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Anticipatory risk management

Recognising risks before they arise

The European RASFF (Rapid Alert System for Food and Feed) registered more than 5,350 original reports in 2024 - 13 percent more than in the previous year. Germany was affected by more than 1,000 reports, a quarter of them with a serious risk. Pesticide residues, salmonella and mould toxins were among the most common complaints - often entered via global supply chains. Classic quality assurance often only recognises such risks when they have already entered the market. Anuga FoodTec 2027 in Cologne provides an overview of which technologies the food industry is using today to counter this risk. This because modern, holistic risk management in food processing means managing all risks systematically along the entire food value creation chain, acting preventively and permanently ensuring quality, safety and compliance.

Between data fragmentation and regulatory pressure

Food safety is non-negotiable. It is the foundation of consumer trust - and at the same time the driver of increasing regulatory requirements. EU specifications for traceability increase compliance pressure. These are joined by the NIS 2 Directive: it classifies food production and processing as critical sectors and obligates companies with more than 50 employees to undertake cybersecurity measures. Complementing this, the EU AI Act provides a framework for the responsible use of AI-based systems. Parallel with this, many production environments are facing a central technical hurdle: machine data, quality information and supply chain data are maintained in separate systems. As long as these data silos persist, risk management remains reactive - and the protection of consumers has gaps. Anticipatory risk management will only be possible and food safety permanently assured when process level and chain level are digitally linked and AI-supported analytics take effect.

Early recognition at the process level

Production failures announce themselves - but classic quality assurance often recognises this too late. Modern approaches are applied earlier: sensor-based monitoring systems, AI-supported anomaly recognition and predictive analytics make it possible to identify deviations before they result in quality defects or production failures. JBT Marel, a global provider of processing technologies and software solutions for the food industry, addresses the process level with two solutions: **AXIN Machine Solutions** monitors system performance in real time. Through the comparison of current machine data with historical patterns on the basis of machine learning and predictive analytics, the system recognises deviations early and triggers maintenance recommendations before failures occur. **AXIN Process Solutions** complements this level with process and quality data along the processing route and enables HACCP audits at the push of a button and gap-free traceability. At Anuga



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FoodTec 2027, JBT Marel will show how both solutions are integrated into existing lines.

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"JBT Marel Software creates data access and networks the entire operation, from receiving to shipping, in order to enable real time transparency, findings and control for well-founded decisions at each production step", Marek Rzepiński, Software Sales Manager EMEA at JBT Marel, explains.

However, the process level alone is not enough. Traceability at the chain level requires that production, quality and supply chain data are converged - a step that costs time and money in existing IT structures. Many operations also struggle with heterogeneous machinery, the absence of specialist staff for implementation and the question of data sovereignty when using external platforms. Cloud-based traceability solutions, ERP-integrated tracing systems and blockchain-supported approaches offer various ways to close these gaps - depending upon operations size, infrastructure and regulatory environment.

Transparency from raw materials to the end product

CSB-System, a specialised ERP provider for the food industry, addresses the chain level with CSB Traceability - a tracing solution integrated directly into the ERP. All data relevant for tracing are recorded during receiving and automatically accompany raw materials through every processing step. The flow of goods can be called up upstream and downstream - batch-precise, even earmark-precise for beef products. Data are transferred standardised to external platforms like fTRACE or ATC. Examples in practice show: a simulated product recall can take place extremely quickly with CSB Traceability. The solution fulfils all relevant compliance requirements - from EU specifications through HACCP and IFS to BRC and SQF.

CSB Traceability thus makes a central contribution to an integrated approach extending beyond a single solution.

Conclusion

Holistic risk management requires a consistent data basis that links the process and chain levels. Where AI-supported analytics anticipate failures and data-based ERP solutions secure the chain level, an integrated approach arises that replaces reactive crisis management. In addition to JBT Marel and CSB-System, other exhibitors like Siemens, ifm and Bizerba show how sensors, process digitalisation and inspection technologies supplement risk management. Anuga FoodTec 2027 provides a comprehensive overview - from the current state of technology to the strategies of tomorrow.

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, ISM Manufacturing (formerly ProSweets Cologne) and ISM Ingredients 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 Brazil, Colombia, India and Italy. 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.

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