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ProSweets Cologne 2025: More reliable quality control using artificial intelligence

AI is improving quality and optimising processes in the sweets and snacks industry

How is artificial intelligence (AI) being implemented for quality control exactly and what potential does it offer food manufacturers? The exhibitors of ProSweets Cologne will provide answers to these questions from 2 to 5 February 2025. It will become clear that AI applications for monitoring the production in the sweets and snacks industry go far beyond simple chatbots, indeed they use advanced technologies to improve a host of processes.

An innovative implementation of AI in the food industry that will be presented at the Cologne fair grounds is improving the quality control using machine vision. The machines on display in Hall 10.1 are equipped with smart cameras and AI-based tools that observe, learn and adapt. From the connection of the machine, to the precise recording and administration of operating and machine data, through to the dynamic visualisation and analysis thereof – the systems enable total transparency of the production processes in real-time.

Process transparency in real-time
"The potential of AI and machine learning is huge and will fundamentally change the processes of the companies – also in the field of quality assurance," emphasised Guido Hentschke, Director of ProSweets Cologne, with regards to this year's highlights of the leading business platform for the global suppliers of the sweets and snacks industry. Instead of "just" recording data, AI can analyse trends and predict future results. By using advanced algorithms it reveals hitherto hidden inefficiencies and delivers recommendations of action to increase "the reliability and flexibility of the production and optimise the use of resources," Hentschke stated.

Automated inspection systems are one of the most important AI applications in the sweets and snacks industry. Thanks to the implementation of computer vision and algorithms of machine learning, modern solutions like the ones also on display in Cologne offer an unprecedented level of precision – for example in recognising defects in biscuits, wafers and crackers. Whether round or square, sweet or savoury, made of wheat or oats: Even slight deviations on complex surfaces are detected on the conveyor belt directly after leaving the continuous oven - this minimises production stoppages and waste and goes hand in hand with the producers' commitment towards more sustainability.

Visual quality control intelligently optimised
The special feature is that AI assesses the products individually and allocates quality

indicators. Holes, breakages, insufficient coating and oozing chocolate are labelled as rejects. Deficits like bubble entrapments or smaller scratches are also detected, but here there are higher tolerances. The quality controls not only have to recognise cracks or colour defects. Foreign bodies have to be detected immediately, before the bakery products reach the trays.

Users can thus carry out complex sorting and quality controls for irregularly formed items, which is difficult, if at all possible, to carry out using rule-based vision systems. In contrast to humans, AI systems are able to scan hundreds of products a minute continually and find tiny flaws or contaminations, which could impair the quality of the food. AI especially demonstrates its advantages in highly-automated packaging lines where the priority lies on speed, flexibility and efficiency. This ensures that only goods that meet the strict quality demands reach the consumers.

An eye on everything during the snack check
In addition to the established R(ed)-G(reen)-B(lue) camera technology and the laser scan, more and more systems that work in the ultraviolet or infrared wavelength range have recently been implemented to inspect food. The reason for this are tasks that can no longer be solely solved using sensors that work in the visible wavelength range. Here, the hyperspectral image processing of the Austrian company, Insort, reaches down to molecule level. It allows the chemical composition of the products to be assessed spatially-resolved inline and in real-time. And even if test objects with a higher variance have to be inspected and sorted, like dried fruits and nuts, AI is no longer a future vision. With the aid of Deep Learning, modern vision systems like the Sherlock Hypernova by Insort decide themselves whether an object belongs in a snack mix or whether it is a foreign body. All foreign bodies, whether plastic, stones, metal or fragments of glass are removed in just one step. It is also possible to determine the bitterness of almonds and have them discharged safely, where necessary.

Generative AI ensures smart processes in the everyday routine
Thanks to AI, food producers not only have the opportunity to solve complicated quality control tasks. Generative AI models that are trained using large data sets, can also help develop optimised recipes or suggest alternative raw materials. "They enable combinations of ingredients and production methods to be discovered that meet the requirements of the consumers more readily and which are at the same time more cost-efficient," said Pierre Wiese, Managing Director at Solvia Digital Solutions, Germany. The company specialises in the introduction of various SAP products and develops intelligent applications to solve local customer needs. Because one of the results of the growing demand for AI applications is above all the increased interest in the SAP Business Technology Platform (BTP). "SAP BTP offers a host of options for putting generative artificial intelligence to targeted use," added Dirk Nolte, Head of ERP Consulting (SAP), at Solvia Digital Solutions Germany.

An example of such a service is the Product Finder of the Darmstadt-based company, Döhler, a supplier of natural ingredients, which will be presenting its solutions at ProSweets Cologne. The tool that enables an AI-supported recipe search will be presented by Pierre Wiese and Dirk Nolte on 4 and 5 February, at 11:30 a.m. respectively in the scope of the lecture "Sweet AI – how AI supports the food and

beverage industry" on the new Sweet Week – Talks & Tasting Stage. Furthermore, the two experts will explain how AI improves the customer experience at Döhler.

Sweet Week Production Summit as an event highlight
"The use of generative AI offers great potential in increasing the efficiency and innovative capability of the food industry," Julia Hildebrant from Mehr.Wert Qualitätslösungen, also confirmed. In the dynamic interplay between human expertise and generative AI, the AI trainer sees the chance to transform the industry long-term and thus prepare it for the challenges of the future.

In her lecture "AI in the Quality Section: Smart solutions for efficiency & safety", she will convey in a practical manner how generative AI can make the processes more efficient to achieve significant added value in the daily work routine – not only in the field of quality. The lecture will be held together with five other lectures on 3 February in the scope of the Sweet Week Production Summit, a format "that selectively brings production managers from the sweets and snacks industry together with the suppliers of ProSweets Cologne and which promotes networking," stated Guido Hentschke, ProSweets Cologne Director. The focus lies on practical examples of Best Practice and innovative approaches for a cost-efficient and future-proof production, especially through the use of AI tools.

All lectures on AI and other industry-relevant themes can be found in the event database of ProSweets Cologne: Event search at ProSweets Cologne 2025

Koelnmesse – industry trade fairs for the food technology sector: Koelnmesse is an international leader in organising trade fairs in the field of food and beverage processing. Anuga FoodTec and ProSweets Cologne are established, world-leading trade fairs, hosted in Cologne/Germany. In addition to the events at its Cologne headquarters, Koelnmesse also stages further food technology trade fairs with different sector-specific areas of focus and content in key markets across the world, including India, Italy and Colombia. These global activities enable Koelnmesse to offer its customers bespoke events and leading regional trade fairs in a variety of markets, thus creating the foundation for sustainable international business. Koelnmesse is also ideally positioned in the field of food and beverages with its leading international trade fairs Anuga and ISM and its global network of satellite events.
Further information: https://www.prosweets.com/fair/industry-sectors

The next events:
ProSweets Cologne - The international supplier fair for the sweets and snacks industry, Cologne 02.02. - 05.02.2025
India International Livestock Expo , Mumbai 16.04. - 18.04.2025
Anuga FoodTec India - India's global gateway to cutting-edge technology for the food & beverage industry, Mumbai 20.08. - 22.08.2025

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