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Cover Story

Sustainability Through Active Packaging

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Sustainability Through Active Packaging



Food waste has increasingly become a global challenge as there is a greater awareness of the environmental impact from the disposal of wasted food and its packaging. At a retail level, meat products that have reached the end of their shelf life cannot be sold and must be disposed of. Disposal may have economic costs associated with it or the products may end up in a land fill, potentially creating the greenhouse gas methane. The environmental impact from disposing of expired food is a major sustainability issue.

Product sustainability initiatives are often in the forefront of manufacturers' minds

as they face the challenge of creating these initiatives while balancing costs. For food manufacturers and processors, the use of active packaging technologies can aid in achieving sustainability goals through extended shelf life, the reduction of food product loss, reduction of packaging, enhanced recyclability, elimination of environmentally unsound materials, and improvement of supply chain management. A fortunate byproduct of this approach is money saved. For retailers, the costs related to food waste can be staggering, especially for fresh meats.

As available landfill space decreases and food waste continues to increase, there is greater attention focused toward waste reduction. One of the greatest pathways for degradation for fresh and processed meats comes from reactions with oxygen. Oxygen exposure accelerates degradation and spoilage costing manufacturers, processors, and retailer thousands of Euros in mark-downs and waste. Degradation that exhibits through color oxidation, flavor oxidation, lipid and fat oxidation, and aerobic microbial growth challenges manufactures to find

cost effective methods for extending the saleable shelf life of the product.

Ironically, even though oxygen accelerates the spoilage of fresh meats, many processors continue packaging it with a high oxygen internal environment, essentially reducing the shelf life of the product they are trying to preserve. Multisorb Technologies has developed the MAPLOX® program for fresh case-ready meat. MAPLOX® is a low-oxygen



Stefano Santagostino

"The quality inside the package"

How can we save food? The idea behind the technology.

Think. Reflect. Act

Stefano Santagostino works as Business Development Leader, Food & Beverage Packaging Europe, with Multisorb Technologies. An Italian from Milan, he talked with Ian Healey about food, beverages, saving food and the future.

FMT: Can you give our readers a little background to yourself and the company?

Stefano Santagostino: I finished my food science degree in 1993 and worked initially in marketing in the dairy industry,

followed by HACCP and quality control. Then I moved into packaging and worked with all kinds of food and beverage packaging systems for 12 years. In 2009 I joined Multisorb Technologies, and currently I am responsible for market development in Europe and South Africa, focusing on the potential of active packaging in the retail food industry.

The company was founded 51 years ago by John S. Cullen, initially protecting automotive parts from the damaging effects of moisture, then concentrating on transportation technology, electronics, pharmaceuticals, and food. Multisorb is the market leader in active packaging technology.

Photos: Multisorb



packaging system. MAPLOX® has been tested by a third party laboratory and is proven to extend shelf life to 21 days or more for fresh meat packaged in primary packaging within a master bag. Once removed from the master bag the meat remains fresh 3-5 additional days on the retail shelf.

Multisorb's FreshPax® packets, FreshMax® self-adhesive active labels, and FreshCard® multifunctional backer cards are oxygen absorbers that work extremely well to extend the shelf life of processed meats, like deli meats and

pepperoni. Without an oxygen absorber, these products, when displayed under retail lights, start to lose color within 3 days. With an optimized oxygen absorber the time can be extended to nearly 21 days. Extended shelf life translates into less waste and more saleable product.

Not only will less food waste be realized but less packaging waste as well. It is obvious to reason if less meat is being disposed of, then less packaging is also being disposed of, but with a customized active packaging solution the waste reduction can be greater. For example,

typical high oxygen systems use barrier foam or rigid trays to package fresh meats, with MAPLOX® a polystyrene tray and overwrap top film is used, resulting in a reduction of packaging materials. Smaller packaging also means retail shelf space can be better used.

In some cases, active packaging allows the manufacture to eliminate non-recyclable multilayer packaging that may be considered environmentally unsound. In packaging for processed meat, active polyolefins and polyesters can replace ethylene vinyl alcohol (EVOH) and polyamide, which are used in barrier layers; polyvinylidene chloride (PVDC), which are used in layers and



Active packaging technology is designed to provide superior protection against moisture, oxygen, odor, and other volatiles. While other components of your packaging remain static, active packaging continually works to extend shelf life, enhance product quality, prevent biochemical and microbiological damage, and more. At the same time, Multisorb is continually at work to bring new and better innovations in sorbent technology to most effectively meet active packaging needs.

What is 'active packaging' exactly?

It is all about the quality inside the package. Active packaging senses changes in the internal package or external environment and responds by altering its properties to accommodate to the change.

The result is an improvement in the food products' quality, safety, shelf life, and usability.

Which business sectors do you particularly have in mind for active packaging?

Active packaging is needed in many food segments. Some of these are fresh meats that are case ready, processed deli meats, bakery, prepared foods, dairy products, snack foods, tortilla, pasta, and various beverages such as beer and juice, basically, any food package where shelf-life, quality, preservation, and sustainability are essential.

I will give some practical examples. There is a rapidly growing change to fresh meats; both whole muscle and ground beef are being prepared case ready around the world. The meat products are prepared at a main meat processing plant and distributed to retailers. In order to maintain the quality of meat for the extended supply chain, oxygen must be rapidly removed from the package, thereby, providing 21 days in transit and 5 days on the shelf. This is exactly what Multisorb's MAPLOX® program does.

Another example is processed deli meat. Recent legislation and the desire to remove unhealthy additives and preservatives from the meat require an active packaging solution to maintain the quality of the meat. This is solved through the use of Multisorb's FreshPax®, FreshMax® and FreshCard® oxygen absorbers.



coatings; and metalized films and metal foils.

In addition to reducing food and packaging waste, an extended shelf-life allows for more efficient manufacturing site and logistics management. Often processors will strategically position operation facilities in several geographic locations to manage a limited shelf life. With an extended shelf-life the processing can occur in a centralized facility, creating a savings in the environmental and monetary costs associated with

running multiple facilities. This is especially beneficial for niche markets that often have a higher percentage of food losses and do not have the luxury of having multiple facilities.

Active packaging in the form of an oxygen absorber will not entirely eliminate meat waste; however, an extended shelf life can create environmental and monetary savings by reducing product loss, reducing packaging, and enhancing supply chain management. Environmental benefits can be realized

in some cases though enhanced recyclability and the elimination of environmentally unfriendly materials. For extended shelf life and costs savings potential, Multisorb's active packaging technologies are the ideal sustainability solution.

Key No. 78531



What are the main technical challenges?

The active packaging solutions for food and beverage applications are highly technical. They are not like the cheap desiccants you see in your purse or shoes. The biggest technical challenge is making sure we work closely with our customers to design a custom solution that is optimized for their product and package.

*This requires close communication with the end user, including their understanding of the benefits of using this technology. There are environmental and sustainability advantages as well. The most significant sustainability issue in the food industry is waste. Spoiled food or **shrink**, as it is called in many markets, requires expensive disposition of the food product. Active packaging not only extends the shelf life to significantly reduce the shrink but provides a much smaller carbon footprint.*

What is your personal vision for the next ten years?

The need for active packaging in the food and beverage industry is going to continue to grow at a rapid pace. As supply chains expand to accommodate shifting population trends, active packaging becomes a more significant need. To respond to this, innovation is going to be critical to meet the growing and demanding challenges of the market. This is the foundation of Multisorb – to continue to bring innovative solutions to the market. I am lucky to be in a position to help discover these innovative solutions which can help to build a better future for my children and their children.

We must think, reflect, and, most importantly, act. The positive impact of active packaging in the next ten years will be significant.

Stefano, thank you very much for sharing your thoughts and inspiring me and our readers.

Thank you for the opportunity.