

*Powering clients to a future shaped by growth*



F R O S T & S U L L I V A N

# TOP TECHNOLOGY INNOVATIONS IN FOOD PROCESSING & PACKAGING

**INSIGHTS BY:** PRITHVIJIT ROY,  
FOODS AND NUTRITION SENIOR CONSULTANT  
AT FROST & SULLIVAN

**FOR GULFOOD MANUFACTURING 2021**

---

Food Processing as a science has evolved over the last few decades and moved towards automation from the traditional manual-/labour-intensive tasks. This has involved the usage of complex machinery, processes, and programming, which aims at increasing throughput time and increase yield and precision with regards to output, cutting, slicing, and dicing finished processed food products. The GCC serves as a ready market for European and American companies who pioneer such technologies. The introduction of these advanced machinery and food processing techniques in the GCC market also becomes a ready template for manufacturers in Asian markets to emulate the usage of these technologies.

# BEVERAGES



## Paper Bottles for Carbonated Soft Drinks:

As part of a long-term strategy to eliminate plastic from its packaging portfolio, Coca-Cola is test marketing paper bottles. The prototype has been made by Paboco, a Danish company, from an extra-strong paper shell that still contains a thin plastic liner made of polyethylene terephthalate (PET). The objective is to create a 100% recyclable, plastic-free bottle that prevents gas from escaping carbonated drinks. The plastic liner/barrier must also ensure no fibers flake off into the liquid, which could alter the drink's taste or potentially fail health and safety checks. The challenge has been to create a structure capable of withstanding the forces exerted by fizzy drinks—such as cola and beer—which are bottled under pressure. Additionally, the paper needs to be moldable to create distinct bottle shapes and sizes for different brands and take ink to print their labels.



## Use of 100% PCR PET Bottles:

Bottles and jars produced using post-consumer resin (PCR) is a growing trend in the packaging industry, and PET is one of the easiest plastics to recycle. As a result, manufacturing PET with PCR content is a high priority for brand owners. These bottles can be produced with 10% to 100% PCR content.

PepsiCo has committed to eliminating all virgin plastic from its Pepsi brand beverage bottles sold in nine European Union markets by 2022. The company will package the entire range of beverages under that brand using 100% recycled polyethylene terephthalate (rPET) bottles from post-consumer packaging while growing reuse and refill systems such as SodaStream. The company estimates that this move will eliminate over 70,000 tons of virgin, fossil fuel-based plastic per year and will lower carbon emissions by approximately 40% per bottle. Germany, Poland, Romania, Greece, and Spain will switch to 100% rPET in 2021, while France, Great Britain, Belgium, and Luxembourg will be at 100% rPET in 2022. The move applies to both company-owned and franchise bottlers in the relevant markets.





### Reduced Plastic Consumption:

Technologies such as **Capper Application Technologies** are being put in place to reduce the net weight of the PET bottles that have reduced from 5 gms to 4 gms to a further 3.8 gms over the past 3-5 years. Such initiatives aim to reduce/minimize the usage of plastics for lightweight and tamper-proof packaging solutions.



### Adoption of BPA-free Can Coating Systems:

BPA-free can coating systems have emerged to replace previously used carcinogenic BPA can coating systems. The BPA-free can coating system has a food-grade composition and is used as a coating solution for carbonated soft drink cans.



### Preference for Green Packaging Solutions:

Green packaging solutions such as pouches made of recyclable polyolefin-based laminated materials have emerged as a popular option for fruit-based beverages to promote a circular economy.





## Laser Glow:

A food laser transformer created and patented by a Spanish start-up, Cocuus, cuts or engraves any type of dough, caramel or food products that can be spread in two dimensions (2D) on a tray or even in 3D on some fruits and vegetables, such as apples. This tool customizes any product by engraving text or an image from a digital file on the food.



## Low-temperature Cooking/Vacuum Cooking:

Vacuum-based ovens enable croissants and pastries to be cooked at high temperatures at half the desired time, after which they shut off. The air is extracted from the chambers with the residual heat used to further cook the baked products (cakes/croissants, etc.). The entire heat permeates into the product and cooks it in half the time. Fusing vacuum and low-temperature cooking allows the pastry to be cooked with fruits, syrups, and seasonings without altering the fiber and taste profile of the fruits and other flavors.



## Mixers with Hydrobond Technology:

The mixers provide a consistent stream of hydration and moisture to the dry ingredient (in most cases flour). The dough undergoes a uniform hydration without the infusion of additional heat, resulting in shorter mixing time. Hydrobond technology speeds up the mixing process by mixing the dough on a particle-to-particle basis in a limited time frame, thus resulting in lower equipment and energy costs. Hydrobond technology can also be used with a pre-hydration system to mix particles of flour, minors, and water directly into a brew holding tank.





### Icebake Machines:

The process of kneading flour dough generates a lot of heat. Adding cold water/ice flakes to the dough does not damage the kneader like ice cubes. Icebake machines have been developed that help knead the dough at cooler temperatures, reducing heat generation. This also helps the kneaded dough become softer.



### Waterjet Cutting Machines:

This pastry cutting and finishing equipment uses a stream of water and is programmed to operate at certain angles to precisely cut the pastry to the desired shape.



### Ultrasonic Cake Cutters:

This machine is ideal for sticky, difficult-to-cut, and delicate bakery products. The machine is adaptable to cut sheet products or two round products simultaneously.



# PROCESSED MEAT



## Tempura Applicators:

The demand for coated and breaded products is dwindling as they are considered high in cholesterol due to higher oil content. Tempura-coated products, which have a thinner coating yet retain their crispiness, are growing in popularity. Tempura applicators are provided by vendors such as JBT to many processed meat manufacturers that produce breaded products.



## Microwave Defrosting:

Traditionally, meats are defrosted in defrosting tumblers, which raise the temperature from  $-18^{\circ}\text{C}$  to  $-2^{\circ}\text{C}$  within 5-7 hours. However, manufacturers are switching to microwave defrosters. They defrost meat from  $-18^{\circ}\text{C}$  to  $-2^{\circ}\text{C}$  within 1-2 hours, thus saving time.



## Brine Injecting Machines:

The machine is used for meat pickling. It can inject saline and seasoning into the meat evenly and continuously to make it fully pickled. The injected flavoring liquid makes the meat tender, thus improving the meat quality and yield rate. Previously, the meat was smeared/coated manually with the brine solutions, resulting in uneven pickling and affecting the taste profile of the processed meat product.



## Water Glazing Machines:

These help the meat retain moisture and ensure that it does not dry up while on the shelf.





## Frost & Sullivan

For over six decades, Frost & Sullivan has helped build sustainable growth strategies for Fortune 1000 companies, governments, and investors. We apply actionable insights to navigate economic changes, identify disruptive technologies, and formulate new business models to create a stream of innovative growth opportunities that drive future success.

Our passionate commitment to growth starts with our Growth Pipeline Dialog™, an all-hands approach that puts your management team in a room with our growth experts, addresses your top challenges, identifies areas of disruption, and develops tailored roadmaps and go-to-market strategies.

With over 1,200 experts and 60 years of experience, Frost & Sullivan is uniquely positioned to help you uncover millions of growth opportunities, guided by our moral imperative to make the world a better place through sustained growth.

### DUBAI

2601, Swiss Tower, Cluster Y  
PO Box 33372  
Jumeirah Lake Towers  
Dubai, UAE  
Tel: +971 4 433 1893

### RIYADH

F16, Level 1, Localizer Mall  
2803 Prince Muhammad Bin  
Abdulaziz Rd  
Al Olaya, Riyadh 12222  
Tel: +966 11 486 8463

Schedule your complimentary **Growth Pipeline Dialog™** today to start your journey toward sustained growth by clicking [here](#).

myfrost@frost.com

☎ 877.GoFrost

🌐 <http://www.frost.com>

F R O S T & S U L L I V A N

Powering clients to a future shaped by growth