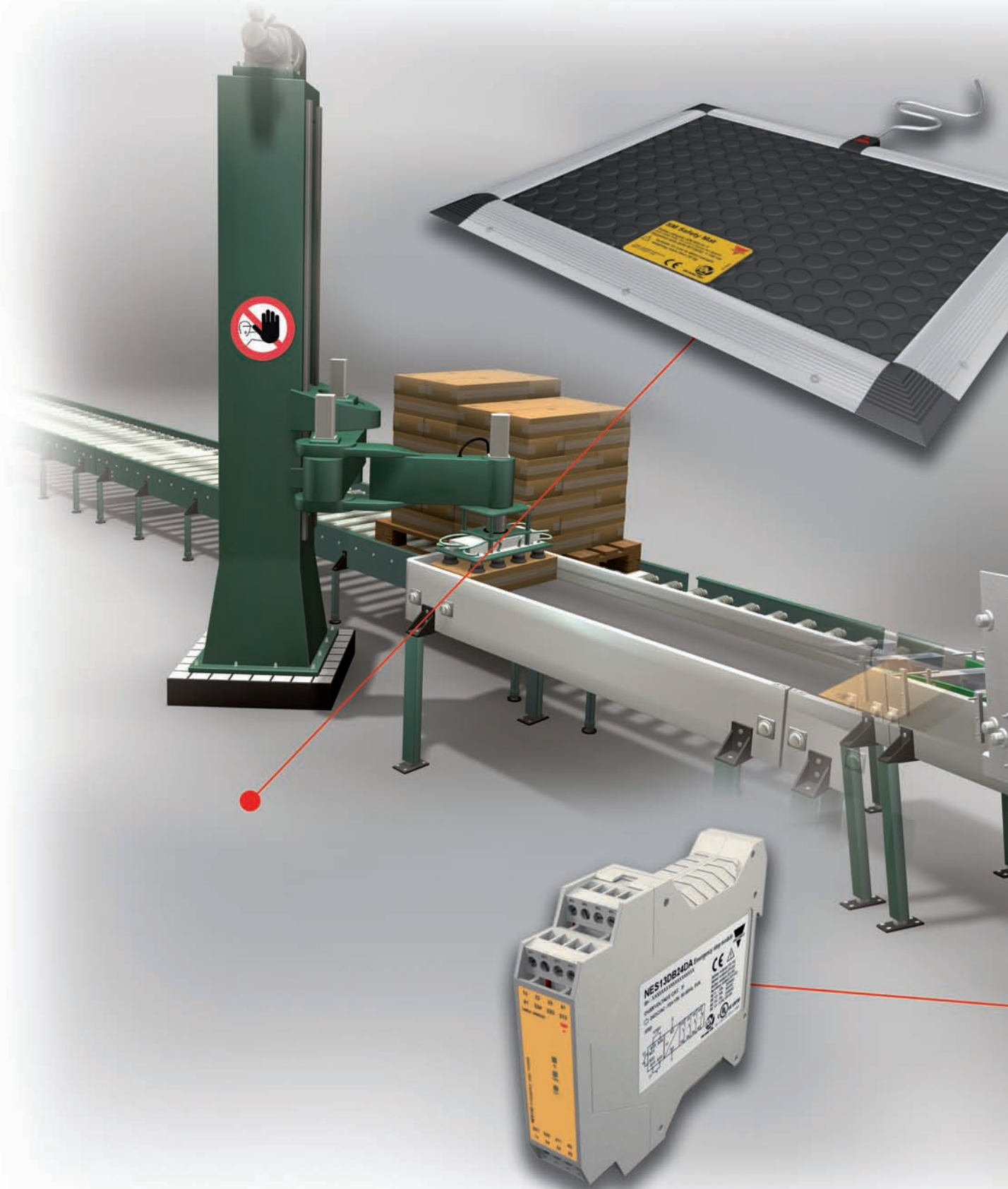
Sometimes, especially in ceramics or wood applications, the dust does not allow the proper working of light curtains. This problem can be solved by Carlo Gavazzi's SM Series safety mats, which cover the floor below the dangerous area, detect the presence of personnel and can then stop the machine. All this information is conveyed to the machine, through our safety modules, which control the machine's functioning.

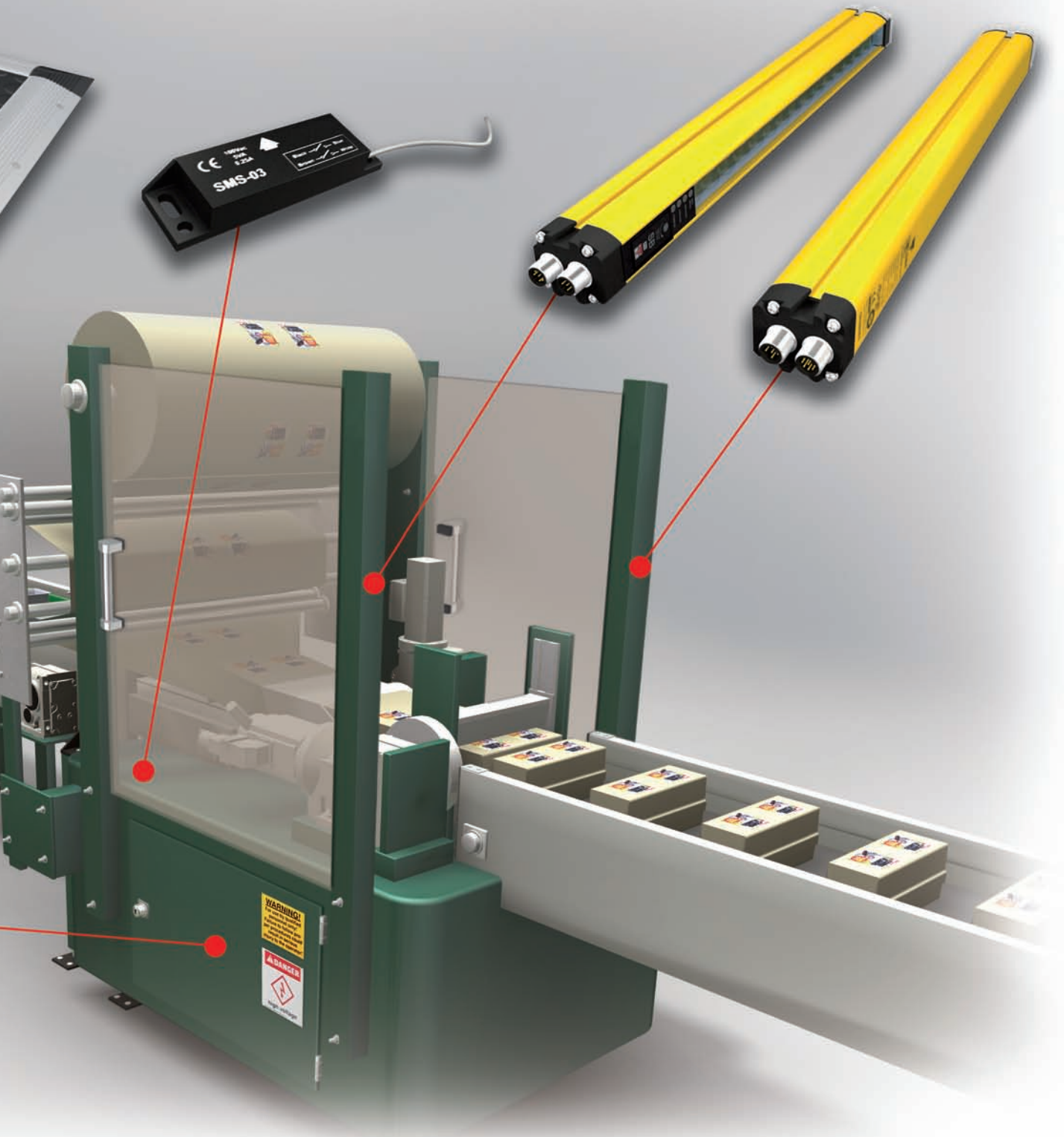






# Integrated Solutions for Safety in Automation



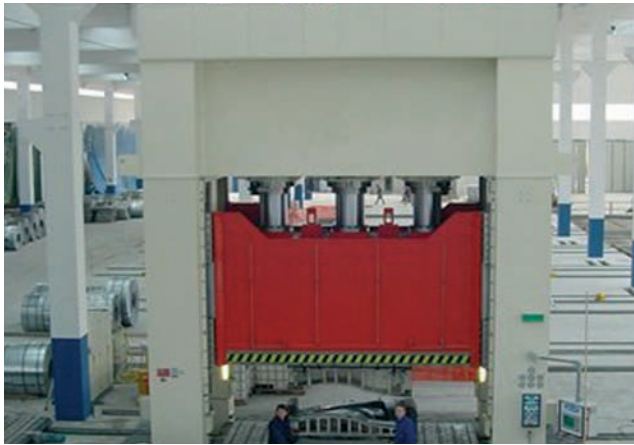






## ***Our Safety Devices at Work***

### ***Light Curtains on Presses***



Safety light curtains are widely used in order to protect the working area of presses and punching machines. The Master- Slave cascade connection of the SB4M-SB4N Series provides protection in the dangerous areas and detects presence of operator. All the electronics for Slave unit monitoring (SB4N) are included into the Master (SB4M). Thanks to Carlo Gavazzi's solutions, mounting, wiring and set-up are quick and safe.

### ***Safety Mats on Woodworking Machines***



The use of safety mat layouts may be required when woodworking machines, such as CNC work centers and routers, must be protected. In fact, safety mats split into several sections allow obtaining different system response according to machine head position and/or operation. SM Series safety mats are designed to comply with stringent reliability and quality principles in order to deliver the safety function everytime, even after millions of operations. Obtaining the needed layout is always possible and simple, thanks to the wide range of accessories and to the modular design.

### ***Stopping Car Wash Systems in Presence of Danger***



In the working area of car wash machines, there are several emergency stop buttons. If a dangerous situation arises, the operator or whoever is nearby the safety button must be able to stop the machine. The NES02 provides the means for connection of multiple E-stop buttons in series. In this way, the needed safety category for the whole machine is assured.

### ***Starting a Press***



Presses are dangerous machines, because no gate can be used and light curtains may not be practical. The only way to guarantee safety is to make sure the operator has both hands busy when the machine is in operation. Safety category III C, complying with EN 574, allows ND12D to be used in the most demanding applications.

## Our Safety Devices at Work

### Managing Safety Gates on a Plastics Machine



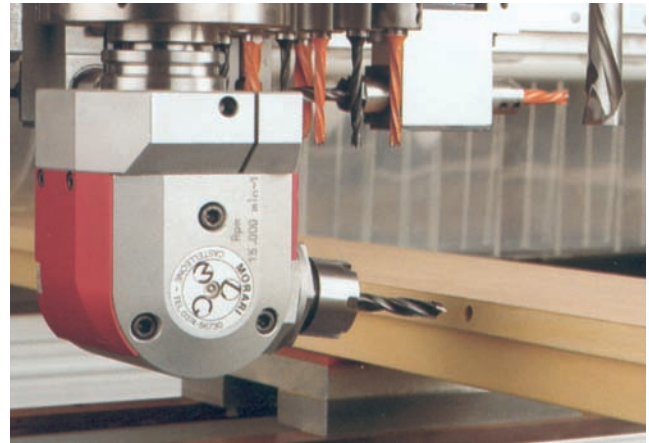
Generally, safety gates need a safety system guaranteeing top reliability and durability. In plastic machines, the main gate must be often opened – i.e. when the moulded part is not correctly released or at the end of each use – and safety must not be a problem. NES02 and NES13 simply solve the problem allowing the opening of the press motor mains, when the gates are open.

### Light Curtains in Packaging Machines



The safeguarding of packaging applications often requires that objects such as feed stock, work pieces etc. pass through the sensing field, without the activation of any stop signal. Carlo Gavazzi's SB4B Series light curtains allow up to three adjacent beams to be interrupted at any location along the sensing field. This system operates without triggering any safety output, such as floating or blanking. Quick and safe setting is ensured, thanks to the integrated DIP-switches.

### Standstill Motor for Electrical Lock Release



If a fast rotating tool is used – for instance to drill wood or glass – the access to the dangerous area must be allowed only when the tool is immobile. In this event, an electrical lock is released and the operator can access. The MF1C performs this function according to category 3 (EN 954-1). The great advantage of this safety device is that no external mechanical sensor or wiring is required.

### Safety Gates



Machines provided with mobile protections to prevent access to dangerous areas need safety switches, to guarantee immediate shut down in case of gate opening during the working cycle. The SMS Series encoded safety magnetic sensors can be used in this application and provide the highest level of reliability, thanks to the housing's high level of sealing. Contactless technology allows ease of mounting, no wear and a life span of over a hundred million operations.





## Safety Limit Switches

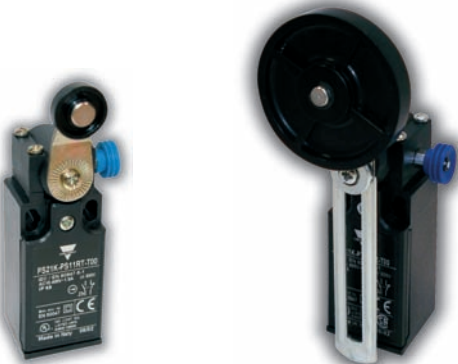
Safety limit switches supervise security of industrial machines, that often cannot rely upon secure working areas because an inadequate down-time does not occlude access.

Carlo Gavazzi's safety limit switches assure the control of the hazardous areas access points, by intervening on the control circuit. In particular, the operators' safety is preserved when the machine immediately comes to a complete stop as the mobile protector (covers, cases, doors, grids, etc.) is opened or a rope is pulled.



## Safety Limit Switches with Pull Button Reset

These devices are designed to be used for the detection and monitoring of faults in hoisting machines, electric lifts, freight elevators, escalators, conveyor belts, etc. The limit switches protect the operators working on dangerous machines, by opening the control circuit. The normally closed safety contacts remain in the open position, once the switch has been activated. The return to the initial operating state can take place only by manually activating the pull button reset.



## Main Advantages

The limit switches are available in different sizes and materials. They are developed in reinforced UL-V0 thermoplastic fiber-glass, zinc alloy (Zamack) or aluminum body. IP65 (thermoplastic) and IP66 (metal) assures a high degree of protection, that allows use of the limit switches in different kinds of environments. The contact block, Zb type, is consistent with the safety requirements of the IEC 947-5-1 with NC contact with positive opening operation.

Others main advantages are:

- Minimum Actuation Force/Torque
- Minimum Force to achieve Positive Opening Operation
- Precise operating points (consistency)
- Immune to electromagnetic disturbances



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## Safety

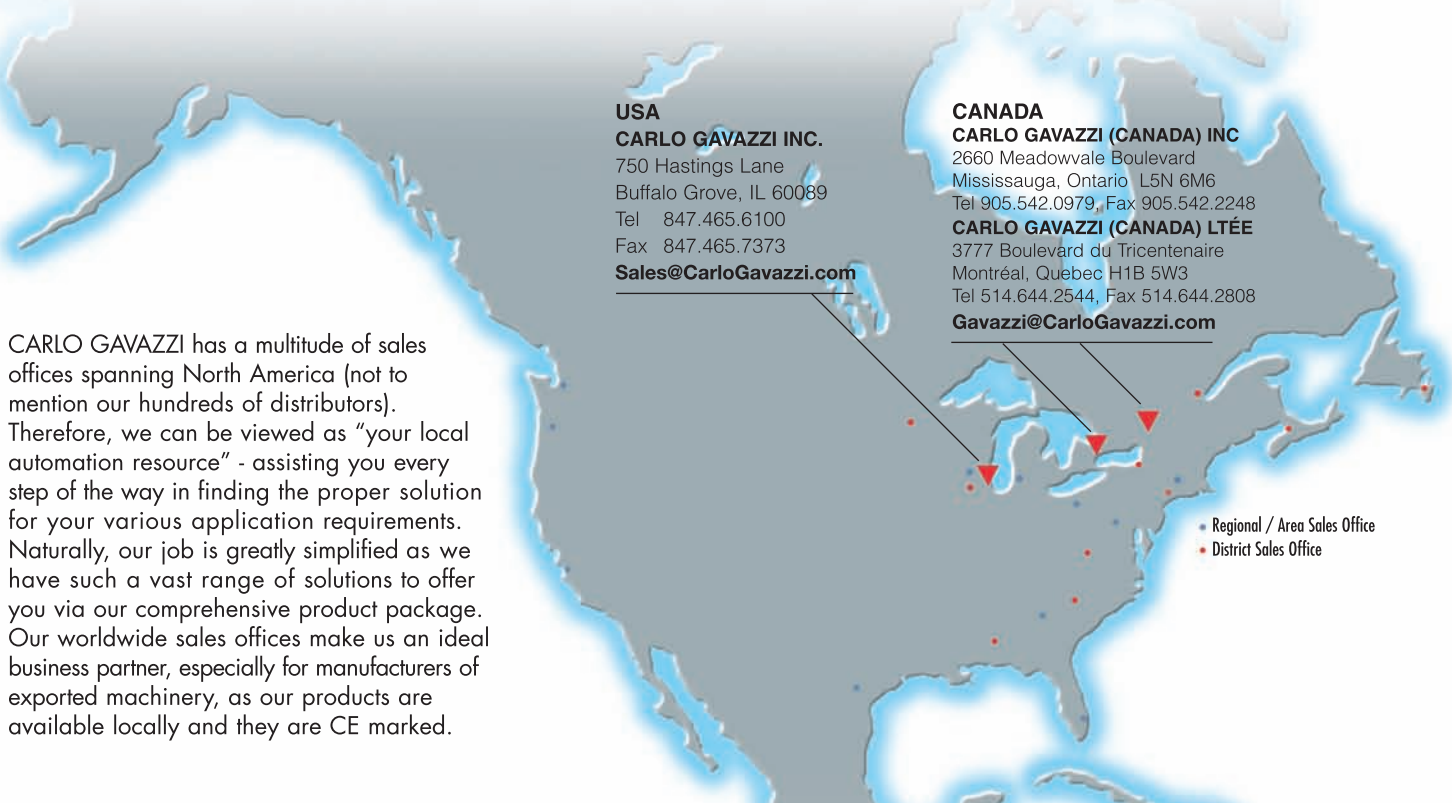
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CARLO GAVAZZI has a multitude of sales offices spanning North America (not to mention our hundreds of distributors). Therefore, we can be viewed as "your local automation resource" - assisting you every step of the way in finding the proper solution for your various application requirements. Naturally, our job is greatly simplified as we have such a vast range of solutions to offer you via our comprehensive product package. Our worldwide sales offices make us an ideal business partner, especially for manufacturers of exported machinery, as our products are available locally and they are CE marked.

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Safety Brochure 6/07

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