Convenience food well packed

Convenience food that helps consumers to save time is recording double-digit growth rates at present.

Convenience food in general encompasses freshly made products with a prolonged shelf life offering a lot of convenience to the customer.

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//...Today there is a trend towards convenience food. Frozen pizza, pre-baked rolls or cake specialties – consumers like to eat any kind of food that is prepared quickly and easily. Which is no surprise; incidentally, if it is taken into consideration that the preparation of fresh ingredients alone can account for up to 60 per cent of the entire time it takes to get meals ready. The trend towards prepared food products is associated with a change in social values: when everyday life is going faster and faster, people have the feeling that there is an increasing shortage of free time.

Packaging without preservatives

Anyone who wants to participate in the double-digit growth experienced in the convenience food market needs to note a few things: the general rule is that products, which make it easier for consumers to prepare their meals and help them to save time, have to be developed using smart manufacturing and packaging methods. A major requirement for many convenience products is, for example, that it has to be possible to store them fresh, without the addition of chemical preservatives, while making sure they still have a long shelf life. Modified atmosphere packs made from plastic film are a potential solution here. The food is stored inside them in a special gas atmosphere, which slows down the spoilage process. What is crucial here is that the pack first of all is evacuated completely, i.e. that all the air from inside the pack is removed. Inert gas mixtures carefully chosen to suit the specific food product concerned are then filled in the pack and extend the shelf life of the product without changing it – as is the case with processes involving preservatives. Sensory tests have demonstrated that only minor – if any – changes in taste can be detected during the specified shelf lives too.

Atmosphere modification with inert gas

A very large number of products can be packaged in an inert gas atmosphere to >>>

> *figure 1*

> *figure 2*

> figure 1
The valve on the top of the pack allows the carbon dioxide produced by fermentation to escape and stops the pack from ballooning.

> figure 2
The inert gas in the pack counteracts atmospheric pressure and protects the soft rolls against damage.

> figure 3
The ready-made flan case can be filled individually and saves preparation time.

> figure 4
The attractive second pack enhances the value of the cake and distinguishes it from competitors.

> figure 5
The pizza dough with a long shelf life promises to be particularly delicious when the consumer has added his own topping.

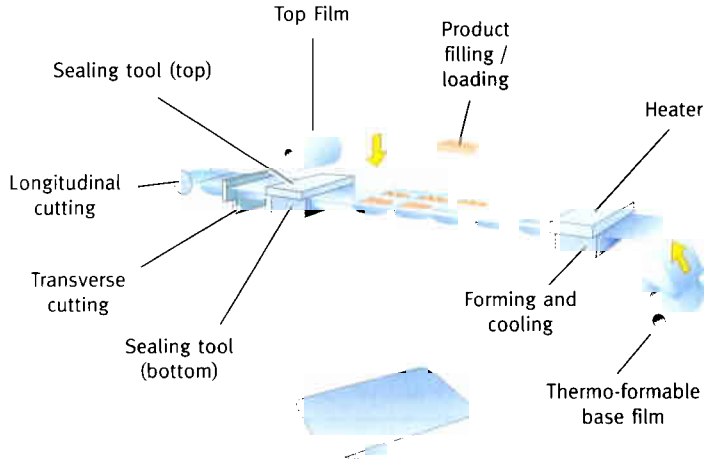
give them a long shelf life, such as the very popular pre-baked rolls and bakery products that simply need heating up. They are available in a wide variety of different forms at retail outlets, from simple rolls made with wheat or wholemeal flour to such specialties as different baguette products with cream cheese or garlic butter spread on.

The demands made on the packaging are just as varied as the products. Machine manufacturers as Multivac for example offer two different kinds of machines for packing products under modified atmosphere. Thermoforming machines operate very economically and at high speeds. The packaging material is a film stored on reels. This process requires only a minimum of material consumption. Tray sealers for sealing pre-formed containers are a less common alternative. Their advantage is that the containers can be filled separately from the packaging operation at a different place and time.

Irrespectively of the type of machine used, both systems allow residual oxygen levels of less than 0.2 per cent to be achieved after the atmosphere has been modified – as a result of which the conditions for a long shelf life have been met. In order to control this process reliably, the packaging machines are equipped with pressure sensors that measure the current pressure level in the vacuum chamber independently of the air pressure at the time in question.

There are two different alternatives for the atmosphere modification process, too. Gas manufacturers supply ready-made inert gas mixtures which can be used straight out of the gas bottle to such companies needing to pack only similar products with a constant gas mixture. Industrial consumers and manufacturers that need to change the inert gas mixtures frequently because of their broad range of different products in general use monogases in combination with a gas mixing unit that is integrated in the machine. This unit produces the required gas mixture on demand. An automatic monitoring unit guarantees a consistent gas mixture and reports deviations as soon as specified upper or lower tolerance levels are exceeded.

Diagram of a forming, filling and sealing machine



All figures: Multivac

Quality assurance with modern technology

If a convenience product is supposed to find its way into consumers' shopping carts again and again, it has to offer not just additional benefits but also consistent quality. Many food products go through a long manufacturing process before they are sold as finished products in the retail outlets. Numerous manufacturers have therefore established quality assurance systems of their own which monitor continuously all processing operations – from the ingredients to the finished product – and document the results.

As far as the packaging is concerned, it is important to make sure that it is undamaged and that the inert gas concentration inside complies with the specifications. There are two different systems available to check either all

Packaging in a modified atmosphere

Packs that are produced on thermoforming machines, chamber machines or tray sealers can be divided into three groups. The most important criterion that distinguishes them is the atmosphere inside the finished pack.
In a vacuum pack, all of the air – and with it the oxygen that causes spoilage – is evacuated from the pack and the product. The pack is sealed when the maximum achievable vacuum has been reached. Since the difference in pressure between the contents of the pack and the air outside the pack is relatively large, the packaging foil lies very tightly around the product and applies pressure on it. Vacuum packaging is therefore ideal for many products, while for other products the lack of oxygen alone is not enough to achieve the optimum shelf life. However, the pressure applied on the vacuumized product can lead to destruction of the contents when the products are soft, porous and contain liquid.
A modified atmosphere pack (MAP) is evacuated and then filled with a special inert gas. A long shelf life depends to a considerable extent on the evacuation process, because in this process all of the air is removed from the pack and the product, so that the residual oxygen level is minimized. Then the inert gas that slows down product spoilage is added. The inert gas also creates a new, gas-filled space inside the pack which counteracts the atmospheric pressure. This makes it possible to pack pressure-sensitive products and give them a long shelf life without risk of damage.
The third group consists of touch-proof or transport packs which do not extend the shelf life. They protect the contents of the pack against contact and environmental influences but do not have any other effect apart from this.

the packs or random samples for compliance. On-line equipment integrated in the packaging machine monitors the inert gas atmosphere automatically during packaging. On the other hand, portable equipment for checking manually selected random samples of ready packed food is also available.

Customer loyalty thanks to pack design

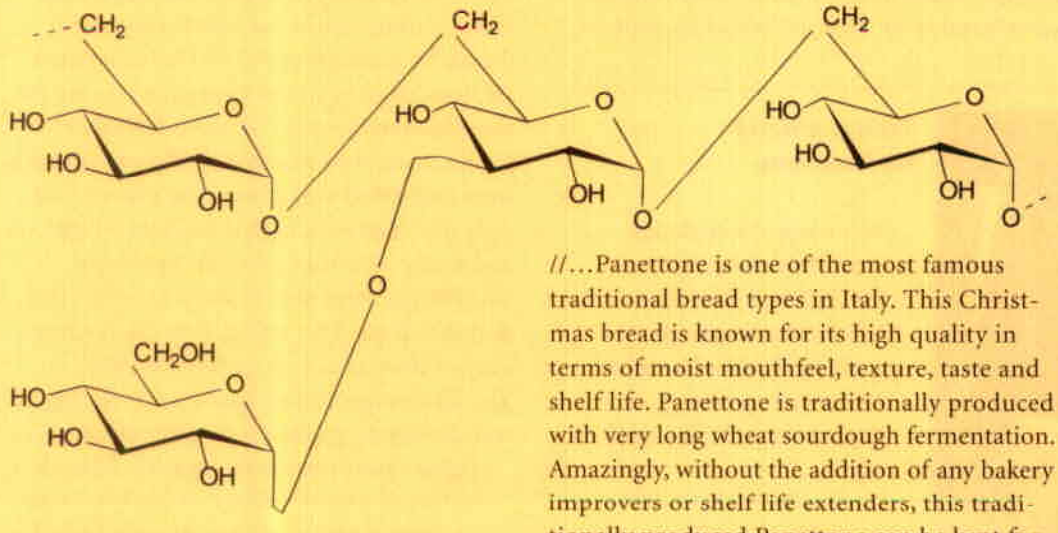
One of the pack's key features is to protect the packed product during transport and storage. The packaging is also the only way to attract consumer's attention in the supermarket. The pack is used to communicate the quality of the packaged product and at the same time to stand out from competitor's products due to its individual design. Its message must be clear, arouse consumer's curiosity and persuade them to buy the product.

An attractive, striking pack design – based, for example, on eye-catchingly printed film or specially designed labels – is remembered by the consumer so well that he recognizes the product again easily after he has finished eating it. Controlled opening aids, reclosability or simple portionability are examples of further design features that draw attention to the quality of the packaged goods...//

Little helpers in common sourdough

Leuconostoc sp. is a heterofermentative lactic acid bacterium capable of producing dextrans.

Such dextrans are able to improve certain dough properties as explained in European patent EP00790003A1.



Dextran consists of about 95% 1,6-linked alpha-D-glucose and about 5% 1,3-linkages. Branched side chains are mainly glucose elements.

//...Panettone is one of the most famous traditional bread types in Italy. This Christmas bread is known for its high quality in terms of moist mouthfeel, texture, taste and shelf life. Panettone is traditionally produced with very long wheat sourdough fermentation. Amazingly, without the addition of any bakery improvers or shelf life extenders, this traditionally produced Panettone can be kept for several months, maintaining the typical fresh bite. >>>

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