The challenge: The role of food packaging in tackling climate change

With an estimated 28-35%1 of global GHG emissions coming from food-related activities, the food industry has a critical role in tackling climate change. The environmental impact of food production and consumption is increased when food is wasted and not consumed. For example, meat production is considered as the most environmentally impacting product responsible for more than 20% of the total GHG emissions related to food waste, according to the United Nations and the Food and Agriculture Organization (FAO)2. Only avoiding food losses and waste can reduce an overall carbon footprint by up to 8%3.

Optimized food packaging is one of the critical solutions for food waste prevention. Proper protection pays off for food products with carbon-intensive production like meat. According to life cycle assessments (LCAs), the environmental benefit of avoided waste is typically 5 to 10 times higher than the environmental cost of the packaging4 while the benefit is expected to be much larger when it comes to carbon-intensive food (e.g., red meat at 20-60 kg CO₂e/kg)5.

In many cases, retailers have the most significant influence on the packaging, but consumers’ acceptance also drives their criteria. The challenge is to partner with retailers to develop optimized packaging that significantly prolongs the shelf life of carbon-intensive food products while ensuring consumer acceptance, stringent hygiene and safety standards, and cost-effectiveness.

The solution

Vacuum Skin Packaging (VSP) is a multi-layered packaging solution with high oxygen and moisture barriers developed to protect fresh products like meat, seafood and cheese. VSP encloses the product tightly with specialty polyethylene (PE) films by removing the residual oxygen from the package, like a second skin, preserving shape, texture and product integrity for a premium retail presentation. VSP responds to the new expectations of consumers in terms of shelf appeal, perceived transparency, quality, safety and authenticity, convenience and sustainability efforts.

Enabled by Dow’s SURLYN™ Ionomer and other packaging resins and technologies, VSP removes all residual oxygen from the package and prevents air from re-entering after the vacuum seal process, therefore notably enhancing the packaging performance and sustainability advantages compared to conventional packages. According to a 2015 study conducted by Austrian-based research institution Denkstatt, the key sustainability advantages of VSP are as follows:

• Less food waste and loss due to better protection during shipment and extended shelf life

The ionomer technology’s unique properties, including toughness (reducing the risk of punctures) and elasticity (to fit tightly around the contents), result in a packaging system that eliminates leakage risk and allows for better protection during shipment. According to the AEON Group, enabled by Dow’s ionomer technology, VSP removes nearly all residual oxygen from the package, leading to an extended shelf life of products, including up to by 10 days for beef.

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Dow and AEON Co. Ltd (AEON), the largest retailer group in APAC, partnered to reduce GHG emissions and food loss using Dow’s technologies in food packaging solutions. The purpose of our collaboration is to reduce food waste at the retailer level through improved food packaging by accelerating the market penetration of VSP. The project takes place in Japan, where the VSP packaging has been rolled out to various meat products in Daiei Supermarkets, an AEON group.

Together, Dow, Dow-Mitsui Polymers, AEON and Daiei set out to accomplish a two-fold goal:

1. Integrate packaging technologies that preserve food freshness.
2. Deliver environmental impacts while raising awareness among consumers on the issue of food loss and its importance.

As a result, Dow hopes that VSP will be accepted by consumers as the new norm in Japan, thereby resulting in accelerated adoption by retailers in other countries in the region.

**Dow’s solutions for food packaging**

Dow Packaging and Specialty Plastics has a broad portfolio of materials that enable them to achieve the required properties while allowing for easier processing, reducing waste and overall cost – across various packaging types. Dow’s portfolio of packaging resins, such as SURLYN™ Ionomers, AFFINITY™ Plastomers, BYNEL™ Coextruded Adhesives and a broad offering of laminating adhesives and coatings, have been developed to meet the increasing demands of consumers and businesses. Our ultimate goal is to ensure that all food and beverages arrive “fresh to the table.”

For more information on Dow’s solutions for better, more sustainable packaging how it can benefit your business, visit:


**About Dow**

Dow (NYSE: DOW) combines global breadth, asset integration and scale, focused innovation and leading business positions to achieve profitable growth. The Company’s ambition is to become the most innovative, customer centric, inclusive and sustainable materials science company, with a purpose to deliver a sustainable future for the world through our materials science expertise and collaboration with our partners. Dow’s portfolio of plastics, industrial intermediates, coatings and silicones businesses delivers a broad range of differentiated science-based products and solutions for its customers in high-growth market segments, such as packaging, infrastructure, mobility and consumer care. Dow operates 106 manufacturing sites in 31 countries and employs approximately 35,700 people. Dow delivered sales of approximately $39 billion in 2020.

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*https://www.youtube.com/watch?v=18A_pN_Z3LY

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