

Automation and integration for effective product quality

Choosing the right packing equipment can play a key role in extending shelf life and delivering consistent product quality.

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Packaging has always reflected the way we live, responding to the latest trends and consumer demands. And undoubtedly today's busy lifestyles have fuelled the growth in convenience foods and ready-prepared meals.

Although the increasing popularity of celebrity chefs and television cookery programmes has moved the focus more onto the value of freshly prepared meals, the boom in convenience foods shows no sign of abating. More to the point, many who seek to cook a meal from scratch still see the value in obtaining their ingredients pre-packed rather than buying them over the counter.

This is certainly true of the meat and poultry sector where pre-packed and pre-portioned products remain hugely popular. At the same time, while the consumer values the convenience of these items, quality and freshness cannot be compromised.

Environmental concerns

Today there is another driver in the consumer market – the environment. We may not want to compromise on convenience but we are becoming increasingly aware of the impact of our actions on the world around us and taking steps to minimise this. Among these has been the high profile campaign on the need to reduce food waste.

Meat and poultry equipment suppliers therefore face a variety of challenges in helping processors to meet these varying requirements. Tray sealers, for example, have to balance the need for quality presentation with ensuring maximum freshness of the product while still delivering the high throughput and efficiencies that are vital in competitive



The Ishida Flex Line.

markets. One way that tray sealers can help to deliver extended shelf life is through the use of gas flushing to create MAP (Modified Atmosphere) packs. To ensure the consistency of this process, gas analysers within the sealing tool are able to sample the gas at every cycle and automatically stop the system if the wrong mix is detected.

In terms of attractive pack presentation, innovative inside cut technology enables trays to be top sealed without any film overlapping the tray rim. This both enhances pack appearance and also reduces film consumption by at least 5%.

Another way in which effective product preservation and presentation can be combined is the use of skin packs. These feature a special film that seals to all surfaces of a tray – rim, sidewalls and base

Skin packs almost double the shelf life for burgers.



– to tightly cover the entire contents. This approach can enhance the appearance of meat cuts while the tightness of the seal around the product removes the need for gas flushing. Such packs are growing in popularity for a wide variety of products including ready to cook meals, game, meat and sausage products, and mini joints.

Changing requirements

At the same time, tray sealers have to deal with many other changing market requirements. One major factor driving new pack development is the huge increase in the number of single person households in many parts of the world.

To meet this demographic development, producers are introducing single-serve packs. What was once a pack suitable for two people is now evolving into a pack with two separate compartments, each with a single portion. This allows one half of the contents to be consumed, while the other remains in its protective packaging atmosphere until required at a later date.

For the consumer this provides convenience, while the extended product life helps to drive down food waste.

Such single-serve packs bring new packing challenges. The pack has to be capable of being separated by the consumer, so typically a tear-off feature is included between the compartments. The tear-off feature reduces the rigidity of the package and this in turn increases the demands on automatic pack handling systems. The two

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compartments require separate sealing film to be applied to each, effectively doubling the number of packs being produced within the equipment.

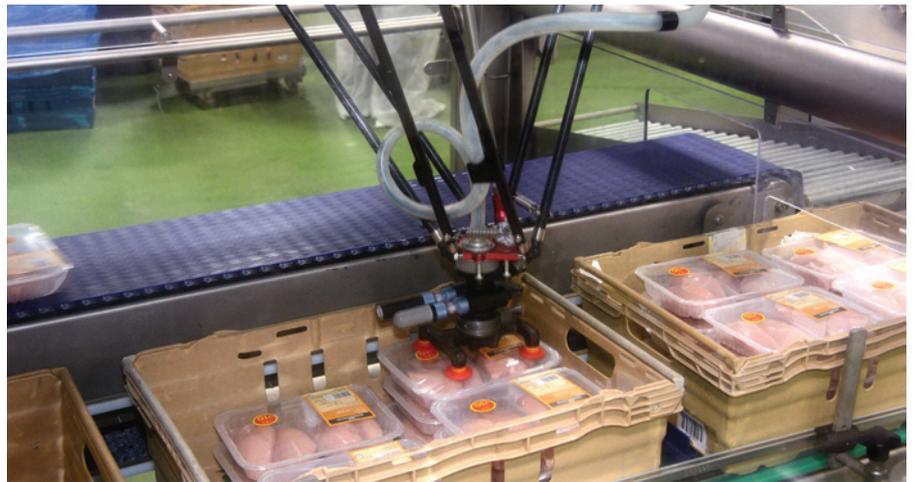
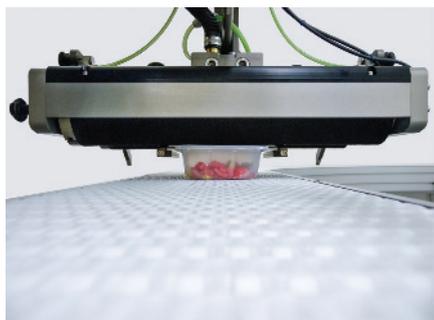
Competitive retail markets also mean that many lines have to pack for special promotions. This requires the ability to vary certain lines by as much as 60% week on week. As a result, flexibility is vital, with tray sealers that are quick and easy to change between products, and which can run at very high efficiency to ensure peak demands can be fulfilled.

Intelligent controls

To meet such requirements, tray sealers incorporate features such as an intelligent control system with auto-set function for integrated film coding, gas mixing and analysing, allowing one button product changeovers. Servo technology delivers accurate and consistent tray handling at high speeds in order to maximise product throughput.

Some tray sealers even have the capability to operate two lanes independently at different speeds, enabling companies to run two separate tray sizes, pack weights, or products, or for two different customers, at the same time, in only one machine footprint.

To ensure that product freshness and shelf life are guaranteed in every pack that leaves the factory, an effective monitoring system is also a vital part of a successful meat packing operation. The importance of this is demonstrated by figures from WRAP (the Waste & Resources Action Programme) that showed that packaging leaks have been associated with almost 500,000 tonnes of food wasted in production each year.



Automatic packing of fresh chicken trays into Eurocrates.

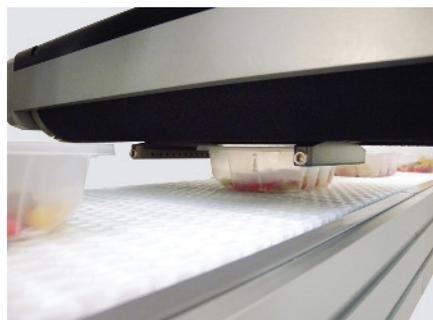
Equally important, if the leaking pack is not detected before it reaches the consumer, the dangers of damaging brand and company reputation are immense – and these can be played out very publicly in today's social media obsessed world.

To prevent this, there is a wide choice of inspection equipment available. Seal testers are able to test the integrity of sealed, flow-wrapped or lidded trays in different materials and sizes. Typically they apply controlled pressure to each tray going across a conveyor in order to detect and evaluate any subsequent 'give'.

A major benefit of the process is that the testing process is very gentle, meaning failed pack contents can be re-packed. In addition, as well as detecting significant leakages, the system can pick up any trends that give an early warning of deterioration in the sealing process, either from the tray sealer itself or the thermoformer.

New technologies are also being developed to meet the challenges of other pack formats, such as bags and pouches, which have traditionally been more difficult to monitor. Latest advanced laser technology is now able to identify leaks of CO₂ from holes as small as 0.25mm in MAP packs at high speeds, ensuring quality without compromising on throughput. The testing process using laser-technology is literally touch-free as therefore the testing process does not impact at all on the

Ishida's Airscan leak detection system.



product, whilst out-of-spec packs can be removed from the packing process without compromising/damaging the pack. Equally important, unlike traditional gas leak detectors, the technology is able to inspect and reject individual packs.

Preserving shelf life is just one of the requirements of an effective packing line, along with other critical considerations such as maximising efficiencies and throughput.

Therefore, while each machine is important in its own right, it is also vital that every piece of equipment is able to integrate effectively and operate as part of a fully automated packing operation that covers the weighing, filling, sealing and inspection of packs, and then placing them into cartons, boxes or Eurocrates.

This has benefits for the fast-response supply chains of the meat industry, where orders are often despatched the same day or within 24 hours.

As part of detailed analysis and reporting, packing equipment can feed back its production data so that information is quickly available for re-ordering of the meat and its packaging.

Integrated approach

This type of integrated approach will enable food manufacturers to drive out waste and maintain production quality in order to reduce risk and optimise performance.

Equally important, investment in this type of equipment can deliver quick commercial returns – both by minimising the costs incurred by product returns, and by ensuring consistent high quality products that reduce customer complaints, protect brand image and demonstrate to retailers that they are sourcing from responsible suppliers who can achieve and deliver high levels of customer satisfaction.

Establishing this type of reputation can also lead to new business as well as helping to retain existing contracts. ■