



A Great Atmosphere Sells the Package

Processors and retailers explore the advantages of modified atmosphere packaging.

By *Huston Keith*

When Kroger asked ConAgra to put its *Healthy Choice Extra Lean Ground Beef* in a tray in order to help the beef retain its red color and extend its shelflife, ConAgra knew there was only one answer — modified atmosphere packaging.

When Hillshire Farm wanted to package its thin-sliced deli meats for pegboard display, the company found the conventional vacuum package for extended shelflife made the slices stick together. The solution? Modified atmosphere packaging.

And when retailer Lucky Stores wanted to keep slow-moving, economical fresh offal meats available for its southern California shoppers, its supplier Alpha Meats knew modified atmosphere packaging could make it happen.

These processors and retailers, along with many others, are finding that modified atmosphere packaging is the preferred solution for providing a variety of fresh, attractive meat products. Plus, there are the added benefits of reduced shrink and waste, less in-store labor, and minimal handling to keep meat cases well-stocked.

For instance, while ConAgra supplies its *Healthy Choice* ground beef in convenient 1-lb. chubs, it was destined to be "a niche item,"

Huston Keith of Keymark Associates is a packaging and marketing consultant in Marietta, GA.



said John Gunn, meat merchandiser for Kroger's Atlanta division. "It had to be a bright red 'fluff' pack in a tray," added Gunn. But Kroger did not want to add labor to grind and tray the 10-lb. keeper casings ConAgra also markets. Modified atmosphere packaging was the answer.

Just a few short years ago, modified atmosphere packaging was seen by most processors as an expensive system — usable only for high-value niche products, short distribution situations, or bulk packaging. In fact, modified atmosphere still has its widest use in Europe where meat prices are high and packers are close to population centers.

In North America, the largest use is still the bulk packaging of fresh poultry. For most applications, vacuum packaging and freezing were considered the most cost-effective and safest methods of extending shelf life.

But, when Frank Perdue wanted to merchandise his chickens as "fresh, never frozen," while maintaining the shelflife of chillpack, modified atmosphere packaging came to the rescue. Retailers also turned to modified atmosphere when they needed 17 days to sell convenient, but premium-priced, *Perdue Done It!* and Tyson pre-cooked chicken.

Several factors have contributed to an increase in the use of modified atmosphere packaging. As our population grows increasingly urbanized, consumers are demanding fresher, more convenient foods. With retail stores under increasing pressure to maximize profits, in-store deli sales are exploding at a 13% annual rate. Food away from home accounts for 45% of food sales, compared with 34% 20 years ago. American retailers command an impressive market share of consumer dollars, but European retailers remain the most profitable worldwide.

Overall, vacuum packaging and freezing just can't match modified atmosphere packaging for preserving meat color, texture and flavor in many situations.

How does modified atmosphere packaging work? Simply, it involves blending a special mix of atmospheric gases in a package and sealing the package. These gases provide certain functions to

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Modified Atmosphere Packaging helps ground beef (left) retain its red color while generally increasing the shelflife of packaged pork (right).

means. Fresh meats, where color is important, calls for 20-30% CO₂, 40-80% O₂, and nitrogen (if needed). Bulk-packed poultry uses 100% CO₂. While many processors do their own testing, assistance is often available from suppliers of gases and packaging systems.

The final selection is the packaging system, consisting of both equipment and materials. This should be done simultaneously, because the materials selected for the final package often determine the equipment needed. Four basic systems are available: bag-in-box snorkel machines, flowwrappers, rollstock machines and tray sealers.

The equipment must be capable of putting an accurate mix of gases into a package and sealing it. For a precise mix and to eliminate oxygen, most machines completely evacuate packages and backflush with gases. Under certain circumstances, only backflushing can provide satisfactory results. Packaging materials must provide barrier to gases and seal easily.

The most common modified atmosphere packaging system in use is the bag-in-box snorkel machines for poultry bulk packages. The process begins when the processor places the product in a foam tray and wraps it with stretch

film on a wrapping machine. The packages are placed in a shipping carton lined with a film bag. The bag is then placed on the seal bar with the nozzle inserted, evacuated, and gas-flushed. This system

has a low initial cost and conventional package appearance.

Pioneered by Perdue, the bag-in-box system has spread throughout the poultry industry. Now pork pro-

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Twist, twist, twist,
twist, cut, twist, twist,
twist, twist, cut, twist,
twist, twist, twist, cut,
twist...

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cessors Smithfield Foods, Smithfield, VA; Hormel Foods, Austin, MN; and FDL Foods in Dubuque, IA, are using the same system for fresh pork packages sold to Kroger's Atlanta division and Supervalu in Eden Prairie, MN. Southgate, CA-based Alpha Meats also uses this system for offal.

When Jerome Foods, Barron, WI, wanted enough shelflife to distribute its line of Turkey Store fresh tray-packed turkey nationwide, it knew the only way was with modified atmosphere packaging.

Flowwrappers are used by Jerome; Perdue; Downers Grove, IL-

based Butterball; Jennie-O in Willmar, MN; and others to package fresh ground turkey and turkey cutlets. Shelflife is usually longer than two weeks. ConAgra uses a flowwrapper for ground chicken, while California's Farmer John applies it for fresh sausage. This machine wraps a barrier stretch-shrink film around a heavy-duty tray, usually foam, while gas-flushing. The film is then sealed. This system provides a package similar in appearance to conventional store-wrapped packages.

Cincinnati, OH-based Hillshire Farm uses rollstock machines for the deli package, increasing shelflife by 15%. This package has been so successful that competitors have copied it, replacing many lines of vacuum-packaged lunchmeats. Some processors are now considering bacon for a similar package, because slices are easily pulled apart.

Poultry processors, such as Perdue and Tyson, also use rollstock machines for precooked chicken, and these machines are widely used in Europe for a variety of fresh and processed meat packages. Several materials can be used, ranging from barrier films to solid plastic sheet to barrier foam. The machine forms a pouch or tray into which product is placed. The package is evacuated, gas-flushed and sealed with a clear antifog lid film.

Tray sealers have long been used for frozen dinners, but have only recently become more widely used for modified atmosphere packaging of meats. Preformed trays, often already loaded with product, are placed in the machine's carriers, evacuated, gas-flushed and sealed with a clear antifog lid film.

Oscar Mayer's *Lunchables* became a big hit with school kids by offering a convenient meal of favorite foods in a plastic tray packed on a tray sealer. More recently, Tesco in Britain; Fairbank Farms in Ashville, NY; XL Meats of

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Calgary, Alberta, Canada; and ConAgra in Downers Grove, IL, have used tray sealers on barrier foam trays for retail fresh beef packages. XL's retail customers have realized substantial cost savings. Rocco, Harrisonburg, VA, and El Monte, CA-based Zacky, have used the same system for fresh turkey, achieving over two weeks shelflife.

As noted above, many packers are using modified atmosphere packaging systems to provide retailers with case-ready fresh meats. But skeptics abound. One large retailer claims he can cut and package pork for less than half the cost of pre-cut pork in modified atmosphere.

Some insist that only vacuum packaging of fresh meats is cost-effective and has the needed shelflife for centralized packaging. Furthermore, consumers can be educated to accept the resulting purple color, advocates say. But test after retail test of vacuum packaged fresh meat starts up and then is pulled.

To address these concerns several two-stage systems are being tested. Essentially, meat is packaged without oxygen in individual trays for long shelflife. At the point of sale, the meat is "bloomed" — by removing part of the package that is an oxygen barrier or by injecting oxygen into the package. Are these systems the answer? Some say "yea" and some say "nay" as testing continues.

In the meantime a complete modified atmosphere packaging system is benefitting packers, retailers and consumers. A good system will extend shelflife and reduce or eliminate product loss. Shelflife also helps a packer reach new markets, and enables the retailer to maintain adequate stocks and variety. For fresh meats, modified atmosphere packaging provides a product with the appearance consumers know; extended shelflife to permit shipping from distant markets; and reduction of unsightly purge. ●