

Safe Management of Hazardous Substances

De-Palletising and Bag Cutting by Robot

Each (Registration, Evaluation, Authorisation and Restriction of Chemicals) has recently introduced an European regulation aiming to improve knowledge of dangers and risks deriving from chemical products circulating within the EU, and make safe management of harmful substances in industrial processes a priority. The regulation sets out that from June 2008, substances which are imported, produced or used must be classified in order to provide users with more complete information on the dangerous properties of products handled, the risks associated with exposure and the safety measures to be adopted. Although in the first instance, Reach sets out that "extremely problematic" substances (carcinogenic and mutagens first and foremost) must be examined, emphasis is placed on the fact that certain substances, widely used in the manufacturing processes of masterbatch and compounds even though they do not belong in this category, should be however considered dangerous. For example,

- substances sensitizing to the skin and lungs
 - toxic substances
 - flammable and potentially explosive substances
- Analysis conducted by the EU has revealed that 70% of

In compliance with the European Reach regulation, Costruzioni Meccaniche Sacchi has developed a number of different robotic solutions for the chemical-plastic field aiming to reduce exposure to problematic products economically and efficiently

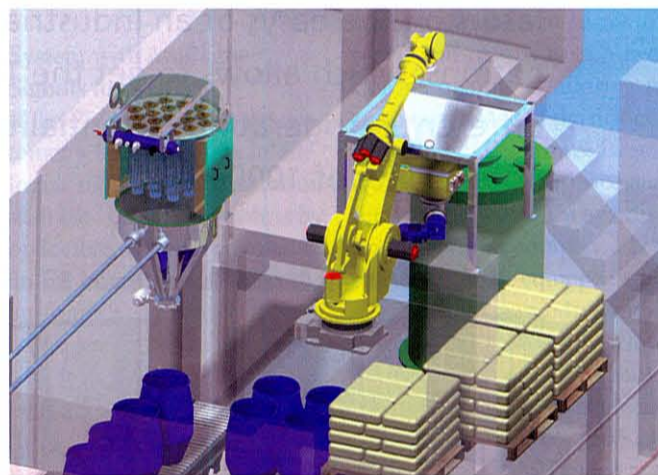
(Radio Frequency Identification) tag readings on the pallets and bags solves the challenge of batch traceability. "Smart Pick" is available in a high number of configurations, and is suitable for granule or powder products (even

the substances produced or released on the market since 1981 (so-called "new" substances) contain at least one harmful property. Therefore, according to Reach, chemical products must be evaluated according to the degree of danger deriving from their use. Risk analysis will identify, among other things, a method that will reduce operator exposure and therefore limit damage caused. Costruzioni Meccaniche Sacchi, incepted in 1926 to engineer handling, dosing, mixing, storing and palletising systems for granular and powder bulk products for several industrial sectors has developed numerous robotic solutions for the chemical-plastic industry over the years compliant with regulations set out by Reach, that meet the goal of reducing exposure to problematic products in an economic and efficient manner. In particular, its new "Smart Pick" system, holding several patents, proposes a solution to the challenge of depalletising, cutting and automatic emptying cycle for paper, plastic, raffia, jute and alu-

minium bags, as well as bins and boxes.

Smart Pick - a Wide Range of Configurations

An anthropomorphic robot, incorporating the "Smart Grip" system and controlled by "CMSmartPick" software, can pick up bags from a number of pallets accumulated on a roller or fixed station in automatic sequence, cut them and empty them using the "Smart Cut" device. The package is then carried off automatically and compacted. The finished product is conveyed to the manufacturing plant by pneumatic or mechanical conveyor systems. Particular attention was paid to developing operator interface, to make the system usable by people unfamiliar with automatic machinery. In particular, a simple and intuitive to use graphic interface guides the operator during the learning stage when a new palletizing plan is entered. It takes the robot just a few minutes to identify the positions associated with new palletizing plan and, once the learning process is complete for a certain pallet, it can save the



The new "Smart Pick" system solves the de-palletising problems in the case of hazardous products

data so the programming stage does not need to be repeated. Optional measuring and artificial vision systems have also been adopted to make the process simpler still. The system was developed to interface with the local PC, DCS, SAP and company management systems, in order to receive and process orders and recipes. In particular, on the basis of the recipe entered, the SmartMix option can pick up the bags needed from more than one pallet to complete the batch. Integration between the SmartPick system and the SmartDispense system doses of product which are fractions of the volume of the bag can be measured. An integrated weighing system helps to verify the quantity of product included in the process. The pallet can be transported and removed from the robot area automatically, using automatic storage systems rather than AGV automatic sliding carriages. Bar code or RFID

tightly packed). The system is applicable in Atex zones (with explosion risks, following the Atex - Atmosphere and Explosion - European regulation) and in toxic or corrosive atmospheres. Using SmartPick also overcomes the age-old question of loading extruders and reactors at more than two metres from the ground. Using anthropomorphic robots with a wide operating range means bags can be picked up from the ground and cut and emptied into a hopper located at considerable height. Particular attention has also been paid to analysis of system payback. It is estimated that return on the investment may be possible in less than eighteen months for most industrial companies, evaluated on the basis of the numerous advantages stemming from complete compliance both with the Italian Decree n. 626 and the new Reach regulation.

