The compact end of line

The efficiency of a bottling and packaging plant whose daily output reaches millions of bottles depends also on end-of-line operations which need to be perfectly synchronised one another.

Smipal, a SMI division specialised in the production of automatic palletising systems, offers reliable cutting-edge solutions with the APS P series. The APS P model features a SCARA arm and integrates in its central column the operations of palletising, empty pallet feeding and pad insertion - three different operations usually performed by separate machines inside their own dedicated space.

The new Smipal palletisers of the APS P series, besides the stand-alone version, can be integrated in a Packbloc Neo compact system, gathering in a unique, small sized plant the operations of an automatic packer, together with an automatic fixed-column palletiser and a turnplate pallet wrapper.

The integration of multiple machines offers considerable advantages from the standpoint of operational flexibility and reduction of costs and energy consumption, as it reduces the need to install long stretches of conveyor belts - usually required to connect various stand alone units to one another – and allows a single operator manage the entire system.

An example of Packbloc Neo system includes a Smiflexi model LWP 30 wrap-around case packer together with a palletiser Smipal model APS 1550 P and a turntable wrapping machine.

Sturdy and elegant packages with the LWP 30 case packer

The automatic LWP 30 wrap-around case packers produced by SMI, suitable for production speeds up to 30 packs per minute, stand out in the packaging machine market for a number of technical features which place them at the top of the reference range.

Machine adjustments in these systems are made by means of convenient cranks and useful numeric counters, which allow the operator to switch from one pack format to another simply, quickly and accurately without having to use any tools. The cardboard blanks are picked up by a mechanical system that ensures precise synchronisation with the other operations performed by the packaging machine. The blanks used to make the finished boxes are transferred from the cardboard blanks magazine to the main work surface smoothly and uninterruptedly by an up-going, slightly curved system that significantly improves continuity in the feeding of the packaging material.

Smiflexi's LWP series new wrap-around case packers have a compact and solid frame, are able to adapt easily to any logistic condition and also mount brushless motors that drive the axes, reducing their energy consumption.

A more efficient production thanks to new control systems

The LWP series of packaging machines can be equipped with accessory devices that increase their level of efficiency such as, for example, a control device based on video camera. This is mounted at packer outfeed to inspect every single pack produced to detect its size characteristics and correct closing. In case a pack does not comply with the quality parameters entered in the production program, it is rejected automatically.

This control system can be further automated by installing a new device to eject and unload defective packs: a conveyor belt that runs on free ball bearings. This belt carries the non-conforming pack to the outside of the production line by gently acting on the bottom of the pack instead of pushing it abruptly on the sides, as occurs in traditional ejection systems.

The APS 1550 P automatic palletiser

The heart of the compact and integrated Packbloc Neo system is the new Smipal APS 1550 P palletiser. All movable mechanical components are housed within the fixed central column. First there is a cross-member that supports the layer-loading head that moves up and down on the

column. The layer-loading head itself performs fast and accurate horizontal movements along the cross-member thanks to a telescopic guidance system. Finally, an articulated arm based on SCARA technology performs both vertical and horizontal movements to feed the empty pallets and to insert the cardboard pads between layers.

All the vertical and horizontal movements of the mechanical components of this SMI palletising system are managed by the machine's automation and control system, which establishes precise and coordinated trajectories for each one. This happens in synch with the operations performed by the layer-loading head so that the machine's various components will never touch or interfere with one another.

Continuous-flow layer formation

Among the features of the new Smipal APS 1550 P palletiser is the machine's infeed section with the layer pre-composition system. It consists of a pack rotation device equipped with belts running on free ball bearings, a row-formation belt and a layer-formation belt. In the new system proposed by Smipal, packs are, before the row is formed, rotated in the palletiser's infeed section through a conveyor belt fitted with free ball bearings. By setting this function in the palletising pattern, these bearings impart rotary motion to the bottom of the pack in transit. This feature avoids the drawbacks linked to traditional pack-turning systems in which the pack is turned by making it collide against a fixed blocking element located above the sliding belt.

Efficient end of line with the integrated turnplate pallet wrapper

The compactness and efficiency of the Packbloc solution proposed by SMI were further enhanced by the Neo version, integrating a turnplate pallet wrapper in the palletiser's structure, which wraps the individual layers as soon as they are placed on the pallet.

In fact, the configuration of the Packbloc Neo packaging system featured the wrapping of the pallet in wrap-around film simultaneously with the formation of its layers, thereby eliminating dead time typical of other solutions in which the wrapping takes place once the pallet is finished. This solution is especially suited to the palletising of unstable containers such as, for example, loose 5 to 10l bottles not packaged in cardboard trays. These remain firmly placed on the pallet as it advances on the machine's conveyor belts, thanks to the wrapping of the single layer.

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