



Food

& Beverages Processing

Ingredients • Processing • Packaging • Technology

Flatbread

Tradition, Technology
and a Structurally
Expanding Market

Vacuum Technology

for Beer Bottling

Redefining Meat Processing

Building a Smarter,
Cleaner, and Sustainable
Future

Beyond “Forever Chemicals”

The Rise of PFAS-Free Food
Packaging in a Sustainabil-
ity-Driven World





during t

BRY-AIR (ASIA) PVT. LTD.

21C, Sector-18, Gurugram - 122015, Haryana, India

Connect with our
Airgeiners® for Solutions



+91882699035

OVERSEAS OFFICES

India • Bangladesh • Thailand • Malaysia • China • Vietnam • Indonesia • Philippines • South Korea
• Mexico • Canada • USA • Brazil • Switzerland • Nigeria • Saudi Arabia • UAE

Bry-Air®

CONTROL MOISTURE[©]

food processing, storage and packaging

◀ Bry-Air...Your Humidity Control Partner

50  1800 102 7620

✉ bryairmarketing@pahwa.com

🌐 www.bryair.com



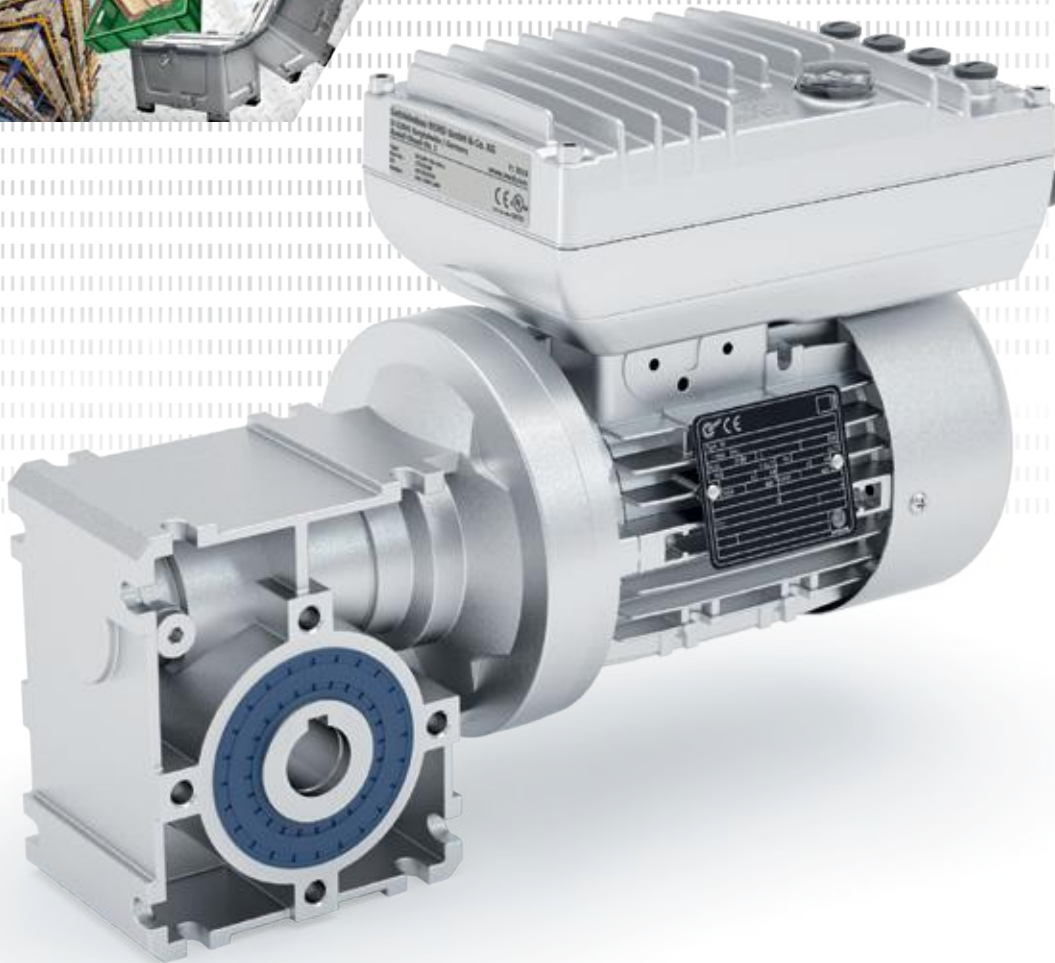
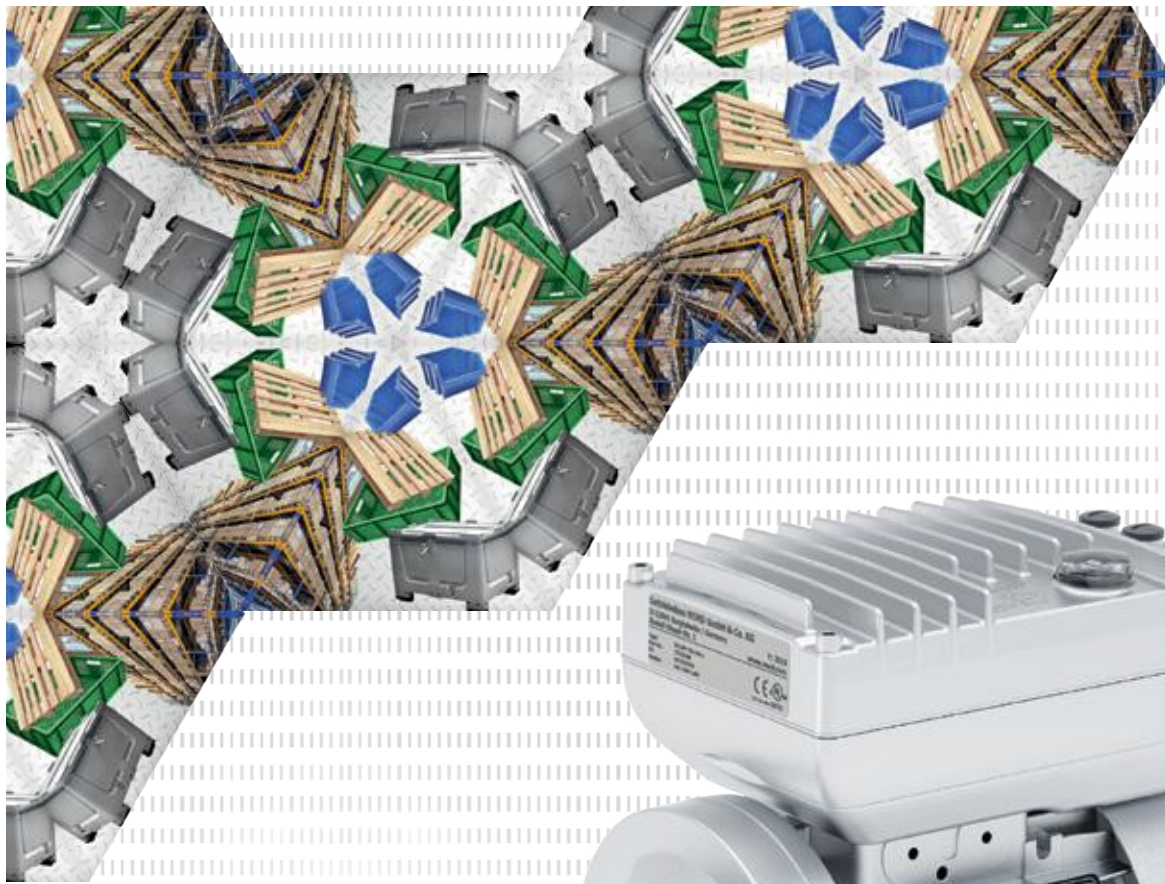
PAHWA™ GROUP
Innovation is life

Bry-Air®
Leaders in Dehumidification...Worldwide

DRI®
Innovative Air Solutions

delair®
The Compressed Air Treatment System Company

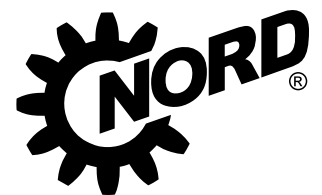
TDS®
Air Solutions on Rent



Our drive solutions for logistics centres

Cost-optimised drive technology for conveyor systems

- ▶ Decentralised drive technology reduces wiring efforts
- ▶ Variant reduction optimises stocks
- ▶ Flexible thanks to small installation spaces and wide speed range



DRIVESYSTEMS

Our Solution. Your Success.

TIMKEN

**CONTAMINATION. SPILLAGE. CORROSION.
DAY AFTER DAY.
BUILT TO LAST WHEN HYGIENE AND
DURABILITY MATTER MOST.**



Corrosion Resistant Ball bearing Housed Unit | Corrosion Resistant Poly Round Plain Bearing Housed Units |
Poly Round Plain Bearings | Comprehensive Range of Deep Groove Ball Bearings | Ball Housed Units

SCAN FOR MORE DETAILS

CONTACT US

Timken India Limited
(CIN: L29130KA1996PLC048230)
Tel: +91 (80) 41362000 | Email: salesbangalore@timken.com
www.timken.com/en-in



Stronger. By Design.

INDUS FOOD 2026 AHMEDABAD



Scan to Discover
Indusfood

24th–26th July, 2026

Helipad Exhibition Centre, Gandhinagar, Gujarat

Western India's Premier **Food & Beverage** Trade Show

Key Highlights



3 Days Focused B2B Engagement



250+ Exhibiting Companies



15,000+ Trade Visitors



15+ Product Categories



40+ Supermarket & Retail Chains

For Exhibitor Registration & Enquiries 

Bhanu K. Vashishtha
E: bhanu.v@tpci.in
M: +91 92058 83423

Abhinav Kumar Singh
E: abhinav.singh@tpci.in
M: +91 79820 10312

Nirav Sinha
E: n.sinha@tpci.in
M: +91 7982001372

Organised By
TPCI Trade Promotion
Council of India

CLEAR PROCESS TOTAL CONTROL



INOXPA Sight Glass

Ensure complete visibility and precision in your process with INOXPA's high-performance sight glasses—engineered for hygienic industries where clarity matters most.

Designed for seamless integration with tanks and pipelines, INOXPA sight glasses allow real-time inspection of product flow, level, and process conditions, ensuring maximum control and product quality.

WHY INOXPA SIGHT GLASS?

- 360° Visibility Options – Monitor your process with full clarity
- Hygienic Design – Sanitary polished finish for contamination-free operations
- Robust Construction – AISI 316L stainless steel with high-quality borosilicate or tempered glass
- Versatile Configurations – Tubular, flat, clamp, and DIN designs for every application
- Easy Installation & Maintenance – Flexible connections and user-friendly design

INOXPA – Flow Control, Perfected.

Plant & Corporate Office (India)
INOXPA INDIA PVT LTD

Plot No. I-45A (Plot No. 6), Part of Gat No. 171 to 1/9,
Chordia Industrial Park, Village Sangavi, Naigaon,
Tal. Khandala, Dist. Satara - 412801
Maharashtra, India

inoxpa.in@inoxpa.com
020-69534000

Regional Contact No :

Solutions: **9657702709**
Gujarat: **7447454528**
Mumbai: **9028017921**
Pune: **9552584027**
Delhi: **9028017922**
Bengaluru: **8380036305**
Hyderabad: **8380036309**



Editorial Note

Publisher
Harish Chaudhary

Editorial Board
Ms. Kanika Banga
Ritesh Verma
Amarpreet Singh
Prof. Dr. Mahendra Pal

Sub-Editor
Mrs. Preeti Kohli

Layout & Design
Suresh Singh Negi

Director - Marketing & Events
Dharmendra Tripathy
dharmendra@dvrpublication.com
+91-9555837779

Director - Finance
Ram Chaudhary
ram@dvrpublication.com
+91-9555837771

Marketing Manager
Shyam Choudhary
shyam@dvrpublication.com
+91-9999383836

Marketing Executive
Ms. Anjali

Web Designer
Subhash Pandey

Printer
Dominant Sales Corp.
11/104, Geeta Colony, Delhi- 110031

Company Information

DVR Publication Pvt. Ltd.
D-101, Gazipur Near Lavin International
School, Delhi – 110096
www.dvrpublication.com
www.foodnbeveragesprocessing.com
info@dvrpublication.com

Editor- Articles & information published herein have been collected from various sources, which are considered to be reliable. Individual and companies are however requested to verify the facts before making business decisions using the same. No part of this publication may be reproduced and transmitted by any means without the written permission of the publisher. Please send your valuable suggestions to info@dvrpublication.com

Food
& Beverages Processing
Ingredients • Processing • Packaging • Technology

Dear Readers,

We're excited to bring you the May - 2026 edition of our magazine.

As the food and beverage processing industry continues to evolve, the focus is steadily shifting toward technologies and strategies that enhance efficiency while meeting growing expectations around sustainability, safety, and product quality. The May 2026 edition of Food & Beverages Processing brings together a range of topics that reflect how innovation across processing, packaging, and ingredients is shaping a more resilient and future-ready food ecosystem.

In our processing segment, we explore Vacuum Technology for Beer Bottling, highlighting how advanced vacuum systems are improving filling precision, extending shelf life, and maintaining product integrity in beverage operations. Complementing this is Redefining Meat Processing: Building a Smarter, Cleaner, and Sustainable Future, which examines how automation, hygiene-focused design, and sustainable practices are transforming one of the most resource-intensive sectors of the food industry.

Our packaging segment addresses one of the most critical shifts in material innovation with Beyond "Forever Chemicals": The Rise of PFAS-Free Food Packaging in a Sustainability-Driven World. This feature looks at how the industry is moving away from harmful substances toward safer, environmentally responsible alternatives without compromising functionality and performance.

In the ingredients and additives segment, we focus on the resurgence and evolution of traditional grains and advanced ingredient technologies. Millets: Flatbread—Tradition,

Technology and a Structurally Expanding Market explores how millet-based applications are gaining traction in modern diets, supported by processing innovations. The Nutritional Pivot: Why Multi-Millet Systems are Redefining the 'Better-For-You' Category highlights the growing consumer shift toward nutrient-dense, sustainable grains. Adding to this is The Rise of Encapsulation Technologies Unlocking Value in Food Systems, which delves into how encapsulation is enhancing ingredient stability, functionality, and targeted delivery in food formulations.

In our corporate interaction segment, we feature insightful conversations with Mr. Amit Anand, Managing Director, Apis India, and Mr. Srinivas Choudhary, Director, Alligator Automations, who share their perspectives on company innovations, product offerings, and the evolving needs of the food processing industry. Their insights provide a valuable industry perspective on technology adoption and market direction.

Alongside these features, this edition also includes updates from our corporate happenings and sustainability segments, offering insights into industry developments, business strategies, and environmental initiatives across the food ecosystem.

We also invite you to explore more insightful articles by visiting our website at www.foodnbeveragesprocessing.com

We encourage you to continue sharing your valuable feedback with us at info@dvrpublication.com.

Thank you
Kanika Banga



www.foodnbeveragesprocessing.com



We offer Solutions, not just a product

Advanced UHT Technology for Modern Dairy Processing

Engineered for maximum shelf life and product safety, KARL SCHNELL UHT systems deliver ultra-high-temperature processing up to 145°C—ensuring reliable, high-performance results for today's demanding food industry.

Proven Expertise: Backed by decades of experience in processed cheese production, our UHT technology builds on a strong legacy of innovation and continuous improvement.

Extended Shelf Life: Achieve significantly longer product durability, enabling flexible storage, efficient logistics, and access to global markets.

Optimized Efficiency: Continuous processing ensures optimal machine utilization, stable production flows, and consistent product quality—while reducing operational costs.

Flexible Configuration: Available in capacities from 100 to 6000 kg/h, with both standard and aseptic options, our systems adapt precisely to your production needs.

Complete System Solutions: From upstream to downstream integration, every component is engineered for seamless performance—delivered from a single source.

Made in Germany: Highest engineering standards, precision manufacturing, and trusted quality you can rely on worldwide.



www.karlschnell.com



Agents in India :
Dynatech Marketing Company
Tel : +91-982 19 22 950
dynatech_marketing@yahoo.com

KARL SCHNELL 
PARTNER TO THE FOOD INDUSTRY



29 SEP - 01 OCT 2026

BOMBAY EXHIBITION CENTRE, MUMBAI

20 Years of Evolution. One Future Platform.

From legacy to leadership
Shaping the Future of Food and Beverage Technology.



**Built on
TRUST**



**Driven by
TECHNOLOGY**



**Defined by
TRANSFORMATION**

SCAN TO
EXPLORE
PARTICIPATING
OPPORTUNITIES



What to Expect:

Building credibility, long term partnerships and a globally respected industry platform

Hall 2 & 3:

Processing, Food Safety,
Automation & Digitalisation

Global
Technology
Showcase

Decision-
Maker Driven
Networking

End-to-End
Food Value
Chain

Hall 4 & 5:

Packaging, Intralogistics &
Cold Chain Solutions

For Sales Inquiries
Ayesha Salve
M: +91 98203 71460
a.salve@koelnmesse-india.com

For Marketing & Alliances
Manali Babaria
M: +91 76662 72824
m.babaria@koelnmesse-india.com



FOODTECH
FOODTECH
FOODTECH



FOOD TAIPEI MEGA SHOWS
FOODTECH TAIPEI

24-27 JUNE 2026 TaiNEX 1, 4F

Your Gateway to Asia's Leading Food,
Bio & Pharmatech Machinery Market

Contents



PROCESSING TECHNOLOGY

- 19 NETZSCH Pumps & Systems Announces the NEMO® MY Magnetically Coupled Pump
- 20 Vacuum Technology for Beer Bottling
- 24 Mettler-Toledo introduces M50 R-Series AdvancedLine metal detectors to support production lines in meeting real world demands
- 26 Precision Measurement: The Competitive Advantage in Modern Food & Beverage Manufacturing
- 28 Yeast Drying Demands More Than Heat
- 28 ANDRITZ introduces modular small-scale spray dryers for R&D, process development, and batch production
- 30 Redefining Meat Processing: Building a Smarter, Cleaner, and Sustainable Future

PACKAGING TECHNOLOGY



- 34 Beyond “Forever Chemicals”: The Rise of PFAS-Free Food Packaging in a Sustainability-Driven World
- 35 Syntegon presents integrated frozen food line solution at interpack 2026

- 37 TNA to preview the tna vacuum de-oiler for healthier potato chips at interpack 2026
- 37 Sesotec GmbH will present its advanced RAYCON Family at interpack 2026
- 38 BMT launches Material DNA to remove production scale-up risk
- 38 Sidel launches its new EvoFILL PET, the fastest-ever speed filler

INGREDIENTS & ADDITIVES



- 40 Flatbread: Tradition, Technology and a Structurally Expanding Market
- 42 The Nutritional Pivot: Why Multi-Millet Systems are Redefining the ‘Better-For-You’ Category
- 44 Apocarotenal’s Revolutionary Role in Natural Food Colorants: Redefining the Future of Clean-Label Innovation
- 46 The Rise of Encapsulation Technologies Unlocking Value in Food Systems
- 48 Stay Cool This Summer: Smart Foods & Drinks to Beat the Heat

WAREHOUSING & LOGISTICS



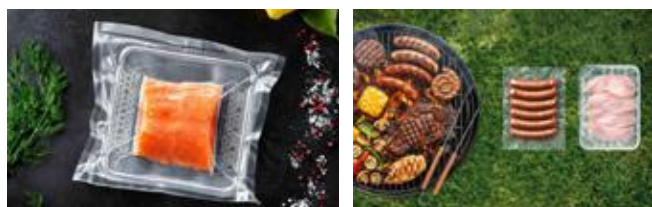
- 50 Smart Palletizing for Fresh Produce: Reducing Waste from Farm to Warehouse

CORPORATE HAPPENINGS



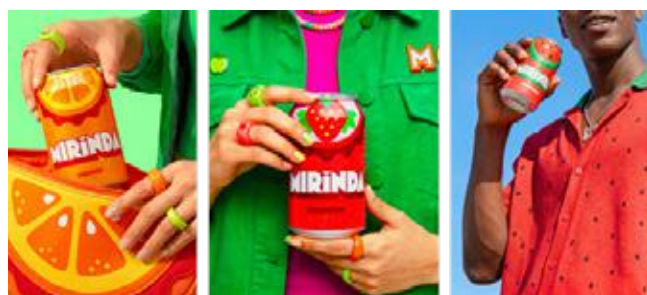
- 52 Ion Exchange Enters Strategic Technology and Manufacturing Collaboration with MANN+HUMMEL for Advanced Membrane and System Solutions
- 52 GNT announces first dedicated China office for plant-based EXBERRY® colors
- 53 Kerry Opens Expanded Biotechnology Manufacturing Hub in Ireland to Meet Growing Global Demand for Lactase Enzymes
- 53 SALTWELL targets rising demand for lower sodium salt with new Chile facility
- 54 HCCB Launches first-of-its-kind High-Speed Kinley Water Production Line at Avinya Facility in Telangana
- 54 Biotexia™ announces new brand identity as part of strategic growth ambitions

SUSTAINABILITY



- 56 Tetra Pak and Sterilgarda Alimenti launch industry-first 1-litre aseptic carton with paper-based barrier
- 56 Siegwerk unveils new acrylic-free ink solution UniLEAF for paper and board applications
- 57 All fired up for meat and sausage packaging
- 57 kp unveils recyclable mono PET fish boards designed for VSP packaging

NEWS & INDUSTRY UPDATES



- 12 Anmol Industries expands premium biscuit range with Royal Butter and Royal Nutty
- 12 Nutrica Expands its Natural Cooking Essentials Portfolio with the Launch of Nutrica Yellow Mustard Oil
- 14 Mother's Recipe Brings Back Wahi Bachpan Wali Baat with its Summerwala Sharbat Range
- 14 Britannia 5050 Expands Premium Portfolio with the Launch of Caramel Dipped Crunchy Layered Sandwich
- 15 Bold new look, a brighter new mood: mirinda® launches a "smile please" platform globally
- 15 Bonn Group Launches Trio of Flavoured Breads to Spice Up Everyday Consumption
- 15 Wonderfills Oats: Supporting Healthier, Fibre-Rich Menu Choices
- 16 Anmol Industries rolls out Fruit & Nut and Choco Chip cookies across India
- 16 Avvatar Reinforces Category Leadership with Limited-Edition Matcha Protein Wafer Bar

CORPORATE INTERACTION



Mr. Amit Anand, Managing Director, Apis India

Apis India: Blending Legacy, Innovation, and Wellness to Redefine Natural Foods



Mr. Srinivas Choudhary Director, Alligator Automations

Alligator Automations: Powering Smart Manufacturing with Scalable, Future-Ready Automation

Anmol Industries expands premium biscuit range with Royal Butter and Royal Nutty

Anmol Industries Limited, one of India's prominent packaged food companies, has made its range of biscuits more appealing with the addition of Anmol Royal Butter and Anmol Royal Nutty, which target customers who prefer more indulgent snacks.

In this regard, both of the newly added products are aimed at appealing to changing preferences within the biscuits category, where there is a growing trend towards the consumption of products that not only provide regular taste but also add something unique to the entire experience. The launch of these products forms a part of Anmol's strategy to make premium offerings accessible.

Anmol Royal Butter delivers a rich and indulgent buttery flavour in a crisp, crunchy format. Positioned as a classic tea-time companion, this sweet biscuit is crafted for consumers who appreciate a traditional, melt-in-the-mouth shortbread texture. Its deep buttery aroma and balanced sweetness give

it a premium character within Anmol's extensive range. On the contrary, Anmol Royal Nutty is a superior sweet biscuit which boasts of a nutty flavour and crispy texture. This product will add variety to Anmol's existing range of sweet biscuits and is targeted at those customers who have a preference for flavoursome snacking products.

Commenting on the launch, Mr. Aman Choudhary, Executive Director – Marketing, Anmol Industries Limited said, "Consumer preferences in the biscuit segment are changing steadily. Along with value and familiarity, there is also growing interest in products that offer a slightly richer taste and a more indulgent experience. With Royal Butter and Royal Nutty, we are looking to address that space with products that remain accessible while offering something distinct in flavour and texture."

Both products are being made available through Anmol's distribution network across



General Trade (GT) channels. This will aid the company in connecting with consumers across markets, including those looking for premium options within the biscuit segment. Anmol over the years has been increasing the variety of its products to suit changing customer demands in the snack category. This is one reason for the introduction of Anmol Royal Butter and Anmol Royal Nutty, among others.

These introductions ensure that the range of biscuits at Anmol Industries keeps growing by catering to all kinds of taste buds, whether they prefer something sweet or savoury. The company continues to keep itself grounded by introducing new products according to consumer preferences.

Nutrica Expands its Natural Cooking Essentials Portfolio with the Launch of Nutrica Yellow Mustard Oil



Nutrica, the lifestyle & wellness brand of BN Agritech Limited, has announced the launch of Nutrica Yellow Mustard Oil, further strengthening its portfolio of natural cooking

essentials, offering families and home cooks a pure and authentic kitchen staple that supports everyday cooking without compromising on taste or quality.

With consumers increasingly moving towards cleaner and more natural cooking ingredients, Nutrica Yellow Mustard Oil unrefined to retain its natural antioxidants and full-bodied nutrition caters to health-conscious families, fitness enthusiasts, and home cooks who seek authentic flavours without compromise. It preserves the natural aroma, taste, and nutritional value of yellow mustard seeds, making it a dependable choice for everyday Indian cooking, from tadkas and sauteing to curries, marinades, and traditional recipes.

Nutrica Yellow Mustard Oil stays close to tradition by bringing the rich taste and natural character of mustard without chemical processing, making it a trusted choice for families seeking real and reliable kitchen staples. The product is available in two convenient pack sizes, a 1 Litre PET bottle and a 5 Litre

tin container, catering to both nuclear and joint family needs. It will be available across general trade stores and retail outlets in Delhi NCR.

Commenting on the launch, Sparsh Sachar, Director and Business Head – FMCG, Nutrica, said, "At Nutrica, we believe that everyday cooking should be both wholesome and flavourful. Consumers today are more aware of what goes into their meals, and Nutrica Yellow Mustard Oil has been crafted with that understanding. It brings natural purity and the authentic taste that Indian kitchens have trusted for generations. With this launch, we are continuing our commitment to offering products that make home cooking healthier and more enjoyable."

The introduction of Yellow Mustard Oil expands Nutrica's growing offering of clean-label, natural food products, furthering its vision of becoming a preferred brand for modern households seeking purity and authenticity in their everyday cooking experiences.

Ice Cream Tub Filling Machine

- Model RTF 10 PS – 16 Pocket

- Fills 2000 tubs/hour



We feel appreciated when national and global brand leaders select us to develop sophisticated filling machines for their food products.

Successfully developed for



PWS ENGINEERS PRIVATE LIMITED



Celebrating 113th Year
1913-2026



D&B for D-U-N-S
No : 91- 844 - 4055
Dt. May 26, 2012



Panchal Estate, Nr. Madhubhan Resort,
Anand - Sojitra Road, Anand 388 001 (Gujarat), India.



02692 - 261424 / 261716
261849 / 261948



pws@pwsengineers.com



www.pwsengineers.com

Mother's Recipe Brings Back Wahi Bachpan Wali Baat with its Summerwala Sharbat Range

Mother's Recipe, one of India's well-known homegrown ethnic food brands, is celebrating the feeling of childhood summers with its Summerwala Sharbat range, a refreshing line inspired by the familiar flavours, little rituals and simple joys that made the season special. Indian summers have always carried memories that stay with us. Long afternoons at home, outdoor games that stretched till sunset, the sound of ice in a glass and a chilled sharbat waiting after hours in the heat. These were small moments, but they became a part of growing up. With Summerwala Sharbat, Mother's Recipe brings back wahi bachpan wali baat through a range of flavours that feel instantly familiar and comforting.

The range includes five flavours: Mango Panna, Rose Syrup, Jeera Masala Syrup, Khus Syrup and Lemon Ginger Squash. Each one draws from tastes that have been closely associated with Indian summers across homes and generations. Together, they bring alive the kind of refreshment that was once a regular part of the season and still holds emotional recall for families today.

Summerwala Sharbat has been created for today's consumers, but the emotion behind it comes from an older, more familiar place. Mango Panna brings back the raw mango taste many remember from home kitchens. Rose recalls the sweet and colourful drinks often served during family gatherings. Jeera Masala carries a bold, traditional flavour linked to cooling summer refreshment. Khus brings back one of the season's most recognisable tastes, while Lemon Ginger offers a lighter and lively option rooted in everyday Indian drinking habits.

The Summerwala Sharbat range comes in a 750 ml PET bottle priced at Rs. 215. Easy to store and convenient for regular use, it is suited for everyday family consumption as well as summer get togethers. The range is available across leading e-commerce platforms and select retail outlets.

Speaking about the range, Sanjana Desai, Executive Director, Mother's Recipe, said, "Some summer memories stay with you forever because they are tied to taste, routine and home. With Summerwala Sharbat, we wanted



to bring back flavours that instantly remind people of those familiar moments. The idea was to create a range that feels refreshing in the present while still carrying the warmth of childhood summers."

With Summerwala Sharbat, Mother's Recipe continues to celebrate Indian taste memories in ways that feel relevant to today's consumer. The range brings together flavour, familiarity and seasonal refreshment in a format that is both easy to enjoy and emotionally resonant.

Britannia 5050 Expands Premium Portfolio with the Launch of Caramel Dipped Crunchy Layered Sandwich



For over three decades, Britannia Industries' iconic brand, 5050, has shaped everyday snacking in India through its distinctive dual-flavour proposition. After successfully pivoting into the premium segment with its "Cheeze Dipped" Crunchy Layered Sandwich earlier this year, the brand has extended its premium range with the new Britannia 5050 Caramel Dipped Crunchy Layered Sandwich, a caramel nuanced flavour with the range's signature 50% crunchy, 50% melty experience.

The product addresses an evolving landscape

in the Indian snacking category, where traditional crunch is now being complemented by a rising demand for indulgence. Indian consumer preferences are evolving towards more premium "melt-in-the-mouth" textures while actively seeking newer, more diverse flavour experiences.

India is also witnessing a growing adoption of caramel in both Western and traditional food segments, and the Britannia 5050 Caramel Dipped Crunchy Layered Sandwich delivers on this demand by blending metic-

ulously baked layers of signature crunch with a smooth caramel enrobing. This "crunch-to-melt" transition offers the multi-sensory contrast that frequent snackers now crave to elevate their routine. By bringing the melty taste of caramel and elevated 5050 crunch together in a single, defined bite, it offers a complete and premium snack for those seeking dual flavours and textures.

Siddharth Gupta, Vice-President, Marketing, Britannia, said, "When we look at how India snacks today, it is clear that consumers are looking for more innovative and engaging ways to enjoy their favourite products. With the launch of Caramel and Cheeze Dipped Layered Sandwiches, we have taken the 5050 idea beyond flavour and expressed it through texture, bringing together crunch and melt in a more premium format. As the brand continues to build on over three decades of celebrating contrast, this launch reflects our continued focus on evolving with consumer needs while strengthening our credentials in the snacking segment."

Britannia 5050 Caramel Dipped and Cheeze Dipped Crunchy Layered Sandwich is currently available across select cities at leading retail outlets and Q-commerce platforms.

Bold new look, a brighter new mood

MIRINDA® launches a “smile please” platform globally



Mirinda® has unveiled a powerful new global platform ‘Smile Please’ alongside a fresh brand visual identity. The fun and impactful movement is designed to brighten everyday life, spark joy and create smiles from the first glance.

Life today feels busy and stressful, and people often forget to enjoy the small, happy moments around them. But a smile is a superpower — it can instantly lift the mood and inspire others to smile too. That’s where Mirinda comes in. With its tangy, refreshing flavor, Mirinda invites you to see the brighter side of life and smile.

Bursting with retro-modern energy and designed with Gen Z in mind, the refreshed look – developed in-house by PepsiCo Design and Innovation team – reflects an expressive, contemporary, and emotionally driven way for consumers to connect with the brand. It embraces bold typography and the iconic Mirinda color palette, while vibrant, larger-than-life fruit forms crown each can and label. Built from semi-circles, the shapes echo the uplift of a smile and establish an unmistakable visual language across variants.

Drawing from the brand’s heritage, the logo has been reimagined with fresh, youthful energy. Saturated tones and high-contrast compositions highlight each flavor while staying true to Mirinda’s bold personality and optimistic spirit.

Eugene Willemsen, Chief Executive Officer, International Beverages at PepsiCo, commented: “Mirinda has always stood for original self-expression, and we are now bringing that spirit to life through a global movement that feels fresh, playful and relevant. In a world of busy days and constant noise, sometimes a simple reason to smile can go a long way. Through our new visual identity and Smile Please

platform, we are inviting you to pause, refresh and choose a moment of joy.”

As part of the ‘Smile Please’ platform, Mirinda is launching ‘Smile Chain’, an influencer-led digital activity designed to spark a chain reaction of positivity. Watch for it and join the ‘Smile Chain’ as the campaign unfolds. The ‘Smile Please’ platform will begin rolling out across Mirinda’s international markets, with activations in India, Pakistan, China, and Uganda, followed by Vietnam and markets across Europe and Middle east.

Bonn Group

Launches Trio of Flavoured Breads to Spice Up Everyday Consumption



In a category-first move, Bonn Group of Industries has launched three innovative flavoured breads, Lehsuni Tadka, Missi, and Digestive Ajwain Jeera, bringing a bold Indian twist to the traditional bread segment. Initially available on Blinkit, the range aims to transform bread from a basic staple into a flavour-driven, convenient option aligned with modern consumer preferences. By blending familiar desi tastes with functional benefits, the company seeks to bridge the gap between bread and roti consumption while encouraging experimentation in the category. Supported by quick commerce partnerships, the launch reflects evolving urban buying habits, where speed, accessibility, and novelty shape everyday food choices.

Wonderfills Oats: Supporting Healthier, Fibre-Rich Menu Choices



As demand grows for healthier and more balanced menu options across cafés, hotels and institutional kitchens, oats have emerged as a versatile ingredient in modern foodservice. Responding to this shift, Earthling Consumer Products has introduced Wonderfills Oats, designed to support evolving breakfast and nutrition-focused offerings.

Made from 100% whole grains and naturally high in dietary fibre, the new range is developed to help chefs create wholesome and satisfying dishes while maintaining ease of preparation. The product is processed without artificial additives or preservatives, aligning with the increasing preference for clean-label ingredients in professional kitchens. Suitable for a wide range of applications, Oats by Wonderfills can be incorporated into porridges, breakfast bowls, baked goods and other health-oriented menu formats. Their adaptability allows foodservice operators to cater to diverse consumer preferences, including those seeking lighter, fibre-rich and nutritionally balanced meals.

Beyond versatility, the product is designed to support operational efficiency in high-volume kitchen environments. Consistent quality and ease of use enable chefs to streamline preparation while maintaining taste and nutritional value across servings.

Anmol Industries rolls out Fruit & Nut and Choco Chip cookies across India



Anmol Industries, a leading packaged food companies, has unveiled two new irresistible varieties of cookies: "Fruit & Nut" and "Choco Chip" in the market. This step has been taken against the backdrop of increasing consumer preference towards tasty snacks, particularly cookies. In this

regard, Anmol Industries is targeting consumers who wish to explore other options apart from the ordinary biscuits.

The Fruit & Nut cookies combine bits of dried fruits and nuts in a crisp base, offering a mix of sweetness and crunch in every bite. Their texture and flavour complement them both for the tea break and as a quick bite throughout the day. However, the Choco Chip variant of cookies concentrates more on the taste of chocolate, featuring choco chips with a crunching texture at the end. This version of cookies can easily be chosen by those who like something more tasty in terms of flavour.

Both variants are designed to fit into

everyday consumption occasions and are expected to see traction across age groups.

Commenting on the launch, Mr. Aman Choudhary, Executive Director – Marketing, Anmol Industries Limited said: "Consumers today seek more variety in their everyday snacking. With the introduction of Fruit & Nut and Choco Chip cookies, we are providing options that offer familiar flavours with a premium, richer experience. Both products have been developed keeping in mind the evolving taste preferences across different age groups."

Both products are now available at local retail outlets ensuring easy accessibility across markets. Anmol has continuously been upgrading its product line to keep up with changing trends among consumers. The introduction of Fruit & Nut cookies and Choco Chip cookies represents a recent development by Anmol in terms of enhancing its range of products.



Avvatar Reinforces Category Leadership with Limited-Edition Matcha Protein Wafer Bar

As India's protein consumption narrative shifts from necessity to lifestyle, Avvatar has consistently stayed ahead by not only addressing protein deficiency but also redefining how protein is consumed; making it more accessible, enjoyable, and culturally relevant. The introduction of matcha, a globally celebrated superfood, underscores the brand's ability to translate international wellness trends into locally relevant offerings.

Speaking on the launch, Akshali Shah, Executive Director, Parag Milk Foods, said: "At Avvatar, we see ourselves not just as participants in the category, but as its architects. Our focus has always been to lead the shift in how India consumes protein; moving from functional supplementation to experiential nutrition. The Matcha Protein Wafer Bar is a reflection of that vision, where global trends meet Indian consumer aspirations. Having built strong momentum across flavours like Chocolate, Coffee, Tiramisu, and Cheese, this limited-edition launch allows us to stay culturally current

while continuing to expand the category."

Over the past few years, Avvatar has emerged as a key growth engine within Parag Milk Foods' new-age business, witnessing strong consumer adoption and rapid scale. Its protein wafer bar portfolio has already created a distinct niche by combining indulgence with nutrition; bridging a critical gap in the Indian snacking ecosystem.

Crafted with whey protein isolate and designed for both fitness enthusiasts and flavour-forward consumers, the Matcha variant caters to a new generation of urban consumers who seek clean-label, globally inspired, and convenient nutrition. The limited-edition launch also reflects Avvatar's agile innovation strategy – leveraging seasonal and trend-led formats to engage its growing community and continuously refresh the category.

The Matcha Protein Wafer Bar will be available across Avvatar's official website and select retail outlets for a limited period. With this launch, Avvatar further strengthens its position as a thought leader in India's evolving sports nutrition landscape driving not just product innovation, but a larger shift in consumer behaviour and expectations.

Avvatar, India's leading homegrown sports nutrition brand, continues to shape the evolution of the country's protein snacking category with the launch of its limited-edition Matcha Protein Wafer Bar. This strategic introduction reflects Avvatar's role in anticipating consumer trends and setting new benchmarks in flavour innovation within functional nutrition.

Blending authentic Japanese matcha with a light, crunchy wafer format, the 40 g bar priced at INR 100 delivers 10 g priced at INR 100 is of high-quality whey protein isolate, offering a differentiated snacking experience that brings together performance, taste, and global inspiration.

SEW MOBILE MATERIAL-HANDLING



Driving the world

Inspired by Nature, Engineered for Efficiency

At SEW-EURODRIVE, we're inspired by the remarkable engineering in nature and strive to bring the same smart design and efficiency to our products.

Just as expert navigation is in leafcutter ants' DNA, our Mobile Material-Handling solutions synchronise your material flow seamlessly across dynamic factory systems, following optimised paths.

Our Industry 4.0 solutions – Automated Guided Vehicles (AGVs) and Electrified Monorail System (EMS) – are fully customisable and built to German standards. And with expert support across India, we ensure smooth material-handling.

Efficiency: It's in our D.N.A.



Leafcutter ants are nature's expert transporters. These tiny powerhouses carry leaf fragments many times their weight. They navigate obstacles across tough terrains without set routes yet ensure smooth cargo movement.



SEW-EURODRIVE MOBILE MATERIAL-HANDLING SOLUTIONS:

Automated Guided Vehicles (AGVs) | Rail Guided Vehicles (RGVs)
Electrified Monorail System (EMS) | Power Management

+91 96866 24322 | marketing@seweurodriveindia.com
www.seweurodriveindia.com



Apis India: Blending Legacy, Innovation, and Wellness to Redefine Natural Foods

From its roots in honey and beekeeping to becoming a diversified player in the natural and wellness foods segment, Apis India Ltd has carved a distinct identity in India's FMCG landscape. In this insightful conversation, the company shares its journey of evolution, its commitment to authenticity-driven innovation, and its strategic expansion into emerging categories like healthy snacking. With a strong focus on quality, global standards, and evolving consumer preferences, Apis India offers a glimpse into how tradition and modernity are shaping the future of clean, convenient, and flavourful nutrition.

Mr. Amit Anand, Managing Director, Apis India

Apis India has established itself as a leading player in the natural foods segment. Could you briefly take us through the company's journey, key milestones, and its vision for the future?

Apis India Ltd traces its origins back nearly a century, with deep-rooted expertise in honey and beekeeping, before being formally incorporated in 1983 and ventured into B2C in 2016. Over the years, it has established itself as a leading brand in honey and dates products in India, supported by strong sourcing networks and expanded manufacturing capabilities, including multiple facilities and a global footprint. The company gradually diversified its portfolio beyond honey and dates into categories such as fruit jam, green tea under the new brand Nutrasip, cooking paste, saffron, vermicelli and cereals, while also expanding into international markets across the Middle East, Africa, Southeast Asia, Europe, and North America.

Today, Apis India is positioned as a clean nutrition and wellness-focused FMCG food brand, continuing to build on its legacy of quality, and innovation. Recently, we've also entered the healthy snacking space under the new name MISK with our Masala Dates range. Going forward, our focus is on strengthening our presence in the wellness foods space, while staying true to the values that have defined us over the years.

With a diversified product portfolio spanning honey, dates, jams, and beverages etc, how does Apis India ensure innovation while maintaining authenticity across its product range?

Innovation at Apis India is always driven by consumer needs and guided by authenticity.

We look for ways to bring new formats, flavours and convenience to consumers while remaining rooted in real ingredients and familiar Indian taste preferences. That is why our portfolio has steadily expanded into adjacent categories such as fruit jams, green tea, kahwa and our newly launched MISK-masala-dates, all of which reflect a balance between modern consumer needs, and traditional food values.

The launch of savoury date variants under your MISK brand is an interesting shift. What inspired the move towards "healthy yet flavourful" snacking, and how do you see this category evolving in India?

The move into savoury date variants under MISK was inspired by the growing demand for healthier snacking options that do not compromise on taste in the mass consumer segment as well. This also resonates with our commitment to making natural nutrition accessible.

Consumers today want products that are convenient, nutritious and enjoyable, and the MISK Masala Dates range has been developed with that in mind. With bold Indian-inspired flavours such as Achari, Chilli Lime and Tamarind, we see this category growing as more consumers look for "better-for-you" snacks that fit into busy lifestyles. That is why we say MISK Masala Dates, Superfood-on-the-go.

In a highly competitive FMCG landscape, how does Apis India differentiate itself from other players in the natural and packaged foods segment?

We have always differentiated ourselves through our natural-food positioning,

product depth and quality-first approach at valued price. Our strength lies in combining a long-standing reputation in honey with a wider portfolio of wellness-led foods, supported by a strong distribution network and national and international reach. We also continue to invest in new product formats and categories, which helps us stay relevant to evolving consumer preferences while maintaining a clear brand identity.

Food safety and hygiene are critical, especially in products like honey and dates. What manufacturing practices, quality standards, and certifications does Apis India follow to ensure product safety and consumer trust?

Food safety and hygiene are non-negotiable for us. At Apis India, we ensure the highest standards of food safety and hygiene through strict adherence to GMP and robust quality systems. Our facilities are certified with BRC, along with Kosher, Halal, Organic, Non-GMO, TSH, and EIC/EIA certifications, ensuring compliance with global quality and safety requirements.

We are also USFDA registered, enabling us to meet international regulatory standards. Additionally, all products undergo rigorous testing through accredited laboratories for safety, quality, and authenticity which reflects our continued focus on robust and quality-first manufacturing practices to ensure consumer confidence.

Apis India has a strong presence across both domestic and international markets. How do you adapt your product offerings and strategies to cater to diverse consumer preferences globally?

We cater to markets in the Middle East (UAE, Saudi Arabia), parts of Africa, South-East Asia,

and select regions in North America and Europe, primarily catering to both the Indian diaspora and local consumers seeking natural and wellness-oriented foods.

Our domestic and international strategies are built around agility and relevance. Our MISK Masala Dates offerings in India are catered specifically to Indian taste profiles. If we were to launch the same product elsewhere, we would adapt to the taste profile of that respective market. Across geographies, the approach is the same: understand consumer preferences closely and shape products, formats and flavour profiles accordingly.

Looking ahead, do you believe bold Indian flavours and functional ingredients will redefine the snacking industry? What trends do you foresee shaping the next phase of growth for natural and healthy foods?

Yes, I believe bold Indian flavours and functional ingredients will play a defining role in the next phase of snacking growth.

The market is clearly moving toward products that combine taste, convenience and health, and that creates strong opportunities for natural foods. At Apis India Limited (AIL), we believe the future will be shaped by wellness-led consumption, regional flavour innovation, and products that offer everyday usefulness without compromising on health and taste.

Eriez to Introduce Newest Inspection System at interpack 2026

Eriez will launch its X8-SF Metal Detector at interpack 2026 (Hall 12 / C05) in Düsseldorf, where visitors can explore the latest addition to the PrecisionGuard X8 inspection line.

Designed for food processors seeking greater consistency and reliability in product inspection, the X8-SF expands Eriez' metal detection range. Visitors to the Eriez stand can observe the system in action through live demonstrations and learn how it addresses key inspection challenges in modern processing environments.

The X8-SF builds on the proven performance of the X8 platform, which features a robust hygienic design, an intuitive interface, and integrated data capture to support traceability and compliance. The system is designed to help processors improve product quality while minimising disruption to operations.

"Different products can create very different inspection conditions, which is where performance consistency becomes critical," said Emmett Keim, Global Product Manager – Inspection Systems at Eriez. "At interpack, we're demonstrating how the X8-SF man-



ages that variability in real time."

Alongside the X8-SF preview, Eriez will showcase its broader inspection and material handling solutions, including X-ray inspection systems, magnetic separation equipment, and vibratory feeders. Together, these technologies help processors protect product quality, safeguard equipment, and optimise production efficiency. Eriez experts will be available throughout interpack to discuss application-specific requirements and recommend tailored solutions.

The launch of the X8-SF is scheduled for May 7th, when full product details will be announced. For more information or to schedule a demonstration, visit www.eriez.com/X8-metal-detectors.

NETZSCH Pumps & Systems Announces the NEMO® R MY Magnetically Coupled Pump

NETZSCH Pumps & Systems, a global leader in complex fluid pumping solutions, announces the NEMO® R MY Magnetically Coupled Pump, an innovative pump designed to meet the most demanding requirements of industries requiring leak-free pumping solutions. It is ideal for use in chemical, pharmaceutical, paint, and food applications to convey highly viscous product.

While mechanical seals are widely used and are a proven method of preventing leakage in pump systems, the failure of a mechanical seal system leads to a seal leak. The NEMO® R MY Magnetically Coupled Pump features a hermetically sealed design, eliminating the risk of leakage. The pump utilizes a magnetic coupling to transmit torque, ensuring a completely sealed and robust system. This design enhances safety and reliability, making it ideal for handling aggressive, toxic, or abrasive product.



Engineered for versatility, the NEMO® R MY Magnetically Coupled Pump can handle a wide range of viscosities, from low-viscosity fluids to highly viscous, shear-sensitive substances. The pump provides continuous, pressure-stable, and low-pulsation conveyance, ensuring consistent and reliable performance.

The NEMO® MY Magnetically Coupled Pump offers the significant advantage of a maintenance-free sealing system. The magnetic coupling eliminates the need for constant sealing pressure and fluid level mon-

itoring. This pump, specifically designed for handling slurries, can efficiently manage products with viscosities up to 20,000 cps. The pump is also compliant with ATEX and can be used in potentially explosive atmospheres without problems. With the introduction of the NEMO® R MY Magnetically Coupled Pump, NETZSCH continues to set the standard for innovative, high-performance pumping solutions. This new pump reflects NETZSCH's commitment to providing safe, reliable, and efficient products that meet the evolving needs of various industries.

Vacuum Technology for Beer Bottling

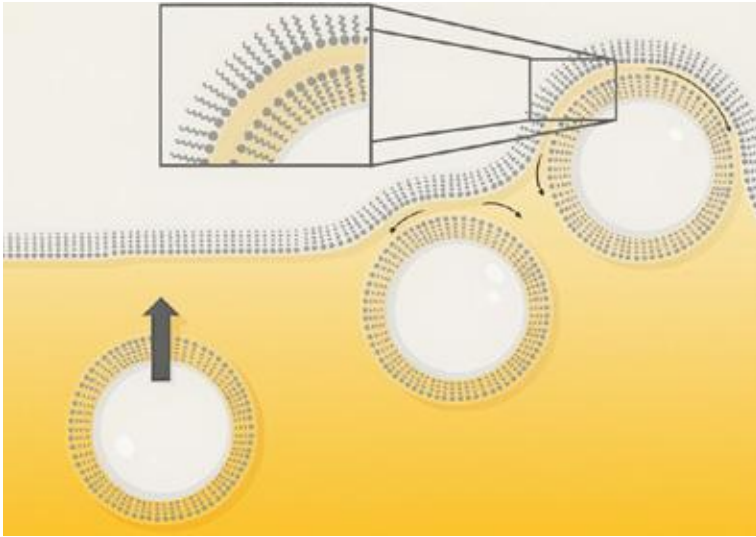


Figure 1: Onset of foam formation. Surfactants with hydrophilic (blue head) and hydrophobic (black tail) molecule sections stabilize liquid films around bubbles. Black arrows indicate drainage.

Many beverages are prone to oxidation processes once they are served in a glass. Some beers can deteriorate within minutes after being poured. That is why breweries take the effort to fill bottles using vacuum technology. Lowering the oxygen content in the product significantly increases the shelf life time.

What sounds straight forward from a brewer's point of view, creates a big headache for those involved in vacuum technology. In principle, removing the air from a glass bottle is an utmost simple task, which was already successfully done more than a hundred years ago (Glasmuseum Wertheim 2025). Today's modern bottling machines in turn are filling 60.000 bottles per hour or even more. Emptying a bottle, purging with CO₂, and filling happens within seconds (Krones 2025). Some spill over is basically unavoidable, not only in case of mal function. Thus, a significant amount of liquid will be dragged to the vacuum system.

As a matter of fact, vacuum pumps are made to compress gases from low to atmospheric pressure. Liquids in turn are basically incompressible. (One can easily push the piston of a bicycle tire inflator even though the valve is blocked – this is impossible if the pump is filled with water!).

Even worse, the liquid, basically water, which might come to the vacuum system can undergo a phase transition (evaporation) due to temperature rise. Vacuum pumps can easily generate internal temperatures of more than hundred degrees – enough to evaporate all liquid water. Only 18 grams of liquid water,



Figure 2: AI can generate what you (hopefully) will never see on your beer - colorful foam.

which take a volume of roughly 18 milliliters, will take about 24 liters of volume if evaporated at room temperature - a factor of 1333. Apart from possible generation of overpressures, evaporation inside of pumps can severely disturb the thermal management, in

particular of – so called - dry pumps, which operate without any lubricant in the suction volume.

Nonetheless, the biggest threat for vacuum systems might come from the various ingredients of beer, which can form deposits. Sugars and starch, originating from malt and transported by droplets can form hard layers, for example by caramelizing. No matter which pump technology is chosen, early pump failures are possible – even likely. The best way to protect a vacuum pump system is by separating the liquid content from the gaseous one. There are numerous solutions to at hand to separate liquids, mostly in the form of droplets, from gas streams. Cyclones use the high inertia of droplets in concentric gas streams. The centrifugal force pushes the liquid particles with higher density than the gas to the wall of the cylinder, whereas the gas molecules can escape through the centered exit of the vessel. Filters with cartridges tailored for specific applications can remove basically all relevant particles coming from the process but they might reduce the suction speed, in particular if they are blocked.

Unfortunately, things are even more complicated in case of beer bottling. The reason for this is foam. For some beer drinkers it is even more important than the delicious liquid below it – the foam or head of a good beer. The foam is anything but a by-product of fermentation and the release of carbon dioxide - it is a design element. Accordingly, one can find a huge amount of published research work on it (Bamforth 2004, Gonzalez Viejo, et al. 2019).

The beer coming to the vacuum system is basically forced to foam. Apart from foam generated by turbulent flow of the liquid, which causes generation of gas inclusions there is the steady release of CO₂ from the liquid.

However, the release of carbon dioxide itself is not sufficient to create foam. Numerous ingredients of beer act as surfactants, which enable the formation of stable bubbles on top of the liquid. The solubility of a gas in a liquid is described by Henry's law, which basically states that the ratio of gas in the gas phase on top of a liquid to the gas dissolved in the liquid is constant – the Henry constant. The solubility of CO₂ in water is extraordinary high due to the formation of carbonic acid H₂CO₃ and its ionic dissociation products (bicarbonate HCO₃⁻ and carbonate CO₃²⁻ (Sander 2023, Speers und Macintosh 2013).

Opening a beer bottle means lowering the inner pressure, typically less than 6 Bar (limited by the pressure relief of the crown cap), to atmospheric pressure. Beer coming to the vacuum system is exposed to even ten times lower pressure, which inevitably causes release of CO_2 .

Even though the beer in a opened bottle is a highly supersaturated liquid, the bubble formation hardly occurs in the liquid itself. Whoever watched the sparkling in a glass carefully, knows that bubbles appear at the glass surface. Nucleation spots are typically little imperfections with increased roughness on the microscopic scale. While perfectly flat surfaces can be easily covered with the liquid, microscopic indentations cannot be filled due to the surface tension. This is where gas released from the beer can accumulate. In order to further grow and to form a bubble a certain radius needs to be overcome. The reason for this is the Laplace pressure² which determines the inner pressure of a bubble can be so high that the gas easier dissolves again in the liquid than gas diffuses into the bubble. Small bubbles will therefore shrink and vanish especially if fully surrounded by the liquid (homogeneous nucleation). Conditions at rough surfaces are more beneficial for the bubble formation (heterogenous nucleation). Small crevices can shelter the gas from high Laplace pressures and finally enough gas can accumulate to develop gas bubbles big enough. As the Laplace pressure decreases with the radius diffusion of gas into the bubble becomes energetically more favorable and the bubble can grow further. At a certain size the buoyancy will force the detachment of the bubble and it will rise to the surface.

One can observe this behavior in basically every glass but at best in glasses with so called moussier points (also called effervescence point) (Zwiesel-glas 2025). These are spots with deliberately increased roughness, which trigger intense bubble formation.

On its way up the bubble will grow a bit more because the pressure caused by the weight of the liquid above it will decrease. One can roughly calculate one mbar pressure reduction per centimeter. Even in tall glasses the overall pressure reduction and therefore the bubble growth is minor in view of the atmospheric pressure (ca. 1000 mbar) which remains unaffected and needs to be added. Reaching the beverage's surface means life's end for most bubbles. Mineral water and sparkling wine are well-known examples. For beer in turn bubbles can survive at the surface, thanks to ingredients acting as surfactants.

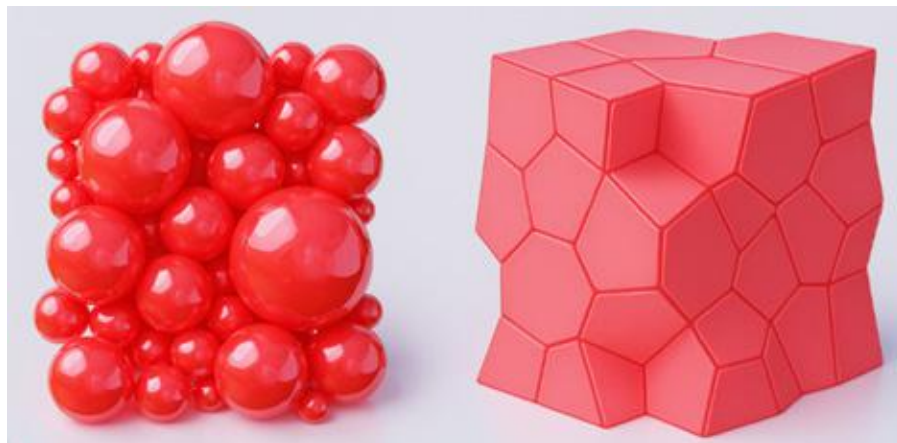


Figure 3: Schematic of wet (left) and dry (right) foam. As long as bubbles are surrounded by enough liquid they can form spheres. Low liquid content causes interaction of bubble borders, resulting in forms following the Plateau's laws.^w

Proteins (LTP1, Z, ...) coming mainly from wheat malt, iso-alpha acids from hops and polysaccharides are only some of the surfactants that favor foam formation and stabilization (Bamforth 2004). Counteracting substances are also present in beer suppressing foam formation. Lipids, free fatty acids and last but not least ethanol are negative for foam formation.

The complex interaction of these ingredients results in a surface tension of beer that is lower than that of water. While water has a surface tension of about 73 mN/m, typical beers cover a range from 40-50 mN/m. Pure water, of course, is not able to foam. However, it is noteworthy that water based soap solutions that are used to make soap bubbles typically have even lower surface tension values, which helps to stabilize the very thin films down to some nanometers. These small film thicknesses are the reason for soap bubbles being so colorful. Interference effects of reflected light at inner and outer surface can cause different wavelengths of visible light (ca. 400 – 800 nm) to extinguish.

Fortunately, such thin wall thicknesses of bubbles are hardly realized in beer foams. In addition, multiple scattering of light in beer foams ensure the typical, nice white appearance.

One might hope that beer foam under vacuum simple bursts. Simply by applying the ideal gas law ($pV=nkT \Rightarrow p_1V_1=p_2V_2$ if $T=\text{const.}$), one can see that a foam bubble at 0.1 Bar takes ten times the volume than at 1 Bar. Certainly, this reduces the thickness of the film of the bubbles. The new thickness can be approximated by: $x' = xa^{-2/3}$ with a being the increase in volume $a=V_2/V_1$ and x' and x being the thickness after and before volume increase, respectively³. The initial

thickness of the bubble's skin only reduces to $(V_2/V_1)^{-2/3} = 0.21$ roughly one fifth of the initial thickness.

However, hoping foam will simply burst under vacuum because the volume increases is not successful. From touching the liquid's surface due to buoyancy to final rupture of the foam's bubbles, the thickness of the wall between two bubbles can change by orders of magnitude.

This is nicely demonstrated in Leybold's beer glass experiment (Leybold 2017). It shows the growth of bubbles due to lowering the ambient pressure. At the end huge bubbles sizes gush out of the glass. One can also observe that the bubble shape is everything but round. The formation of Plateau⁴ borders is well known for foams with thin film borders. In general, due to the surface tension, a sphere-like shape of a bubble is energetically favorable. For two bubbles next to each other with hardly any liquid between them, this condition cannot be fulfilled for both bubbles at a time. The result is a flat border showing no curvature. The foam-structure with several of such bubbles with hardly any liquid between them ("dry foams") follow the Plateau's laws: Three films meet at a Plateau border at an angle of 120° and at a vertex four Plateau borders form a tetrahedron with an angle of 109.49° between them.

For beer foam however, this behavior is hardly observable. The reason is, that it typically stays wet throughout the life-time. There are different deterioration mechanisms for foams, not all of them are equally important for beer. Drainage describes the – gravity driven – flow of liquid from the foam back to the liquid phase. It is the major mechanism thinning the film between two bubbles. Stabilizing mechanisms like the Marangoni



Figure 4: Leybold's solution for beer bottling with Dry vacuum pump (left). Foam separation is a very important part of it.

or Gibbs-Marangoni effect (the liquid moves to regions with high surface tension due to a gradient of the surface tension) counteracts and prevents early rupture.

In fact, foam deterioration-mechanisms like bubble rupture or coalescence are hardly observed in foams of beer – unlike in other types of foam. The head of a beer can be remarkably stable depending on the type of beer. Ostwald ripening, sometimes referred to as disproportionation, describes the favored growth of bigger bubbles at the expense of smaller bubbles. Here again the higher Laplace pressure of smaller bubbles drives the diffusion of gas into bigger bubbles.

At the top layer of foam bubbles CO_2 will quickly diffuse to ambient due to the difference in partial pressure – an important effect for foam aging. For some beers this effect is effectively mitigated by adding nitrogen. The low solubility of N_2 in aqueous solutions and the high amount of nitrogen in air hampers the gas exchange.

From a vacuum technology point of view, foam is a very challenging opponent. Cyclons can hardly separate small foam fragments because the effective density (and therefore the inertia) can be close to the one of the gas⁵. Filters, in turn, will always lower the suction speed of the vacuum pump system. Once clogged the reduction in performance will be even worse. Wet foams can even penetrate filters and the liquid downstream can create new foam also triggered by the pressure drop across the filter element.

Clearly the best method to handle foam in a vacuum system is to avoid foam. There are numerous chemical ways to do this.

Unfortunately, food applications are highly sensitive to any kind of chemicals that might contaminate their product. No brewery will accept the risk of this, even though it might only occur during rare malfunctions.

There are also other ways of defoaming. Ultrasonic defoaming for example relies on resonance effects on foam bubbles with diameters that are in the range of the acoustic wavelength. Mechanical removal of foam is rather trivial, of course. Both methods are not easy to apply under vacuum conditions.

An interesting approach for passive foam control is surface treatment. Recent studies of superamphiphobic surfaces show remarkable results. Nanoparticle based surface coatings establish an air gap where gas bubbles can burst and release the gas before reaching the liquid's surface and contributing to foam growth (Wong, Naga und Hauer 2021).

Technically, the probably most resistant pumping solution are water ring pumps, but these come along with high water consumption and clearly less energy efficiency, means more energy consumption than modern pumping solutions. The constant rotating liquid ring intrinsically causes higher fractional losses than rotating mechanisms based on oil lubrication or even without any sealing agent – so called "dry" pumps. Water ring pumps can become more efficient if there is a considerable condensation effect inside of the pump but as the main constituents of the gas mixture in beer bottling are air and carbon dioxide, basically no condensation will take place. The difference in efficiency (=pumping speed/power) can easily reach 20-30%, which means 40 (m^3/h)/kW instead of 50 (m^3/h)/kW. Pressures considerably lower than 100 mbar, which might be required in beer bottle filling, become even more challenging for LRPs. At 10 mbar modern dry screw pumps can reach efficiencies of more than 90 (m^3/h)/kW – a pressure not reachable for LRPs.

Oil-sealed vacuum pumps can be found in beer bottling even though this technology inevitably comes with the risk of back contamination of the product (for example in case of accidentally venting the system through the pump). Therefore, so called "food grade" oils can be used as lubricants for the pumps. However, a food scandal will be hardly mitigated if customers learn that it was food grade oil in their beer. Apart from this, every lubricant will be sensitive to even small amounts of carry-overs from the filling process. Moreover, flushing out

or dissolving process material is impossible as the flushing agent inevitable will mix with the lubricant.

Dry pump technology, not using any lubricant in the suction chamber, can be flushed and might be the best pumping technology as long as carry-over from the filling process cannot be fully avoided. Still today, foam is a challenging opponent for vacuum systems.

[1] We don't recommend filling neither inflators nor tires with water unless for experimental studies.

[2] $p_{Laplace} = 2\gamma/r$ for bubbles surrounded by the liquid and $p_{Laplace} = 4\gamma/r$ for free bubbles, γ being the surface tension

[3] The approximation assumes $x \ll R$ which is normally fulfilled. The exact calculation yields: $x' = -Ra^{1/3} / [(R^3 a + 3R^2 x + 3Rx^2 + x^3)]^{1/3}$ with R being the initial radius.

[4] Joseph Antoine Ferdinand Plateau, Belgian physicist, 1801-1883

[5] For bubble with a radius of 1 mm and a film thickness of 100 nm the film's weight only contribute about 30% to the overall weight.

References

Bamforth, C.W. "The Relative Significance of Physics and Chemistry for Beer Foam Excellence: Theory and Practice." *Journal of the Institute of Brewing*, 110, 2004: 259-266.

Glasmuseum Wertheim. 13. 11 2025. <https://glasmuseum-wertheim.de/en/isoliergefasse>

Gonzalez Viejo, C., D.D. Torrico, F.R. Dunshea, und S. Fuentes., "Bubbles, Foam Formation, Stability and Consumer Perception of Carbonated Drinks: A Review of Current, New and Emerging Technologies for Rapid Assessment and Control." *Foods* 8, Nr. 596 (2019): 18.

Krones. 12. 12 2025. https://www.krones.com/en/products/machines/filling-technology.php?page=1&searchtext=&filter%5B1%5D%5B1_1%5D=1_1&filter%5B4%5D%5B4_5%5D=4_5&filter%5B4_5_1%5D%5B5%5D=all&searchtext=&searchtextold=

Leybold. "Leybold's beer glas experiment." YouTube. 10. 1 2017. <https://youtu.be/r86m7foOxRA>.

Sander, Rolf. "Compilation of Henry's law constants (version 5.0.0) for water as solvent." *Atmos. Chem. Phys.* 23 (2023): 10901-12440.

Speers, Robert Alexander, und A. J. Macintosh. "Carbon Dioxide Solubility in Beer." *Journal of the American Society of Brewing Chemists*, 2013: 242-247.

Wong, W.S.Y., A. Naga, und L. Hauer. "Super liquid repellent surfaces for anti-foaming and froth management." *Nat Comm* 12 (2021): 1-11.

Zwiesel-glas. 11. 11 2025. <https://www.zwiesel-glas.com/en/brand/effervescence-point>

Leybold

drinktec india

International trade fair for beverage,
dairy and liquid food industry



Bookings open

28-30 October 2026

Bombay Exhibition Centre,
Mumbai

 drinktec-india.com

Scan to exhibit



Contact: Gaurav Wahi | +91 8433656839 | gaurav.wahi@mm-india.in

Connect with us on:    

Mettler-Toledo introduces M50 R-Series AdvancedLine metal detectors to support production lines in meeting real world demands

Delivering advanced detection, digital connectivity and compliance support for food manufacturers of unpackaged and packaged, wet, dry or bulk products



Mettler-Toledo Product Inspection, a global leader in precision instruments and inspection solutions, has announced the launch of the M50 R-Series AdvancedLine metal detectors. This advanced generation of metal detectors is designed to support food manufacturers facing increasing demands around compliance, traceability, data connectivity, and line performance.

The M50 R-Series reflects a shift in how food producers approach metal detection. While detection capability remains critical, manufacturers are now operating in an environment shaped by higher audit expectations, greater digital accountability, faster line speeds and the need for seamless data transfer across production and quality systems. The M50 R-Series has been designed to address these requirements, both today and in the future as expectations continue to change.

"The launch of the M50 R-Series reflects how closely we have listened to our customers," said Jaison Anand, Market Manager – Metal Detection at Mettler-Toledo Product Inspection. "Here at Mettler-Toledo, we understand the pressures that food manufacturers are faced with every day; balancing productivity with increasing

The M50 R-Series introduces a range of new technology innovations developed to increase detection sensitivity and deliver safer products for different applications. Technologies such as eDrive PLUS when combined with 900 kHz frequency, improves the field strength to deliver the highest sensitivity to detect the smallest wire and non-spherical metal contaminants. Cutting-edge algorithms such as 3S PLUS combined with AI-based machine learning help achieve maximum sensitivity to minimise the risk of product recalls and deliver safer products.

expectations around compliance, traceability and digital connectivity. As production lines become faster and more complex, maintaining that balance becomes even more challenging.

The M50 R-Series has been developed to help address these challenges, delivering advanced detection performance alongside intuitive operation and future-ready connectivity, supporting manufacturers not only today but as their requirements continue to evolve." The new models combine improved detection performance with intuitive operation and secure connectivity, delivering the most sensitive, compliant, and future-ready metal detection platform from Mettler-Toledo to

date. Even with these new and advanced features and functionality, ease of use has remained at the centre of the design.

Built around three core pillars of performance, productivity, and protection, the M50 R-Series supports manufacturers in delivering safer products by detecting the smallest of metal contaminants, keeping good products moving, and protecting more than just the product.

Delivering advanced detection performance

The M50 R-Series introduces a range of new technology innovations developed to increase detection sensitivity and deliver safer products for different applications. Technologies such as eDrive PLUS when combined with 900 kHz frequency, improves the field strength to deliver the highest sensitivity to detect the smallest wire and non-spherical metal contaminants. Cutting-edge algorithms such as 3S PLUS combined with AI-based machine learning help achieve maximum sensitivity to minimise the risk of product recalls and deliver safer products.

Metal detectors in the series include:

- **M55R** – optimised for detecting significantly smaller, irregular-shaped metal contaminants in dry products such as pasta, savoury snacks and deep frozen produce (where thawing does not occur).
- **M55RB** – optimised for bulk products such as large sacks, bags of powder and cartons. Radio Frequency Interference (RFI) shields filter out external interference in large aperture applications, increasing metal detection sensitivity. The innovative coil geometry delivers consistent detection performance in busy production environments
- **M56R** – optimised for challenging applications such chilled, wet, dry, deep frozen/thawing and metalized film-wrapped products. It incorporates Multi-Simultaneous Frequency, an enhanced 3S PLUS algorithm to minimise the active product signal and an AI-based machine learning process to improve sensitivity on wet or conductive products to virtually eliminate false rejects. The inclusion of a 900 kHz tuned frequency provides excellent performance on dry products, making it a highly versatile solution for manufacturers with diverse products on the line.

Together, these capabilities support higher detection accuracy, fewer false rejects and



give manufacturers greater confidence in detecting metal contaminants in demanding production environments.

Driving productivity across the line

The M50 R-Series has been designed to maximise uptime and simplify daily operation, with the ultimate aim of helping manufacturers to keep good products moving. A new 10.1-inch capacitive touchscreen provides clear visualisation and intuitive navigation. Operating with the responsiveness familiar from smartphones and tablet screens, even when the user is wearing gloves or when the screen is wet, the interface supports faster setup and confident use compared with traditional resistive touchscreen technologies.

The introduction of the INFINITY Electronic Test System represents a significant advance in routine testing. Automation in production performance monitoring simplifies test routines, improves consistency and accuracy, and significantly reduces testing time as it is up to three times faster testing than manual testing. The M50 R-Series can also run tests automatically without operator intervention.

Embedded Wi-Fi supports secure and simplified connectivity, giving users rapid access to system information through QR code functionality. Combined with improved Condition Monitoring software and simplified data transfer, the M50 R-Series supports continuous operation and reduced disruption on the line.

Strengthening protection, compliance, and traceability

Protection within the M50 R-Series extends beyond detection performance. Brand protection is also enhanced through new Radio-frequency identification (RFID) access control which supports individual user logins and access management for enhanced security. Detailed access records are stored locally or transferred through multiple communication protocols, including OPC-UA and EtherNet/IP.

Manufacturers have the option to take product safety and data security to the next level by integrating ProdX™ data management software from Mettler-Toledo.



By connecting all Mettler-Toledo Product Inspection devices, ProdX™ monitors and records all inspection activities devices in real time and safely stores the data indefinitely. The information can be quickly retrieved for audits and compliance reasons plus, when connected to Management Enterprise Systems (MES), the data can be analysed to help improve production line efficiencies.

Advanced connectivity and full system logging provide comprehensive traceability across testing, detection events and system status, supporting audit preparation and alignment with global food safety standards such as BRCGS and International Featured Standards (IFS).

A dedicated service QR code also provides rapid access to maintenance and service support, helping manufacturers maintain system performance and long-term reliability with immediate access to relevant information when it is needed.

Supporting product integrity from production through to consumer

The M50 R-Series has been developed as part of the continued investment by Mettler-Toledo in advanced generation metal detection technology, reflecting the changing environment in which food manufacturers operate.

Across global production, manufacturers are managing faster line speeds, increasing expectations from Global Food Safety Initiative (GFSI) schemes, greater focus on cyber security, system integration and the growing importance of data transparency. The M50 R-Series brings together advanced detection capability, digital connectivity, and compliance focused features within a platform designed to adapt as operational and regulatory requirements continue to evolve.

The M50 R-Series will make its first global exhibition appearance at Interpack 2026, (Hall 11 Stand A60), where visitors will be able to see the system demonstrated live. Following Interpack, the system will also be showcased at key industry events including PackExpo.

For more information, please click here or visit: www.mt.com/metaldetection-pr

**Book your
Advt.
Now!!**

**June - 2026
Ingredients / Processing/
Packaging/New Year Special**

**July - 2026
Annual Edition / Processing/
Packaging/ Ingredients**

 **+91-9555837779
+91-9555837771**



Precision Measurement: The Competitive Advantage in Modern Food & Beverage Manufacturing

How WIKA's Hygienic Instrumentation Solutions Drive Safety, Efficiency, and Quality Across Production Lines:



Mr. Gaurav Bawa, Senior Vice President, WIKA India



The transformation of modern food and beverage manufacturing fundamentally rests on the ability to collect, interpret, and act upon real-time operational data through purpose-built instrumentation designed specifically for hygienic processing environments. In an industry where product safety, regulatory compliance, and margin pressures converge with unrelenting force, organizations that effectively leverage precision measurement technologies gain a decisive competitive advantage. WIKA's comprehensive instrumentation portfolio addresses this strategic imperative by delivering integrated sensor solutions engineered to meet the exacting demands of contemporary food production.

The shift from manual record-keeping and periodic quality checks to continuous, intelligent monitoring with WIKA's digital-enabled sensors represents far more than a technological upgrade; it marks a strategic repositioning toward data-driven operational excellence. Manufacturing leaders are recognizing that investment in WIKA's measurement infrastructure delivers dual returns: immediate operational efficiency gains through downtime reduction and waste minimization, combined with long-term strategic benefits including enhanced traceability, predictive capability, and regulatory confidence. Recent industry data confirms this strategic recognition. In 2025, control systems and digital monitoring technologies received the highest capital allocation within food manufacturing facilities, with WIKA solutions representing a significant share of these investments.

A mid-sized frozen food processor implementing WIKA's sensor-driven predictive maintenance platform reduced unplanned downtime from 312 hours annually to 84 hours, simultaneously decreasing emergency repair costs by nearly 80 percent and spoilage losses by 97 percent. These outcomes demonstrate WIKA's commitment to engineering solutions that deliver measurable business impact. The financial mechanics are straightforward: food production downtime costs exceed \$20,000 hourly in many processing environments. When WIKA's predictive systems identify equipment degradation before catastrophic failure, avoiding even a few unplanned shutdowns generates return on investment within months.

Beyond equipment health, WIKA's precision measurement solutions drive product consistency and quality assurance through mechanisms that human oversight cannot replicate. The WIKA TR22-B in-line resistance thermometer delivers sub-second response times in pasteurization applications, enabling operators to maintain the narrow processing windows that eliminate pathogenic contamination while preserving nutritional quality and sensory attributes. Temperature sensors embedded throughout pasteurization, fermentation, and packaging lines ensure that every batch encounters identical processing conditions, preventing costly batch rejection and protecting brand

reputation against contamination incidents.

In critical pressure monitoring applications, WIKA's SA-11 pressure transmitter, certified to meet 3-A and EHEDG standards, monitors pressure points throughout homogenization, retort sterilization, and carbonation processes where single pressure variances can compromise hundreds of liters of finished product. The DMSU22SA in-line process transmitter represents WIKA's engineering excellence in hygienic design, featuring dead-space-free construction with thick-walled stainless steel sensor tubes that withstand aggressive Clean-in-Place (CIP) and Sterilize-in-Place (SIP) cycles without degradation. This certified hygienic design significantly increases instrument lifespan while ensuring compliance with stringent FDA, EHEDG, and 3-A Sanitary Standards. WIKA's patented DMSU21SA double diaphragm system offers breakthrough protection for critical processes where product contamination presents unacceptable risk.

This innovative system employs dual diaphragm configuration with continuous vacuum monitoring between diaphragms; should the process-side diaphragm rupture, an alarm triggers immediately via HART protocol communication, enabling manufacturers to minimize product rejection and prevent extensive production losses. Organizations lacking WIKA's integrated measurement systems face substantial compliance risk; those with WIKA sensor-enabled data infrastructure gain inspectional confidence and demonstrate systematic hazard management that regulatory agencies increasingly demand.

The integration of WIKA's advanced digital communication protocols amplifies measurement value further by transforming isolated data points into comprehensive operational intelligence. When WIKA sensors transmit data via HART, IO-Link, or FOUNDATION Fieldbus protocols into centralized control systems and analytics platforms, manufacturers gain visibility previously impossible to achieve. WIKA's level measurement solutions, including gravimetric and submersible pressure sensors, deliver continuous data that improves inventory management, prevents equipment-damaging overflows, and ensures consistent blending ratios across production runs. A beverage



bottler monitoring WIKA fill-level sensors across multiple lines simultaneously can detect drift patterns indicating equipment wear, adjust parameters proactively, and prevent overrun waste before it consumes material and creates cleaning complications. A snack food manufacturer correlating WIKA temperature, humidity, and moisture data across drying stages can optimize energy consumption while maintaining consistent product texture and shelf stability.

WIKA's force sensors and load-cell solutions enable precise volumetric or gravimetric control that keeps packaging accurate and costs optimized, preventing both overfilling waste and underfilling label violations. This kind of granular, real-time visibility transforms quality control from intermittent sampling into continuous assurance. In refrigeration systems and cold-chain applications, WIKA's continuous temperature monitoring prevents spoilage and ensures compliance with cold-chain integrity requirements, while the ability to log and trend data identifies equipment degradation before costly failures occur. Yet WIKA's measurement technology delivers competitive advantage only when organizations address the broader ecosystem challenges that determine implementation success. WIKA's application consulting services, calibration expertise, and HACCP compliance support help manufacturers document process control effectiveness and provide the validated, traceable data required

for FDA inspections under the Food Safety Modernization Act (FSMA). Organizations that leverage WIKA's complete solution ecosystem realize significantly faster returns and build stronger competitive positions than those deploying measurement technology in isolation.

Looking toward the coming years, WIKA's measurement technology platform continues evolving toward greater intelligence and autonomy, creating widening separation between technology leaders and lagging competitors. WIKA's integration with machine learning models trained on historical sensor data increasingly enables failure forecasting weeks in advance, optimizing maintenance scheduling and minimizing unexpected production interruptions. WIKA's commitment to artificial intelligence-driven quality analysis augments human judgment with pattern recognition beyond human perceptual capability, identifying subtle quality variations before they manifest as consumer-facing product defects.

The competitive reality facing food and beverage manufacturers is increasingly stark: organizations operating without WIKA's modern precision measurement systems face escalating risk across regulatory exposure, quality consistency, operational resilience, and margin protection dimensions. Conversely, those that strategically invest in WIKA's comprehensive instrumentation portfolio, integrate it thoughtfully into operational workflows through WIKA's consulting services, and develop workforce capability create compounding competitive advantages. WIKA's purpose-built hygienic sensors with service-free connections, polished surfaces resisting bacterial adhesion, and dead-space elimination represent the practical necessity of contamination prevention rather than theoretical engineering. They prevent costly failures, optimize resources, document compliance with confidence, and position manufacturers for the Industry4.0 innovations that will define manufacturing excellence through the coming decade.

The manufacturers who recognize WIKA's measurement technology not as a cost center but as a strategic investment in competitive positioning will capture disproportionate market share, command premium valuations, and build resilience against supply chain disruptions and regulatory changes characterizing the evolving food and beverage landscape. WIKA's mission remains clear: provide the measurement intelligence that enables food and beverage producers to optimize every stage of production, from raw material intake through final packaging and cold-chain distribution.

EXHIBITIONS & CONFERENCES 2026-2027

ProPak Asia - 2026
10 - 13, June - 2026
Impact MUANG Thong Thani - Bangkok

Bakery Technology Fair - 2026
1 - 3, July - 2026
Codissia, Coimbatore

Indus Food Ahmedabad - 2026
24 - 26, July - 2026
Helipad Exhibition Centre,
Gandhinagar, Gujarat

Foodpro - 2026
7 - 9, Aug - 2026
Chennai Trade Centre

DairyTech India - 2026

India Foodex - 2026
21 - 23, Aug - 2026
KTPO, Bangalore

Fi India - 2026
26 - 28, August - 2026
Bombay Exhibition Centre, Mumbai

ProPak India - 2026
26 - 28, August - 2026
Bombay Exhibition Centre, Mumbai

Anuga FoodTec India - 2026
29 Sep - 1 Oct - 2026
Bombay Exhibition Centre, Mumbai

Anuga Select India - 2026
29 Sep - 1 Oct - 2026
Bombay Exhibition Centre, Mumbai

drinktec India - 2026
28 -30, Oct - 2026
Bombay Exhibition Centre, Mumbai

PackMach Asia Expo - 2026
28 -30, Oct - 2026
Bombay Exhibition Centre, Mumbai

Refcold India - 2026
19 - 21, Nov - 2026
Agriculture College Ground, Pune

World SnackPro Expo - 2026
3 - 5, Dec - 2026
Ludhiana Exhibition Centre, Punjab

Annapoorna Inter Food - 2026
9 - 11, Dec - 2026
Bombay Exhibition Centre, Mumbai

info@dvrpublication.com
+91- 9555837779/9555837771
www.foodnbeveragesprocessing.com

Yeast Drying Demands More Than Heat



In yeast manufacturing, drying is far more than a moisture-removal step—it is a defining stage that directly influences product quality, stability, and performance. Because yeast is a living organism, the drying process must do more than reduce moisture; it must do so under carefully controlled conditions that protect viability and preserve the integrity of the final product.

The challenge becomes more acute when ambient humidity is high or variable. Moist air reduces the drying potential of process air

and makes the environment less predictable. In practice, this can lead to inconsistent drying, reduced yeast quality, moisture regain after drying, and weaker shelf-life performance. Yeast drying requires very dry, low-temperature air with tightly controlled moisture levels and dew point conditions. In fluidized bed drying, these operating requirements are particularly stringent, which is why achieving them through mechanical cooling alone can be difficult in many environments. This is precisely where humidity control becomes critical.

With seasonal humidity expected to rise in the coming months, preparedness becomes especially important for manufacturers seeking to maintain drying consistency and shelf-life performance. Desiccant dehumidification becomes highly relevant here. By combining low-temperature air with deep moisture removal, manufacturers can create a more stable drying environment that supports final product quality, improves process consistency, and reduces moisture-related disruptions across drying, handling,

packaging, and storage.

Better humidity control also supports energy-efficient operation by reducing avoidable process instability, minimizing rework risk, and helping plants run with better control over operating costs. For manufacturers, this means not only improved final product quality, but also higher productivity and smoother process performance.

In many food-processing environments, the challenge is not only achieving dry air, but doing so in compact spaces where installation flexibility and process reliability both matter. For such applications, Bry-Air's Compact Desiccant Dehumidifier FFB Series offers a practical option. With its compact footprint, rugged industrial design, and suitability for moisture-sensitive areas, it fits well where reliable dry air is needed but space is limited.

In food processing, consistency is everything. In yeast drying, that consistency begins with air.

ANDRITZ introduces modular small-scale spray dryers for R&D, process development, and batch production



International technology group ANDRITZ has launched a new generation of small-scale spray dryers designed to help customers bridge the gap between laboratory trials and industrial-scale operation. The modular portfolio supports product development, process optimization, scale-up from pilot trials to industrial validation, as well as small-scale production.

The ANDRITZ Dedert small-scale spray dryer range comprises six models with water evaporation capacities from 5 to 250 kg/hr, enabling small-scale production and process

verification across multiple sectors. Systems are offered in standard execution with single-stage or multi-stage configurations, including the option to integrate a fluid bed to enhance powder properties and optimize energy use.

Each unit features a modular, skid-mounted, plug-and-play design intended to shorten installation time. The design places safety and hygiene at the forefront and complies with internationally recognized fire-protection, safety, and hygienic manufacturing standards. Typical application areas include food, dairy, nutraceuticals, and chemicals.

With increasing pressure to validate formulations quickly and navigate frequent product changes, operators benefit from a flexible R&D and small-scale plant that mirrors industrial conditions. The modular design enables rapid adaptation to new recipes and process parameters, allowing teams to run controlled tests, troubleshoot

drying behavior, and generate reliable scale-up data without tying up full-scale production lines. This reduces development loops, enhances process predictability, and helps ensure consistent powder quality.

"Our objective is to provide a clear pathway from pilot trial to validated operational conditions", said Suresh Sundararaj, Global Spray Dryer Technology Manager at ANDRITZ Dedert. "These systems support data-driven decisions by combining modular configurations with proven standards in safety and hygiene."

www.andritz.com

International technology group ANDRITZ provides advanced plants, equipment, services, and digital solutions for a wide range of industries, including pulp and paper, metals, hydropower, environmental, and others. Founded in 1852 and headquartered in Austria, the publicly listed group employs about 30,000 people at 280 locations in over 80 countries.



Confederation of Indian Industry

16th Edition **Foodpro** 2026



AN INTERNATIONAL EVENT "SHOWCASING INNOVATION ACROSS THE FOOD ECOSYSTEM"

7 8 9
AUGUST 2026

CHENNAI TRADE CENTRE, CHENNAI, INDIA

CONCURRENT EVENTS

ColdStoRe
INDIA
Cold Storage & Refrigerated Transportation

T - FOOD
BACK TO BASICS
Traditional Food Festival & Expo

FOOD
EXPO

Food
Packaging
Expo

cleanX

FACT SHEET

3 DAYS
EXHIBITION

350+
EXHIBITORS

SECTORAL
CONFERENCES

B2B / B2G / B2C
MEETINGS

PRODUCT
LAUNCHES &
PRESENTATIONS

INTERNATIONAL
PAVILION

FOCUS SECTORS



Food Processing & Technologies



Packaging Machinery & Equipment



Bakery, HoReCa & Commercial Kitchen Equipment



Dairy Products & Processing Equipment



Cold storage, Refrigeration & Transportation



Traditional & Organic Foods



Food & Beverages



Food Ingredients, Pulses & Grains



Ready to Eat & Frozen Foods



Livestock, Poultry & Seafoods



Food Safety, Hygiene & Cleaning Equipment



Testing Equipment and R&D Centres



Quick Commerce

SPONSORS

EVENT SPONSORS



GOLD SPONSORS



SILVER SPONSOR



BRONZE SPONSOR



CORPORATE SPONSOR



SCAN FOR A GLIMPSE OF FOODPRO 2024





Image source: lanhandling

Redefining Meat Processing: Building a Smarter, Cleaner, and Sustainable Future

Kanika Banga

Feeding the Future, Responsibly

As the global population steadily approaches the 10 billion mark by 2050, the pressure on food systems is intensifying at an unprecedented pace. Protein demand is rising sharply, and meat continues to remain one of the most critical sources of high-quality nutrition worldwide. However, producing meat at scale today is no longer just about volume. It is about responsibility. The meat processing industry finds itself at a defining moment where traditional methods are being challenged by climate change, water scarcity, rising energy costs, and increasingly complex supply chains. At the same time, consumers are more informed than ever before. They expect transparency, sustainability, ethical sourcing, and uncompromised food safety.

This convergence of pressures is pushing the industry toward a profound transformation. Meat processing is no longer just an industrial activity. It is evolving into a technology-driven, sustainability-focused ecosystem where efficiency, intelligence, and environmental responsibility go hand in hand.

The Shift Toward Intelligent Processing

Modern meat processing facilities are rapidly evolving through digital transformation, shifting from traditionally labor-intensive operations to highly automated and data-driven environments. This transition is being driven by the integration of advanced technologies that enhance efficiency, safety, and consistency

across the entire processing chain.

At the core of this transformation are Industrial Internet of Things (IIoT) sensors, which play a critical role in monitoring key parameters such as temperature, humidity, airflow, and overall processing conditions in real time. By continuously collecting and transmitting data, these sensors help maintain strict hygiene standards and significantly reduce the risk of contamination—an essential factor in ensuring food safety and regulatory compliance.

Complementing this, Supervisory Control and Data Acquisition (SCADA) systems provide centralized control over processing operations. These systems enable operators to monitor entire facilities from a single interface, allowing for better visibility, improved decision-making, and enhanced production efficiency. With the ability to track performance metrics and identify inefficiencies, processors can optimize resource utilization and minimize waste.

Programmable Logic Controllers (PLCs) further strengthen automation by synchronizing various stages of the processing line. From slaughtering and cutting to packaging, PLCs ensure precise control and coordination, resulting in consistent product quality and streamlined operations.

Together, these technologies are creating a smarter, more responsive processing environment where decisions are guided

by real-time data rather than manual intervention. This not only improves operational efficiency but also sets new benchmarks for safety, quality, and sustainability in the meat processing industry.

From Meat 4.0 to Industry 5.0

The evolution of meat processing aligns closely with broader industrial transformation trends. The industry is moving from Meat 4.0, characterized by automation and digitalization, toward Industry 5.0, which emphasizes human-centric innovation combined with sustainability. While Industry 4.0 introduced technologies like IoT, big data, and blockchain, Industry 5.0 focuses on collaboration between humans and intelligent machines. This includes collaborative robots (cobots), adaptive automation systems, and AI-driven decision-making tools that enhance both efficiency and worker safety.

This shift is particularly important in meat processing, where product variability has historically limited automation. Industry 5.0 technologies allow systems to adapt dynamically to variations in size, shape, and texture, making automation more flexible and practical.

Automation and Robotics: Precision Meets Productivity

Automation has become the backbone of modern meat processing operations. Advanced robotic systems are now capable of performing tasks that were once considered too complex for machines. Robotic arms equipped with machine vision and AI-based image recognition systems can identify bone structures, fat layers, and muscle composition in real time. This enables highly precise cutting, deboning, and trimming operations.

Unlike manual processes, robotic systems ensure consistent quality, higher yield, and minimal waste. Even small improvements in yield can result in significant cost savings at scale. Automated conveyor systems and robotic pick-and-place units further streamline material flow across processing lines. These systems reduce bottlenecks, improve throughput, and enhance overall operational efficiency.

Another critical advantage is worker safety. By reducing manual handling of sharp tools and repetitive tasks, automation minimizes workplace injuries while addressing labor shortages that continue to challenge the industry globally.

Artificial Intelligence: The Brain Behind Smart Processing

Artificial intelligence is rapidly emerging as a game-changer in meat processing. It

enables processors to move from reactive operations to predictive and optimized systems. AI-powered algorithms analyze vast amounts of production data to identify patterns, inefficiencies, and opportunities for improvement. For example, predictive maintenance systems use sensor data to detect early signs of equipment wear and tear, preventing unexpected breakdowns and costly downtime.

In processing operations, AI enhances yield optimization by determining the most efficient way to cut and portion each piece of meat. Computer vision systems can detect defects, contamination, or inconsistencies in real time, ensuring high-quality output. AI also plays a crucial role in demand forecasting. By analyzing market trends and consumption patterns, processors can align production with demand, reducing overproduction and minimizing waste.

In essence, AI is not just improving efficiency. It is enabling smarter decision-making across the entire value chain.

Advanced Processing Technologies: Enhancing Shelf Life and Safety

Beyond automation and AI, a new wave of advanced processing technologies is fundamentally transforming how meat is preserved, processed, and delivered to consumers. These innovations are not only improving efficiency but also addressing critical industry challenges such as food safety, shelf life, and the growing demand for clean-label products.

High Pressure Processing (HPP) stands out as one of the most impactful developments in this space. By applying extremely high pressures—up to 600 MPa—HPP effectively inactivates harmful pathogens without the need for heat. This non-thermal approach helps retain the meat's natural texture, flavor, and nutritional value, while significantly extending shelf life and reducing food waste.

Pulsed Electric Fields (PEF) technology is another promising advancement. It works by delivering short bursts of high voltage that disrupt microbial cell membranes, thereby enhancing food safety. At the same time, PEF reduces processing time and energy consumption, making it an efficient and sustainable alternative to conventional methods.

Ultrasonic processing is also gaining traction for its ability to improve marination efficiency and accelerate processing. By using high-frequency sound waves, this technology enhances the penetration of marinades, improves tenderness, and shortens



processing cycles. Additionally, it contributes to energy savings, making it an attractive option for modern processing facilities.

Complementing these methods, UV-C light and ozone treatments are increasingly being explored for surface decontamination. These technologies help reduce microbial loads without relying on chemical preservatives, aligning well with consumer demand for cleaner and more natural food products.

Collectively, these advanced processing technologies are paving the way for a more sustainable, efficient, and safe meat processing industry—one that prioritizes quality while meeting evolving regulatory and consumer expectations.

Smart Sensors and Real-Time Quality Control

Ensuring consistent product quality is a critical challenge in meat processing, given the natural variability of raw materials. Advanced sensing and imaging technologies are addressing this challenge with remarkable precision. Near-infrared (NIR) spectroscopy and hyperspectral imaging systems can analyze meat composition in real time, detecting parameters such as fat content, moisture levels, and protein structure without damaging the product.

These technologies enable processors to make instant quality decisions, reducing the risk of defects and product recalls. They also improve standardization, which is essential for meeting both regulatory requirements and consumer expectations.

Digital Traceability and Transparent Supply Chains

Traceability has become a non-negotiable requirement in the modern food industry. Consumers want to know where their food comes from, how it is processed, and

whether it meets ethical and environmental standards.

Digital technologies such as blockchain are enabling end-to-end traceability across the meat supply chain. Each batch of meat can be assigned a digital identity, allowing stakeholders to track its journey from farm to fork.

On the consumer side, QR codes on packaging provide instant access to information about sourcing, processing methods, and nutritional value. This level of transparency not only builds trust but also strengthens brand loyalty.

For processors, traceability systems improve accountability, reduce fraud, and enable faster response in case of recalls or safety issues.

Smart and Functional Packaging

Packaging is no longer just a protective layer. It has become an integral part of the processing ecosystem. Technologies such as Modified Atmosphere Packaging (MAP) replace oxygen with gases like carbon dioxide and nitrogen to slow microbial growth and oxidation. Vacuum skin packaging (VSP) further enhances shelf life by eliminating air exposure. Intelligent packaging solutions are adding a new dimension to food safety and quality monitoring. Time-temperature indicators (TTIs), freshness sensors, and RFID-enabled packaging provide real-time insights into product conditions throughout the supply chain.

These innovations help reduce food waste, improve inventory management, and ensure that products reach consumers in optimal condition.

Sustainability at the Core of Processing

Sustainability has become a necessity rather than a choice in modern meat processing, driving facilities to adopt energy-efficient

technologies such as variable frequency drives (VFDs), high-efficiency motors, and heat recovery systems to minimize energy consumption and operational costs. Alongside energy efficiency, water management is emerging as a critical priority, with advanced treatment solutions like membrane bioreactors (MBRs) enabling water recycling and significantly reducing wastewater discharge.

At the same time, the industry is rethinking waste by treating it as a valuable resource. By-products such as bones, fats, and offal are increasingly being converted into value-added products like animal feed, biofuels, and collagen-based materials, supporting a more circular economy. Additionally, Life Cycle Assessment (LCA) tools are playing a key role in helping processors evaluate environmental impact across the entire production cycle, allowing for more informed, data-driven, and sustainable decision-making.

Toward a Circular Meat Processing Ecosystem

The future of meat processing lies in creating a circular economy where resources are utilized efficiently, and waste is minimized. Zero-waste processing models are gaining traction, focusing on maximizing value extraction from every part of the animal. This approach not only improves profitability but also reduces environmental impact. Emerging innovations such as cultured meat and hybrid protein products are also expected to play a role in reshaping the industry. While still evolving, these technologies represent a shift toward more sustainable protein production systems.

Challenges on the Path to Transformation

The transition to intelligent and sustainable meat processing presents several key challenges, with high capital investment being one of the most significant. Small and medium-sized enterprises, in particular, often struggle with the upfront costs of adopting advanced technologies such as automation and AI-driven systems, especially when immediate returns are uncertain. Alongside cost, integration complexity poses another major hurdle, as many existing facilities require careful and technically demanding retrofitting to accommodate modern digital solutions, which can temporarily disrupt operations.

Workforce adaptation and regulatory compliance further add to the complexity of this transformation. As technology advances, there is a growing need for skilled workers, making continuous training and upskilling essential. At the same time, processors must ensure that new systems meet strict food safety and quality standards, which can be resource-intensive. Despite these challenges, the adoption of modular solutions, along with government support and industry collaboration, is gradually making the transition more practical and achievable.

The Road Ahead: Smart, Sustainable, and Scalable

Looking ahead, the meat processing industry is set to become more connected, intelligent, and sustainability-driven. Smart factories built on integrated digital ecosystems will increasingly define operations, with AI enabling real-time

optimization and digital twins allowing processors to simulate processes and refine performance before implementation. These advancements will help improve efficiency, reduce waste, and enhance overall productivity across the value chain.

Sustainability and evolving consumer expectations will further shape the industry's future. Greater adoption of renewable energy, circular processing models, and resource-efficient technologies will remain central to long-term growth. At the same time, consumers will demand higher levels of transparency, traceability, and ethical practices, making them key factors in building trust and ensuring brand success in a competitive marketplace.

Conclusion: A New Era of Meat Processing

The transformation of the meat processing industry goes far beyond technological upgrades; it represents a fundamental shift in how food is produced, processed, and delivered. By integrating automation, artificial intelligence, advanced processing methods, and sustainable practices, the industry is steadily moving toward a smarter and more responsible model of operation. The focus is no longer just on increasing production, but on improving quality, safety, efficiency, and sustainability. As intelligent technologies continue to evolve, they are redefining the limits of meat processing, enabling a cleaner, more resource-efficient, and resilient food system. This shift will be crucial in meeting the rising global demand for protein while ensuring environmental protection and long-term sustainability.

ADVERTISE NOW!!

SPECIAL EDITIONS

June - 2026

Ingredients / Processing/Packaging/New Year Special

July - 2026

Annual Edition / Processing/Packaging/ Ingredients

Aug- 2026

Events Special / Ingredients / Processing/Packaging/Sweets & Snacks

☎ 9555837771/9555837779/9999383836
info@dvrpublication.com
www.foodnbeveragesprocessing.com

**10%
DISCOUNT**



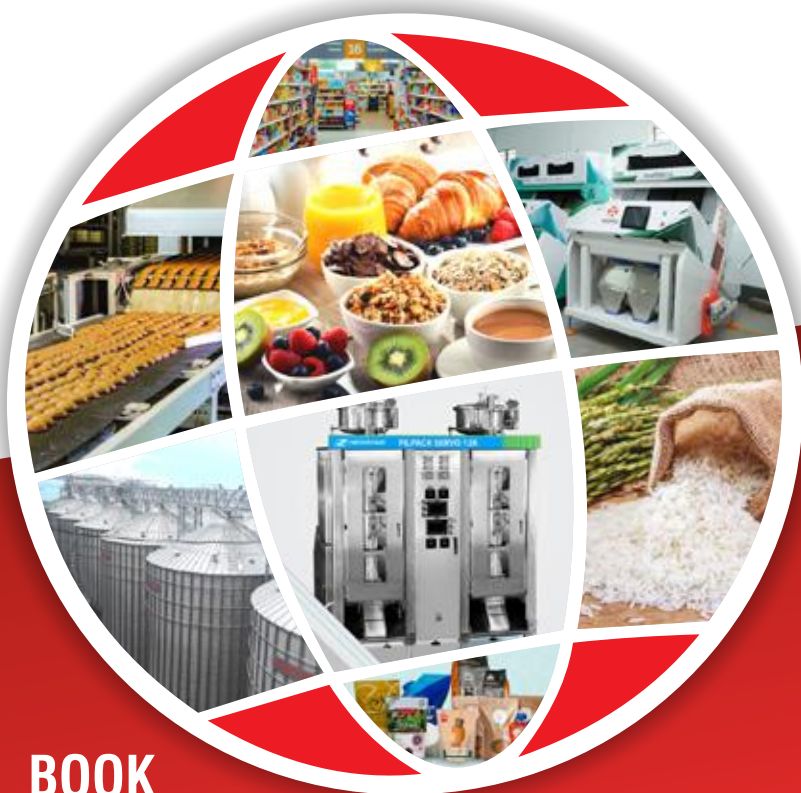
INTERNATIONAL EXHIBITION ON FOOD, BEVERAGE & BAKERY
PRODUCTS, FOOD & DAIRY PROCESSING, PACKAGING MACHINERY
& EQUIPMENT, COLD -CHAIN AND ALLIED INDUSTRIES



21-22-23 August 2026

KTPO Exhibition Centre, Whitefield, Bangalore, India

Concurrent Event:



**BOOK
YOUR STALL
NOW!**

HIGHLIGHTS

- 200+ STALLS
- 20+ COUNTRIES
- 25000+ VISITORS
- LIVE MACHINE DEMONSTRATION
- CONFERENCE / WORKSHOP
- WORLD'S TOP MOST COMPANIES PARTICIPATION

Organizer:



Supported by*:



In Association with:



Outreach Partner*:



Official Publications:



Industry Partners*:



International
Media Partners:



Media Partners:



Online Media Partners:



For stall booking and other details, please contact:

Mobile: +91 9899380104 | 9319608806 | E-mail : indiafoodex@gmail.com | www.indiafoodex.com

*Proposed

Beyond “Forever Chemicals”: The Rise of PFAS-Free Food Packaging in a Sustainability-Driven World



A Market Transition Driven by Safety and Sustainability

The global food packaging industry is undergoing a structural transformation, and at the heart of this shift lies a critical objective: eliminating harmful substances while maintaining performance, safety, and scalability. Among the most significant developments is the rapid emergence of PFAS-free food packaging, a market that is not only expanding steadily but also redefining how the industry approaches material science, regulation, and consumer trust. Recent market insights indicate that the PFAS-free food packaging sector, valued at USD 38.13 billion in 2024, is expected to reach USD 70.80 billion by 2034, growing at a CAGR of 6.4%. This trajectory reflects more than just market expansion. It signals a deeper, systemic transition toward safer and more sustainable packaging ecosystems.

Understanding the Risks of PFAS in Food Packaging

PFAS, or per- and polyfluoroalkyl substances, have long been integral to food packaging due to their exceptional resistance to grease, oil, and water. These properties made them particularly valuable in applications such as fast-food wrappers, microwave popcorn bags, and takeaway containers. However, PFAS are often referred to as “forever chemicals” because they do not break down easily in the environment and can accumulate in soil, water, and even the human body over time. Scientific studies have increasingly linked PFAS exposure to potential health concerns, including endocrine disruption, immune system effects, and chronic diseases. This growing body of evidence has triggered widespread regulatory scrutiny and public

PFAS, or per- and polyfluoroalkyl substances, have long been integral to food packaging due to their exceptional resistance to grease, oil, and water. These properties made them particularly valuable in applications such as fast-food wrappers, microwave popcorn bags, and takeaway containers. However, PFAS are often referred to as “forever chemicals” because they do not break down easily in the environment and can accumulate in soil, water, and even the human body over time. Scientific studies have increasingly linked PFAS exposure to potential health concerns, including endocrine disruption, immune system effects, and chronic diseases.

concern, forcing the food packaging industry to confront a difficult reality. Materials once considered indispensable are now being phased out at an accelerating pace.

Regulatory Push and Changing Consumer Expectations

One of the strongest forces driving the PFAS-free transition is regulation. Governments across North America and Europe have introduced strict guidelines, bans, or phased restrictions on the use of PFAS in food-contact materials. These regulatory frameworks are evolving rapidly and expanding to include broader categories of fluorinated substances. At the same time, regulatory momentum is beginning to build in Asia Pacific markets, including India and China, where environmental concerns and food safety standards are gaining prominence. However, regulation alone is not shaping the market. Consumers are playing an equally decisive role. Today's buyers are more informed and

cautious about what comes into contact with their food, and packaging is no longer viewed as a passive layer but as an integral part of the product experience.

Clean Label Packaging and Brand Responsibility

Clean-label expectations have extended beyond ingredients to include packaging materials. Terms such as non-toxic, chemical-free, and eco-friendly are influencing purchasing decisions, particularly among urban and environmentally conscious consumers. For brands, this shift presents both a challenge and an opportunity. Companies that fail to adapt risk reputational damage, while those that embrace PFAS-free solutions can strengthen brand loyalty and differentiate themselves in a competitive marketplace. This transition is especially visible among large food producers and quick-service restaurants, many of which are actively removing PFAS from their supply chains to align with sustainability goals and maintain consumer trust.

Evolving Consumption Patterns Driving Demand

The growth of PFAS-free packaging is also closely linked to evolving consumption patterns. The rise of online food delivery, takeaway culture, and ready-to-eat meals has significantly increased the demand for high-performance packaging solutions. Foodservice operators are under growing pressure to adopt safer alternatives, particularly as regulatory oversight intensifies. At the same time, e-commerce driven food distribution requires packaging that can withstand longer transit times, temperature fluctuations, and handling stress. This creates a complex challenge for manufacturers, who must develop PFAS-free materials that match or exceed the performance of traditional coatings while ensuring safety and compliance.

Innovation Trends: Bio-Based Materials Reshaping Packaging

Technological advancements are playing a pivotal role in enabling the transition to PFAS-free packaging. Manufacturers are increasingly investing in bio-based and renewable materials, including molded fiber, cellulose coatings, and plant-derived polymers. These alternatives offer comparable barrier properties such as grease resistance and moisture protection without compromising safety or environmental performance. Emerging innovations in nanotechnology and material science are further enhancing the durability and functionality of PFAS-free packaging. High-barrier coatings, heat-resistant films, and compostable substrates are enabling food packaging solutions that

meet both performance and sustainability requirements. As a result, companies are not only complying with regulations but also differentiating themselves through eco-friendly product offerings. Another notable trend is the integration of circular economy principles, with packaging manufacturers focusing on recyclability, compostability, and reduced carbon footprints while aligning their operations with global sustainability targets. This shift is expected to create significant opportunities for innovation and investment in the coming decade.

Material Segmentation and Market Preferences

From a material perspective, plastics continue to hold a dominant position in the PFAS-free packaging market due to their versatility, durability, and established supply chains. They remain particularly suitable for high-moisture and frozen food applications where performance requirements are demanding. However, paper and paperboard are rapidly gaining momentum. Advances in coating technologies have significantly improved their performance, making them viable alternatives in many applications traditionally dominated by plastics. Their renewable nature, recyclability, and compostability make them highly attractive in a sustainability-focused market.

Application Trends Across Food Segments

In terms of application, packaged food and beverages represent the largest segment, driven by strict safety regulations and high consumption volumes. At the same time, the foodservice sector is emerging as the fastest-growing segment as restaurants and delivery platforms accelerate their shift toward sustainable packaging. This trend is expected to intensify as more companies commit to eliminating harmful substances from their packaging portfolios.

Regional Outlook and Growth Opportunities

Regionally, North America leads the PFAS-free packaging market, supported by early regulatory action and strong consumer awareness. The region has become a hub for innovation, with companies investing heavily in research and development. Europe is following a similar path, driven by stringent chemical regulations and ambitious sustainability targets. Meanwhile, the Asia Pacific region is expected to witness the fastest growth, fueled by rapid urbanization, expanding foodservice ecosystems, and increasing environmental awareness. In countries like India, the demand for sustainable packaging is rising steadily, supported by government initiatives and

shifting consumer preferences.

Challenges in Scaling PFAS-Free Solutions

Despite its strong growth potential, the PFAS-free packaging market faces several challenges. Cost remains a significant barrier, as advanced materials and coatings are often more expensive than traditional solutions. This can limit adoption, particularly among small and medium-sized enterprises. Performance limitations in certain applications also persist, although ongoing research and innovation are gradually addressing these gaps. In addition, scaling up production and ensuring consistent supply of new materials require substantial investment and infrastructure development. The lack of standardized definitions for PFAS-free products can also create confusion, highlighting the need for clear guidelines and certification frameworks.

Competitive Landscape and Innovation Strategies

The competitive landscape is becoming increasingly dynamic, with companies focusing on innovation, partnerships, and portfolio expansion to stay ahead. Collaboration across the value chain is playing a crucial role in accelerating the development of effective solutions. Packaging manufacturers, material scientists, and food brands are working together to create products that meet both performance and sustainability requirements. Innovation is emerging as the primary differentiator, with companies that can deliver scalable and cost-effective solutions gaining a competitive edge.

Future Outlook: Toward a Circular Packaging Economy

Looking ahead, the transition to PFAS-free food packaging is set to reshape the industry in profound ways. Sustainability is no longer a peripheral concern but a central pillar of business strategy. The integration of circular economy principles will be essential, with a focus on designing packaging that is not only functional but also recyclable, compostable, and environmentally responsible. Emerging innovations such as biodegradable barrier coatings, edible packaging materials, and AI-driven material design are expected to further accelerate this transformation. The shift away from PFAS represents more than just a regulatory response. It reflects a broader rethinking of how packaging interacts with both people and the environment, paving the way for a safer and more sustainable future.

Source - Polaris Market Research

Content compiled & editorially refined by Kanika Banga

Image Source - bhadraglobal

Syntegon presents integrated frozen food line solution at interpack 2026

- Global debut of integrated SVX Agile and Elematic 4001 line solution
- Gravity-based case packing for optimized case density
- Reflecting the unmatched speed of SVX in a full line solution



At interpack 2026, Syntegon will present a global premiere of its integrated frozen food line, combining the SVX Agile vertical bagger with the newly launched Elematic 4001 gravity case packer. Designed for Individually Quick Frozen (IQF) products such as French fries, frozen vegetables, fruits, and proteins, the solution delivers a seamless transition from primary to secondary packaging. By integrating bagging and case packing within one unified control system, the line enhances efficiency, improves carton utilization, and simplifies operations, while also addressing key industry challenges like high-speed processing, low-temperature handling, and reducing excess packaging material.

The solution stands out through its gravity-based case packing technology, which enables flexible, high-speed loading of bags into cartons while minimizing "shipping air" and maximizing logistics efficiency. With capacities of up to 120 bags per minute and 25 cases per minute, the system supports high-output production while offering modular configurations to suit regional needs. Beyond machinery, Syntegon positions itself as a lifecycle partner, providing end-to-end service support, advanced HMI systems for improved monitoring, and a harmonized platform that ensures consistent operation, reduced training time, and optimized overall equipment effectiveness across the entire packaging line.

Alligator Automations: Powering Smart Manufacturing with Scalable, Future-Ready Automation



Mr. Srinivas Choudhary (Director, Alligator Automations)

long as the customer uses its solutions.

In today's highly regulated Food & Beverage landscape, how critical is automation in helping manufacturers maintain consistent quality and ensure compliance with evolving safety standards?

In today's highly regulated Food & Beverage landscape, automation plays a critical role in ensuring consistent quality and compliance. It significantly reduces human error by enabling precise and repeatable product handling while also minimizing contamination risks through limited manual intervention. Automation systems support end-to-end traceability and data-driven compliance, helping manufacturers align with global standards such as HACCP and ISO. Additionally, real-time monitoring capabilities enhance transparency and ensure continuous audit readiness, making automation indispensable for modern food processing operations.

How do you see automation transforming the operational efficiency of Food & Beverage manufacturing companies over the next 5-10 years?

Over the next 5-10 years, automation will significantly enhance operational efficiency in Food & Beverage manufacturing by driving the transition toward smart factories through Industry 4.0 integration. The adoption of AI-driven predictive maintenance will help minimize downtime and optimize asset performance. Manufacturers will increasingly deploy flexible, modular automation systems to adapt to changing product demands. Additionally, greater use of robotics and vision systems will improve precision and throughput, while a stronger focus on energy-efficient and sustainable operations will reduce costs and support environmental goals.

From your perspective, what are the biggest risks manufacturers face today if they delay adopting advanced automation solutions?

Delaying the adoption of advanced automation exposes manufacturers to several critical risks. They may lose competitiveness as peers achieve higher efficiency and faster turnaround times through automated processes. Continued reliance on manual labor can lead to higher operational costs and limited scalability. Additionally, increased chances of human error can result in quality inconsistencies and compliance challenges. Without automation, manufacturers also miss out on valuable data insights and cost

“ As the Food & Beverage industry accelerates toward digital transformation, automation is emerging as a critical enabler of efficiency, quality, and resilience. In this interview, Alligator Automations shares its evolution from a project-based engineering firm to a full-scale turnkey automation partner, delivering customized, end-to-end solutions across industries. The conversation highlights how advanced automation, robotics, and Industry 4.0 technologies are reshaping manufacturing operations, while also addressing the growing need for flexibility, compliance, and supply chain resilience in an increasingly complex global landscape.

Can you share the journey of Alligator Automations and how the company has evolved within the industrial automation space?

Alligator Automations was founded with a strong focus on robotics-driven automation, inspired by the founders' deep interest in the field. The company initially operated through project-based engineering assignments but gradually evolved into a comprehensive, end-to-end turnkey automation provider. Over time, it expanded its capabilities across design, manufacturing, integration, and commissioning. With a growing footprint in industries such as F&B, tires, FMCG, chemicals, and fertilizers, Alligator Automations is now positioned as a solution-driven, customer-centric partner in the industrial automation space.

What differentiates Alligator Automations from other automation solution providers, particularly in the Food & Beverage sector?

Alligator Automations differentiates itself through its ability to deliver highly customized, application-specific solutions rather than relying on standard, off-the-shelf offerings. In the Food & Beverage sector, the company emphasizes complete system integration, bringing together mechanical, electrical, and control systems seamlessly. Its process-centric approach, supported by strong workflows, ensures consistent customer focus and execution excellence. Additionally, its unique "life support" promise guarantees long-term customer support through spares, service, AMC, O&M, and upgrade services for as

optimization opportunities, ultimately impacting long-term growth and market positioning.

With ongoing geopolitical uncertainties impacting global supply chains, how important is it for manufacturing companies to build resilient and flexible automation systems?

In the face of ongoing geopolitical uncertainties, building resilient and flexible automation systems has become critical for manufacturing companies. Such systems enable businesses to effectively navigate supply chain disruptions and sudden demand fluctuations. With the ability to quickly reconfigure processes and scale operations, manufacturers can remain agile and responsive. Flexible automation also reduces dependence on single-source suppliers and supports continuity planning, ensuring stable operations even in uncertain environments and helping companies safeguard productivity, delivery timelines, and overall business resilience.

How has your diversified vendor ecosystem helped mitigate disruptions in component sourcing, and what lessons can other manufacturers learn from this approach?

A diversified vendor ecosystem has played a crucial role in mitigating disruptions in component sourcing by ensuring the consistent availability of critical parts. Strong, long-term partnerships with suppliers have improved lead times, reliability, and overall supply chain responsiveness. By adopting a balanced local and global sourcing strategy, the company has enhanced flexibility and reduced vulnerability to regional disruptions. The key takeaway for manufacturers is to avoid over-dependence on a single supplier and instead build collaborative, resilient vendor relationships that support continuity and scalability.

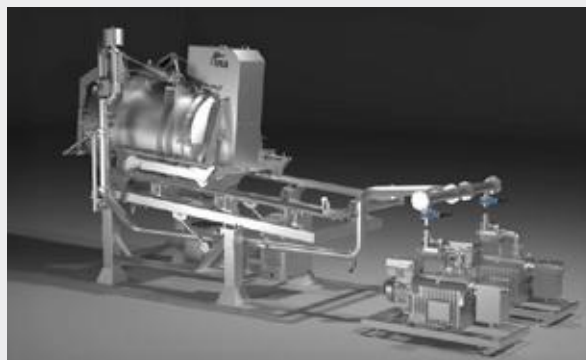
What key trends in automation should Food & Beverage manufacturers watch closely to stay ahead in an increasingly complex global environment?

Food & Beverage manufacturers should closely watch several key automation trends to stay competitive in an increasingly complex global environment. Digitalization and the adoption of Industrial IoT (IIoT) are enabling smarter, connected operations with enhanced visibility. The rise of robotics and collaborative robots (cobots) is improving efficiency and flexibility on production lines. Additionally, data analytics and real-time decision-making systems are driving faster, more informed actions. There is also a growing emphasis on sustainability-focused automation and end-to-end supply chain integration to enhance efficiency, transparency, and resilience.

As the Food & Beverage industry continues to evolve, what final message would you like to share with manufacturers looking to future-proof their operations?

As the Food & Beverage industry continues to evolve, automation is no longer optional, as it is a strategic necessity. Manufacturers must invest in scalable, future-ready solutions that can adapt to changing demands and regulatory requirements. It is equally important to partner with solution providers rather than just equipment suppliers to ensure long-term success. Focusing on overall value instead of just upfront costs will drive sustainable growth. Most importantly, starting early will help businesses remain competitive, compliant, and resilient in a rapidly transforming landscape.

TNA to preview the tna vacuum de-oiler for healthier potato chips at interpack 2026



At interpack 2026, TNA Solutions will preview its patent-pending tna vacuum de-oiler, an innovative technology designed to help potato chip manufacturers significantly reduce oil content while preserving taste, texture, and crispiness. Developed specifically for batch-fried chips, the system uses vacuum-driven technology at ambient temperature to remove both surface and absorbed oil, lowering fat content from around 32–35% to the low 20% range, without additional browning or acrylamide formation often associated with reheating processes. Beyond improving product health profiles, the solution enhances operational efficiency by recovering and reusing oil, reducing consumption and costs, while its seamless integration with batch frying systems ensures smooth processing and scalability. Backed by testing capabilities at TNA's Food Technology Centre in Woerden, the Netherlands, the innovation reflects the company's commitment to enabling healthier snack production alongside improved process control and performance.

Sesotec GmbH will present its advanced RAYCON Family at interpack 2026



At interpack 2026, Sesotec GmbH will showcase its RAYCON Family of intelligent X-ray inspection systems under the theme "Food Safety is our Passion. Anytime and Anywhere." The portfolio covers applications from packaged and unpackaged foods to bulk materials, offering scalable solutions for manufacturers of all sizes. These systems detect both metallic and non-metallic contaminants, including glass, stones, and plastics, even in complex products. A highlight is the AI-powered RAYCON D+ TX, delivering high-precision detection at high speeds, alongside the compact RAYCON EX2 for easy entry-level adoption. Beyond contamination detection, the systems also perform quality checks such as completeness, positioning, and density analysis. With seamless digital integration, traceability, and modular design, the RAYCON Family ensures high food safety, efficiency, and future-ready performance.

Bmt Launches Material Dna to Remove Production Scale-Up Risk



BMT, a strategic partner to the global packaging industry, has launched Material DNA: a process development service helps manufacturers define, validate and transfer process windows before production begins. Material DNA enables manufacturers to move into production while already having the know-how to successfully run the process. By validating process conditions offline and then translating them on the production line using BMT's preform temperature sensor, THERMOSCAN, the service significantly reduces set-up time, disruption and financial risk.

"Material DNA gives manufacturers confidence before they commit," said David McKelvey, Head of Product at BMT. "Instead of

learning under pressure on a live production line, teams can define what success looks like in advance and then transfer those validated conditions directly into production."

Define the process before production begins

Production trials are often constrained by time, material availability and operational priorities, particularly when working with new materials or rPET. With machines running at more than 20,000 bottles per hour, learning through trial and error on the line is costly and sometimes inconclusive.

Material DNA separates material and process learning from these constraints. Using only a small volume of material, typically fewer than

100 preforms, BMT conducts controlled off-line experimentation to isolate material behaviour and define a clear, transferable process window. This allows manufacturers to understand operating limits before investing in tooling or production trials.

Bringing validated process knowledge onto the line

Each Material DNA engagement delivers a defined process window and a detailed technical report documenting validated settings, limits and evidence. The service also includes a two-week THERMOSCAN rental, enabling temperature measurement and real-time monitoring of process conditions during production line set-up. This combination allows teams to transfer validated parameters onto the line with minimal adjustment, reducing commissioning time and increasing the likelihood of right-first-time production outcomes.

A standardised service for repeatable results

Designed as a standardised, repeatable engagement, Material DNA can be deployed quickly across different machines, sites and products. It provides a consistent, documented approach that helps manufacturers de-risk major capital investments and accelerate the transition from development to production.

McKelvey continues: "By turning limited material and constrained line access into production-ready insight, Material DNA supports smarter decision-making, faster scale-up and reduced waste, directly supporting BMT's mission to make sustainability achievable."

Sidel Launches its New Evofill Pet, The Fastest-Ever Speed Filler



Sidel introduces the EvoFILL PET, its new filling solution for water and still beverages. It is the fastest filler ever developed by Sidel, and combines advanced fluid-dynamics engineering with a next-generation filling

valve. It is set to support producers wishing to unlock higher efficiency in reduced space, without compromising product quality or line flexibility. As beverage producers face growing pressure to increase output

while maintaining the highest standards of hygiene and sustainability, filling technology is becoming a critical differentiator on the production line.

While plain and carbonated bottled water remain the most popular choices among consumers, the rise of functional and flavoured water is transforming the market by driving profitability and spurring brand innovation. This segment is forecast to grow at a CAGR of 3.7% from 2024 to 2028, fuelled by health consciousness, lifestyle changes and rising incomes. Sidel's EvoFILL PET has been developed to meet these demands head-on, delivering high speed, optimised product flow and a more compact, ergonomic design for still beverages in PET bottles.

Redefining filling performance for still beverages

At the heart of the EvoFILL PET is a completely

redesigned filling valve, engineered following an in-depth fluid-dynamics study to optimise product flow during filling. This innovation enables a significant boost in filling speed, of up to 20%, allowing the filler to reach outputs up to 90,000 bottles per hour in more compact space.

Hygiene by design, with easier cleaning and maintenance

Hygiene has been a central design focus for the EvoFILL PET. The highly hygienic filling valve design is complemented by optimised cleaning operations that reduce downtime, water usage and chemical consumption.

The filling valve features volumetric flowmeter control and a no-contact filling principle, eliminating the need for components to be replaced when changing fill levels. This not only simplifies operations but also enhances overall line hygiene, helping preserve beverage quality across a wide range of still products. Automatic CIP dummy cups, shorter internal and external cleaning cycles, reduced thermal dispersion and fewer components and surfaces to clean all contribute to faster, more efficient cleaning.

A more compact, ergonomic filler

The EvoFILL PET introduces a no-base layout that delivers a footprint reduction of up to 15% compared to previous designs. This more compact configuration improves line integration and frees up valuable floor space in the filling hall. Improved accessibility to key areas such as the external caps buffer and roof HEPA filters enhances ergonomics and simplifies maintenance tasks, supporting safer and more efficient operations for line operators and maintenance teams alike.

Flexibility to match evolving production needs

To support a wide range of production configurations, the EvoFILL PET is available in flexible layouts, including stand-alone, Combi and Super Combi solutions. This adaptability allows producers to select the configuration best suited to their current requirements, while remaining future-ready as portfolios and volumes evolve.

"Sidel's new EvoFILL PET has been engineered to help customers increase output while simplifying operations and maintaining the highest standards of beverage protection, delivering performance without compromise", explains Tommaso Tegoni, Product Manager Filling at Sidel.

"With fast and easy automatic changeovers, the extended lifespan of key components and optimised total cost of ownership, the EvoFILL PET is designed to deliver long-term value alongside high performance."

Find out more about Sidel's filling technology and how you can access this kind of support for your business on the Sidel website.

BATCH - PRINTING / PACKAGING SYSTEMS

Supplying Quality Products Globally since 1993

TOUCH SCREEN 8-LINE INKJET PRINTER POUCH PACKING FFS HIGH QUALITY CIJ PRINTER

AIMS ADVANCED INDUSTRIAL MICRO SYSTEMS

BRANCHES: MUMBAI, DELHI, BENGALURU, KOLKATA

201 Triumph Industrial Estate, 1st Bhatti - Panch Bawadi, 7/2 Ashoka Chambers, Opp. Pillar No. 150, Below Rajendra Place Metro Station, Pusa Road, New Delhi - 110060, INDIA.

☎ : +91-22) 40123228, 42663228, 9372374470, 7715939146 ☎ : 011-47539558, 9372776965

✉ : SamirGarg.AIMS@gmail.com 🌐 : www.CodingMarking.com

Flatbread: Tradition, Technology and a Structurally Expanding Market



Flatbread is one of the oldest food forms on the planet. For millennia, it has served as more than just a meal component. It has been a plate, a utensil, a wrapper, and a symbol of hospitality in homes across the Middle East, South Asia, North Africa and beyond.

Today, flatbread is also one of the most promising industrial growth categories in global baking. In several Western European markets, wrap and flatbread segments are growing between 4 and 7 percent annually. In the Middle East, flatbread remains a staple of daily life, with industrial production scaling rapidly to meet the needs of modern retail and QSR chains. In Asia-Pacific, naan and specialty flatbreads are increasingly embedded in foodservice and private label programs.

It is a response to deep structural shifts in how people eat and how the bakery industry evolves to serve them.

A traditional format meeting modern demand

What makes flatbread so compelling in 2026 isn't just its history. It's how perfectly it fits into the patterns of modern consumption. In a world that's moving faster, eating more flexibly and seeking lighter alternatives to traditional breads, flatbread offers a unique solution. United Nations projections show that nearly 60 percent of the global population will live in urban areas by 2030, with the strongest growth occurring in Asia-Pacific, the Middle East and parts of Africa. As urbanization accelerates, food habits

Across the EMEA and Asia-Pacific regions, flatbread is shifting from specialty to standard. Retail wrap and flatbread categories in Western Europe are growing by 4 to 7 percent per year, with private label penetration exceeding 30 to 40 percent in some markets. In the Middle East, flatbread remains a daily staple, but is increasingly produced on high-capacity lines to meet the expectations of modern retail and fast-food chains. In Southeast Asia, organized foodservice is growing faster than traditional grocery retail and flatbread formats are ideally suited to this evolution.

shift. Portability, speed, and versatility are no longer conveniences. They are requirements.

Flatbread answers that demand on every level. It's low in profile, easy to fold, quick to heat, and highly compatible with a wide range of cuisines and occasions. From wraps and mezze to street food and on-the-go lunches. It can be served warm or ambient, and prepared in formats that are topped, filled, dipped or folded. It works across meat, vegetarian and plant-based applications. Its functionality supports not only culinary expression, but also operational speed in foodservice.

It's made from a short list of simple ingredients: flour, water or yogurt, salt, and sometimes oil. That simplicity supports clean-label positioning. The absence of fermentation steps makes it quick to produce. It requires no proofing time, and rises directly

in the oven, often in less than 90 seconds. That speed translates into throughput. And the format's low unit weight and standardized shape makes it highly efficient to pack, stack and transport.

A structurally expanding segment in industrial baking

Across the EMEA and Asia-Pacific regions, flatbread is shifting from specialty to standard. Retail wrap and flatbread categories in Western Europe are growing by 4 to 7 percent per year, with private label penetration exceeding 30 to 40 percent in some markets. In the Middle East, flatbread remains a daily staple, but is increasingly produced on high-capacity lines to meet the expectations of modern retail and fast-food chains. In Southeast Asia, organized foodservice is growing faster than traditional grocery retail and flatbread formats are ideally suited to this evolution.

Quick-service restaurant networks are accelerating in these regions. In the Gulf states, for example, burgers and fried chicken dominate QSR menus, but local breads like samoli, pita and markook remain essential in everyday diets. That dual demand is pushing bakery producers to scale both heritage formats and globalized styles and to do so with speed, consistency and repeatability.

In all of these markets, flatbread formats offer operational benefits that standard sandwich carriers do not. They allow for faster assembly in kitchens. They support portion control. And they provide a familiar, flexible base for both meat-based and vegetarian options which is especially important as plant-based menus grow worldwide. From a production perspective, these trends are converging on a single truth: flatbread is no longer a niche. It's a high-volume, multi-market category with clear industrial potential.

Why flatbread is deceptively complex

To the consumer, flatbread feels effortless: soft, pliable, warm and familiar. But at industrial scale, producing that level of consistency is anything but simple. In fact, flatbread lines are some of the most technically demanding systems in modern baking.

Because there's no proofing stage to buf-



fer variations, everything depends on exact control. Thickness must remain uniform across the entire belt width. Diameter must be precise, especially in multi-lane sheeting lines where slight deviation can disrupt downstream cutting and stacking. In pita, pocket formation must occur consistently at the exact moment of bake, which depends on tight control of temperature differentials and dough elasticity.

In naan and layered flatbreads, the interaction between sheeting pressure, flour dusting, and folding stages directly determines final texture. Moisture retention becomes critical during packaging, particularly in export or frozen formats. And because the bake time is short and the product thin, thermal balance in the oven between top and bottom heat can make or break product quality.

This is not casual production. Flatbread manufacturing is a discipline of precision repetition, with performance measured in fractions of a millimeter and seconds of dwell time.

Industrial readiness: what bakeries need to succeed

To compete effectively in this category, bakeries must invest in line technology that delivers three core capabilities: precision, flexibility, and throughput.

Flatbread lines must be able to:

- Sheet dough with exact and repeatable thickness
- Maintain gentle handling to preserve elasticity, prevent tearing or shrinkage
- Bake uniformly at high speeds, with consistent color and blistering
- Transition quickly between recipes, diameters, or product types
- Integrate seamlessly with stacking, folding, and packaging systems

It's not about overengineering. It's about reliability. Flatbread at scale is not a craft process done fast. It is a high-speed process that must produce artisanal results at volume, under pressure, every shift.

AMF's flatbread systems: built for precision and scale

At AMF, we've designed our flatbread systems to match the specific requirements of this evolving segment. Whether you're producing stone-baked naan in Asia, folded wraps in Europe, or pocket pita in the Gulf region, our lines are engineered to deliver the consistency and performance that high-output flatbread production demands.

Each system combines:

- Advanced sheeting and gauging for exact thickness and shape control

- Gentle dough transport that preserves the gluten matrix and prevents stress points
- Tunnel ovens with balanced, programmable top and bottom heat zones
- Modular line components for recipe and format changeovers
- Scalable layouts that support both regional and centralized production models

From upstream mixing and dough handling to downstream folding, stacking and packaging, AMF solutions enable producers to meet growing demand with the reliability, hygiene and efficiency global markets require.

Flatbread as a long-term opportunity

Flatbread is not a short-term trend. It is a

structurally expanding category, driven by global demographic shifts, evolving food habits, and increasing expectations for performance and authenticity.

For bakeries, it presents an opportunity to diversify product lines, serve new channels, and expand into regional cuisines. All within a format that is margin-friendly, culturally relevant, and operationally scalable.

For consumers, it delivers familiarity with freshness. For producers, it demands technical clarity and repeatable excellence. At AMF, we're proud to help shape that future. One sheeted, blistered, and perfectly baked flatbread at a time.

Together, let's shape the future of baking.

Your baking partner of choice,

AMF Bakery Systems



Explore your business Opportunities
with India's leading & largest circulating Processed food magazine

Celebrating 10 Years of Excellence in the field of Publication & Advertising services !!

Get Our MEDIA KIT 2026-2027

Write to
info@dvrpublication.com
www.foodnbeveragesprocessing.com
+91-9555837779/9555837771/9999383836



The Nutritional Pivot: Why Multi-Millet Systems are Redefining the 'Better-For-You' Category



Divyashikha Gupta, Founder, Millwize

The global food and beverage industry is currently navigating a "Great Reset." For decades, the convenience of ultra-processed foods, defined by high sodium, trans fats, and refined carbohydrates, dictated market share. However, a significant shift is underway. Driven by a post-pandemic focus on longevity and metabolic resilience, the "Better-For-You" (BFY) segment has moved from a niche health-aisle curiosity to a primary driver of FMCG growth.

Central to this revolution is the industrial resurgence of ancient grains. While once relegated to traditional diets, millets are being repositioned as the apex solution to the modern "junk habit." By transitioning from refined flour (maida) and hidden sugars to scientifically formulated multi-millet compositions, the industry is finally providing a path to indulgence that does not compromise physiological well-being.

The Macro Shift: Industry Data and the Rise of Functional Snacking

The data supporting this shift is definitive. Globally, the Better-For-You snack market is projected to reach nearly \$110 billion by 2030, growing at a CAGR of approximately 6.7%. In India, the transformation is even more aggressive. The Indian health food market is expected to expand at a 20% CAGR, potentially reaching \$30 billion by 2026.

This growth is fuelled by a stark clinical realization: the "junk habit" is a leading contributor to non-communicable diseases (NCDs). According to the World Health Organization (WHO), NCDs are responsible for 74% of all deaths globally. In India, often cited as the "diabetes capital of the world", the demand for low-glycemic index (GI) foods has shifted from a medical recommendation to a baseline consumer expectation.

Millets, which are naturally gluten-free and

rich in complex dietary fibre, offer a glycemic profile significantly lower than wheat or polished rice. This makes them the ideal industrial substitute for the rapid-glucose-spike cycle triggered by traditional refined-flour snacks.

Solving the Protein Deficit: The 14.8g Benchmark

A persistent challenge in the wellness industry is the "nutritional void" found in most convenient snacks. Traditional snacks often provide "empty calories", high energy density with near-zero nutritional value. This contributes to the "overfed but undernourished" paradox seen in urban populations. The BFY switch addresses a critical public health issue: the protein gap. In India, recent surveys indicate that nearly 80% of the population is protein-deficient. A multi-millet approach changes this narrative by leveraging the diverse amino acid profiles of Ragi (Finger Millet), Bajra (Pearl Millet), and Jowar (Sorghum).

When a snack provides 14.8g of natural protein per serving, it moves from being a simple "treat" to a functional food. Unlike synthetic protein isolates found in many mass-market health bars, millet-based protein is naturally occurring and accompanied by essential micronutrients like iron, magnesium, and phosphorus. This 14.8g benchmark is significant; it represents approximately 25% of the Recommended Dietary Allowance (RDA) for an average adult, effectively turning a snacking moment into a muscle-repairing, satiating nutritional event.

The "No Refined Sugar" Mandate: Transparency in Labelling

Perhaps the most insidious component of modern junk food is refined sugar. The average urban consumer unknowingly consumes massive quantities of hidden sugars found in "savory" snacks, condiments, and breads. Refined sugar is a primary driver of systemic inflammation and metabolic syndrome.

The industry is seeing a massive pivot toward "Clean Label" products. Today's wellness-conscious consumers are scrutinizing the "back of the pack," specifically looking for the absence of maltodextrin, high-fructose corn syrup, and cane sugar. Replacing these with natural, low-insulin-spike alternatives like jaggery or dates, or relying on the inherent nutty sweetness of toasted millets, creates a

superior metabolic profile. This “No Refined Sugar” promise is the cornerstone of the BFY movement, ensuring that the dopamine hit from snacking is not followed by a devastating insulin crash.

Sustainability as a Wellness Value

For the modern health-conscious consumer, personal wellness is increasingly linked to planetary health. Millets are “climate-smart” crops that align perfectly with the Environmental, Social, and Governance (ESG) goals now being adopted across the food industry. They require:

- 70% less water than rice or wheat.
- Minimal chemical intervention, as they are naturally hardy and pest-resistant.
- The ability to thrive in arid zones, supporting biodiversity and soil health.

International bodies, including the United Nations, have recognized millets as a key to global food security. For the wellness industry, this adds an ethical layer to the dietary switch. Every millet-based formulation supports a circular economy that prioritizes both the consumer’s gut health and the earth’s resources.

The Future of Functional Food

We are witnessing the “premiumization” of traditional grains through food science. We no longer must choose between a snack that tastes like cardboard and one that is loaded with palm oil and sugar. Innovation in processing has allowed for the creation of textures that mimic traditional favourites while maintaining a superior nutrient density. Leading this charge are brands focused on bridging the gap between ancient nutritional wisdom and modern lifestyles. Millwize, for instance, has been a key player in this evolution, focusing on high-protein, zero-refined-sugar formulations that make the transition away from junk food seamless. By prioritizing integrity in ingredients, such initiatives are proving that health-centric eating is not a temporary trend, but a permanent shift in the global food hierarchy.

Conclusion

Breaking the junk habit is not about caloric restriction; it is about nutrient density. By choosing multi-millet alternatives that offer high natural protein and eliminate refined sugars, consumers are making a long-term investment in their metabolic health. The trade data is clear: the future of food is transparent, nutrient-dense, and grounded in functional ingredients. As the “Better-For-You” segment continues to dominate the Indian and global markets, the humble millet stands as the ultimate catalyst for a healthier, more resilient society.

SUBSCRIPTION FORM



By Subscribing to FBP magazine, you are helping us to fulfil our mission to inspire and deliver technology based information worldwide....

Date : _____

Place: _____



FOOD & BEVERAGES PROCESSING MAGAZINE
Frequency / Monthly | Cover Price - Rs. 250 /- Only

Full Name: _____

Company Name : _____

Address : _____

Pincode : _____ **Mobile No:** _____

Email Id: _____

GST No. : _____ (If Any)

Magazine Type	6 Months	1 Year	2 Years	3 Years
Print	Rs. 1500	Rs. 3000	Rs. 6000	Rs. 9000
e-Magazine	Rs. 600	Rs. 1000	Rs. 1500	Rs. 2000

PAYMENT DETAILS (RTGS/NEFT)

Beneficiary Name : DVR PUBLICATION PVT LTD
Account No - 50200006029203 /
Beneficiary's Bank - HDFC BANK LTD
Bank Add: HDFC BANK LTD,
Mayur Vihar Phase - 2, Delhi - 91
Branch code : 0293
IFS code : HDFC0000293
MICR code :110240042
Company PAN No:AAFC0344Q
GST No. : 07AAFC0344Q1ZG



DVR PUBLICATION PVT. LTD.

Adds: D-101, Gazipur, Near Lavin International school, Delhi-110096

Phone : +91 - 9555837771 / 9555837779 / 9999383836

Email Id: info@dvrpublication.com / foodandbeveragesprocessing@gmail.com

Web: www.foodnbeveragesprocessing.com

Apocarotenal's Revolutionary Role in Natural Food Colorants: Redefining the Future of Clean-Label Innovation

Kiran Kumar



Introduction: The Shift Toward Natural Color Solutions

The global food and beverage industry is undergoing a profound transformation, driven by a decisive shift toward clean-label, transparent, and naturally derived ingredients. Consumers today are more informed than ever, scrutinizing product labels and actively seeking alternatives to synthetic additives. Among the many natural compounds gaining prominence, apocarotenal has emerged as a powerful and versatile coloring agent, offering both aesthetic appeal and functional advantages.

Derived from carotenoids, apocarotenal delivers vibrant orange to reddish hues, making it a preferred choice across multiple food applications. Its growing adoption reflects a broader movement within the industry, one that prioritizes health, sustainability, and innovation without compromising on visual appeal or product stability.

Understanding Apocarotenal: A Natural Yet Engineered Solution

Apocarotenal, often referred to as apo-8'-carotenal, is a naturally occurring carotenoid compound that can also be produced through controlled processes to ensure consistency and purity. Structurally related to beta-carotene, it is known for its intense

Apocarotenal is more than just a food colorant; it reflects the industry's shift toward combining natural origins with advanced technology. Offering vibrant hues while aligning with clean label, sustainability, and performance demands, it has become a transformative ingredient for modern food applications. As manufacturers adapt to evolving consumer expectations and regulatory standards, apocarotenal stands out as a reliable and future ready solution, redefining how color is created and experienced in the evolving landscape of natural food colorants. Its growing adoption clearly signals a strong future for high-performance natural ingredients in the global food industry.

coloring properties and excellent solubility in fats and oils.

Unlike many natural colorants that struggle with stability issues, apocarotenal offers enhanced resistance to light, heat, and oxidation. This makes it particularly valuable in industrial food processing environments where maintaining color integrity throughout shelf life is critical. Its ability to bridge the gap between natural origin and industrial performance has positioned apocarotenal as a "next-generation" colorant—one that aligns with both consumer expectations and manufacturing demands.

The Psychology of Color: Why Orange Matters

Color plays a pivotal role in influencing consumer perception, appetite, and purchasing decisions. Among the spectrum of food colors, orange holds a unique position. It is widely associated with freshness, flavor intensity, and energy, making it highly appealing in categories such as beverages, confectionery, dairy, and snacks.

Apocarotenal's ability to deliver a consistent and vibrant orange shade makes it especially valuable. Studies in food psychology suggest that warm colors like orange can stimulate appetite and enhance perceived taste, which is why many brands are transitioning toward natural orange hues derived from compounds like apocarotenal. In an increasingly competitive marketplace, visual differentiation is critical and apocarotenal provides brands with a natural tool to achieve just that.

Applications Across the Food & Beverage Spectrum

One of apocarotenal's greatest strengths lies in its versatility. It is widely used across a broad range of applications, including:

1. Beverages

Apocarotenal is extensively used in soft drinks, fruit juices, and energy beverages. Its stability in liquid systems ensures that color remains vibrant even under varying storage conditions.

2. Dairy Products

In products like cheese, butter, and flavored yogurts, apocarotenal enhances visual appeal while maintaining uniformity. It is particularly effective in processed cheese applications where color consistency is essential.

3. Bakery and Confectionery

From cakes and pastries to candies and gummies, apocarotenal provides a natural alternative to synthetic dyes, enabling manufacturers to meet clean-label requirements without sacrificing brightness.

4. Snacks and Savory Products

In chips, extruded snacks, and seasoning blends, apocarotenal contributes to an appetizing appearance, often mimicking the natural hues of spices like paprika or turmeric.

5. Plant-Based and Alternative Proteins

As the plant-based segment grows, achieving meat-like coloration has become a key challenge. Apocarotenal plays a role in replicating the warm tones associated with cooked meats, enhancing consumer acceptance.

Clean Label Advantage: Meeting Consumer Expectations

The clean-label movement has redefined how ingredients are perceived. Consumers now prefer products with recognizable, minimally processed components and are wary of artificial additives. Apocarotenal fits seamlessly into this narrative. Although it can be produced through controlled processes, its association with natural carotenoids allows it to be positioned as a more acceptable alternative to synthetic colorants.

Regulatory frameworks across global markets are also evolving to support the transition toward natural ingredients. Food manufacturers are increasingly leveraging apocarotenal to reformulate products and align with these regulations while maintaining product quality and shelf life.

Stability and Performance: A Technical Advantage

One of the longstanding challenges with natural colorants has been their lack of stability under processing and storage conditions. Many plant-based pigments degrade when exposed to heat, light, or oxygen, leading to color fading and reduced product appeal.

Apocarotenal addresses these challenges effectively. Its chemical structure provides:

- High thermal stability, making it suitable for baked and processed foods
- Resistance to oxidation, ensuring longer shelf life
- Light stability, reducing the risk of color degradation in transparent packaging

These attributes significantly reduce the need for additional stabilizers or protective packaging, contributing to both cost efficiency and sustainability.

Sustainability and Environmental Impact

Sustainability has become a cornerstone of innovation in the food industry. From sourcing to production, every stage is being evaluated for its environmental impact. Apocarotenal contributes positively in this regard. Compared to some traditional natural colorants that require extensive agricultural resources, apocarotenal can be produced more efficiently with a lower environmental footprint. Advances in biotechnology and fermentation processes are further enhancing its sustainability profile.

Additionally, its high coloring strength means that smaller quantities are required to achieve the desired effect, reducing overall resource consumption.

Market Trends and Growth Potential

The global market for natural food colorants is experiencing robust growth, driven by increasing consumer awareness, regulatory pressures, and technological advancements. Within this landscape, apocarotenal is emerging as a key growth segment.

Several factors are contributing to its rising demand:

- Shift away from synthetic dyes due to health concerns
- Expansion of clean-label product lines across categories
- Growing demand for plant-based and functional foods
- Technological improvements in formulation and delivery systems

Emerging markets, particularly in Asia-Pacific, are witnessing rapid adoption as local manufacturers align with global standards and consumer preferences.

Innovation in Delivery Systems

To maximize the effectiveness of apocarotenal, companies are investing in advanced delivery systems such as emulsions, encapsulations, and dispersions. These technologies enhance solubility, improve stability, and ensure uniform color distribution across different food matrices. Microencapsulation, for instance, protects apocarotenal from environmental stressors, allowing it to retain its potency even in challenging conditions. This opens up new possibilities for its application in complex formulations, including fortified and functional foods.

Regulatory Landscape and Safety Considerations

Apocarotenal is widely approved for use in food applications across multiple regions, including Europe, North America, and Asia. It is often listed under specific food additive codes and is subject to stringent quality and safety standards. Its safety profile is well-established, with extensive research supporting its use within recommended limits. As regulatory bodies continue to emphasize transparency and safety, apocarotenal's compliance credentials further strengthen its position in the market.

Challenges and Considerations

Despite its many advantages, the adoption of apocarotenal is not without challenges:

- **Cost Factors:** Natural colorants are generally more expensive than synthetic alternatives, which can impact product pricing.
- **Consumer Perception:** While more acceptable than synthetic dyes, some consumers may still question processed

natural ingredients.

- **Formulation Complexity:** Achieving the desired shade and stability may require technical expertise and precise formulation.

However, ongoing research and technological advancements are steadily addressing these challenges, making apocarotenal more accessible and cost-effective.

Future Outlook: A Bright Orange Horizon

The future of apocarotenal looks promising, driven by continuous innovation and evolving consumer preferences. As the demand for natural, sustainable, and high-performance ingredients grows, apocarotenal is poised to play an increasingly important role in shaping the next generation of food products.

Key trends that will influence its future include:

- Integration with functional ingredients for added health benefits
- Expansion into new product categories, including nutraceuticals
- Advancements in bio-based production methods
- Greater emphasis on traceability and transparency

With its unique combination of color intensity, stability, and natural appeal, apocarotenal is set to become a cornerstone of modern food formulation.

Conclusion: Redefining Natural Coloration

Apocarotenal represents more than just a food colorant; it symbolizes a broader shift toward innovation that balances nature and technology. Its ability to deliver vibrant hues while meeting the demands of clean labeling, sustainability, and performance makes it a transformative ingredient in the food industry. As manufacturers continue to navigate the complexities of consumer expectations and regulatory requirements, apocarotenal offers a reliable and forward-looking solution. In a world where visual appeal and ingredient integrity are equally important, this remarkable compound is redefining how color is perceived, produced, and experienced.

The revolution in natural food colorants is well underway and apocarotenal is leading the charge with brilliance, resilience, and a distinctly orange glow.

Author's Bio : Mr. Kumar serves as a Supporting Editor for FBP magazine

The Rise of Encapsulation Technologies

Unlocking Value in Food Systems

A Market on the Rise

The global food industry is undergoing a transformation where functionality, nutrition, and performance are becoming as critical as taste. At the center of this evolution lies food encapsulation, a technology rapidly gaining prominence across food and beverage applications. Valued at USD 14.68 billion in 2025, the Food Encapsulation Market is projected to reach USD 23.70 billion by 2034, growing at a CAGR of 8.6%. This steady growth reflects a deeper shift in consumer expectations, where food is no longer just sustenance but a vehicle for health, wellness, and enhanced living.

Understanding Food Encapsulation: A Technology with Purpose

Food encapsulation involves enclosing sensitive or active ingredients such as vitamins, probiotics, enzymes, flavors, and omega 3 fatty acids within protective coatings. This process shields these components from environmental factors like heat, moisture, and oxidation while enabling controlled release during consumption or digestion. The result is improved ingredient stability, enhanced bioavailability, and longer shelf life, which are key advantages for manufacturers striving to deliver consistent and high quality products.

The Functional Food Revolution Driving Demand

One of the most significant growth drivers for food encapsulation is the surge in demand for functional foods and nutraceuticals. Today's consumers are increasingly seeking products that support immunity, energy, gut health, and overall wellness. Encapsulation allows manufacturers to incorporate bioactive ingredients without compromising taste, texture, or product integrity. As more than half of global consumers actively look for performance enhancing foods and beverages, encapsulation has become essential for meeting these evolving dietary expectations.

Dominance of Functional Applications

Functional foods currently dominate the encapsulation landscape, accounting for a substantial share of market applications. These include fortified snacks, dietary supplements, and health focused packaged foods enriched with probiotics, vitamins, and plant based nutrients. Meanwhile, the beverage and dairy segments are emerging as high growth areas. From fortified juices and functional drinks to plant based milk



alternatives, encapsulation ensures nutrient stability while preserving flavor profiles, which is essential for consumer acceptance.

Technological Advancements from Micro to Nano

Innovation in encapsulation technologies is reshaping how ingredients are delivered and experienced. Microencapsulation continues to lead the market due to its versatility and cost effectiveness, enabling protection and controlled release of ingredients across diverse applications. At the same time, nanoencapsulation is gaining traction as a next generation solution. It offers improved absorption and targeted delivery of nutrients, opening new possibilities for precision nutrition. The integration of AI assisted formulation and sustainable encapsulation materials is further accelerating innovation, allowing manufacturers to optimize performance while aligning with environmental goals.

Nutraceutical Growth and Plant Based Momentum

The expansion of the nutraceutical sector is creating significant opportunities for encapsulation technologies. Ingredients such as omega 3 fatty acids, probiotics, and botanical extracts require protection to maintain efficacy, making encapsulation indispensable.

Simultaneously, the rise of plant based foods is driving new applications. Encapsulation helps overcome formulation challenges such as flavor masking and nutrient delivery in plant based products, enhancing both taste and nutritional value. This is particularly evident in plant based beverages and dairy alternatives, where consumer expectations are rapidly rising.

Regional Dynamics Driving Expansion

North America remains the dominant market,

supported by advanced food processing infrastructure, high consumer awareness, and strong demand for functional products. The region continues to lead in innovation and product development.

However, Asia Pacific is emerging as the fastest growing region. Rapid urbanization, increasing disposable incomes, and a growing middle class population are driving demand for packaged and fortified foods. Countries like India, China, and Japan are witnessing a surge in consumption of functional and ready to eat products, creating strong growth opportunities for encapsulation technologies. Europe is also expanding steadily, driven by clean label trends and regulatory emphasis on natural ingredients.

Challenges on the Path to Adoption

Despite its promising outlook, the food encapsulation market faces notable challenges. High production costs, the need for specialized equipment, and technical complexities can limit adoption, particularly among small and mid sized manufacturers. Additionally, ensuring scalability while maintaining product quality and regulatory compliance remains a critical hurdle. However, ongoing advancements in technology and increasing economies of scale are expected to gradually ease these constraints.

Competitive Landscape Shaped by Innovation

The competitive landscape is marked by strong investments in research and development. Leading players such as Archer Daniels Midland Company, BASF SE, Cargill, Incorporated, DSM-Firmenich AG, Kerry Group plc, and International Flavors & Fragrances Inc. are focusing on advanced delivery systems and next generation encapsulation solutions.

Their efforts are centered on improving ingredient performance, enhancing sustainability, and meeting the rapidly evolving demands of global consumers.

The Future of Encapsulation in Food Innovation

Food encapsulation is no longer a niche technology. It is becoming a foundational element of modern food innovation. As the industry moves toward personalized nutrition, clean label formulations, and functional product development, encapsulation will play an increasingly critical role. With its ability to bridge the gap between science and consumer expectations, food encapsulation stands poised to redefine how food is designed, processed, and experienced in the years ahead.

www.polarismarketresearch.com



India
Mumbai
26-28 August 2026

20TH
EDITION
ESTD. 2006



Where the future of food ingredients takes center stage!

26 | 27 | 28
August 2026

Hall 3-4
BEC, Mumbai

Co-located with
PROPAK
INDIA

Fi India marks 20 years of driving food innovation and here's why you can't afford to miss it:



Meet the right audience



Connect with global suppliers



Engage with R&D leaders



Discover ingredient innovations



Experience live demos & launches



Celebrate 20 years of food innovation

For more information, contact:

ESME BANGERA | E: esme.bangera@informa.com | M: +91 97691 28772
MAHESH VERMA | E: mahesh.verma@informa.com | M: +91 74989 67629

Follow us on:    

Scan the
QR Code
to register



Stay Cool This Summer: Smart Foods & Drinks to Beat the Heat



Dr. G. Pandidurai and
Mr. S. Gobinath

Summer is a season full of energy, bright sunshine, and outdoor activities, but it also brings intense heat that can affect our health. Staying cool and hydrated becomes very important during this time. One of the simplest and most effective ways to manage the heat is by choosing the right foods and drinks. A proper summer diet helps maintain body temperature, prevents dehydration, and keeps you active and refreshed throughout the day.

Why Your Summer Diet Matters

During summer, the body loses a significant amount of water through sweating, which can lead to dehydration and fatigue. At the same time, digestion tends to slow down, making it difficult to process heavy, oily, or spicy foods. Consuming the wrong type of food can increase body heat and cause discomfort such as bloating and tiredness. Therefore, it is important to follow a diet that is light, easy to digest, rich in water content, and packed with essential nutrients to support overall health and regulate body temperature.

Best Hydrating Foods for Summer

Hydrating foods play a vital role in maintaining fluid balance in the body during hot weather. Fruits like watermelon are highly beneficial because they contain

a large percentage of water and help replenish lost fluids while providing essential nutrients like potassium. Similarly, cucumber is another excellent choice due to its high-water content and cooling properties. Tomatoes not only hydrate the body but also supply antioxidants such as lycopene, which help protect against heat-related stress. Vegetables like zucchini and celery further support hydration and provide vitamins and minerals that are necessary for maintaining energy and overall wellbeing.

Light & Easy-to-Digest Summer Foods

In summer, it is advisable to consume foods that are gentle on the digestive system. Yoghurt is an ideal choice as it not only cools the body but also contains probiotics that improve gut health and immunity. Fresh salads made with fruits and vegetables are refreshing, nutritious, and easy to digest, making them perfect for hot days. Light soups, especially broth-based or chilled varieties, provide hydration without putting stress on digestion. Additionally, fermented foods like buttermilk and kefir help maintain a healthy digestive system and improve appetite during the hot season.

Cooling Herbs & Natural Refreshers

Certain herbs and spices have natural cooling properties that help reduce body heat and provide a refreshing effect. Mint is widely known for its cooling sensation and can be easily added to drinks or meals. Fennel seeds are also beneficial as they help in reducing internal heat and improving digestion. Coriander leaves add both flavor and a cooling effect to dishes, while cumin seeds support digestion and help maintain body balance. Including these natural ingredients in daily meals can significantly enhance comfort during summer.

Summer Drinks That Truly Hydrate

Staying hydrated is essential during summer, and natural drinks are the best way to achieve this. Coconut water is one of the most effective hydrating drinks as it contains essential electrolytes that replenish lost minerals. Lemon water is refreshing and helps detoxify the body while keeping it cool. Traditional drinks like buttermilk are highly beneficial for digestion and hydration. Fresh fruit juices, when consumed without added sugar, provide both hydration and essential vitamins, making them a healthy alternative to artificial beverages.

Foods to Avoid in Summer

Just as some foods are ideal for summer, certain foods are best limited or avoided in hot weather as they can aggravate heat-related symptoms like dehydration, indigestion, and fatigue. Here's what not to eat in summer:

Heavy & oily foods

Avoid greasy, heavy foods in summer as they are harder to digest, causing the body to generate more heat. Minimise intake of:

- Fried foods: French fries, fried chicken, and other deep-fried items are difficult to digest and can increase body temperature.
- Creamy sauces: Rich, heavy sauces can be taxing on the digestive system and lead to discomfort in hot weather.
- Fatty meats: High-fat meats can be slow to digest and generate more body heat.
- Processed snacks: Many packaged snacks are high in sodium and low in water content, which can contribute to dehydration.

7 Powerful Foods to Beat the Summer Heat

1. Watermelon

This low-calorie red juicy fruit is packed with water, which helps to regulate your body temperature when you're sweating in the heat. Plus, watermelons are filled with nutrients for good health, including vitamin C, potassium, and magnesium. In fact, the B vitamins found in watermelons are needed for energy production, so if the sun is making you hot and sleepy, this summery fruit could be the food you need.

2. Cucumber

A water-packed fiber-filled food that also helps to hydrate the body on hot summer days is the classic cucumber. Not only does the high-water content of this fruit help to cool the body, but cucumbers also contain a number of important nutrients – such as vitamin C, vitamin K and vitamin B6 – to help support your overall wellbeing.

3. Red Onions

Whipping up a salad? Make sure there are some red onions in there. These root vegetables contain a compound called quercetin, which is even said to protect against sunstroke. Plus, onions contain plenty of other nutrients, including antioxidants and fiber.

4. Coconut Water

There's a good reason why coconut water is such a good drink to have on your summer holidays. Research has found that it could offer whole body rehydration, in turn helping you to stay cool on those hot summer days. The same research also found that coconut water caused less nausea, fullness, and no stomach upsets when compared to plain water and carbohydrate-electrolyte beverages. It primarily comes down to the fact that coconut water contains electrolytes including potassium, magnesium, calcium, and sodium and research suggests that it be a better option than water for rehydrating after exercise.

5. Citrus Fruits

Juicy and bright oranges, grapefruits, and lemons don't just make a delicious snack, they could also help you to cool down. How so? Well, it's thanks to the fact that citrus fruits are filled with antioxidants, which have a cooling effect, and they're packed with digestion-boosting fiber. If your body is using less energy digesting food, then it will be more likely to reap the benefits of the antioxidants.

6. Avocado

The humble avocado contains plenty of fibre, which as mentioned, helps food to digest. The easier digestion is for the body, the less heat you'll feel as your body works to break down food. Enjoy avocado spread on toast, slice into a salad, or mixed with hard boiled eggs for a tasty, high-protein, high-fat mix.

7. Mint

This popular herb contains a compound called menthol which interacts with the cold-sensitive receptors in your skin and mouth and creates a cooling effect. You may not want to eat mint leaves on their own, so opt for mint in cold water or try adding it to a salad or gazpacho.

Simple Summer Diet Tips

Follow these simple tips to stay hydrated and beat the heat with your summer diet:

- Eat seasonal fruits and vegetables with high water content
- Have light, frequent meals rather than heavy spreads
- Stay hydrated by sipping on water, coconut water, buttermilk, etc., through the day
- Include cooling herbs and spices like mint, fennel and coriander
- Limit intake of fried, spicy, sugary and processed foods
- Consume probiotic foods like yoghurt and fermented veggies for gut health

Conclusion

Summer can be enjoyable and refreshing if proper care is taken, especially in terms of diet. By including water-rich fruits, light meals, and natural cooling drinks, you can protect your body from heat-related issues and maintain good health. Avoiding unhealthy food choices further supports your wellbeing. A balanced and mindful approach to eating will help you stay cool, active, and full of energy throughout the season.

Author's Bio

Dr. G. Pandidurai and Mr. S. Gobinath S

Subject Matter Specialist

ICAR - Krishi Vigyan Kendra (KVK)

Tamil Nadu Veterinary and Animal Sciences University (TANUVAS)

Corresponding author: nanalpandi@gmail.com

ADVERTISER'S INDEX

COMPANY NAME	P.N
ADVANCED INDUSTRIAL MICRO SYSTEMS	39
ANNAPOORNA INTER FOOD - 2026	58
ANUGA FOODTEC INDIA - 2026	8
ANUGA SELECT INDIA - 2026	55
BLUECRAFT AGRO PVT. LTD.	59
BRY-AIR (ASIA) PVT. LTD.	G.F
DRINKTEC INDIA - 2026	23
DYNATECH MARKETING COMPANY	7
FI INDIA - 2026	47
FOOD PRO - 2026	29
FOODTECH TAIPEI	9
FOODTECH TAIPEI	60
INDIA FOODDEX - 2026	33
INDUS FOOD AHMEDABAD - 2026	4
INOXPA INDIA PVT. LTD.	5
NORD DRIVESYSTEMS PVT. LTD	2
PWS ENGINEERS PVT. LTD.	13
SEW EURODRIVE	17
TIMKEN	3



CELEBRATING 12 YEARS OF
PUBLISHING EXCELLENCE

SUBSCRIBE NOW
Call - +91- 9999383836



Print Subscription Starting @ Rs. 3000/- Yr.
Digital Subscription Just @ Rs. 1000/- Yr.

Smart Palletizing for Fresh Produce: Reducing Waste from Farm to Warehouse

Ritesh Verma



Introduction

Fresh fruits and vegetables are among the most perishable commodities in the global food supply chain, yet a large share of post-harvest losses occurs not in the field but during handling, stacking, and transportation. From the moment produce is harvested, it becomes highly vulnerable to mechanical damage, temperature fluctuations, and improper load distribution. Traditional palletizing methods, which often rely on manual labor and inconsistent stacking practices, can lead to bruising, crushing, and reduced shelf life. These inefficiencies not only result in financial losses for producers and distributors but also contribute significantly to global food waste. As supply chains become more complex and demand for fresh produce increases, the need for smarter, more controlled palletizing solutions is becoming increasingly critical.

Why Smart Palletizing is Necessary

The fresh produce supply chain operates under tight timelines and strict quality requirements. Fruits and vegetables are living products that continue to respire after harvest, making them highly sensitive to pressure, temperature, and airflow conditions. In conventional palletizing, uneven stacking and poor weight distribution often create pressure points that damage delicate produce such as tomatoes, berries, and leafy greens. Additionally, unstable pallets can shift during transport, leading to further losses.

Smart palletizing addresses these challenges by introducing precision and consistency into the stacking process. It ensures that each pallet is configured based on the specific characteristics of the produce, including size, weight, and fragility. This

level of customization is essential in modern supply chains where mixed loads, longer transit times, and export requirements demand higher standards of handling. Without smart palletizing, the industry risks continued inefficiencies, increased waste, and compromised product quality.

Understanding Smart Palletizing in Fresh Produce Supply Chains

Smart palletizing goes beyond simple automation. It is a data-driven approach that combines advanced machinery with intelligent software to create optimal stacking patterns. These systems analyze multiple variables, such as carton strength, product weight, ventilation needs, and transportation conditions, to design pallet configurations that protect produce throughout its journey.

For fresh produce, airflow is a critical factor. Proper pallet design ensures that air can circulate freely between cartons, supporting effective cooling and maintaining consistent temperatures. This is especially important in cold chain logistics, where uneven cooling can accelerate spoilage. Smart palletizing also considers factors such as pallet height, stacking sequence, and load stability to ensure that the produce remains intact and fresh from farm to warehouse.

Key Benefits of Smart Palletizing

Reduced Physical Damage

One of the most immediate benefits of smart palletizing is the reduction in mechanical damage. Automated systems handle produce with precision, placing each carton in a way that minimizes pressure and avoids impact. This is particularly important for high-value and delicate produce, where even minor damage can lead to significant losses.

Improved Load Stability

Smart palletizing systems use advanced algorithms to create stable and balanced loads. By distributing weight evenly across the pallet, they reduce the risk of shifting during transportation. This not only protects the produce but also enhances safety during handling and storage.

Optimized Space Utilization

Efficient pallet configurations allow for better use of available space in trucks, containers, and warehouses. By maximizing pallet density without compromising product safety, companies can reduce the number of shipments required, leading to cost savings and improved logistics efficiency.

Enhanced Operational Efficiency

Automation streamlines the palletizing process by reducing dependence on manual labor and significantly increasing throughput. This becomes especially important during peak harvest seasons, when large volumes of produce must be processed quickly and with precision. By maintaining consistent performance, automated systems also help reduce handling errors, product damage, and the need for rework. This not only improves operational efficiency but also ensures a more reliable and standardized flow across the supply chain.

Improved Shelf Life and Quality

By minimizing damage and maintaining proper airflow, smart palletizing helps preserve the freshness and quality of produce. This translates into longer shelf life, reduced spoilage, and higher customer satisfaction.

Better Traceability and Data Insights

Modern palletizing systems can integrate seamlessly with digital platforms to track pallet configurations, handling conditions, and movement across the entire supply chain. This real-time data offers valuable insights for quality control and operational monitoring. By analyzing this information, companies can quickly identify inefficiencies, reduce handling issues, and improve overall workflow performance. This not only enhances traceability but also supports faster, data-driven decision-making across logistics and distribution networks.

Technology Integration: The Backbone of Smart Palletizing

The effectiveness of smart palletizing is driven by the integration of advanced technologies that bring intelligence and adaptability to the process. Robotics plays a central role, with automated arms capable of handling produce gently and consistently, reducing

the risk of damage associated with manual handling.

Further, technology like, machine vision systems enhance accuracy by identifying product dimensions, shapes, and orientations in real time. This allows the system to adjust stacking patterns dynamically, ensuring optimal placement for each item. Artificial intelligence and machine learning further improve efficiency by analyzing historical and real-time data to refine pallet configurations and predict potential issues.

The Internet of Things (IoT) also adds another layer of control by enabling real-time monitoring of environmental conditions such as temperature, humidity, and vibration. These sensors ensure that produce is handled and stored under optimal conditions, reducing the risk of spoilage.

Digital twin technology is also gaining traction, allowing operators to simulate pallet configurations and logistics scenarios before implementation. This reduces trial-and-error, improves planning, and enhances overall system performance. Integration with warehouse management systems (WMS) and transportation management systems (TMS) ensures seamless coordination across the supply chain, from farm to distribution center.

Smart Palletizing as a Sustainable Way to Reduce Food Waste

Sustainability has become a central focus for the food industry, and smart palletizing plays a significant role in achieving environmental goals. By reducing physical damage and spoilage, it directly lowers the amount of food wasted during handling and transportation. This is particularly important given the resources required to produce fresh fruits and vegetables, including water, energy, and labor. In addition to reducing waste, smart palletizing contributes to more efficient logistics. Optimized pallet loads mean fewer shipments are needed, which in turn reduces fuel consumption and greenhouse gas emissions. Improved load stability also minimizes the risk of product loss during transit, further enhancing sustainability.

Moreover, the data-driven nature of smart palletizing enables continuous improvement. Companies can analyze performance metrics to identify areas for optimization, reducing inefficiencies and supporting long-term sustainability initiatives. By aligning operational efficiency with environmental responsibility, smart palletizing represents a practical and impactful approach to building a more sustainable food supply chain.

Applications Across the Fresh Produce Value Chain

Smart palletizing can be applied at multiple stages across the fresh produce supply chain, delivering value at each point. At the farm level, mobile or compact palletizing systems can be installed at packing stations to ensure proper stacking immediately after harvest. This early-stage intervention helps minimize damage right from the beginning.

In processing and packaging facilities, advanced palletizing systems handle large volumes efficiently while maintaining uniform load configurations. In distribution centers and warehouses, smart palletizing can be integrated with automated storage and retrieval systems, enhancing inventory management and overall operational efficiency. For export operations, where produce must travel long distances and meet strict quality requirements, smart palletizing ensures that products remain well-protected throughout the entire journey. This plays a crucial role in preserving quality and maintaining competitiveness in global markets.

Challenges and Considerations

Despite its advantages, the adoption of smart palletizing comes with certain challenges. Initial investment costs can be significant, particularly for small and medium-sized enterprises. Integrating new systems with existing infrastructure and workflows may also require careful planning and customization. Workforce training is another important factor, as employees need to adapt to new technologies and processes. However, these challenges are often outweighed by the long-term benefits, including reduced waste, improved efficiency, and higher product quality. As technology becomes more accessible and scalable, adoption is expected to increase across the industry.

The Future of Fresh Produce Handling

The future of fresh produce logistics will be shaped by continued advancements in automation, data analytics, and connectivity. Smart palletizing systems are expected to become more intelligent, flexible, and cost-effective, making them accessible to a wider range of businesses. Emerging innovations such as collaborative robots, advanced sensors, and predictive analytics will further enhance system capabilities. These technologies will enable real-time decision-making, allowing supply chains to respond quickly to changing conditions and demands. As consumer expectations for quality and sustainability continue to rise, the adoption of smart palletizing will become a key differentiator for companies looking to stay competitive in the global market.



Conclusion: Building a Smarter and More Sustainable Supply Chain

Smart palletizing represents a transformative shift in how fresh produce is handled, stored, and transported across the supply chain. Unlike conventional stacking methods, it leverages automation, sensor-based systems, and data-driven algorithms to ensure optimal load stability, precise weight distribution, and minimal physical stress on fruits and vegetables. This is particularly critical for perishable commodities that are highly sensitive to pressure, temperature fluctuations, and handling inconsistencies. By reducing manual intervention and human error, smart palletizing significantly lowers instances of bruising, spoilage, and contamination. In addition, integration with technologies such as IoT-enabled monitoring, machine vision, and real-time analytics allows operators to track pallet conditions, optimize warehouse space, and streamline logistics operations. The result is not only improved product quality and extended shelf life but also enhanced traceability and compliance with food safety standards—key requirements in modern food supply chains.

For the food industry, where operational efficiency and sustainability are becoming increasingly interconnected, investing in smart palletizing is a strategic imperative rather than a discretionary upgrade. Rising demand, supply chain complexities, and the growing emphasis on reducing food waste are pushing companies to adopt intelligent, scalable solutions. Smart palletizing contributes directly to sustainability goals by minimizing product loss, optimizing transportation loads to reduce fuel consumption, and lowering the carbon footprint associated with logistics. Furthermore, it supports better resource utilization by enabling faster throughput, reducing labor dependency, and improving overall warehouse productivity. As global supply chains face mounting pressure from climate change, urbanization, and evolving consumer expectations, the adoption of smart palletizing systems will play a crucial role in building resilient, future-ready food logistics networks that prioritize efficiency, profitability, and environmental responsibility.

Mr. Verma is a freelance writer with over 10 years of experience delivering high-quality, industry-focused content.

Ion Exchange Enters Strategic Technology and Manufacturing Collaboration with MANN+HUMMEL for Advanced Membrane and System Solutions

**MANN+
HUMMEL**

ION EXCHANGE
Refreshing the Planet

Ion Exchange (India) Ltd, a leading provider of total water and environment management solutions globally and MANN+HUMMEL, a world leader in filtration technology and intelligent separation solutions, have announced a strategic technology transfer and manufacturing collaboration for the production of advanced PVDF Ultrafiltration (UF) membranes with integrated UltraSKID systems, and subsequently a strategic technology transfer of Membrane Bio Reactor (MBR) solutions to India.

The collaboration brings together MANN+HUMMEL Water & Membrane Solutions' global expertise in membrane technology with Ion Exchange's strong manufacturing capabilities, engineering strength and established presence in India's water and wastewater treatment sector.

Under the agreement, Ion Exchange will manufacture, undertake system integration and commercialize PVDF hollow fiber ultrafiltration membranes along with integrated UltraSKID systems based on MANN+HUMMEL's advanced technology. Production will take place at Ion Exchange's expanded state-of-the-art HYDRAMEM® membrane manufacturing facility in Goa.

The collaboration further strengthens Ion Exchange's HYDRAMEM® solutions to offer an integrated portfolio of membrane-based technologies, including Ultrafiltration (UF), Reverse Osmosis (RO) and Membrane Bioreactor (MBR) systems. It will enable the company to deliver globally benchmarked membrane technology manufactured locally, reduce import dependence and ensure improved supply reliability and

faster delivery timelines for customers.

Sridhar Padmanaban, Senior Vice President, Ion Exchange (India) Limited, said: "This collaboration is a significant milestone in delivering world-class solutions through our advanced membrane manufacturing capabilities. It reflects our commitment to the Government's Make in India vision and supports the larger aspiration of Viksit Bharat 2047 by advancing self-reliance in critical water treatment technologies."

Rohit Sathe, Senior Vice President and General Manager, MANN+HUMMEL Water & Membrane Solutions, added, "This partnership with Ion Exchange reflects a strong global collaboration focused on technology transfer and localized manufacturing of advanced membrane solutions. It brings together complementary strengths to enhance the availability of high-performance filtration solutions, supporting evolving customer needs across markets."

GNT announces first dedicated China office for plant-based EXBERRY® colors



GNT's General Manager APAC Andreas Thiede, Managing Director Petra Thiele, and CEO Hendrik Hoeck at the launch party in Shanghai (photo credit: GNT Group)

GNT has opened a sales and application office in Shanghai to meet demand for plant-based EXBERRY® colors in China. GNT offers a full spectrum of EXBERRY® color concentrates in China. They are made from non-GMO fruits, vegetables, and plants using physical processing methods and water. Under China's new official industry standard, these concentrates are classified as Coloring Foods and qualify for clean and clear

label declarations such as "carrot coloring ingredient."

GNT has now opened its first dedicated office in China to help the country's food and beverages manufacturers create more natural products. The application laboratory will enable GNT to offer Chinese customers faster and highly tailored application support. It will provide a space for customer

training sessions and workshops as well as services including concept innovation, formulation support, and stability testing. Andreas Thiede, General Manager APAC at GNT Group, said: "Together, this office and application lab demonstrate our commitment and long-term strategic growth ambition in China."

He added: "China is a dynamic market, with strong momentum behind natural and clean-label food and beverage products. Customers here move fast – and they expect partners to be able to move with them. Now, with a local team in place, we can support this growth with faster decisions, closer collaboration, and tailored solutions."

EXBERRY® colors are available in hundreds of shades from across the rainbow. They can be used to achieve vibrant, stable shades in almost any type of food and drink. Victor Foo, GNT Group's Head of Sales for China, said: "Our new application lab allows customers to visit us, collaborate face to face, and receive tailored training that supports their teams and applications. This helps us work faster together, strengthen relationships, and unlock new growth opportunities across China."

Kerry Opens Expanded Biotechnology Manufacturing Hub in Ireland to Meet Growing Global Demand for Lactase Enzymes



Kerry, a global leader in taste and nutrition, has announced the opening of its expanded biotechnology manufacturing facility in Carrigaline, Co. Cork, significantly increasing its capacity to produce lactase enzymes at industrial scale. The expansion strengthens Kerry's ability to support dairy producers worldwide as demand accelerates for lactose-free and sugar-reduced dairy products, enabling faster scale-up, secure supply and consistent performance at commercial volumes.

"This investment translates decades of biotech research into scalable, real-world capability," said Shane McGibney, President & CEO, Biotechnology Solutions and Transformation at Kerry. "By strengthening the link between enzyme engineering and industrial production, we're able to move innovations more efficiently from the lab to the production line – helping customers access reliable supply and bring new products to market with greater speed and confidence."

The Carrigaline investment enhances Kerry's end-to-end enzyme platform by more closely linking advanced enzyme engineering and strain development with large-scale manufacturing. Working with Kerry's Global Innovation Centre as the central hub, Kerry connects innovation and application development with its specialised biotechnology capabilities at the Kerry Biotechnology Centre in Leipzig, Germany, and expanded production capacity in Carrigaline, Ireland — accelerating the journey from lab-based discovery to commercial application.

"This facility demonstrates how industry, skills and innovation come together to support the future of Ireland's food and biotechnology sectors," said Peter Burke, Ireland's Minister for Enterprise, Tourism and Employment. "As a global leader in food, Kerry Group continues to play an important role in advancing

high value capability from its Irish base. Manufacturing sites like Carrigaline help move innovation towards scale and strengthen Ireland's position in advanced manufacturing."

Enabling faster, more resilient customer scale-up

Demand for lactose-free and sugar-reduced dairy continues to grow across global markets, as consumers seek products that support digestive comfort and reduced sugar intake without compromising taste or quality. Kerry's expanded lactase capacity is designed to help dairy producers respond to this demand quickly, reliably and at scale.

"For our customers, this expansion is about execution as much as innovation," said Ronan Moloney, Vice President of Enzymes at Kerry. "With increased manufacturing capacity in Carrigaline, combined with deep applica-

tion expertise, we can support customers through enzyme selection, process optimisation and scale-up – reducing bottlenecks and strengthening supply continuity as they commercialise lactose-free and sugar-reduced dairy products."

A critical hub in Kerry's global enzyme network

The Carrigaline site plays a central role in Kerry's global manufacturing network, supporting more than 200 customers across over 80 countries. Lactase enzymes produced at the site are used to process more than two million tonnes of milk annually, reaching an estimated 28 million consumers worldwide. With the expanded facility now operational, Kerry is well positioned to support the next phase of growth in lactose-free and reduced-sugar dairy. By combining decades of dairy science with advanced enzyme innovation and industrial-scale manufacturing, Kerry enables producers to move from concept to commercialisation with greater speed, resilience and confidence — acting as a single, integrated partner across the full innovation lifecycle.

SALTWELL targets rising demand for lower sodium salt with new Chile facility

SALTWELL Group, the owner and producer of SALTWELL® naturally lower sodium salt, has opened a new production facility in Chile, close to where its raw materials are sourced. The site will enable the company to meet growing global demand for its solutions from food manufacturers, who face mounting pressure to cut sodium levels in their products.

SALTWELL® is a natural, clean-label salt that contains 35% less sodium than standard salt but offers comparable taste, texture and functionality. It is obtained through solar-evaporation and modern sea salt production processes using hypersaline water resources from the Atacama salt flats. The new state-of-the-art facility, in Santiago, will give SALTWELL Group significantly increased production capacity. Additionally, it will create an even more robust supply chain thanks to its proximity to both the source of the raw materials and Chile's key trading ports.

There will be sustainability benefits, too, since the location of the facility means raw materials will now travel shorter distances for processing. Most production of SALTWELL® salt will move to Chile from the current location in Cyprus, which will



focus on speciality lines and contingency purposes.

Anders Hansson, CEO of Sweden-based SALTWELL Group, says: "This new production plant in Chile represents a major strategic investment and a key milestone in our story. With this expanded capacity, and the proven performance of SALTWELL® salt in food formulations, we are well positioned to help food manufacturers deliver healthier, great-tasting products that align with evolving consumer expectations."

He continues: "Not only is this a decisive step towards scaling up global supply of SALTWELL® salt, but it also demonstrates our vision of delivering a positive impact on public health by making it easier for consumers to reduce their dietary sodium intake."

HCCB Launches first-of-its-kind High-Speed Kinley Water Production Line at Avinya Facility in Telangana



Hindustan Coca-Cola Beverages Private Limited (HCCB), one of India's leading FMCG companies, today announced the commissioning of a first-of-its-kind high-speed Kinley Water Production Line at its manufacturing facility at Avinya (TGF – Telangana Greenfield Factory) in Telangana. Avinya Plant is located at Banda Thimmapur in Siddipet district and is one of HCCB's most advanced manufacturing facilities. Built on a 49-acre site with a total planned investment of over INR 2,000 crore, the plant currently operates seven advanced production lines and represents a major addition to the company's manufacturing ecosystem in the region.

Among one of the most advanced packaged drinking water production lines in the coun-

try, the facility now ranks as the fastest within the Coca-Cola India Southwest Asia (INSWA) system [in terms of the production capacity in BPM]. The newly installed line can produce Kinley 500 ml PET bottles at a speed of up to 1,350 bottles per minute (BPM) and Kinley 1-litre PET bottles at 1,000 BPM, setting a new benchmark for manufacturing speed, operational efficiency, and precision production capacity.

The high-speed production line is built on an integrated automation framework designed to deliver enhanced operational visibility, process precision, and manufacturing consistency across production cycles. The line features a state-of-the-art water purification system equipped with mineral injection and ozonisation technology to maintain stringent quality standards. It also incorporates advanced lamella pack technology, enabling up to 90% water recovery, reinforcing the company's commitment to resource efficiency and responsible water management.

An integrated Human-Machine Interface (HMI) enables centralised monitoring and improved process control, enhancing production consistency and operational reliability. The new line is also equipped with an ad-

vanced dosing system, improving packaging stability and extending product integrity.

Additionally, the equipment has been optimised for energy efficiency, with real-time monitoring capabilities designed to minimise downtime and enable quicker changeovers, allowing for greater manufacturing flexibility and responsiveness to market demand.

Speaking on the commissioning of the new production line, Avinash Kant Kumar, Head – Integrated Supply Chain, Hindustan Coca-Cola Beverages (HCCB), said, "Avinya sets a new national benchmark in beverage manufacturing by merging high-tech automation with sustainable resource management. The launch of our Kinley production line, the fastest in the Coca-Cola INSWA system marks a big milestone for HCCB. This facility reinforces our commitment to Telangana's industrial growth and our dedication to world-class operational excellence."

The commissioning of the new line further strengthens HCCB's manufacturing ecosystem and enhances the capacity of Avinya facility, supporting the company's continued focus on building an agile, technology-led, and future-ready supply chain.

Biotexia™ announces new brand identity as part of strategic growth ambitions



Biotexia has introduced its new brand identity as it prepares to showcase its clinically supported ingredient portfolio at Vitafoods Europe (5th-7th May in Barcelona).

Biotexia is the new name for three health and nutrition businesses within ABF Ingredients that have merged. The companies previously operated as ABbiotek Health, Fytexia and Anzchem, each contributing unique expertise. ABbiotek Health brings extensive experience in biotics that support the microbiome,

including ABBC1, and in degrading histamine through its adiDAO enzyme. Fytexia offers leading capabilities in clinically supported polyphenols and peptides, with products like Promunel, Sinetrol® and DNF 10 in high demand. Anzchem contributes as a trusted legacy in fish oil lipids, deep knowledge of the APAC region, and a strong footprint in Australia and New Zealand.

As a unified brand, Biotexia delivers natural, science-backed ingredients across four key areas: metabolic, immune and digestive health, while also innovating to support healthy ageing and vitality. The merger and new name launch are part of a strategy for growth in supplements markets.

Laurent Hubert, CEO of Biotexia, said: "The primary reason for the creation of Biotexia was to bring together our expertise to serve our customers at a time when the supple-

ments industry is undergoing exciting shifts. Each of our three former businesses offered something valuable, and by bringing them together we will be able to innovate and share our scientific expertise more effectively. Moving forward as Biotexia, our goal is to expand and play an active part in the continuing evolution of the global wellness market."

After many years of attending Vitafoods Europe as separate businesses, Biotexia will make its debut as a unified brand at Stand 3B6. As part of the Vitafoods education programme, Biotexia will sponsor the Weight Management Spotlight on 7 May, featuring insights on flagship ingredients DNF 10, a peptide studied for its role in appetite regulation, and Sinetrol, a natural citrus polyphenol complex researched for its ability to increase resting energy expenditure and promote lipolysis. The company will also present a dedicated session on 6 May in the Nutraceu-tical Theatre, exploring the science behind the functional enzyme DAO and showcasing adiDAO, a diamine oxidase enzyme developed to support the metabolism of dietary histamine in the gastrointestinal tract.

POWERING THE FUTURE OF DAIRY BUSINESS.



29 | 30 | 01
SEPT | SEPT | OCT
BOMBAY EXHIBITION
CENTRE, MUMBAI **2026**



Built for Brands That Mean Business

Anuga Select India is defined by the quality of its visitors. Bringing together importers, distributors, retailers, HoReCa buyers, food processors, and key decision-makers from across India and overseas, the platform is built purely for business.

If you are looking to expand distribution, enter new markets, strengthen trade relationships, and accelerate growth — Anuga Select India is your one-stop business platform.

**SECURE
YOUR STAND**



What to Expect in 2026



25,000+
Trade Visitors



15+
Country Pavilions



450+
Leading
Exhibitors



10
Power-Packed
Show Features



65+
Country
Representations



13,500+ sqm
of Exhibition
Space

For Exhibiting Opportunities

Connect with **Vaishali Thakker**

M: +91 99871 23821

v.thakker@koelnmesse-india.com

For Marketing & Alliances

Reach out to **Manali Babaria**

M: +91 76662 72824

m.babaria@koelnmesse-india.com



Tetra Pak and Sterilgarda Alimenti launch industry-first 1-litre aseptic carton with paper-based barrier



Tetra Pak, in collaboration with leading Italian dairy company Sterilgarda Alimenti, has unveiled the first-ever 1-litre package featuring a paper-based barrier, marking another significant milestone in the carton packaging industry's transition towards low-carbon, renewable materials. Introducing a paper-based barrier into the Tetra Brik® Aseptic 1000 Edge carton package – one of the company's most popular formats with its distinctive slanted top panel – increases the renewable content to 90% when combined with plant-based polymers.

Designed for ambient distribution, the carton supports shelf life and performance comparable to traditional aseptic packaging with an

aluminium foil barrier, while reducing the carbon footprint by up to 50%, as verified by the Carbon Trust¹.

Giampaolo Rossi, Plant Director at Sterilgarda Alimenti said: "We at Sterilgarda Alimenti stand for tradition and innovation. Through our continuous improvements in technology and product quality, we aim to provide the best possible answers to evolving consumer needs. Conscious consumption is becoming increasingly important, which is why adopting pioneering technologies is key across all our activities. Tetra Pak's new paper-based barrier is a groundbreaking innovation in beverage packaging and represents a significant contribution to our journey towards greater sustainability."

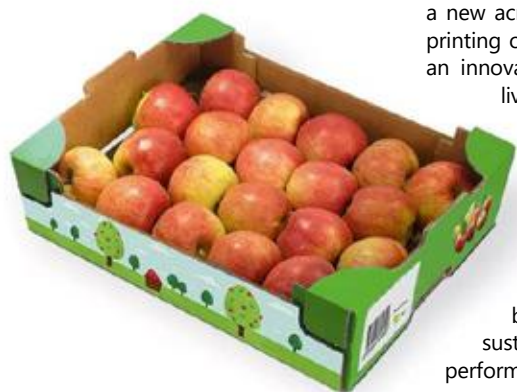
Tatiana Liceti, Executive Vice President, Packaging Solutions at Tetra Pak commented: "As environmental sustainability continues to shape the food and beverage industry, this innovation is an important step forward. It introduces a new barrier material that helps producers move closer to their environmental goals. For me, this is about harnessing the power of paper to make beverage cartons more renewable. This is the result of working hand-in-hand with our customers, supporting them as they offer responsible choices that consumers increasingly expect."

This industry-first news follows another major step in Tetra Pak's development of next-generation sustainable packaging materials: a €60 million investment in a new pilot plant for paper-based barrier technology at the company's facility in Lund, Sweden.

Tetra Pak's aseptic beverage carton with a paper-based barrier was first launched in 2023 in a portion package format on flexible lines. The technology was later expanded to high-speed lines and in 2024, it was recognised as a groundbreaking sustainability innovation in packaging, receiving the "Resource Efficiency" award at the Sustainable Packaging News Awards 2024. The paper-based barrier simplifies the carton's material structure, reducing it from three to two main materials: paper and polymers. The increased paper content can support recycling infrastructure by improving material recovery and quality, while maintaining the strength and rigidity required to protect aseptic products throughout their lifecycle.

To further enhance the environmental profile of food cartons, Tetra Pak is committed to investing approximately €100 million annually through to 2030 in the development of sustainable packaging solutions. This includes the creation of packages with simplified material structures and increased renewable content.

Siegwerk unveils new acrylic-free ink solution UniLEAF for paper and board applications



a new acrylic-free ink for water-based flexo printing on paper and board: UniLEAF. With an innovative formulation approach, it delivers substantial gains in renewable content, significant reductions in carbon footprint, improved energy efficiency, and strong alignment with market and regulatory requirements. This makes UniLEAF a valuable solution for converters, printers and brand owners seeking to enhance sustainability while maintaining high performance and operational efficiency.

Innovative Formulation Approach

UniLEAF, which stands for "Low Energy Acrylic Free", is built on Siegwerk's widely used

UniNATURE product range, which is already formulated with regenerative raw materials. UniLEAF advances this principle to a new level as it completely replaces conventional acrylic resins with polymers derived from regenerative, bio-based raw materials. "This represents a fundamental shift in the formulation of waterbased flexo inks," said Thibaud Liard, Business Unit Head Paper & Board EMEA at Siegwerk. "By removing acrylic resins, UniLEAF breaks with long-standing industry conventions and establishes a new approach for sustainable ink design." At the same time, the formulation integrates seamlessly into existing production processes. The bio-based resin system can be incorporated into standard ink-manufacturing operations without requiring major investments in production

Siegwerk, one of the leading global providers of printing inks and coatings for packaging applications and labels, introduces

technology. Manufacturing efficiency and finished-product quality remain unchanged, allowing producers to adopt the innovation without disrupting established workflows.

Measurable Sustainability Benefits

The new formulation concept has been validated during initial industrial trials, where UniLEAF was compared directly with Siegwerk's own UniNATURE, which is a sustainable and high-performing product series. The results show a remarkable reduction in CO₂ footprint by an additional 50% achieved by UniLEAF, marking a transformative improvement in the sustainability profile of water-based flexo printing inks. This is driven by a major increase in the share of biogenic carbon in the formulation, as UniLEAF more than doubles this share through the complete removal of acrylic resins. UniLEAF offers another significant sustainability advantage through reduced energy consumption during drying. Industrial trials confirm energy savings of more than 15% versus UniNATURE, all while maintaining the same production speed. "With these benefits combined, our new formulation supports converters, printers, and brand owners in meeting their sustainability targets while improving operational costs. At the same time, it helps them prepare for evolving regulatory requirements across the printing and packaging value chain," said Thomas Lehnen, Head of Technology Paper & Board EMEA at Siegwerk.

All fired up for meat and sausage packaging

SÜDPACK is advancing high-quality packaging solutions for meat and sausage products with a strong focus on sustainability and performance. As regulatory frameworks like the PPWR push for greener materials, the company emphasizes reducing resource consumption through smarter design, improved material efficiency, and enhanced recycling, alongside increasing the use of recyclable mono-materials and bio-based alternatives.

A family-owned leader in film manufacturing, SÜDPACK has long positioned itself at the forefront of innovation and circular economy practices. Its comprehensive portfolio integrates advanced extrusion expertise with customer-centric development, offering both conventional laminates and recyclable structures tailored to diverse packaging formats such as MAP, vacuum packs, and pouch systems, ensuring product protection, shelf life extension, and process reliability.

SÜDPACK's solutions play a crucial role in reducing food waste by significantly



extending the shelf life of fresh and processed meat products. High-performance films provide excellent sealing, barrier protection, and machinability, enabling manufacturers to enhance efficiency, minimize downtime, and achieve consistent output even with thinner, recyclable PP- and PE-based materials.

The company's innovative product lines, including Pure-Line, Multifol®, SafePeel Clear NT, and CarbonLite®, demonstrate how sustainability and functionality can go hand in hand. From recyclable MAP packaging for cold cuts to lightweight mono-material flow packs and high-barrier films, these solutions deliver strong eco-benefits while maintaining premium product protection, convenience, and visual appeal across the value chain.

kp unveils recyclable mono PET fish boards designed for VSP packaging

Klöckner Pentaplast (kp), a global leader in rigid and flexible packaging and specialty film solutions, has launched kp Evolve® Fish Boards, its latest innovation designed specifically for vacuum skin packaging (VSP) for processed fish.

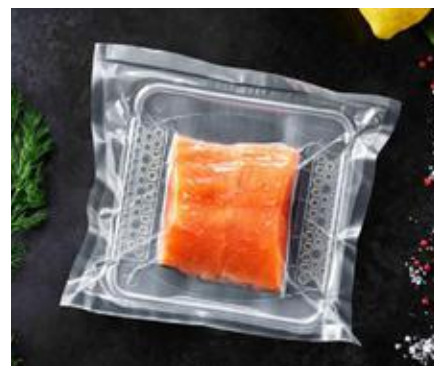
The new boards can contain up to 100% recycled content, helping brands comply with evolving regulatory requirements. Their lightweight, mono-material construction helps lower carbon impact and reduce EPR fees to the minimum in most European countries, while the board's open-flap design maximises pallet efficiency to improve logistics performance.

To deliver a dependable, high-quality solution for VSP applications, kp Evolve® Fish Boards offer strong vacuum-skin performance and excellent shelf clarity, and are fully recyclable in established PET recycling streams. At the core of the design is kp Zapora® advanced retention-chamber

geometry, which replaces the need for absorbent pads and adhesives. This system guides any released juices away from the product surface and into dedicated micro-vacuum retention zones, helping prevent liquid build-up and reducing the risk of leakage during distribution and handling.

Paul Rawlings, Launch Manager at kp Food Packaging, commented: "kp Evolve® Fish Boards are engineered for smooth runs on high-speed automated packing lines thanks to the board's central section, which enhances overall strength and processing efficiency. Available in a wide range of sizes, the boards meet UK and EU design-for-recycling requirements. And when brands choose to include kp Tray2Tray® recycled PET, the solution supports a closed-loop system for food trays."

"For brands looking to advance their sustainability commitments and reduce environmental impact without compromising



on performance, kp Evolve® Fish Boards offer an effective and commercially ready solution."

Thanks to the boards' innovative design features, consumers can lift the fish cleanly out of the pack without any mess or cleaning-up involved. Once used, the pack can be rinsed and recycled via established PET recycling systems.

For more information on kp Evolve® Fish Boards, visit: <https://foodpackaging.kpfilms.com/acton/media/43678/recyclable-monopet-boards-for-vsp-fish-applications-pr>

18th
Edition



Supported By



International Food & Beverage Trade Expo

December 09-11, 2026

Bombay Exhibition Center, Mumbai

Powering the future of F&B Trade

Key Highlights Of 2026

- » International hosted Buyers from around 30 countries
- » Presence of leading F&B importers, distributors, retailers and HoReCa professionals
- » Annapoorna Inter Food Awards
- » CEO Roundtable Discussion
- » Masterclasses by Celebrity Chefs
- » ALCOBEV Pavilion



Culinary Partner



Supporting Partners



pr@vaexhibitions.com gurmeet.chawla@ficci.com
 +91 98675 00880 +91 95997 63563



Sip it.
Mix it.
Energise.

Design by THE S-SQUAD

BLUECRAFT AGRO PVT. LTD.

Manufacturers of Starch and Derivatives

10, Abhishree Corporate Park,
Ambli - Bopal Road, Ambli,
Ahmedabad - 380 058

+91-2717454547 | marketing@bluecraftagro.com

 Bluecraft Agro Private Limited

Blucidex®

MALTODEXTRIN

FUNCTIONALITY

Source of energy | Thickening | Texturizing

FOOD SEGMENT PORTFOLIO

Food grade starch | Blucidex® Maltodextrin
Sorbitol | Liquid glucose | Amylostar® | Amylojel®



FOODTECH
FOODTECH
FOODTECH



FOOD TAIPEI MEGA SHOWS

FOODTECH TAIPEI

24-27 JUNE 2026 **TaiNEX 1, 4F**

**Your Gateway to Asia's Leading Food,
Bio & Pharmatech Machinery Market**