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Who better than an artificial intelligence can describe the effects of artificial intelligence on the global food system? That's what we asked two of the most popular chatbots worldwide - ChatGPT and Bard - and here is what they replied to us, with interesting differences. pages 8-9

Bufala through the lens of science

Researchers at the University of Parma used DNA analysis to identify the microbiota of the famous PDO cheese. They found differences in the bacterial population during the various stages of production. But which microorganisms play a key role? pages 14-15

insight **Reusables:** the revival

As sustainability targets get bolder, this system gains momentum. Yet there are still several barriers, mainly linked

to acceptance, lack of infrastructure, product safety, and cost. The challenges and pros illustrated by McKinsey's latest report.

pages 16-19

the company

Ricciarelli: breaking innovation barriers

with the

AI

In 2023, the Tuscan firm blows out 180 candles. An achievement made possible by the continuous strive for packaging solutions that meet the changing needs of customers around the world, attention to sustainability and an efficient after-sales service. on page 12

TFM: serving the fruit industry since 1975

With over four decades of know-how in the field, Tropical Food Machinery designs and manufactures multi-purpose processing lines tailored to clients' needs.

From small-size plants up to large-scale ones, the R&D department plays a vital role. on page 20

Lawer: tailor made weighing systems

The company provides automatic solutions for the handling of all kind of microingredients, for both large and small production flows.

on page 28

new tech Discovering

precision fermentation

This technology has the potential to turn upside down the alternative protein market. But how does it work ther techniques?

The "biggest-ever" **Gulfood Manufacturing** opens its doors

The 2023 edition of the Dubai-based industry event will see a major presence from European manufacturers. In the following pages, a preview of the solutions that Italian brands will introduce to global F&B decision-makers from 7 to 9 November.



markets & data **Robots on** the rise

With half a million installations worldwide •••• • in 2022, it is one of the fastest-growing industries. The top performing markets. As well as an insight into major global trends, with a special focus on the crucial role played by Artificial Intelligence.

on page 22

iocus on What if a supermarket trolley could save lives?

research team of Liverpool University has come up with an effective solution to detect atients with atrial fibrillation, without ng their daily routines. The disorders were identified through pecial sensors embedded into the shopping 'handles.

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Year 7 • N.5 November 2023



editorial

Is sustainability really... sustainable?

by Angelo Frigerio

An interesting initiative was set up in Germany by the supermarket chain Penny. During the first week of August, in all its 2,150 branches, the retailer promoted the launch of nine products by applying prices that allow for the cost of sustainability – that is, the amount that should actually be charged to customers if all environmental damage caused by production were taken into account. And it came with surprises: frankfurters went from 3.19 to 6.01 euro; a 300-gram pack of Dutch cheese went from 2.49 to 4.84 euro. However, the same did not apply to vegan schnitzel, which increased by only 5%.

"We realise that many of our customers suffer when they get to the checkout because of the constantly high food prices. However, we have to face the uncomfortable reality that the costs of the supply chain do not reflect those of the environmental and social impact," explained Penny's Chief Operating Officer Stefan Görgens. Penny's initiative was developed in cooperation with researchers from the University of Technology Nuremberg and the University of Greifswald, who estimated the economic effects of the nine products on soil, climate, water and health. "We are lying to ourselves if we pretend that today's food production has no hidden environmental costs," said Amelie Michalke of the University of Greifswald. These are currently invisible costs that are inevitably incurred along the supply chain. They do not currently affect, or only partially, the selling price of the final products. These are therefore scientifically justifiable increases.

portant issues related to sustainability, namely its "social" impact. How many families could afford to pay an extra 100% when they do the shopping? The question is not incidental. Rising prices due to inflation are having a major impact on purchases – both in terms of volume and spending in general. Therefore, one of the biggest challenges in the near future will be to reconcile sustainability and convenience. It is a decisive challenge. And it also involves institutions.

On 12th July, the European Parliament passed a regulation for the restoration of degraded ecosystems. The vote in plenary session concluded weeks of heated disagreements between environmentalists and the rural world. The proposal, called Nature Restoration Law, entails, among other things, an end to endothermic engines and a ban on plastic packaging. The aim is to repair at least 20% of Europe's degraded marine, urban and agricultural habitats by 2030, and to regulate the sustainable use of pesticides. However, the process of the law is not over. The proposal has to go through the Environment Commission, where it was previously rejected. There are many opposing positions on the issue – a large part of which come from the production sector. These measures will reduce, within seven years, 55% of greenhouse gases on a continent that today contributes less than 1% to global emissions. A mere trifle compared to the pollution caused by other countries, with China in the lead. Once again, well-paid bureaucrats, in the name of a second-hand environmentalism, have come up with a proposal that is certainly questionable. Will manufacturers first and households Penny's bold initiative lifts the veil on one of the most im-later be able to sustain the impact of sustainability?

TECH4FOOD

Managing director ANGELO FRIGERIO Edited by: Edizioni Turbo Srl Corso della Resistenza, 23 20821 - Meda (MB) Tel. +39 0362 600463/4/5/9 Fax. +39 0362 600616 e-mail: info@tespi.net Periodico bimestrale - Registrazione al Tribunale di Milano n. 2 del 4 gennaio 2018 Edizioni Turbo Srl nº iscrizione ROC11158 del 21 aprile 2005 Numero 5 - novembre 2023 Stampa: Italgrafica - Novara -Poste Italiane Spa -Sped. in Abbonamento Postale DL 353/2003 (conv. in L. 27.02.2004, n.46) art. 1, comma 1, LO/MI -In caso di mancato recapito, inviare all'ufficio postale di Roserio per la restituzione al mittente che si impegna a pagare la relativa tariffa. Una copia 1,00 euro -Abbonamento annuo 20,00 euro L'editore garantisce la massima riservatezza dei dati personali in suo possesso. Tali dati saranno utilizzati per la gestione degli abbonamenti e per 'invio di informazioni commerciali. In base all'Art. 13 della Legge n° 196/2003, i dati potranno essere rettificati o cancellati in qualsiasi momento scrivendo a: Edizioni Turbo S.r.I.Edizioni Turbo S.r.I. Responsabile dati: Angelo Frigerio Corso della Resistenza, 23 20821 Meda (MB)

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Ma la sostenibilità è... sostenibile?

dalla catena di supermercati Penny in alimenti su: suolo, clima, acqua e salu-Germania. Nel corso della prima set- te. "Mentiamo a noi stessi se pretentimana di agosto, in tutte le sue 2.150 diamo che la produzione alimentare filiali, l'insegna ha promosso il lancio di oggi non abbia costi ambientali di nove prodotti applicando prezzi che nascosti", ha detto Amelie Michalke 'calcolano' il costo della sostenibilità. Ovvero l'importo che dovrebbe esse- attualmente invisibili che sono inevire effettivamente richiesto alla clientela se si tenesse conto di tutti i danni Attualmente non ricadono, se non ambientali causati dalla produzione. parzialmente, sul prezzo di vendita dei passano da 3,19 euro a 6,01 euro; la scientificamente giustificabili. confezione di formaggio olandese cremento solo del 5%.

Iniziativa interessante quella attuata economici della produzione dei nove dell'Università di Greifswald. Costi tabilmente sostenuti lungo la filiera.

fswald, che hanno stimato gli effetti un regolamento per il ripristino degli della sostenibilità?

ecosistemi degradati. Il voto in sessione plenaria ha concluso settimane di accesi contrasti tra il mondo ambientalista e quello rurale. La proposta, denominata Nature Restoration Law, comporta, fra gli altri, la fine dei motori endotermici e il bando degli imballaggi di plastica. Ci si prefigge di riparare entro il 2030 almeno 20% degli habitat marini, urbani e agricoli europei che versano in cattive condizioni, e rego-Le sorprese non mancano: i würstel prodotti. Si tratta dunque di aumenti lamentare l'uso sostenibile dei pesticidi. L'iter della legge non è finito. Deve La coraggiosa iniziativa di Penny passare alla Commissione ambiente, tipo Emmental da 300 grammi da 2,49 solleva il velo su uno dei problemi più dove in precedenza era stato bocciaeuro a 4,84 euro. Non così invece per importanti legati alla sostenibilità, ov- to. Sull'argomento molte le posizioni la cotoletta vegana che subisce un in- vero sulle sue ricadute 'sociali'. Quan- contrarie. Fra queste, gran parte del te famiglie potrebbero permettersi un mondo produttivo. Si tratta di misure "Ci rendiamo conto che molti dei costo del 100% in più nel carrello della che ridurranno, nel giro di sette anni nostri clienti soffrono quando arrivano spesa? La domanda non è peregrina. il 55% i gas serra di un continente che alla cassa per i prezzi sempre alti dei L'aumento dei prezzi a causa dell'infla- oggi contribuisce con meno dell'1% prodotti alimentari. Tuttavia, dobbia- zione sta incidendo in misura notevole alle emissioni globali. Un'inezia dunmo affrontare la scomoda realtà che sugli acquisti. Sia in termini di volumi que al confronto con l'inquinamento i costi della filiera non riflettono quelli sia di spesa in generale. Ecco allo- provocato da altri paesi, Cina in testa. dell'impatto ambientale e sociale", ha ra che una delle più grandi sfide del Ancora una volta dei burocrati, molto spiegato il direttore generale di Penny prossimo futuro sarà proprio quella di ben pagati lo ricordiamo, sulla spinta Stefan Görgens. L'iniziativa di Penny è conciliare sostenibilità con convenien- di un ambientalismo d'accatto, hanno stata realizzata in collaborazione con za. Sfida cruciale. Che vede coinvolte elaborato una proposta tutta da discui ricercatori dell'Università Tecnica di anche le istituzioni. Lo scorso 12 lu- tere. Riusciranno le industrie prima e Norimberga e dell'Università di Grei- glio il Parlamento Europeo ha varato le famiglie dopo a sostenere l'impatto



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NEW CHRISTMAS-THEMED PRINTS FOR ESSEOQUATTRO'S PACKAGING

Ahead of the holiday season, Esseoquattro presents a new series of Christmas-themed prints. The 2023 collection, called 'Christmas Feeling', is made up of different packaging types for any need: the Ideabrill Freshpreserving packaging for meat, cold cuts and cheese preserves the organoleptic characteristics, thus extending its shelf life; the Greaseproof Olà Line is ideal for specialty breads, fried and very flavoured foods, delis, as well as for take-away and delivery. Among other traditional packaging, moreover, the line includes packs in natural Havana kraft as well as coated paper.

Nuove grafiche natalizie per i packaging Esseoquattro

In vista delle festività invernali, Esseoquattro presenta una nuova serie di grafiche accattivanti a tema natalizio. 'Christmas Feeling', questo il nome scelto per il coordinamento natalizio di quest'anno, si compone di diverse tipologie di packaging per ogni esigenza: la linea salvafreschezza Ideabrill è composta da incarti e sacchetti ideali per confezionare carni, salumi e formaggi in sicurezza prolungandone la shelf



life; la linea antigrasso Olà include invece carte e sacchetti di dimensioni diverse, adatte per gastronomie e Horeca. Questi packaging sono in grado di trattenere olio e unto, mantengono i fritti croccanti e consentono di riscaldare l'alimento presente al loro interno in forno, nel microonde e sulla piastra elettrica; tra i packaging tradizionali troviamo invece carta accoppiata avana e carta politenata, sovrainvolto avana, sacchetti velin e kbm.

SAMSUNG ANNOUNCES SAMSUNG FOOD, AN AI-POWERED, PERSONALIZED RECIPE SERVICE

It's called Samsung Food and it's the new personalized, Al-powered food and recipe platform launched by Samsung Electronics. Released in 104 countries around the world, in eight languages, Italian included. The app acts as a personalized assistant that helps users discover new dishes, create tailored meal plans and order ingredients online. The service will also help users control their cooking appliances, while giving step-by-step guided cooking and allowing users to share their favorite recipes on social media. To accomplish this, Samsung Food draws from the extensive database of Whisk, a smart food platform acquired by Samsung Next in 2019 that leverages advanced technology called Food AI, which suggests meals based on user preferences and food seasonality. Building on the foundation of Samsung's wide range of cooking appliances and food services, Samsung Food uses AI technology to go beyond existing capabilities and deliver a food platform that truly adapts to the needs and lifestyles of its users. To accomplish this, Samsung Food draws from the extensive database of Whisk, a smart food platform acquired by Samsung Next in 2019 that leverages advanced technology called Food AI, which suggests meals based on user preferences and food seasonality. By the end of the year, Samsung plans to offer Samsung Health integration with Samsung Food so that users will be able to receive suggestions for diet management. The seamless syncing of information such as BMI, body composition and calorie consumption with Samsung Food will help users to hit health goals and maintain a balanced diet. Planned for implementation in 2024, furthermore, Vision AI technology will enable Samsung Food to recognize food items and meals photographed through the camera and provide details about them, including nutrition information. By analyzing food items, the app can recommend the best recipes to use them with, save these recipes to the users' collection and add the required ingredients to a shopping list.

Arriva Samsung Food, la nuova piattaforma Al per personalizzare le ricette

Si chiama Samsung Food la nuova piattaforma alimentata dall'Intelligenza artificiale creata da Samsung e prossimamente disponibile in 104 paesi e otto lingue, italiano incluso. L'app si pone come una sorta di assistente personale, aiutando gli utenti nella scoperta di nuovi piatti, nella creazione di piani alimentari ad hoc e nel compilare la lista della spesa. Inoltre, è pensata per interfacciarsi con gli elettrodomestici di casa, guidandoli nei processi di cottura, e permetterà di condividere le ricette preferite sui social media. Per fare tutto questo, Samsung Food attingerà all'ampio database di Whisk, un'app di ricette che il colosso coreano ha acquisito nel 2019. Per personalizzare i piani alimentari giornalieri, l'app fornirà delle raccomandazioni create tramite l'intelligenza artificiale in base ai dati dell'utente, alle sue preferenze alimentari e ai tipi di cucina preferiti. Oltre a quelli già disponibili su Samsung Food al momento del lancio, Samsung continuerà ad aggiungere funzioni e servizi all'app: entro la fine dell'anno avverrà l'associazione con Samsung Health, affinché gli utenti possano ricevere soluzioni ottimizzate per il proprio benessere. Tra questi, dei suggerimenti di pasti personalizzati basati su dati come l'indice di massa corporea e il consumo di calorie. Prevista per il 2024, invece, la tecnologia Vision Al consentirà a Samsung Food di riconosce-

re gli alimenti e i pasti fotografati e sarà in grado di fornirne tutti i dettagli, informazioni nutrizionali incluse. Analizzando gli alimenti, l'app potrà consigliare le ricette migliori con cui utilizzarli, salvare le ricette nella raccolta personale e aggiungere gli ingredienti necessari alla lista della spesa.



KILOMETRO VERDE INAUGURATES A NEW VERTICAL FARM. ISMEA FINANCES SIX MILLION EURO

The largest vertical farm in Europe by cultivated sqm is in Italy, in Brescia, more precisely in Verolanuova, and it has been recently inaugurated by Kilometro Verde. As Giuseppe Battagliola, the CEO of the Italian company, underlines: "Part of the financing comes from Ismea, more precisely one million in the form of equity and 5 million in the form of a loan." Inside the vertical farm everything is automated and the 50 employees are highly specialized technicians, hydroponic cultivation is carried out: the plants grow all year round, regardless of the seasonal cycle, without the need for soil and only thanks to the water, in which they are grown added mineral salts. The controlled environment allows not to use pesticides and the on-site processing allows the salads to be bagged without the need to wash them, thus saving water.

Kilometro Verde inaugura una nuova vertical farm. Ismea finanzia sei milioni di euro

È stata inaugurata a Verolanuova (Bs) la vertical farm di Kilometro Verde, un impianto dove le colture crescono in verticale in strutture chiuse e in un habitat controllato, senza l'impiego di fitofarmaci. Come fa sapere l'Ad dell'azienda, Giuseppe Battagliola, l'impianto "è il più grande d'Europa per metri quadrati coltivati". Per la realizzazione del progetto, l'azienda ha ricevuto un apporto finanziario da Ismea pari a sei milioni di euro, nell'ambito della misura 'Ismea Investe', con la sottoscrizione da parte dell'Istituto di un aumento di capitale e l'erogazione di un prestito obbligazionario convertibile, per la durata di otto anni, a fronte di un progetto di investimento di complessivi 19 milioni di euro. La vertical farm è totalmente automatizzata, si basa sulla coltura idroponica indoor, che fa leva su valori quali sostenibilità, salvaguardia dell'ambiente, etica e salubrità, e che permette risparmio energetico e idrico.



GUALA CLOSURES APPOINTS MAURO CANESCHI AS ITS NEW CEO

Italy-based Guala Closures, specialized in the production of safety closures for spirits and wines, has appointed the former managing director of Campari Group's US arm, Mauro Caneschi, as its new CEO. He takes over from Gabriele Del Torchio, who will remain in his role as chairman of the council and work alongside Caneschi. The latter comes from the Campari Group where he initially led the Southern Europe, Middle East and Africa Business Unit (including Global Travel Retail) before creating and managing the Americas operation, Campari Group's largest division. He had previously held senior international positions at Heineken, Scottish & Newcastle and Danone Group.

Guala Closures, Mauro Caneschi è il nuovo Ad

Mauro Caneschi è stato nominato amministratore delegato di Guala Closures, gruppo multinazionale attivo nel settore della produzione di chiusure per bottiglie di liquori, vino, acqua minerale e olio d'oliva. In precedenza, il ruolo era ricoperto da Gabriele Del Torchio, confermato nella carica di presidente del Gruppo. Mauro Caneschi proviene dal Gruppo Campari dove inizialmente ha guidato le Business Unit dell'Europa Meridionale, del Medio Oriente e dell'Africa (compreso il Global Travel Retail) prima di istituire e dirigere la divisione americana di Campari, la più grande del Gruppo. In precedenza, ha ricoperto posizioni senior di rilievo internazionale in Heineken, Scottish & Newcastle e Danone Group.



FEDRIGONI: 971-MILLION REVENUE (-9.9% OVER 2022) IN THE FIRST HALF OF 2023

Fedrigoni closed the first half of 2023 with 971.0 million euro in revenue, down 9.9% from the same period in 2022, and an Ebitda of 150.9 million euro (-9.2% from 2022). However, the Ebitda Margin (15.5%) remained in line with the previous year and performance was well above the industry average. Compared to the first half of 2021, both turnover (+28.9 %, from 753.5 million euro) and Ebitda (+49.3 %, from euro 101.1 million) continued to grow steadily. The figure for the last 12 months, from June 2022 to June 2023, confirms the same trend: proforma revenue of 2.1billion euro falls 4.2% from 2022 (2.2 billion euro in the 12 months of 2022) and rises 31.1% from 2021 (1.6 billion euro in the 12 months of 2021) and pro-forma Ebitda of 335.6 million euro falls 1.3% from 2022 (339.9 million euro in the 12 months of 2022) but rises 51.9% from 2021 (221.0 million euro in the 12 months of 2021).

Fedrigoni: fatturato primo semestre 2023 a 971 milioni (-9,9% rispetto al 2022) Fedrigoni chiude il primo semestre 2023 con 971 milioni di euro di ricavi, in calo del 9,9% rispetto allo stesso periodo del 2022, e con un Ebitda pari a 150,9 milioni di euro (-9,2% rispetto al 2022). Tuttavia, l'Ebitda Margin (15,5%) si mantiene in linea con l'anno precedente e le performance sono nettamente superiori alla media dell'industria. Rispetto al primo semestre 2021 il Gruppo, attivo nelle etichette e nei materiali autoadesivi premium e nelle carte speciali per il packaging di lusso e altre soluzioni creative, conferma una crescita costante sia del fatturato (+28,9%) sia dell'Ebitda (+49,3%). Anche il dato degli ultimi 12 mesi, da giugno 2022 a giugno 2023, conferma il medesimo trend: i ricavi pro-forma di 2,1 miliardi di euro calano del 4,2% dal 2022 (2,2 miliardi di euro nei 12 mesi 2022) e crescono del 31,1% dal 2021 (1,6 miliardi di euro nei 12 mesi 2021) e l'Ebitda pro-forma di 335,6 milioni di euro decresce dell'1,3% dal 2022 (339,9 milioni di euro nei 12 mesi 2021). PIOVAN: IN THE HALF YEAR 2023 REVENUES UP BY +21.9% COMPARED TO 2022

For the first six months of 2023 Piovan's revenues reached 290.1 million euro (+21.9% year-on-year). The board of directors of the company, leader in the development and production of systems for the automation of production processes for the storage, transport and treatment of polymers, plastic and food powders, approved the consolidated Half-Year Financial Report as of June 30, 2023. The document highlights the consolidated net income at 21.8 million (+45.7%); adjusted Ebitda of 37.7 million (+37.9%). "The growth in revenues and - above all - the marked improvement in profitability achieved in the first half of 2023 can mainly be attributed to the good balance of our business portfolio, both in terms of end-markets and geographies, to the implementation of our strategy always focused on the needs of our customers, and to the first positive results deriving from the integration of the Group in North America," says executive chairman Nicola Piovan.

Piovan, nel primo semestre ricavi a +21,9% rispetto al 2022

290,1 milioni di euro il totale dei ricavi e altri proventi consolidati registrati nel primo semestre 2023 da Piovan Group, in crescita del 21,9% rispetto allo stesso periodo del 2022. Il Cda della società, specializzata nello sviluppo e produzione di apparecchiature ausiliarie, soluzioni ingegneristiche e servizi per l'industria della plastica, ha esaminato e approvato la relazione finanziaria semestrale consolidata lo scorso 30 giugno. Da questa emerge anche l'aumento dell'utile netto a 21,8 milioni di euro (+45,7% rispetto al primo semestre 2022) e dell'Ebitda a 37,7 milioni (+37,9%). Nicola Piovan, presidente esecutivo del Gruppo, spiega in una nota che i risultati sono da attribuire principalmente al buon bilanciamento del portafoglio di business, sia in termini di end-markets che di geografie, all'implementazione della strategia sempre focalizzata sui bisogni dei clienti e ai primi positivi risultati derivanti dall'integrazione del Gruppo in Nord America.



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Year 7 • N.5 November 2023 digital transformation

Interview with the AT

Who better than an artificial intelligence can describe the effects of artificial intelligence on the global food system? That's what we asked two of the most popular chatbots worldwide - ChatGPT and Bard – and here is what they replied to us, with interesting differences.

by Federica Bartesaghi

• ChatGPT • AI Revolutionizing Food Technology: A Gourmet Transformation

Introduction

ged as a game-changer, revolutionizing the way we produce, prepare, and consume food. This dynamic synergy between advanced technology and gastronomy has ushered in a new era of possibilities, ensuring not only efficiency and precision but also a heightened culinary experience for consumers worldwide. This text explores how AI is transforming food technology, from precision agriculture to personalized meal recommendations, and sheds light on the promising future of this symbiotic relationship.

Precision Agriculture: Feeding the Future

One of the most profound impacts of AI in food technology is witnessed in the realm of precision agriculture. AI-powered systems analyze vast amounts of data, including weather patterns, soil conditions, and crop and suggestions, helping individuals achieve their health and wellness goals. health, to optimize farming practices. Through real-time monitoring and predictive analytics, farmers can make informed decisions that maximize yields while minimizing environmental impact. AI-driven drones equipped with hyperspectral cameras scan fields, providing detailed insights into the global food industry. Through predictive analytics, AI systems forecast plant health and pest infestations. This data allows for precise application demand patterns, allowing producers, distributors, and retailers to optimize of fertilizers and pesticides, reducing waste and minimizing harm to ecosy- supply chains. By accurately predicting consumer preferences and purchasing stems. Moreover, AI-powered irrigation systems deliver water precisely behaviors, businesses can reduce overproduction and redirect surplus food to where and when it is needed, conserving this precious resource.

Smart Food Processing: Elevating Efficiency and Quality

In food processing, AI technologies are streamlining operations and enhancing quality control. Automated systems equipped with computer vision can swiftly identify and sort produce based on size, color, and ripeness, ensuring consistency in final products. This not only reduces manual labor but also minimizes waste by diverting imperfect items for alternative proach food production, preparation, and consumption. From precision agriculuses like juices or sauces. Additionally, AI-powered machines can monitor ture to personalized nutrition, the impact of AI is felt across the entire food ecosyand adjust cooking parameters in real time, ensuring optimal taste, texture, stem. As technology continues to evolve, the potential for even more sophisticated and nutritional value. These systems employ sophisticated algorithms to applications in the culinary world is boundless. With innovation and collaboration adapt to variations in ingredients and environmental conditions, resulting at the forefront, AI promises to shape a future where food is not only abundant and in consistent and high-quality food products.

Culinary Creativity Unleashed

AI is not just confined to the fields and factories; it's also making waves in professional kitchens. Innovative chefs are leveraging AI-powered tools to push the boundaries of culinary creativity. For instance, IBM's Chef Watson utilizes machine learning algorithms to generate unique and unexpected ingredient combinations, sparking novel flavor profiles and culinary experiences. Furthermore, AI-driven robots are stepping into the kitchen, capable of performing In the realm of culinary innovation, artificial intelligence (AI) has emer- precise tasks like chopping, mixing, and plating. These robots work in tandem with human chefs, enhancing efficiency and allowing for more intricate and time-consuming preparations.

Personalized Nutrition: Tailoring Diets for Individual Health

The integration of AI in food technology extends beyond production and preparation; it delves into personalized nutrition and dietary planning. Advanced algorithms analyze an individual's genetic makeup, lifestyle, and health goals to recommend personalized meal plans. This tailored approach optimizes nutrient intake, addressing specific dietary needs and preferences. Mobile applications and wearable devices equipped with AI-driven nutrition trackers empower users to make informed food choices. These platforms provide real-time feedback

Reducing Food Waste: A Global Imperative

AI plays a pivotal role in the fight against food waste, a critical issue facing areas of need. Moreover, AI-powered solutions monitor inventory in real time, alerting stakeholders to impending expiration dates and enabling timely redistribution or repurposing of perishable goods. This not only curtails waste but also contributes to a more sustainable and environmentally conscious food industry

Conclusion

The integration of AI in food technology represents a seismic shift in how we apdiverse but also sustainable, nutritious, and tailored to individual needs.



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• Bard •

Artificial Intelligence in Food Technology

Artificial intelligence (AI) is rapidly transforming the global food system, from the production and processing of food to the delivery of meals. AI-powered technologies are being used to improve food safety, efficiency, sustainability, and accessibility.

Food Safety

area of food safety. AI-powered systems can be used to monitor food production and processing facilities for potential hazards, such as contamination or spoilage. These systems can also be used to track food products throughout zer. AI-powered systems can also be used to develop new food processing and the supply chain, ensuring that they are handled and stored safely. For example, AI-powered cameras can be used to inspect food products for defects or contamination. These cameras can be trained to identify a wide range of hazards, including physical objects, such as insects or pieces of plastic, as well as biological hazards, such as bacteria and mold. AI-powered systems can also be AI-powered systems can be used to develop new food products and technologies used to predict the risk of foodborne illness outbreaks. By analyzing data on food production, processing, and distribution, these systems can identify areas where there is a high risk of contamination. This information can then be used bility of food delivery services. For example, AI-powered systems can be used to to implement preventive measures and reduce the risk of outbreaks.

Efficiency

AI is also being used to improve the efficiency of the food industry. AI-powered systems can be used to optimize crop yields, livestock production, and food processing and packaging operations. These systems can also be used to reduce food waste and improve inventory management. For example, AI-powered systems can technologies are being used to improve food safety, efficiency, sustainability, be used to predict crop yields based on weather data, soil conditions, and other factors. This information can then be used to make informed decisions about when innovative and transformative applications of AI in the food industry.

and where to plant crops, as well as how to best manage them. AI-powered systems can also be used to optimize livestock production. For example, AI-powered systems can be used to monitor animal health and growth, and to identify animals that are at risk of disease. This information can then be used to take preventive measures and improve the overall health and productivity of livestock.

Sustainability

AI is also being used to make the food industry more sustainable. AI-powered systems can be used to reduce the use of water and pesticides in agriculture, and to improve the efficiency of food processing and packaging operations. AI can One of the most important applications of AI in food technology is in the also be used to develop new sustainable food products and technologies. For example, AI-powered systems can be used to develop new crop varieties that are more resistant to pests and diseases, and that require less water and fertilipackaging technologies that reduce waste and energy consumption.

Accessibility

AI is also being used to make food more accessible to people around the world. that are tailored to the needs of specific populations, such as people with dietary restrictions or allergies. AI can also be used to improve the efficiency and affordadevelop personalized meal plans for people based on their individual dietary needs and preferences. AI-powered systems can also be used to develop new food products that are specifically designed for people with dietary restrictions or allergies.

Conclusion

AI is transforming the global food system in a number of ways. AI-powered and accessibility. As AI continues to develop, we can expect to see even more



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Direct line with Janusz Wojciechowski

Meat sounding, green transition, Designations of origin, Common Agricultural Policy. An interview with the EU Commissioner for Agriculture on the most pressing issues for the European food system.

Heading towards the 2024 European Elections, we discuss the most relevant topics for the food industry and the related legislations with the EU Commissioner for Agriculture, Janusz Wojciechowski.



by Andrea Dusio

Italy and now also France have introduced concentration, changes in precipitation patterns ducts using names that refer to different raw materials also on the EU agenda?

First of all, I would like to stress that the first principle of food labelling is that consumers should not be misled about the product they buy and consume. That being said, should there be certain terms misleading for consumers, EU countries are empowered to take action. This is planned at EU level in the legislation on food information to consumers (regulation (EU) No 1169/2011). This Regulation recalls that food information shall not be misleading as to the characteristics of the food and, in particular, as to its nature and composition. taining, and sometimes even increasing, its pro-Member States have the primary responsibility ductivity! So I see all the efforts made by farmers for the enforcement and the correct implementation of the legislation. The protection of dairy terms stems from history: when competing products were developed, like margarine, the EU legislator that consumers were properly informed and could make well informed choices. This was done by specifically protecting dairy terms in agricultural legislation. Margarine cannot be called butter and the use of the term milk is strictly regulated and Italian farmers. This should make certain measutives to meat is much more recent and occurred at farmers. For example, Italy has earmarked over a time where we already had an overall legislative 10 billion euro of its CAP Strategic Plan's budge framework in place for food labelling, the regula- for interventions aimed at the climate and enviprotecting consumers.

that the ecological transition desired by the as soil conservation practices. EU is extremely costly and too fast. As far as agricultural policies are concerned, which steps will be taken more quickly, and which long-term choices still need to be weighed up?

a law to sanction the so-called 'meat soun- and more frequent extreme events influence crop ding'. Is the topic of vegetarian or vegan pro- yields and livestock productivity in Europe, but also water management and conditions for transport and storage. The multiplication of extreme climate events has a great impact on farmer's work, their income and the food production. So there is no question that food security goes hand in hand with environmental actions. In this respect, the current Common Agricultural Policy (CAP) is the most ambitious ever when it comes to green achievements. Farmers are part of the solution when it comes to mitigating the effects of climate change and adapting to a new reality. The agricultural sector has already decreased its emissions while mainand I thank them for it.

Some changes take longer than others...

That's true. For this reason we are no longer folintervened as of 1987 (Reg. 1898/87) to make sure lowing a 'one-size-fits-all' approach. Each country could design its CAP Strategic Plan and make the best choices to address its own local and national issues. It is quite obvious that Finnish farmers do not face the same environmental challenges than limited. The development of vegetal based alterna- res less burdensome and more understandable for tion I mentioned earlier. We consider that it is still ronment. More than thirty voluntary schemes that fit for purpose and rely on EU countries to pro- compensate farmers for the additional costs and perly enforce and implement it in the interest of income loss deriving from the application of more environmental and climate-friendly practices. These include reduced use of fertilisers and pesticides, In Italy there is a widespread conviction farming techniques preserving biodiversity, as well

Are research and innovation important topics, with this regard?

Innovation and research are key. For example, we can pay farmers to change farming practices Italian farmers have had to suffer from drought and use less pesticides. But when this translates and also from floods in certain regions this sum- into crop failure we reduce food production. This mer. Rising temperatures and atmospheric CO2 is not efficient! So we must also invest in innovalogy to reduce pesticide application with reduced risk for crop failure, more resistant crop varieties, pesticides, etc. The current programming period products? 2023-2027 has increased the European funds deto adopt innovations in farming practices.

relegated to the mere field of research.

There are still many barriers to a greater spreading of knowledge, innovation and digitalisation. The current CAP will continue helping to overcome these barriers, by, for instance, providing sup-CAP can also support the investments in new agricultural technologies, like precision farming, and can support the change in practices that often accompany these new technologies. The Italian CAP Plan dedicates around 2.22 billion euro to the prodigitalisation.

to deal with the reality of other Member Sta-

tion: farming practices that incorporate agro-eco- tes asking to register products whose names refer to our excellences (the example of Croatian Prosek is worth mentioning). How does precision technologies to reduce application of the EU intend to protect the value of these

Italy has a great culinary heritage. It is very telling dicated to research. Now, we must also make sure that Italy has the greatest number of registered quathat farmers receive adequate advice and guidance lity products in the EU: more than 880 food and drinks products have a quality label, like Protected Designation of Origin (PDO), and Protected Geo-It often happens that innovation remains graphical Indication (PGI). PDOs and PGIs benefit from a high level of protection in the EU, including against evocation and misuse. This protection system carefully scrutinises each individual request for the protection of a name and specifically takes into account the rights of all interested parties. The port for projects within the European Innovation rules ensure fairness and equity among all parties EU agri-food products. This will benefit rural eco-Partnership for productivity and sustainability, and and aim at avoiding labelling that misleads consuoffering funding for advisory services as such. The mers. In particular, Prosecco did - and continues to - hugely benefit from the EU protection system.

What can be done to make this system even more efficient?

The Commission is planning concrete measures motion and sharing of knowledge, innovation and to further enhance the protection of geographical indications in the future. In particular, we presented a review of the current rules last year and our **Lastly, the issue of denominations remains** proposal is currently being discussed by the co-leon the table, on which a country like Italy has gislators, the European Parliament and the Council. Our proposal will increase the protection of

geographical indications on the internet, for example as regards sales via online platforms and use of registered terms in the domain name system. We also would like EU countries to recognise GI producers' group. These groups will be empowered to manage, enforce and develop their GIs, notably by having access to anti-counterfeiting authorities and customs in all countries in the EU. This review will also introduce stricter rules on the use of GI names in the sale names of processed goods when the GI product is an ingredient of the processed product. I would like to recall that while the Commission is responsible for the registration of names, it is the countries that are in charge of controls and compliance. It is important to maintain a trustworthy legal framework to protect the global reputation of nomies across the Union and contribute to preserving local traditions and natural resources.

Filo diretto con Janusz Wojciechowski

Meat Sounding, transizione ecologica, tutela delle denominazioni d'origine, Politica agricola comune. In apertura del semestre che porta alle Elezioni europee, il commissario europeo per l'Agricoltura risponde alle questioni più calde del mondo food.

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Year 7 • N.5 November 2023 the company

Ricciarelli: breaking innovation barriers

In 2023, the Tuscan firm blows out 180 candles. An achievement made possible by the continuous strive for packaging solutions that meet the changing needs of customers around the world, attention to sustainability and an efficient after-sales service.

Specialized in the design and manufacturing of packaging solutions, Ricciarelli calls itself a 'sy-stem integrator', since it can provide clients with complete, 100% automatic lines equipped with weighers, packaging systems, shrink wrap- and candies, as well as pet food – made it the ideal ping machines, case packers and palletizing sy-point of reference to food producers willing to deal stems. Headquartered in the beautiful Tuscan with one partner only for all operations. Among all town of Pistoia, Ricciarelli celebrates this year the sectors it covers, the company has developed a an important anniversary: 180 years since its unique expertise in the pasta industry. Is it short, foundation, which happened in 1843. Over such long or in special shapes. "We are currently buila long time span, this historic firm has definitely ding the very first prototype of a new generation contributed to building the excellent reputation of cartooning machines, namely the IWR22 moof the Italian packaging industry worldwide. In del, dedicated to bags and cartons, where packs are 2021, it was named 'Historical trademark of na- vertically inserted in wrap around cases'', Daniele tional interest' by the Italian Government for its Bagni explains. "Another solution that we presencontinuity in production.

series of factors that are still hampering the activity of companies like ours, and yet we managed to find new and alternative solutions to stay the unique and patented weigher FTL and the hiclose to our clients around the world, and provide them constantly with our technologies and rently, we are also working on a brand new horizonservices," the company's sales director, Daniele Bagni, explains. "This year, we experienced significant improvements especially as regards materials' availability. We can definitely say that we have been rewarded for our positive and optimist attitude.'

by Federica Bartesaghi

Innovation never stops Ricciarelli's specialization in the supply of com-

plete packaging lines for a wide variety of goods - rice and cereals, dry pulses and fruits, snacks ted to market operators this year is the horizontal "2022 has been a tumultuous year due to a packaging machine mod FTLHS20, with increased (mafaldine, tripoline etc). This solution combines gh-speed continuous horizontal packer HS20. Curtal packer for the high-speed packaging of lasagne."

Sustainability and service first

"Always very attentive to market changes and customer requests, in recent years we have developed cutting-edge solutions with regard to some strategic

topics for the supply chain. First and foremost, sustainability", the sales director points out. The latest machines developed and presented to the market are indeed able to process paper or compostable materials other than plastic. Great results were also achieved to ensure the highest energy savings, the interconnection between machines and smart-friendly devices, as well as the development of space-saving solutions. Ricciarelli's expertise does not end with the technological offer: it conti¬nues also in the after-sales. The direct mana¬gement by a dedicated Department allows it to provide customers with a variety of solutions, such as remote assistance, staff training and maintenance contracts even in the most delicate moments. Beside immediate assistance, Ricciarelli also provides spare parts for all the machines it produces, even for those built over a decade ago and still in operation, thanproduction capacity for special long pasta shapes ks to the detailed documentation kept in the archive. Assistance is fast and effective also for the company's international clients, thanks to a widespread network of local agents. With an export share of revenue of 75%, Ricciarelli currently operates in more than 70 countries across the 5 continents. This November, the company will be among the exhibitors of Gulfood Manufacturing 2024, one of the most influential annual F&B manufacturing event in the world, taking place from 7 to 9 November 2023 at the Dubai World Trade Centre (DWTC).

THE COMPANY

Based in Pistoia, Tuscany, Ricciarelli was founded in 1843 as a copper processing specialist. At the beginning of the 20th Century, under the guidance of Garibaldo Ricciarelli it started producing pasta dies, while at the end of the '60s his sons, Aldo and Mario, decided to change the company's course and thus started manufacturing automatic packaging machines. An activity which still represents Ricciarelli's core business. Since 2003 the company is run by Vito Marino Milella and every day it is committed to designing and manufacturing complete automatic lines for both primary and secondary packaging.



Mod. RC140 for the packaging of long pasta in cartons

Ricciarelli: innovazione senza limiti Nel 2023 l'azienda toscana spegne 180 candeline. Un successo raggiunto grazie anche all'incessante ricerca di soluzioni di confezionamento in grado di soddisfare le nuove esigenze dell'industria alimentare globale, all'attenzione per la sostenibilità e a un eccellente servizio post vendita.



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Mozzarella di Bufala through the lens of science

Researchers at the University of Parma used DNA analysis to identify the microbiota of the famous PDO cheese. They found differences in the bacterial population during the various stages of production. But which microorganisms play a key role?

zarella di Bufala Campana? What arcane mysteries production with a daily milk supply. Both, of coursurround the white, rounded surface of this chee- se, operate according to the specific dictates of the se – an opaque milky sphere still unscrutinised by consortium for the protection of Mozzarella di In the whey from the traditional dairy company, the eye of science? Dr. Alessia Levante, from the Bufala Campana DOP. Samples of milk, natural Department of Food and Drug of the University of whey starters, cheese curd, brine and, of course, tobacillus (approximately 49.9%) were equally Parma (Emilia-Romagna), together with her team finished mozzarella were examined. of scientists, tried to answer these questions.

The article, "The microbiota of Mozzarella di Bufala Campana PDO cheese: a study across the manufacturing process", sheds light, thanks to DNA analysis, on which microorganisms are ced to identify which microorganisms are present found in this outstanding gastronomic product in the different stages of production and in what from Southern Italy, and which of these are re- proportions. Most of the identified bacteria are Firsponsible for its uniqueness.

The aim and the method

"This study was performed to investigate the changes in the microbial structure of the Mozzarella di Bufala Campana consortium throughout Among Firmicutes, Bacilli are the most represented the cheesemaking process," as the scientific article class (between 98.7% and 100%), with the excepstates. To do this, two dairy companies of different sizes and structures were taken into consideration – one, smaller, adopts a traditional method, Actinobacteria (21.5%) and Clostridia (5%).

by Tommaso Tempesti

What secrets lie behind the production of Moz- and the other, a larger producer, has an industrial

DNA extraction

from them. The genes were subsequently sequenmately 40.2% of the microorganism population and cus decreases. where Proteobacteria (34.1%), Actinobacteriota (21.5%) and Bacteroidota (3.6%) are also found.

The differences

More specifically, the natural whey samples produced different results for the two dairy farms. Streptococcus (approximately 49.9%) and Lacabundant, whereas the whey from the industrial dairy company was dominated by Streptococcus (approximately 76.7%). This difference in mi-To analyse all 19 samples, DNA was extracted crobiota composition is also reflected in the curd, even after the acidification process. Once the curd is boiled and submerged in brine, the presence of Lactobacillus increases: the proportion becomes approximately 78.7% in the traditional dairy and micutes (99-100% of the total), with the exception approximately 57.1% in the industrial dairy samof milk samples, where they account for approxi- ple. At the same time, the presence of Streptococ-

However, these two families of bacteria account for more than 90% of the microbiota of the mozzarella samples. As for the brine, Streptococcus dominates, followed by Lactobacillus. Some species tion of milk, where they account for 35.1% of the that were detected only in the liquid of the traditiototal, followed by Gammaproteobacteria (33.8%), nal dairy company were not subsequently found in the mozzarella.



Conclusions

"Cheeses, particularly artisanal cheeses, are rarely the result of the activities of an individual but that of a group of microorganisms," explains the study, in its final lines. "Mozzarella di Bufala Campana has a dynamic ecosystem in which players are subjected to continuous temporal

environmental/technological stimuli." The most possible to assume that "the composition of the interesting thing, in this context, is that "the Moz-

natural whey starters represents the key factor zarella di Bufala Campana cheesemaking process, that drives the composition of the final Mozzarella despite the initial presence of a large and varied di Bufala Campana products". Slight differences microbiota, is mainly in the hands of a small mi- in the production process of various dairy compacrobiome, mainly composed of Streptococcus nies could also explain the specific characteristics and Lactobacillus species". Therefore, it is that each producer's cheese possesses.



sotto la lente della scienza

I ricercatori dell'Università di Parma hanno usato l'analisi del Dna per identificare il microbiota della celebre Dop campana. Sono emerse differenze nella popolazione batterica durante le diverse fasi della produzione. Ma quali sono i microrganismi che giocano un ruolo fondamentale?



Reusables: the revival

As sustainability targets get bolder, this system gains momentum. Yet there are still several barriers, mainly linked to acceptance, lack of infrastructure, product safety, and cost. The challenges and pros illustrated by McKinsey's latest report. As well as four common myths busted by Zero Waste Europe.

Whether it be refill or returning empties, the concept of reusable packaging is not new. On the contrary. And today, as companies and industries are committed to lowering their carbon emissions to the minimum with the ultimate goal of meeting increasingly bolder climate targets – also posed by the recent EU Proposal for Packaging and Packaging Waste Regulation – reusable packaging has once again gained momentum. With a significant increase in the number of start-ups developing reusable packaging, typically in food and food service end-use areas and also in new segments such as beauty and personal care, without forgetting the e-commerce channel. Nevertheless, there are still several barriers within the current packaging value chain, mainly linked to a lack of acceptance by consumers, inadequate infrastructure, regulatory pushes for reductions in overall packaging, product safety, and cost dynamics. A closer look at the model's challenges and pros are illustrated by McKinsey's latest report 'The potential impact of reusable packaging'.

by Lucrezia Villa

The three main challenges

Due to consumers' rising sustainability concerns, as well as regulatory pressure over single-use packaging – particularly for products with low circularity and high environmental footprint - interest in reusable packaging has increased drastically in the last years.

"Such solutions," according to McKinsey's report 'The potential impact of reusable packaging', "can help cut greenhouse-gas emissions and packaging use by reducing the number of packages on the market. This can be achieved by increasing the reusability of those packages and raising the number of use cycles, the so called 'rotations'." Nevertheless, there are several challenges of scaling reusable packaging, as the report by McKinsey highlights: "The economic impact of

Ξ

reusability solutions versus alternatives, the environmental impact – meaning CO2 emissions – of reusable-solution materials and the actual reusability system (emissions from item production as well as emissions from rotation). And the third: the societal implications for stakeholders (such as single-use packaging producers, reusable packaging operators, merchants, and consumers) resulting from the introduction of reusability systems.'

Rotation and average distance

But how many use rotations are needed to provide benefits? "According to the data collected, both in the food as in the non-food sectors," McKinsey comments, "from three to ten cycles in food (service) packaging are considered to be appropriate, while B2B reusable crates are reported to be at about 24 rotations. Looking at our experiments, successful system operators need to go beyond 20 rotations before emissions reductions can be achieved. For takeaway food packaging, this could be as high as 200 rotations." Hence, at high rotation numbers, a si-

gnificant reduction in packaging waste will also be beneficial, both from an environmental as from an economic point of view. Yet rotations are not the only key aspect to examine when considering a reuse system. As a matter of fact, the average distance reusable packaging can travel also plays an important role. "Packaging needs to be returned to the system after each ro-

tation. Between use cases, the average distance can vary significantly, potentially adding more emissions costs and thereby key disadvantages compared with single-use packaging," McKinsey's report stresses, "in densely populated areas, collection, cleaning, inspection, and redistribution of reusables will be similar to last-mile deliveries, which are also reported as having significant costs and emissions. Indeed, the learning curavoid excess volumes to become cost and carbon the medium term." efficient."

ve entails understanding how to become efficient and reverse logistics hardly exist today. In many and shift to low-carbon transport. Further, stan- use cases, there is a need to invest in reusabilidardized packaging can lead to inefficiencies be- ty setups for filling lines, warehouses, retailers, cause of overpackaging. Companies would likely and other locations while maintaining existing need to use reusable packaging within cities and packaging setups for single-use packaging in

Future commitment

"Whether or not customers adapt their daily behaviors will affect the successful implementation of reusability solutions versus single-use packaging. The easier the reusable items can be returned, the easier a reusability circle can be maintained." According to the research that is the key to the reusability system: that is making it affordable and easy for consumers to accept such a system, which is something that is only possible upon ever more companies and startups in all industries investing to implement the right infrastructure.

Indeed, the easier that reusable items can be returned, the easier a reusability circle can be maintained. As the research by McKinsey shows: "In most sectors, except glass beverage bottles in countries with deposit return schemes in place, reusability brings a significant change for both businesses and consumers. In food service, there is a need for a new format in the value chain to include reusable packaging, for which collection

Imballaggi riutilizzabili: il ritorno

In uno scenario in cui i target di sostenibilità si fanno sempre più ambiziosi – come testimoniato anche dalla proposta di Regolamento Ue sugli imballaggi e i rifiuti da imballaggio – il riuso torna a farsi strada. Tuttavia non sembrano mancare criticità e limiti, legati soprattutto alla percezione dei consumatori, infrastrutture inadeguate, food safety e costi. Le sfide e i vantaggi del sistema in un report di McKinsey. E un focus su quattro falsi miti, sfatati dall'associazione Zero Waste Europe.

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insight Year 7 • N.5 November 2023

Four Myths Busted

"Single-use packaging must be avoided at all co- hygiene, health concerns, and food waste seem to and Packaging Waste Regulation was published sts, reusables are not hygienic, recycling will solve be endless. And everyone, researchers as well as Hereafter, a collection of four of the most common all waste problems..." and the list could go on and ordinary people, want to have their say. And such myths debunked by Zero Waste Europe, the Euroon. When it comes to packaging for the food & be- concerns have become more and more widespread pean network founded in 2013 working towards the verage, misconceptions about its relation to food since the first draft of the revision of the Packaging elimination of waste in our society.

Does single-use packaging really reduce food waste?

Packaging producers have repeatedly claimed that single-use packaging, small portion size, and wrapping vegetables would help reduce food waste. But is it really so?

While some packaging can contribute to increasing the products' shelf life, a recent study by the UN Environment Program, titled 'Single-use supermarket food packaging and its alternatives', found that "wherever the food type allows it, food should be sold unpackaged or in reusable packaging, as this is almost always environmentally preferred to food in single-use packaging."

Moreover, according to Zero Waste Europe, "in EU households, food waste and plastic packaging waste have increased simultaneously over the past two decades. The additional packaging has not reduced the consumers' waste since some consumer behavior resulting in food waste such as over-purchasing, preparation, and storage of food are independent from packaging design." In some cases, as a matter of fact, packaging can actually increase food waste during processing: practices such as trimming, multipacks and portion size can generate additional food waste during production.

Disposables are not the safest option, on the contrary...

Single-use, disposable f&b packaging appears to have made a comeback since the Covid-19 outbreak, as many consumers believed it to be safer or more hygienic. Yet are these beliefs truly warranted? Growing evidence shows that many single-use f&b contact articles made of plastics, paper and cardboard pose direct health risks to consumers.

Why? According to the piece of research by Zero Waste Europe, these materials indeed may contain hundreds of harmful or potentially harmful chemicals that migrate to the food and end up in the consumer's body, such as the so called PFAS (as we further explored in our previous Tech4Food's number at pages 24-25). As highlighted by the EU Chemicals strategy for sustainability (CSS), 388 different chemicals that may be present in food contact materials are classified as the most harmful chemicals since "they have proven to be carcinogenic, mutagenic, toxic to reproduction, persistent and bioaccumulative, and/or endocrine-disrupting chemicals. Repeated daily exposure to these chemicals may contribute to serious human health risks such as decreased fertility, obesity, diabetes, and even long-term hormonal cancers."

Reusables 1 – Single-use 0

Is reusable safer than single-use packaging? That is the question. And it is not an easy one to answer. First of all, the food hygiene legislation (Regulation (EC) 852/2004) already regulates this practice as it covers all aspects of hygiene in all food businesses. Such a regulation, as the research paper by Zero Waste Europe highlights, "specifies that reusable containers and packaging - including material used for wrapping and packaging - must be kept clean, and if necessary disinfected, in order to avoid contamination. Therefore, businesses selling food in either reusable or single-use packaging must comply with such requirementsts."

" There is a longstanding history of reusable packaging used for generations around the world to transport dairy, meats, seafood, fruits and vegetables, grains, and other foods. Looking more closely at the two different models of reuse, that is 'refill' – consumers bringing their own packaging and refilling it in shops – and 'systems for reuse' – packaging is owned by a business and inserted into a system that operates with a full logistic of distribution, return, washing, collection, and so on – as for the former "rules to guarantee hygiene and exemptions on the liability of the shops are a good practice, and it was also highlighted in the proposal of the new Packaging and Packaging Waste Regulation," Zero Waste Europe recalls. "Moreover, as for the latter, there is an infrastructure and reverse logistics for the packaging in place which is rather industrialized with standards for hygiene throughout the whole process (distribution, take-back, washing and refilling of the packaging)."

"We can't recycle our way out of the waste problem[?]

"While it is important to recycle and build better systems for it, more recycling will not solve the waste problems," Zero Waste Europe highlights. "The main focus for the industry, today, is

indeed ensuring that packaging is collected for recycling, and on solutions such as chemical recycling promoted as a technological innovation that could enable recovering of problematic plastic waste streams. Yet, even if recycling can improve, such a practice has its limits and cannot meet all the demand, and all together it leaves many sustainability challenges related to packaging unsolved."

packaging, the lower the overall quality of the recycled material. The presence of many chemicals in packaging along with food leftovers also hampers recycling. Furthermore, current recycling statistics do not take into account inappropriate disposal (littering) while including packaging shipped outside of EU territory, where safe and effective recycling and traceability cannot be guaranteed.

When it comes to plastics, furthermore, "although there are around 79 plastic material types commercially available on the market, only a handful of polymer types are actually recycled. Europe, for instance, achieved an overall plastic recycling rate of 23%. In Europe, decades after the launch of the first recycling system, still only about 40% of plastic packaging is reported as recycled, with the rest going to landfill or incineration. Estimates state that the effective recycling rate, that is the substitution rate of recycled plastic or the ability to replace the production of virgin equivalent plastics, is closer to 10%. In addition, one third of plastic packaging destined for recycling is still shipped outside of EU territory, where effective recycling and traceability cannot be guaranteed."

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Passion, dedication, and ongoing innovation are key ingredients in Tropical Food Machinery's story. Founded in the late 1970s by a pioneering Italian entrepreneur, Romano Orsi, the company offers complete production plants for the industrial process of tropical and continental fruit, producing finished products such as natural juices, concentrated juices, purée, fruit in svrup or jams. With a strong international in Italy – namely in Busseto (Parma) –, and one in Brazil, where it also boasts an operating branch in the state of Minas Gerais, as well as two-fruit processing plants in the north of the country. Liaison offices in India, Costa Rica, across the Asia-Pacific and West African regions, moreover, ensure TFM's for filling bags with capacities ranging coverage of the global market.

clients' needs

Over the years, the company's success is certainly due to the pineapple processing plants. Tropical Food Machinery can indeed vaunt dozens of active plants all over the world, with machines entirely designed around the can be supplied with a single or double pineapple juice extraction, and that can filling-head. The Teti/2 double-head guarantee a very high extraction yield aseptic filler, moreover, guarantees a and a high-level quality of the finished capacity of up to 12,000 l/h and is ideproduct. The company's production, al for the aseptic filling of concentramoreover, includes the development of ted juice, whole pulp, tomato puree in multi-fruit processing lines. "These sy- drums or curing bins ranging from 5 to stems combine different extraction ma- 1,000 litres." All Tropical Food Machichines, each one dedicated to a specific nery fillers are fully equipped with cuttype of fruit – whether with thick skin ting-edge instruments for the automatic like pineapple, or stone fruit as mango management of filling cycles in aseptic or even fruit with seeds like maracuja," conditions and product quality control. TFM explains. "In this way, it is possible to use a single multi-fruit line for the processing of different types of products according to the harvesting season, quests, according to the latest market guaranteeing a continuous productivity trends, the R&D department plays a at high efficiency." Every production key role. "The most important progress plant is designed and built in-house to in recent years has been the developsatisfy a wide range of solutions: from ment of Cerere 6000: a system that can mobile small-size plants for producers guarantee precise automatic banana or farmers in decentralized areas, dimi- peeling, a processing of the pulp in an nishing management costs and genera- inert atmosphere with antioxidant tre-

by Lucrezia Villa

ting local economy; to large-scale plants meeting high production demands, optimizing energy consumption and expanding the producers' markets.

filling units

The processing lines include the use of aseptic filling, a technology that guarantees a shelf-stable product at room economical and tested solution for several types of products. TFM offers an assortment of complete aseptic filling units that vary depending on the customer's marketing and logistics needs namely: Dione, Calipso and Teti. "The Dione aseptic filler has been developed from 3 to 20 litres, making it ideal for small plants with limited production Multi-fruit plants tailored to capacity. The other units support higher production capacities and are designed for filling drums with 220 litres bags up to bins with 1,000 litres bags," the company highlights. "The Calipso aseptic filler is developed for filling drums for medium-large sized plants and

The R&D latest innovations

Aiming at satisfying all clients' re-

excellent final quality," TFM adds. hour with a capacity of 6 tons of fresh fruit per hour and a yield of extracted that was awarded with the prestigious International FoodTec Award by the Deutsche Landwirtschafts-Gesellschaft, a German agricultural firm, in heart, TFM has two headquarters, one a cold chain - and is confirmed as an Recovery System, a compact auto- sold separately," TFM concludes.

atment, a constant productivity and matic machine that can be integrated into new or existing production plan-It can peel about 35,000 bananas per ts, also contributed to the business's success. "It does not involve waste of juice and can extract and concentra-A complete assortment of aseptic pulp of 60%. An innovative solution te natural aromas and essences that would, otherwise, be lost in the extraction process. The aromas can be reintroduced into the product during the final processing stages to improve temperature – without the need for 2021. The development of the Aroma its characteristics, or it can either be

TFM: al fianco dell'industria frutticola dal 1975

Con due sedi, una in Italia e l'altra in Brasile, da oltre 40 anni Tropical Food Machinery offre un assortimento completo di linee per la lavorazione industriale di ogni varietà di frutta, tropicale e mediterranea. Linee progettate e realizzate a partire dalle reali necessità dei clienti, in grado di garantire prodotti finali conformi a standard qualitativi internazionali.

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Robots on the rise

With half a million installations worldwide in 2022, it is one of the fastest-growing industries. The top performing markets. As well as an insight into major global trends, with a special focus on the crucial role played by Artificial Intelligence.

Ever smarter, more flexible, and easier to use. US - the largest regional market - accounted for unpredictability in the external environment, ei-In the latest years, the global robotics industry advances in the Artificial Intelligence field, thus attracting users from smaller enterprises to corporations. With 553,052 industrial robot installations in factories around the world in 2022 – a growth rate of 5% compared to 2021 –, the sector has marked a new record-high. The International three major trends that are and will be shaping the Federation of Robotics (IFR) forecasts increa- robotics industry the most," highlights the IFR singly positive performances by the end of 2023 as well. "The industrial robot market is expected to grow by 7%, equal to approximately 590,000 day's robots are designed to consume less energy, new units. Such a trend should continue in 2024 too, when we expect sales to exceed 600,000 uni- stainability targets for their production, compats," explains Marina Bill, IFR president. As the nies use industrial robots equipped with energy Marina Bill. robotics industry keeps growing and shifting ac- saving technology: robot controls are able to concording to the latest market demands and opportunities, the International Federation of Robotics provides an insight into the most promising markets, as well as a detailed analysis of the top trends of innovation in the field, with a special focus on feature is the smart power saving mode the increasingly larger role played by the AI.

The major markets worldwide

Last year, Asia was by far the world's largest for non-experts, is also a crucial market for robotics, accounting for 73% of ove- trend. rall installations. China took the lion's share ac- paired with an intuitive user expecounting for 52% of the global demand alone, rience replaces extensive robotics with 290,258 units installed, thus replacing the programming and opens up new previous record of 2021. "To serve this dynamic robotics automation opportumarket, domestic and international robot suppliers nities," Bill says. "Easy-to-use have established production plants in China. On programming interfaces, that average, annual robot installations have grown by allow customers to set up the 13% each year (2017-2022)," comments Marina robots themselves, also drive Bill, president of the IFR. Japan, instead, once the emerging new segment again proved to be the world's predominant ro- of low-cost robotics". bot manufacturing country with a market share of It's impossible when 46% of the global robot production.

The EU remains the world's second largest reover, not to mention market in 2022, accounting for 14% of overall in- the key role played by stallations globally. "The top five adopting coun- the AI. Indeed, apart from tries - Germany, Italy, France, Spain and Poland all digital advances taken to desi-- account for about 70% of all industrial robots gn ever smarter robots, operating as part of installed within the EU in 2022," says Bill. Ger- a connected digital ecosystem, Artificial Intelmany boasts a share of 36% within the EU. Italy ligence and robotics go hand in hand, with the follows with a market share of 16% - installations ultimate goal of better managing variability and grew by 8% to 11,475 units. The country has a powerful food & beverages industry with installations that went by 9% reaching 1,400 units in 2022.

Finally, the Americas rank third, accounting for 10%. Installations were up 8% to 56,053 units in 2022, surpassing the 2018 peak level. The by Lucrezia Villa

71% of the installations within the region in 2022. ghtly last year.

Global trends: AI on top

"Energy efficiency, increased accessibility and president. The first is key to improve companies' – for example, for manufacturers or competitiveness amid rising energy costs. Towhich leads to lower operating costs. To meet su- that change on a regular vert kinetic energy into electricity, for example, and feed it back into the power grid. This technology significantly reduces the energy required to run a robot. Another that controls the robot's energy supply on-demand throughout the workday.

Providing easier to use robots, also "The accessible software

talking about robots, mo-

Robotica: un mercato in costante crescita

Sempre più intelligenti, flessibili e di facile utilizzo. Con oltre mezzo milione di nuove unità installate su scala globale nel 2022, l'industria della robotica è in costante crescita. Una panoramica dei mercati più performanti e dei principali trend di innovazione, attuali e futuri. Con un focus speciale sui crescenti vantaggi apportati dall'Al.

ther in real-time, or off-line, as for instance the has been flourishing, also propelled by greater Mexico, Canada, and Brazil also performed bri- decline in population, staff shortages, alongside unpredictable events such as Covid-19. AI in robotics also meets the necessity of reshoring part of the production in the original countries and developing SMEs businesses. "The greater the vadigital automation: these are undoubtedly the riability and unpredictability of the environment, the more likely it is that AI algorithms will provide a cost-effective and fast solution

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wholesalers dealing with millions of different products basis," further explains

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What if a supermarket trolley could save lives?

A research team of Liverpool University has come up with an effective solution to detect patients with atrial fibrillation, without disrupting their daily routines. The disorders were identified through special sensors embedded into the shopping carts' handles.

by Aurora Erba

to help identify shoppers with atrial the SHOPS-AF study – carried out fibrillation. Perhaps we are still far by a research team of Liverpool John from that moment, yet the first little Moores University – was presented.

been taken. Last July, as a matter Sciences at the Athenaeum, guided NAP (Associa- in the study, designed to test an in- specialist. tion of Cardiova- novative method of mass screening scular Nursing without disrupting their daily routines. What better place, therefore, experiment?

disorders

that is to embed electrothe devices would be able to detect one of the most com-

mon heart rhythm disorders: atrial fibrillation. Such an arrhythmia, according to the report, affects more than 40 million people around the world, and it increases the risk of stroke by five-fold.

Apart from being a valid and es- and Allied Professions) 2023, a a traumatic event such as a stroke, sential ally when grocery shopping, scientific congress of the European for instance. Similar screening proin the future the supermarket trol- Society of Cardiology (ESC), which grams are hence needed to identify ley could become a potential mean took place in Edinburgh (Scotland), people with the condition so they can receive preventive medication. The shopping cart, of course, would not replace in any way a professional fisteps in that direction have already Ian Jones, Professor of Mathematical gure, yet it would contribute to early detect the heart rhythm disorders, so of fact, during AC- the researchers' team that took part that the patients could later on visit a

The testing phase

In order to prove the truthfulness than a supermarket to conduct the of the experiment, the researchers' team of Liverpool University selected four supermarkets with pharmacies **Preventing heart rhythm** in the city. During the two month study, over 2,100 adults used 1 out The research project by of the 10 shopping trolleys provided Professor Jones revolves with the electrocardiogram sensors. around a simple intuition, Shoppers were asked to hold the handlebar for at least 60 seconds. If cardiogram (ECG) sensors the sensor did not detect an irregular into the handles of super- heartbeat, it lit up green. If an irregumarket trolleys. This way lar heartbeat was found, the sensor lit up red. The in-store pharmacist then did a manual pulse check.

The study's outcome

Out of the over 2,000 people who took part in the experiment, CG data were available for 220 participants who either had a red light on the The real valued added of such a sensor and/or an irregular puls. After device would therefore be pre- ECG review by the study cardiolocautionary: the vast majority of gist, there was no evidence of atrial people, indeed, only discover fibrillation in 115 participants, 46 they have atrial fibrillation after recordings were unclear, and atrial

fibrillation was diagnosed in 59 participants. The average age of these participants with atrial fibrillation was 74 years and 43% were women. Of those, 20 already knew they had atrial fibrillation and 39 were previously undiagnosed.

Future goals and conclusions

Although the end results demonstrated the benefits of the technology, the promoter of the research himself, Professor Jones, underlined that further adjustments are still needed to make the system more accurate. "For example, having a designated position on the bar to hold onto, as hand movement interfered with the readings. In addition, ESC guidelines require just a 30 second ECG to diagnose atrial fibrillation, so we aim to find a sensor that will halve the time shoppers need to continuously hold the bar," the researcher explained.

Hence, the system needs to be further improved, yet the prospects appear to be positive. It is possible, without interrupting the patients' daily routines, to come up with effective screening methods which help prevent strokes and, therefore, save lives. And it can all happen while people do their regular shopping at the supermarket.

Il carrello della spesa? Potrebbe salvarci la vita Un team di ricerca dell'Università di Liverpool ha ideato un'efficace soluzione per rilevare scompensi cardiaci senza alterare la routine dei pazienti. Le anomalie verrebbero registrate durante gli acquisti al supermercato. Tramite sensori speciali installati sulla maniglia delle 'quattro ruote'.

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Lab Innova spotlights South-Eastern Europe

This project launched by ITA intends to promote trade between Italy and foreign companies. The protagonists of this edition are businesses from Bosnia and Herzegovina and Bulgaria operating in the agri-food industry, invited to visit Cibus Tec (Parma, 24-27 October).

by Aurora Erba

ITA brings the Lab Innova South East Europe project to Cibus Tec 2023. The Agency for the promotion abroad and internationalisation of Italian companies is reproposing the technical-managerial training programme launched in 2019. The aim is to foster trade and encourage international investment between foreign companies and Italy – a leader in food processing and packaging.

The project, which for the first time this year involves two countries of the Balkan Peninsula, Bosnia and Herzegovina and Bulgaria, achieved full realisation right at Cibus Tec. Among the companies participating in the project, those with the greatest potential for trade and experience in agribusiness have been invited to participate in this international event dedicated to food technology, where they had the opportunity to improve their know-how and establish new professional relationships.

New areas of business interest

The novelty of this edition of Lab Innova mainly lies in the choice of the target countries: Bosnia and Herzegovina and Bulgaria. In the past, the project turned the spotlight on a different geographical area of interest - North Africa and Sub-Saharan Africa – culminating with the signing of new business agreements between African and Italian companies.

The success of the programme made it possible to repeat the project in South-Eastern Europe. The new area of interest "was chosen for its development potential, and also following the latest geo-political changes that have taken place on the world stage, which have led Italy to show political and economic support for the Balkan countries," the project organisers say. It is also important to note that the GDP and

the local economy are considerably growing, with consequent benefits for Italian exports to this region: in the first 11 months of 2022, Italy exported 16 billion worth of products to the Balkan peninsula - 38% year-over-year growth - while importing around 13.7 billion worth of products - 46% more compared to the same period of 2021.

Selection and training of participants

In order to identify the companies that best suited the project, ITA used the help of its network of foreign offices and local trade associations. The ITA offices in Sarajevo and Sofia selected the most interesting and structured companies operating in the agrifood production and processing sector, choosing those with the greatest potential in terms of import/ export. This year's shortlist includes companies specialising in the processing and production of fruit and vegetables, meat and meat products, as well as dairy products.

The companies were invited to participate in three days of training with international experts from the ITA Faculty and discussed interesting topics such as international marketing and the global economic scenario. Based on the characteristics of the two countries, more targeted topics were covered: for example, in Sarajevo,

Lab Innova valorizza il Sud Est Europa

L'iniziativa promossa da Ice intende favorire gli scambi commerciali tra Italia e aziende straniere. Protagoniste di questa edizione sono le imprese di Bosnia Erzegovina e Bulgaria attive nella produzione e nella trasformazione agroalimentare. In visita a Cibus Tec.

ITA Faculty in Bosnia and Herzegovina, and Bulgaria

the focus was on branding, communication, packaging, and intellectual property; while in Plovdiv, the main topics were the internationalisation of SMEs, marketing and digital promotion, technological innovation, and selected companies had the opportunity to showcase their products and production sustainability.

Meeting at Cibus Tec

zegovina and Bulgaria showing the greatest potential for trade and experience in agribusiness were invited to Italy for a study tour and to get to and details of the next training courses and study tour.

know the most interesting industrial districts up close. An unmissable stop on the study tour itinerary was obviously Cibus Tec. In Parma, the services, while discovering innovative technologies and establishing new partnerships and trade relaI TA is already working on the second edition of Lab Innova South East Europe. The Agency has chosen the two new Once the training phase was over, the companies from Bosnia and Her- partner countries, Albania and Serbia, and together with the offices in Tirana and Belgrade is already defining the timing, target companies,

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the company Year 7 • N.5 November 2023

Lawer: tailor made weighing systems

The company provides automatic solutions for the handling of all kind of micro-ingredients, for both large and small production flows. A 100% Italian expertise, gained in more than 50 years of activity.

by Federica Bartesaghi

and the know-how gained over the past 50 years, ried out, as well as perfect hygiene and safety in Lawer established itself as the ideal technologi- handling. Lawer supports food manufacturers tion with external systems (MES), as required by cal partner for food manufacturers. Founded in with automatic weighing systems of powder mi-1970, the company is headquartered in Cossato, cro-ingredients which guarantee very high proin the Biella province (Piedmont), and is a major ductivity, constant quality, and complete process supplier of machines fot the automatic weighing traceability, while eliminating the 'human error' of powder and liquid products, with single- or factor. multi-weighing systems. "Our products, solutions and services supply the food industry to increase reliability, safety, and efficiency," the company CEO, Filippo Lanaro, explains. "Among the key factors that have contributed to the growth of our powders' storage (from 50 lt up to 1800 lt capabrand: the verticalized production process, that considers every single mechanical component that need to weigh large quantities of product or produced as a fundamental part for quality; the many products for the same recipe, it developed centrality of each individual who participates in the Supersincro weighing system. production, essential for the quality of the finished product; and the constant investments in safety and improvement of the working environment."

Supersincro: the systems for medium-large process flows

The weighing process of micro-ingredients must guarantee precision, quality, repeatability

Thanks to the advanced solutions developed and, above all, traceability of the operations car- the system, generating at the same time sophisti-

weighing systems, with Mono – Double or multi (1gr - 0.1 gr or 0.01 gr) and different capacity of city each hopper). For medium-large productions

to the different products used, which can be stored in fixed and interchangeable silos, hoppers, and big-bags," the CEO explains. "The system includes a station for the automatic generation of bags of variable size (from 9 to 36 lt). The control software guarantees effective cross-checks and traceability on all the operations carried out by

cated reports, and allowing bidirectional integra-Industry 4.0."

Automatic weighing with the 'Unica' range

For small-medium productions, the solution is Lawer can supply different models of automatic Unica. This system has been designed and patented to organize production in an innovative way, scales technology, with different level of accuracy by automatically weighing the powder ingredient components of recipes and batches in different processes of the food preparation industry.

Unica Twin consists of a number of independent storage silos in stainless steel, to store different ingredients. Each silo is equipped with dosing screw (Lawer patented) which allows fast "Supersincro is totally customizable according and accurate dosing; an efficient suction-filtering device guarantees maximum safety and a clean working area. The system is managed by a touch screen computer on the main control panel. Unica HD, for its part, is equipped with stainless steel silos with a capacity of 50 lt, and it can be configured with 8-16 or 24 silos. The products are dosed through stainless steel screws into buckets placed on the weighing trolley, which has

of the recipes

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an electronic scale, with 30 kg capacity and a resolution of 1gr. The management software allows to collect information about the operation reports and statistics and it can be interfaced with external systems.

Lawer: la pesatura è su misura Che si tratti di grandi o piccole produzioni, Lawer offre soluzioni automatiche per la gestione di tutte le tipologie di micro-ingredienti. Un'expertise 100% italiana, affinata in oltre 50 anni di storia.

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Discovering precision fermentatio

This technology has the potential to turn upside down the alternative protein market. But how does it work exactly and how does it differ from other techniques?

Precision fermentation is gaining momentum. This technology enables to create essential food components - like proteins, enzymes and other molecules - without the need for traditional agriculture. "In other words, it's a high-tech way of producing the building blocks of our favourite foods without relying on cows, chickens, or vast fields of crops," explains the collaborative platform Forward Fooding, in an article that clearly describes how it works. "While precision fermentation has the potential to produce high-quality ingredients, it does not aim to replace traditional protein sources such as meat and dairy", it adds. "Instead, precision fermentation is expected to produce ingredients that significantly improve existing alternatives on the market today, including plant-based, plant-based 2.0, and mycoprotein-based products."

The global precision fermentation market was valued at USD 1.93 billion in 2022, and it is projected to surpass around USD 63.85 billion by

the industry counts around 50 specialized companies, 95 start-ups and even its own Alliance, the Precision Fermentation Alliance, whose members are sector's big names lite Change Foods, Tomorrow Farms, Perfect Day, Remilk, ImaginDairy and New Cultures, among others.

By Federica Barte

An environmental-friendly technology?

In 2022, an article written by The Guardian columnist George Monbiot claimed that precision fermentation "might be the most important environmental technology ever developed". The article describes the technology as "a refined form of brewing", "a means of multiplying microbes to create specific products". Widely used to produce drugs and food additives so far, now it's finding the cost of the process itself and, as a consequenplenty of applications also in food production, ce, also of the resulting products. With this regard, especially in the alternative protein market.

According to Monbiot, the most interesting development use no agricultural feedstocks. "One paper estimates that precision fermentation using 2032, expanding at a CAGR of 41.89%. Today, methanol needs 1,700 times less land than the most nch its vegan mozzarella.

efficient agricultural means of producing protein: soy grown in the US. This suggests it might use, respectively, 138,000 and 157,000 times less land than the least efficient means: beef and lamb production. Depending on the electricity source and recycling rates, it can also enable radical reductions in water use and greenhouse gas emissions. Because the process is contained, it avoids the spillover of waste and chemicals into the wider world caused by farming."

And yet, despite this huge potential, scaling up precision fermentation presents numerous challenges. One is that like most disruptive technologies, precision fermentation is clouded by false myths and misinformation. Another key issue is related to New Culture, a company that uses precision fermentation to make animal-free casein, claimed this Summer that it targets cost parity for animal-free cheese in 3 years. In early 2024, it prepares to lau-

How precision fermentation works, basically speaking

1. Select a microbe

The journey starts by choosing a microbe (bacteria, yeast, micro-algae, or fungi) that can produce the desired molecule. Each microbe has advantages and disadvantages. For instance, bacteria have a relatively short period of time to double in size, while yeast and fungi can tolerate higher ranges of temperature, pH, salt, etc.

2. Modify the microbe

The microbe's DNA is modified, instructing it to produce a specific protein (such as dairy and meat proteins) or molecule.

3. Select the feedstock

The feedstock serves as the fuel for the fermentation process. It can be derived from various sources, including byproducts of the food industry or even post-consumer organic food waste.

4. Grow the microbe

Microbes are placed in a bioreactor, a controlled environment that provides the right conditions for their growth (temperature, lighting and pH). The time it takes for the product to be made depends on what you're trying to produce, the chosen microbe, and the feedstock.

5. Recover the new product

Once the microorganisms have produced enough of the desired product, it's time to extract it. This process requires careful separation of the microbes from the product. Once finished, you're left with a valuable product that can be used as an ingredient for making a variety of foods. Source: Forward Fooding

Within the food industry, fermentation is used in three primary ways:

- Traditional fermentation: natural microbes are used to transform basic ingredients into foods and beverages, like yeast turning sugars into beer or cheese cultures doing their magic to milk.
- Biomass fermentation: it is one of the most efficient ways to produce lots of protein, since the microorganisms used in fermentation reproduce and grow very quickly. These microorganisms become the key building blocks for crafting alternative protein products.
- Precision fermentation: it goes beyond relying on natural microbes: It involves tweaking the DNA of selected microorganisms to produce a specific molecule that they wouldn't naturally make (animal proteins, enzymes, fats).

Alla scoperta della fermentazione di precisione

É una tecnologia pionieristica e relativamente nuova – lo è certamente nelle applicazioni in ambito alimentare - che potrebbe rivoluzionare il mercato dei prodotti alternativi alle proteine animali. Ma come funziona e in cosa si differenzia dalle altre tecniche di fermentazione?

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New proteins: a market to 'cultivate'

Plant-based, cultured meat, fermentation processes. Organizers of IFFA, leading German trade fair in technologies for meat and its alternatives, interviewed Ivo Rzegotta, of the Good Food Institute Europe, on some key topics for the global food system.

IFFA's latest edition, in 2022, officially opened up to alternative proteins and the related technologies. A focus that the Frankfurt trade show is willing to further strengthen starting from the next edition, that will be held in 2025, from 3 to 8 May. A great leap forward for a show that, for decades, had been considered the global meeting platform for the animal protein industry (more precisely the meat industry), and a clear sign of the direction the market is moving to. IFFA's organizers talked about the market's major challenges and opportunities with Ivo Rzegotta, Senior Communications Manager Germany at the Good Food Institute Europe. Here is an extract of the interview.

The market for alternative proteins is growing. More people want to eat more sustainably and consume less conventional meat. The spectrum of alternative-protein products ranges from completely plant-based meat substitutes to hybrid products and cultivated meat. Can you give us an overview of how these individual segments are currently developing in Germany?

Worldwide, at least 1,150 companies are producing plant-based alternatives to animal products, and they include both innovative start-ups and established companies in the food industry. At least 70 of them are based in Germany. Germany is by far the largest market for plant-based alternative products in Europe. In terms of sales, the German market for plant-based foods grew by 11% to 1.9 billion euro in 2022 and has grown by a total of 42% since 2020. Against the background of increasing product quality, we expect dynamic growth to continue, particularly as we are seeing numerous innovations in categories that have fallen behind to date, e.g., plant-based fish products and structured products such as plant-based steak. At present, the market launched onto the German market.

Cultivated meat is not yet approved as a food in Europe. When do you think it will go on sale and what are the current obstacles to this?

In recent months, there has been great progress towards the launch of cultivated meat onto the market. The first products have been approved in the USA and similar procedures are underway in other markets, too. When such products will reach the German and European markets depends basically on two things: firstly, production costs must be cut further and the necessary manufacturing capacities built up before the products are ready for the mass market. This calls not using modern fermentation processes. Germany is very

By Carolina Pizzi

only for private investment but also for significantly more public funding in research and infrastructure. Although Germany has invested large sums in the energy and transport revolutions, a comparable effort to bring about a food revolution is still outstanding. Secondly, in this emerging category. The challenges in the field cultivated meat is covered by the EU's Novel Food Refor alternative proteins is made up almost entirely of gulation, which calls for a thorough food-safety review plant-based products and it will be some time before before such products can be sold in the EU. However, cultivated meat and fermentation-based products are this process is extremely bureaucratic and takes much longer than in other parts of the world.

> Another fascinating field is fermentation because, using microorganisms, fermentation makes it possible the production of foodstuffs that not only look and taste like meat but also have the same cooking properties. Where are we in this process and how could further progress be made?

The fermentation segment is just beginning to develop its full potential within the alternative protein sector. Currently, at least 136 companies worldwide are working on the production of sustainable proteins

strong in this area, with the third most startups after the USA and Israel including, for example, Formo, Mushlabs and Kynda. As a result, the German ecosystem is on its way to becoming a global powerhouse of fermentation are basically the same as in cell cultivation: the technologies behind them work and companies have shown that they can be used to produce tasty and sustainable products. However, to bring the production price down to the level of its animal counterparts, and to produce significant quantities, efforts must now be made by both private investors and political decision-makers to achieve this.

Nuove proteine: un mercato da 'coltivare'

Prodotti plant-based, carne sintetica, tecniche di fermentazione. Gli organizzatori di IFFA, fiera tedesca leader nelle tecnologie per la carne e le sue alternative, hanno intervistato Ivo Rzegotta, del Good Food Institute Europe, su alcuni temi chiave per il sistema alimentare globale.

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Security and flexibility

- The unique, patented, continuous sealing flange ensures seal integrity equal to traditional plastic trays.
- No mould changes required on existing plastic trays equipment

Sustainability

- PaperSeal® trays use up to 90% less plastic than traditional trays.
- Easy separation of film liner from the paperboard after use, promoting recycling.
- The italian Aticelca evaluation system has assigned a "B" degree of recyclability, allowing to dispose the tray in the paper bin.

Full customization

Both the inside and outside of the tray can be fully customized in offset printing up to 5 colours.

Innovation

 Our paperboard packaging solutions meet functionality and performance of the equivalent plastic trays.

Applications

 Chilled and frozen meals that can be cooked in the microwave or a traditional oven.

Customization

 The outside of the tray can be customized in offset printing up to 5 colours.

Contact us laggiore: +39 0331 42311

Headquarters

Logistics and Production site

MartinoRossi: a controlled supply chain looking ahead

Thanks to the Agrifuture project agriculture is ever more sustainable. And the blends 'Meat analogue mixes' are designed to satisfy the higher demand of protein. The values of a multi-faceted company. Where everything starts in the fields.

the window from his office, as he recalls the story of team processes the raw materials. his company, the market situation, past and future projects. Giorgio is the president, direct descendant of Martino, founder of the business. Today Giorgio is supported by his son Stefano, the CEO.

ning gluten, soy, allergens, and GMOs. "We deci- and without the use of chemicals harmful to air, developing innovative solutions."

The value chain

The cornerstone of the modus operandi of the plants per year." company is the value chain: it all starts with the market analysis and the supply chain planning (resulting from over 30 years of collaboration with the MartinoRossi's sustainability commitment is partner companies): MartinoRossi carefully selects ongoing, as recently demonstrated by the Agrifuthe farms to which entrust the cultivation, to be ture project: the experimental farming company carried out according to the disciplinary; it selects founded by Giorgio Rossi with the collaboration the best seeds destined to the farmers; and each of the agronomist Gilberto Garuti dedicated to the phase is closely followed by an in-house agronomi- research of new cultivation techniques aiming at sts' team. Threshing and transport are dealt with promoting a sustainable and high-quality agriculdirectly to avoid any risk of contamination; all the ture. Agrifuture cover an area of 330,000 sqm of incoming and outgoing raw materials are subjected fields and relies on the patented system 'Underto strict chemical-physical analyzes carried out en- drip', asub-irrigation precision technique, together

by Margherita Luisetto

Sustainability

everywhere, it's tangible. Everyone in the company parties. This led to the collaboration with ERSAF this way it is possible to talk about sustainability, to reduce the footprint of our production, we are forestry) and two Milan universities." and thus discuss the future of the agriculture and adopting concrete solutions", says Stefano. "Thethe environment. From this mindset, we have cre- re are many examples: from experimenting with ated the first controlled supply chain in the mid- sub-irrigation, a method that allows to save up to 1990s", says Giorgio. The company has full con- 60% of water and up to 25% of phytosanitary; introl over all stages, and to offer clients only high cluding the fight against parasites through the use quality raw materials it eliminated all those contai- of drones, introducing antagonistic species to fight ded to invest on pulse and functional ingredients, water and soil; to the project 'MartinoRossi for the Planet': the objective is to offset the CO2 emissions made by vehicles leaving MartinoRossi during their products delivery activity, planting over 10,000

Giorgio Rossi's attention is constantly paid to the tirely in the internal laboratory, for the control of with a minimum tillage philosophy, relying on the fields. It's where the strength of his company lies. granulometry, humidity, mycotoxins and allergens. GPS technology, which enables MartinoRossi to His eyes (and his heart) are there. It all becomes cle- After that the drying, cleaning and storage phases sharply reduce the use of water, fertilizers, energy, ar by looking at how he observes the fields outside take place. And at the end of all these steps, the and phytosanitary. "It is like a big open-air laboratory, where we can directly test the results of our research, thus optimizing the time between theory and practice", explains Giorgio. "We wanted the MartinoRossi exudes sustainability. It can be seen outcome to be monitored and validated by third "A real supply chain starts from the field. Only feel responsible towards the environment. "In order (the regional body for services to agriculture and

The product range

The company provides flours, semi-finished products and functional ingredients from cereals and pulses, gluten-free, allergens-free and GMO-free, both conventional and organic. Among the new entries, the Meat Analogue Mixes: a 100% plant-based alternative to meat: dry mixes for burgers, veggie balls, and Bolognese style sauce that only require some water and oil to be rehydrated and then ready to be cooked.

MartinoRossi: vera filiera controllata che quarda al futuro

Grazie al progetto Agrifuture l'agricoltura è sempre più sostenibile. E con le farine 'Meat analogue mix', soddisfare l'aumento della richiesta di proteine diventa realtà. Le sfaccettature di un'azienda poliedrica. Che ha un punto di partenza imprescindibile: la terra.

SACCO system Yo-mild

Stable structure, colour and aroma

Process Flexibility

Maintain stable mildness during shelf life

Strenghtens Immunity System

Unstoppably Sweet

saccosystem.com

The "biggest-ever" Gulfood Manufacturing opens its doors

The 2023 edition of the Dubai-based industry event will see a major presence from European manufacturers. In the following pages, a preview of the solutions that Italian brands will introduce to global F&B decision-makers, from 7 to 9 November.

by Federica Bartesaghi

Gulfood Manufacturing, one of the most influential annual F&B manufacturing event in the world and probably the most influential in the MENA Region, will take place from 7-9 November 2023 at Dubai World Trade Centre (DWTC). This year's edition – that marks its 9th anniversary - will be "the largest ever" according to organizers, since it will bring together more than 2,000 exhibitors in 15 halls, among top production players in processing, packaging, ingredients, supply chain solutions and control & automation. The event will attract F&B industry's decision-maker, including top brands like Apical, Cargill, Givaudan, Wilmar, Kerry, Dohler, Orkila, Fanar, and Takasago.Once again, the FoodTech Summit will convene the global industry's most dynamic and engaging experts, decision-makers and thought leaders, to offer fresh new perspectives, insights and inspiring strategies on topics ranging from cost hikes, through to innovation economics, green solutions and smarter manufacturing, to alternative products, functional foods, food safety and much more.

Focus on sustainability, AI and plant-based

A focus area will be Dubai's Green and Sustainable Manufacturing initiative, part of the Dubai Economic Agenda. The initiative will bring together leading businesses in the plant-based F&B industry with co-manufacturers, equipment, and solution providers to explore challenges and opportunities in effectively scaling up plant-based production and manufacturing in Dubai. "With COP28 taking place just weeks after the show," organizers explain, "Gulfood Manufacturing is set to redouble its long-standing focus on how the F&B manufacturing industry is integrating sustainable practices and processes (such as sustai-

nable packaging), reducing food waste, introducing energy-efficient machinery with a smaller carbon footprint, and driving traceable, ethical and transparent food production." The 2023 edition will deep dive into themes examining how AI, robotics and automation are spurring an evolution in efficiency, the digitalisation of the F&B manufacturing sector, stimulating revolutionary innovation, and those raising the benchmark of excellence across the industry.

Four events, a single pass

Three other DWTC food and beverage events will be co-located with Gulfood Manufacturing from 7 to 9 November 2023: the Speciality Food Festival, MENA region's only dedicated gourmet and fine food trade show; and ISM Middle East, the region's largest trade fair for sweets and snacks. Last but not least, Private Label Licensing ME - MENA's only event where buyers can source cost-effective customisable products, branding and packaging solutions, bringing together food and non-food suppliers, private label & contract manufacturers under one roof. Attendance is free and gives registrants access to the entire ecosystem of four events with a single pass. Trixie LohMirmand, Executive Vice President, Dubai World Trade Centre commented: "Gulfood Manufacturing is the leading industry event in the MENA region, sitting firmly in the top tier of global industry events, and the only annual event of its kind in the world. The event comes at a critical point for the global F&B industry, as it tries to balance rising inflation and input costs, against downward price pressure from retailers and consumers – whilst meeting the imperative to make food production more sustainable. By leveraging innovative technologies and driving efficiencies, the industry can strike this balance and continue to evolve and reach new heights.'

VISIT US AT

HALL: SHK SAEED 3

BOOTH: S3-D56

Continuous sealers SSI and SSIT series

Fields of application

Food packaging. Description and strong points

IFP Packaging - brand of the Tecno Pack Group - presents a brand new machine series suitable for heat-shrink film: SSIT and SSI, respectively with and without integrated shrink tunnel. They are the result of 40 years of experience and are designed for optimum performance, uncompromised quality, and investment.

Continuous sealers of SSI and SSIT series are newest generation machines, developed to be adaptable, robust and high-speed resistant. Suitable to wrap products of different thickness and dimensions. The robust structure and the full control of all features with touchscreen make this machine series the optimal choice for both lower speed craftsman production and higher speed industrial production.

ZACMI - ZANICHELLI MECCANICA

www.zacmi.com

Customer care

Fields of application

All Zacmi machines

HALL: SHK SAEED 2 Italian Pavilion Booth: S2-D4

VISIT US AT

Description and strong points This is an exclusive tool for Zacmi customers, with the ability to enormously simplify all procedures and communications. Customer care offers a wide range of services to improve production: detailed machinery documentation, including updated technical sheets; personalised assistance for each plant; a quick and simple method for the order of original Zacmi spare parts.

The Customer care also offers further advantages: reduction of environmental impact, with its particular attention to method and timing, thus favouring more effective travel and shipments; maintenance cost reduction, that allows the immediate identification of a problem and an easy access to original spare parts; fast delivery of replacement parts that consequently reduces production stops, giving a higher plant yield; product quality is ensured under Zacmi's control, that is directly responsible for the supplied material.

follow

Year 7 • N.5 November 2023 gulfood manufacturing 2023

CEPI www.cepisilos.com

Bulk-handling system

Fields of application

Bakery & biscuits, confectionery, pasta & cereals, premix, baby food and functional food, pet food. Description and strong points

Turn-key, highly customized bulk-handling systems for the storage, transport and dosing of raw materials, as well as fully integrated automation and technologies to complete all production processes. All design, production and commissioning operations are managed internally, and each system is designed through a detailed study of the user's processes.

Technical specifications

- Multiple indoor and outdoor storing options in stainless steel or antistatic fabric
- Minisilos and dumping stations for medium production volumes • Broad spectrum stations for the storing and accurate dosing of micro ingredients
- Pneumatic conveyance
- Dosing in modular hoppers for powders, tanks for liquids and blending station
- Flour cooling, fermentation, sugar mill, invert sugar technology, salt solution systems, fat and liquid tanks, fat cold dosing, bread and biscuit rework systems
- CIP or PIG washing system
- Fully integrated automation including touch panels, process control software with full traceability and communication with ERP/MES

Process line for dairy

Fields of application

Mixing and preparation for evaporated and sweet condensed milk from milk and whey powder. Description and strong points

Automatic and reliable line with total supervision control.

- Technical specifications
- Complete wetting out of even the most difficult to wet powders in a single pass.
- Concentrations up to 40% in single pass • No air entrainment other than the occluded air in the power phase
- Batch time reduced to the minimum
- Hight product hield due to intensive wetting of powders • Low intensity mixing due to high impact frequency instead of high shear
- Feeding from BigBar or silo is also possible

MIELE www.mielepackaging.it

Double Block Bottom Tin Tie

Fields of application

Snack, powders, coffee bean and powder, frozen food, bakery, sweets, sugar, dried fruit, pasta, pet food and more.

Description and strong points

The Double Block Bottom machine is completely integrated into the packaging line and has as its main characteristics high productivity, surprising ease of use and, naturally, an extremely thorough integration into the packaging line, thanks to the software entirely developed by Miele. It stands out for the reliability of its performance and the very high quality of its materials, both in the mechanical devices and in the electronic part. The double block bottom bag is very successful both for aesthetic reasons and for the logistical advantages (reduction in the volume of the package) but also for the availability of resealable, stable, compact and easy to store packages. Technical specifications

• Stainless steel version

- Superior quality electronics that integrates Siemens commercial products Easy access to internal parts and easy to clean
- Pneumatic Festo
- A powerful industrial tool for large volumes in a short time, combined with multi-heads, auger dosers, weight dosers or volumetric dosing system

RICCIARELLI www.ricciarellispa.it

VSB150S

Fields of application

Pasta and food (rice, dried fruit, dried legumes) industry. Description and strong points

High-speed packaging group to produce pillow bags, square bottom and double square bottom bags starting from a reel of flexible film. The machine's strong points are: flexibility, production of different types of pack (pillow bags, square bottom and double square bottom bags), considerable reduction of the overall dimensions, possibility of equipping devices and accessories for working with paper.

Technical specifications

- Max. speed: 90 double square bottom bags per minute; 120 pillow bags per minute • Reel holder for foil width up to 580 mm positioned at the head of the machine
- (90° in comparison to the standard rear solution) with return of the reel itself
- Operation cycle and driving axles controlled by Siemens Simotion • Just one electrical panel positioned at the top and reduced mechanical structure

CAVANNA

www.cavanna.com

FlowBar

Fields of application

Cavanna's news FlowBar line, a mid-speed flowpacking and cartoning line, responds to the great market demand for a format, the bar, ideal for on-the-go consumption. The bars are individually flowpacked and packaged in displays and boxes, in different patterns (6x1, 6x2, ...), to preserve their integrity during transport and shelf-life. Description and strong points

The FlowBar consists of: stainless steel stream conveyors, with flip-over guards for full access and no removal of parts; ZERO4 flowpackers, featuring TPM, sanitary design and IoT integrated, to maximize OEE efficiency; and ICECube robotic delta toploader, for a turnkey solution of the bars into displays/boxes/trays. FlowBar is ideal to work with all new sustainable packaging materials: fully recyclable mono-materials, paper-based or compostable films. Other points of strength are the gentle handling of products in all phases; the quick and tool-less changeovers; the minimal downtimes, through real-time monitoring and troubleshooting; and scalability, to dimension your packaging line according to your market demand.

GB BERNUCCI

www.gbbernucci.com/en/

PaperSeal and PaperSeal Shape

Fields of application

VISIT US AT

HALL: SHK SAEED 2

B00TH: S2-B26

Cheese, fresh or processed meat, fish, ready-made products, frozen foods, snacks, salad and fruit.

Description and strong points

PaperSeal (registered) is an innovative, eco-friendly and sustainable tray that offers brands and retailers the opportunity to replace Modified Atmosphere Packaging (MAP) plastic trays and Vacuum Skin Packaging (VSP) trays with a barrier-lined paperboard alternative. It allows a plastic reduction of about 90% as the thin inner layer can be easily removed and disposed separately, ensuring an efficient recycling. The unique, reinforced, continuous sealing flange ensures seal integrity equal to traditional plastic trays. High-quality offset graphics on both the front and rear of the tray deliver on-shelf differentiation. Technical specifications

- PaperSeal Shape is perfect for non-rectangular and multi-compartment trays. The tray offers excellent rigidity thanks to the double flange structure.
- The PaperSeal Cook solution is suitable for chilled and frozen applications that can be cooked in the microwave or a traditional oven.

follow

VISIT US AT

HALL: SHK SAEED 2

B00TH: S2-E3

www.sirman.com

gulfood manufacturing 2023 Year 7 • N.5 November 2023

B&B SILO SYSTEMS www.bebsilos.com

Microdosers

Fields of application

Food, chemical, pharmaceutical and cosmetics industries. Description and strong points

Units for volumetric micro-dosages of powder, granular, solid and liquid ingredients. Their specific structure adapts to any space, with the possibility of subsequent extensions. The hoppers have variable capacities. The extraction group with fluidizing homogenizer allows its use for the most challenging products.

Technical specifications

- In-series or star-shaped
- Modular structure and hoppers • Fluidizing homogenizer
- Self-cleaning dynamic filter
- Special screw dosing group
- Manual or automated product loading (by bag suction)
- Support frame in painted steel

CLEVERTECH www.clevertech-group.com

Integrated solutions

Fields of application

Systems installed in all production management phases of the packaging line.

Description and strong points Compactness, reliability, and innovation are the keys to efficiency and Clevertech's integra-ted solutions meet every need thanks to their holistic approach. The design used for product nandling allows the quality of the primary packaging to remain totally intact. Starting from f&b sector, Clevertech is a well-experienced partner in the supply of systems such as: robotic basket loaders and unloaders or traditional ones to treat the product in autoclaves where Clevertech reaches speeds up to 2000 cans/bottles per minute. At the same time the group supplies highly customized bulk palletizing and depalletizing solutions integrated with multi-flavoured lines when required. At the end of line, the approach is the same: full integration of different systems (mechanical, electrical, software). Systems could be with high- or low-level nfeed or robotic island and include, precisely palletizers, stretch wrappers, strappers, and abellers.

ΕΚΟ

Fields of application

Bakery, chocolate, dates

Technical specifications • Speed 110 ppm • Max reel size 400 mm

Power supply 220v

TROPICAL FOOD MACHINERY www.tropicalfood.net/en/

Cerere 6000

Fields of application

Banana puree extraction. Description and strong points

Tropical Food Machinery has patented the new automatic banana peeler 'Cerere 6000' which has a working capacity of 6 T/h of fresh product and a pulp extraction yield of 60%. Cerere 6000 can guarantee precise automatic peeling, a processing of the pulp in an inert atmosphere with antioxidant treatment, a constant productivity and excellent final quality. Fully automatic, processing times reduction, high extraction yield, high-quality product are this technology's main features.

Technical specifications

- Capacity: up to 6 T/h of fresh fruit processed
- Small dimensions: 310x140x180 cm • Antioxidant treatment of the processed
- product • Automatic cleaning system
- Automatic waste ejection

VISIT US AT

HALL: SHEIKH SAEED 3

B00TH: S3-E12

GASPARIN BREVETTI www.gasparin.com

1900 + IMA-200

Fields of application

Slicing and bagging of bread.

Description and strong points

The line is suitable for the automatic slicing and bagging of bread loaves at high speed. According to the capacity required and the initial loaf size the line can be configured in different ways. The transfer between the slicer and bagger machines is provided by appropriate feeding unit which can be customized according to the different product to handle. Integrated in line on the bagger is included the clipping head to save space and guarantee

the immediate closing of the bags after the bagging. For any other type of closure required can be combined at the bagger exit a 90° conveyor predisposed for the installation of it. **Technical specifications**

- Capacity: About 40 or 60 packs per minute (depending on line configuration)
- Controller: Siemens, different on request
- Operating panel: Switches and buttons
- Pneumatic system: Festo
- Power supply: 380/460 Volts 50/60 Hz 3 Phases
- Power input: Approx. 25 Kw • Compressed air: Min. 6 bar

follow

GULFOOD 2023 Hall Sheikh Saeed 3 / Booth S3-119

B&B SILO SYSTEMS, THE SOLUTION FOR **YOUR IDEAS**

We put your ideas into practice, developing tailor-made solutions for you: we design and produce systems to automatize storage, transport and dosing of raw materials, for the food, chemical, pharmaceutical and cosmetic industries. We work with you from pre-design to post-sales stage, with the main objective of providing you with the system best suited for your requirements and production needs.

B&B Silo Systems s.r.l.

Via M.Buonarroti 3 - Z.I. Sipro 44020 San Giovanni di Ostellato - Ferrara, Italy Tel: +39 (0)533311163 | Fax: +39 (0)533319110 | info@bebsilos.com | www.bebsilos.com

Year 7 • N.5 November 2023 gulfood manufacturing 2023

FAVA www.fava.it - www.storci.com

Automatic and semi-automatic process equipment Fields of application

Pasta (short-cut, long-cut, nests, lasagna, instant, gluten-free, fresh pasta, stuffed pasta) and couscous production factories.

Description and strong points

Achieving the best possible pasta quality with the raw materials available in the specific markets is reached through Fava and Storci's technology. The latest long and short-cut pasta lines, GPL 180 and TCM 100, are proof of the important technical and technological developments achieved. More than 1,500 Fava lines are in operation today, many of them in the some of the largest and most renowned pasta factories in the world. **Technical specifications**

In terms of energy sustainability and environmental impact, heat and power consumption per kilo of pasta is significantly reduced without compromising flexibility, process capability and ease of use. With regard to equipment, Fava offers added value to customers and optimises the service life and total cost of ownership.

WE PAC

YOUR

WISHES!

VIMCO www.vimco.it

Robotic Loading Unit RLU100

Fields of application

Food packaging.

Description and strong points

The strong point of this robotic product loading unit is a high-tech vision system: equipped with different cameras, it is able to recognize the size and orientation of the randomly incoming products, the quality and the colors of the primary packaging, a transparent film or a packaging of the same color of the transport belt.

This system communicates to the delta robot which products to pick up and which products must be rejected. The robot is designed and manufactured by Vimco, who over the past decade has decided to produce in-house its own robotic units; from the mechanical and software engineering phase to the production of the mechanic parts. **Technical specifications**

High-tech vision system

- Possibility to work with different colors of the primary packaging and with transparent film
- Used to pack products in cardboard boxes
- UNIVERSAL PACK www.universalpack.it

Automated sachet line for powders in flat blank cartons

Fields of application

VISIT US AT

HALL: SHK SAEED 2

BOOTH: S2-B19

Specifically-dedicated for the food industry, for the packaging of powders into practical and user-friendly single-dose sachets.

Description and strong points

This automated line consists in a multilane sachet machine to produce twin sachets, integrated with secondary packaging machines for carton forming and closing. The counting and stacking unit, which connects the primary and secondary packaging machines, inserts the sachets into the formed cartons through top loading system. Dosing accuracy, accessibility and flexibility are the core advantages of this project.

Technical specifications

- Sachet weight: from 12 up to 23 gr
- Sachet dimensions: 85 x 91/111
 Carton dimensions 178 x 100/115 x 60/80/100/140 mm
- Output speed: 400 sachets/minute
- Line speed: 20 cartons/minute

MILKYLAB www.milkylab.it

String cheese

Fields of application

Dairy sector, cheese production. **Description and strong points**

MilkyLAB automatic line for the production of string cheese consists of: steam cooker-stretcher, automatic moulding machine with special extruding system, cooling and automatic cutting system. Clients can produce string cheese with fixed diameter and adjustable length.

Technical specifications

- The special extruding system allows to obtain separated parallel cords of cheese, so that the structure of the product will have a perfect shape and predetermined weight, meanwhile the peelability and consistent texture will be guaranteed
- The cooling system is composed by independent transportation channels for each string cheese. While the string cheese goes forward, the nozzles will spray cold/
- The automatic cutting system has independent blades, one blade for each cord
- of cheese
- The whole production line is arranged for automatic CIP cleaning

ALIMEC

www.alimec.com

VISIT US AT

HALL: SHK SAEED 3

B00TH: S3-D4

Line for the production of muffin and cakes Fields of application

Production of different types of cakes.

Description and strong points

A line composed by tray handling system, paper cup denester and batter depositor, tailor-made for the production of different types of cakes. This equipment can be integrated in a fully automatic line for medium-high production capacity according to the product type.

Technical specifications

- Machines completely driven by servomotors, for a wide range of products and high accuracy
- Tray management system made with materials that reduce both noise and wear-and-tear, while ensuring accuracy and positioning during transport
- PLC and display (HMI) for production line control, data and recipe storing
 The line is made according to the production capacity and product type required by the customer

GRANDI www.grandi.it

Packing line multipack

Description and strong points

Originally produced to deal with very specific cases, Grandi's experience with seal-ban-

ding machines became so significant that the production of these machines has now reached extremely high quality and reliability levels and has become a reference standard for the company's production. Especially designed for multipacks of cheese portions round boxes, this multipack line uses the wraparound concept.

Technical specifications

Boxes type and dimensions: 8, 16, 24, 32 portions
Wrapped in multi packs of min 110 mm and max 260 mm

follow

VISIT US AT

HALL: SHK SAEED 2

B00TH: S2-C16

OUR SPEED IS ABOVE LIMITS

WITHOUT FINES!

FOOD & BEVERAGE PLANTS

Established in 1954, ZACMI specialises in the design, construction and installation of tailor-made filling & closing lines for the food & beverage industry.

ITALY PAVILION SH2 - FLOOR PLAN BLOCK 06

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gulfood manufacturing 2023 Year 7 • N.5 November 2023

SIAD MACCHINE IMPIANTI www.siadmi.com

VITO Next

Fields of application

Dairy, mineral water, soft drinks, beer & wine, detergents, edible & mineral oil.

Description and strong points

VITO Next is a range of smart and green compressors specifically designed for blowing PET, rPET and PLA bottles. The collaboration of SIAD MI technicians and engineers with the R&D department, plus specific feedback from customers, has led to the evolution of the VITO range with the creation of high-performance, reliable and sustainable compressors.

The VITO Next standard supply also includes SIADMI4U, the remote monitoring and diagnostics system that enables clients to view, analyze and manage all the operating parameters in real time. Highly user-friendly and customizable, SIADMI4U offers countless advantages in terms of the planning and optimization of maintenance operations plus the reduction of management and maintenance costs. **Technical specifications**

- High pressure compressors 0 40 bar, dry oil free air
- Type: non lubricated dry air
- Capacity: from 420 to 3840 Nm³/h
- Configuration: 3 stages in "V" frame

NAVATTA GROUP FOOD PROCESSING

www.navattagroup.com

Recipes preparation systems, mixing systems, heating, de-aerating with vacuum boules evaporators

Fields of application

Tomato mix, ketchup, tomato paste blended products, jams, and sauces production lines. Description and strong points

Thanks to the automation improvements achieved over the past years, boules concentration systems have now been reconsidered for sauces and jams production. This automation allows for the preparation of some ingredients before loading to the boule, the dosing of products in defrosting /mixing heated vats, which are later sent to concentration boules. In this way boules become the ideal solution for mixing, cooking, concentration, adding of other ingredients, " Brix and pH control, pasteurizing: once the desired product characteristics are obtained, it can be downloaded in a rest tank ready to be filled in the final desired containers.

Technical specifications

• Inlet product: tomato paste 36-38° Brix • Output product: tomato mix, tomato paste double concentrate 24-28° Brix, tomato paste blended products, ketchup, fruit jam

• In the system you can dose/add even unit for aroma, pectin and citric acid

FoodPack Hyper

Fields of application

Packaging of fruits and vegetables, meat, fish, ready meals, dairy products and more. Description and strong points

ILPRA www.ilpra.com

FoodPack Hyper is an in-line tray sealer designed to meet the needs of large-scale production. Available in the 1000 and 1250 versions, this model includes the CPS (Constant Placement System) technology that allows the continuous inflow of trays, thus increasing speed. Hyper can be easily integrated into any production line and is characterized by the presence of the Anti-crush system for the incorrect positioning of trays, the recognition system of authorized personnel and the predictive maintenance to plan maintenance and replacement of components. All movements are mechanical (including sealing). Although this solution achieves very high performance and speed, it guarantees extreme precision in the positioning and sealing phases.

Technical specifications

Limited film waste

- In line power supply • Automatic film tensioning Quick mould change
 - Brushless drive
 - Quick and easy disassembly belts system
- On-screen data capture and self-diagnostic system

VISIT US AT

HALL: SHEIKH SAEED

DIMA www.dima.it

Batch steam cooker, stretcher & melter

Fields of application

Specifically designed for cooking, kneading, melting and stretching of all types of 'pasta filata' cheese (mozzarella, pizza-cheese, shredded mozzarella, kashkaval, string-cheese, etc.) as well as analogue cheeses and food preparations.

Description and strong points

The machine is equipped with two counter-rotating and independent augers allowing to process fresh curd, frozen industrial curd (cagliata), vegetable curd (veg curd, caglina) and/or food ingredients and powders. Its special construction with direct and indirect steam heating offers many advantages in the cheese production process and permits to reach high quality product and improve the vield.

Technical specifications

- The steam cooker stretcher is supplied with the CIP automatic cleaning system and PLC automatic control
- Many automation possibilities and options available to make the machinery and the
- entire upstream and downstream production line fully automatic • Robust and compact, provides high productivity and flexibility

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ΙΜΑ

www.ima.it

Processing, filling and packaging range of solutions

Fields of application

Food industry. Description and strong points

IMA offers fully engineered turn-key solutions delivering highly efficient processing, filling and packaging technologies. At Gulfood Manufacturing a variety of innovations will be presented for the tea & coffee market, thanks to the renowned know-how and competence of the IMA Coffee Hub. IMA FLX HUB companies (IMA Ilapak, IMA Eurosicma, IMA Record and IMA Tecmar) will be presenting a choice of innovative horizontal and vertical solutions for the flow wrapping of food products while IMA's experts for processing and packaging technologies dedicated to the confectionery industry will highlight the latest developments. Processing and packaging solutions for butter, margarine, cheese and stock cubes will be unveiled by

experts of IMA Benhil and IMA Corazza, while IMA Erca, IMA Gasti, and IMA Hassia will highlight their most innovative fill & seal solutions for pre-formed cups as well as form, fill & seal solutions for beverage and baby food, dressings & sauces markets. IMA's experts of the new IMA END OF LINE hub (IMA BFB, IMA Ciemme, IMA Mespic, IMA Phoenix) will be available on the booth presenting the variety of secondary and end-of-line solution IMA is able to offer. On show, the IMA Hassia's vertical form-fill-seal (VFFS) F600 for four-sided sachets and the IMA Ilapak Vegatronic 6000 DZ - vertical form-fill-seal for traditional pillow and block bottom bags.

VISIT US AT

HALL: SHK SAEED 3

B00TH: S3-D34

GORRERI

Cuttermixer

reduce costs.

Fields of application

www.gorreri.com

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Scraps retriever Description and strong points Gorreri Cuttermixer allows industrial producers to recover up to 100% of production waste, which are shredded and continuously rehydrated to obtain a homogeneous mixture to be added to the original recipe without changing its original technological characteristics. Cuttermixer helps industrial production to be more sustainable and

follow

Plastic equipment according to CE standards for food industry

DAIRY

MEATS

DRYING PASTA, FRUIT, VEGETABLES, SPICES

ALL OUR EQUIPMENT ARE CERTIFIED, HYGIENIC, PRACTICAL AND ROBUST

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gulfood manufacturing 2023 Year 7 • N.5 November 2023

AML Ovens

Fields of application

Ice cream, food machines manufacturing. Description and strong points

Highly-automated ovens for the production of wafer molded ice cream cones and cups that can replace plastic products since they are completely biodegradable and edible at the same time. It is also suitable for the production of wafer products in a wide variety of shapes (a fish, a corncob, a flower or even a bear, also using gluten-free or vegan batter). The finished products baked with IMAR's oven are of high quality and crispy. **Technical specifications**

- Five models available for small, medium and big productions: AML14, AML18, AML21, AML28, AML36 • The best quality materials are used for both the machine body and the molds
- Molds exchange is very simple
- Each machine has a Remote Control Device installed, so that the company can connect
- to the oven, to the PLC of the oven, in the event of problems • Each machine has a special system of cutting power supply for overheating protection

TT ITALY www.ttitaly.com

Celebration layer cake line

Fields of application

Bakery and pastry. Description and strong points

The company engineers and manufactures turnkey industrial celebration layer cakes and cheesecakes lines, tailored according to the clients' requests. Special attention is given to a better use of ingredients, improving operational times and use of human resources, fast and effective sanitization, and overall waste reduction. Long durability, great ease of use and low cost of ownership - all while producing high quality industrial cakes - are just some of the line's best features.

Technical specifications

- Entirely made in AISI 304 stainless steel
- Constant control and efficiency during the process, from the batter preparation to the cake decoration
- Batter and cream preparation are equipped with PLC able to save up to
- 150 production profiles, with configurable password protection
- The equipment comes CIP ready for easiness of cleaning and time saving

E80 GROUP www.e80group.com/en/

AS/RS warehouses and storage solutions with LGVs

Fields of application

actories and DCs, both greenfield and brownfield, within different industries (food, beverage, tissue, and others) Description and strong points

Automated warehouse systems are fundamental to optimize the production flow according to the market demand, reducing shipping times, minimizing errors, and exploiting the available space. The flagship of E80 storage solutions is the integration with LGVs, that makes the entire solution flexible and conveyor-free. Through a simulation software, the layout of our warehousing systems is designed according to the customer's objectives. The entire solution can work from temperatures as low as -26°C and as high as 40°C.

Technical specifications

E80 provides different types of automated warehouses, from high-density automated warehouse with shuttles and satellites, powered by lithium-ion batteries; to the AS/RS with stacker cranes, equipped with devices for the automatic handling of products in single, double or multi-depth storage layout.

VISIT US AT

SACMI www.sacmi.com

CCM Compression Molding machine for plastic caps and closures

Rigid packaging & beverage.

The main advantages of compression molding technology are: higher productivity and energy savings, thanks to a shorter cycle time and the lower extrusion temperature: with less energy needed to heat the plastic, less is required to cool it. Because plasticizing occurs at low temperatures and with no hot runner, the raw material maintains its characteristics and product performance is improved. Constant weight and size of the product is a winning feature of this technology, exceeding the best results of injection molding. A cooler product exiting the mold means less shrinkage and therefore less size variability.

Rapid, easy maintenance thanks to independent molds, that are replaced quickly and individually. The simplicity of the plasticizing unit and the absence of the hot runner speed up color changeover and considerably reduce waste of raw material during and after color switches.

Fields of application

Description and strong points

Passion for every meal.

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