Press release

No. 18 / February 2024, Cologne
#anugafoodtec

Focus on the product: Anuga FoodTec presents modern approaches to process analysis and quality control

++ Artificial intelligence ++ Deep learning algorithms ++ Near infrared (NIR) spectrometers ++ Sorters and foreign body recognition systems ++

From 19 to 22 March, Anuga FoodTec 2024 reflects the entire spectrum of modern process analysis technologies for the food and beverage industries. Thanks to progress in the field of optical technologies, many tasks of quality control and assurance can in the meantime be solved in real time. Artificial intelligence and deep learning algorithms thereby play an increasingly important role on the Cologne fair grounds."

In the food industry, quality control with its classic methods of analysis and wet chemical processes is still very broadly distributed. This takes place in the lab, whereby a sample is taken for each batch. Products that do not correspond with specifications are held back. There is often thereby a heterogeneous environment of analysis devices, software tools and processes present in the company. The devices are linked only in individual cases via the operating software with a central lab information and management system (LIMS). The data are transferred with USB sticks and Excel sheets or, least ideally, are printed out and handed over manually – such a procedure in times of increasing digitalisation is hardly practical.

The key to the better product

In addition to this, the samples must be taken during ongoing production under observance of the strictest hygiene conditions, which proves especially difficult in closed processes. "Especially with regard to trends like the Internet of Things and Big Data, various processes and structures in quality assurance must be adapted in companies that process food", says Matthias Schlüter, Director Anuga FoodTec. Automation solutions and process analysis technologies (PAT), both areas of focus on the Cologne fair grounds, are key to this. "Visitors find a comprehensive offering across segments for qualitative and quantitative analysis in the lab and process at the stands of the exhibitors", according to Schlüter.

With a PAT-based approach, the measurement parameters familiar from the lab are directly recorded in the production process by the analysis instruments. From there, the values are transferred to the process control system, which can be integrated on the device side into an Industry 4.0 concept. The declared goal: to ensure a food production within the specifications from the start that avoids product losses and helps reduce costs.

Anuga FoodTec
19.03. - 22.03.2024
www.anugafoodtec.com

Your contact:
Karen Schmithüsen
Tel.
+49 221 821-2231
e-mail
k.schmithuesen@
koelnmesse.de

Koelnmesse GmbH
Messeplatz 1
50679 Köln
P.O. Box 21 07 60
50532 Köln
Germany
Tel. +49 221 821-0
Fax +49 221 821-2574
www.koelnmesse.com

Executive Board:
Gerald Böse (President and Chief Executive Officer)
Oliver Frese

Chairwoman of the Supervisory Board:
Mayor of the City of Cologne
Henriette Reker

Headquarters and place of jurisdiction:
Cologne
District Court Cologne, HRB 952

Inline analysis of ingredients

In keeping with this premise, near infrared (NIR) spectrometers have developed into reliable tools for monitoring in all steps of food manufacturing. The mathematical models required for the evaluation of spectroscopic results are stored in the devices, meaning that they combine probe and spectrometer in one apparatus. With them, quality-relevant parameters like dry matter, sugar, protein and fat content can be directly determined in the production line – contact-free and without having to take samples. At the same time, faulty batches can be avoided, as deviating values are recognised at an early point, and not first following analysis in the lab. Manufacturers of cooking oils can in this way define the oil content of the raw materials even before pressing.? The same applies in the milk industry, for example, for the manufacture of yogurt. Here, the content of fructose can be determined, which can fluctuate in the fruits processed depending upon the sort and stage of ripeness. Instead of a time-intensive determination by way of the refraction index, the spectroscopic inline measurement through reflection probe ensures the best possible quality prior to filling. Process analysis technology thus paves the way to automated batch approval. It is also ultimately about increasing yields, and this with the use of as little energy as possible. If, for example, the desired degree of drying of milk powder for baby food has been achieved, no further heat need be applied to the process.

Artificial intelligence in quality control

Innovative solutions, as they can be found at Anuga FoodTec, assist food manufacturers in recognising foreign bodies, determining the filling level or the integrity of modified atmosphere packaging. Important is that the production time is not lengthened as a result of the measurement procedure. Contact-free measurement procedures are primarily used for this reason. The image processing software must also calculate the results in real time in order that a defective product can be immediately ejected. That artificial intelligence is thereby becoming increasingly important also becomes evident on the Cologne fair grounds. Optical processes with deep learning are available in increasing numbers on the market. With them, it is possible, to examine food over the entire wavelength range from ultraviolet through the visible to near infrared.

The technology providers present sorters and foreign body recognition systems at Anuga FoodTec that can be seamlessly incorporated into existing processing lines and be programmed customer-specifically. Classic sorting systems use a visual inspection with normal light. Thus, for example, the degree of browning of toast or buns can be precisely determined through a 2D colour analysis of the surface. Baked goods that have been browned too dark are thus sorted out automatically prior to packaging, so that they don't make it onto the market in the first place. It becomes more difficult when the chocolate glazing on cookies need to be inspected. In the case of modern systems, the software recognises whether the glazing has been correctly applied to the baked item within milliseconds on the basis of the brightness structure of the surface. Because countless possibilities of incorrectly applying chocolate coating are conceivable, deep learning technologies play a central role. This means that the software "learns" the typical properties of the objects to be recognised through the detailed evaluation of digital image data. Only images in which correctly glazed cookies are seen are required for this training.

Where is the food industry?
The prospect of Anuga FoodTec 2024 shows, the demand for process analysis technology has also grown with the increasing requirements for system efficiency and food quality. "The requirements for efficiency and sustainability are advancing the need for PAT in the food and beverage industries", Matthias Schlüter emphasises. There is in the meantime a large offering of technologies and sensors suitable for corresponding applications on the market. The PAT of the future will be smart and, besides the actual measuring value, also make a large number of additional data available, for example, about the condition of the system, in order to initiate prescient maintenance measures. However, where does it make sense to replace laboratory analysis with PAT? And what challenges can be solved, and how, in order to outfit existing systems with more process analytics? Answers to these will be provided by the exhibitors from 19 to 22 March on the Cologne fair grounds.

Anuga FoodTec is the leading international supplier fair for the global food and beverage industry. Organised by Koelnmesse, the trade fair takes place from 19 to 22 March 2024 in Cologne and places the emphasis on the key theme of Responsibility. The professional and industry sponsor is the DLG, the German Agricultural Society.
You can find more information at www.anugafoodtec.com

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.

100 years of Koelnmesse: Koelnmesse is celebrating its 100th anniversary in 2024. 100 years in which Koelnmesse has brought people and markets together worldwide. 100 years in which it has reinvented itself time and again with a visionary passion for the future. This has made the vision of Konrad Adenauer, who was the Mayor of Cologne in 1924 and later became Germany's Chancellor, of an international trade fair venue in Cologne a reality. With the awareness that even established trade fairs require constant renewal in order to remain fit for the future, Koelnmesse will continue to drive innovation and international growth without forgetting its roots.

The next events:
Anuga FoodTec - International supplier fair for the food and beverages industry, Cologne 19.03. - 22.03.2024
Anuga FoodTec India - India’s global gateway to cutting-edge technology for the food & beverage industry, Mumbai 28.08. - 30.08.2024

Note for editorial offices:
Anuga Food Tec photos are available in our image database on the Internet at www.anugafoodtec.com in the "Press" section.
Press information is available at: www.anugafoodtec.com/pressinformation

If you reprint this document, please send us a sample copy.

Anuga FoodTec on Linkedin:
https://www.linkedin.com/company/anuga-food-tec/

Anuga FoodTec on facebook:
https://www.facebook.com/anugafoodtec/

Anuga FoodTec on twitter:
https://www.twitter.com/anugafoodtec

Your contact:
Karen Schmithüsen
Public and Media Relations Managerin

Koelnmesse GmbH
Messeplatz 1
50679 Cologne
Germany

k.schmithuesen@koelnmesse.de
www.koelnmesse.com