

No. 13 / September 2026, Cologne

Conserving resources and reducing costs: the future of food production is flexible, energy-efficient and digital

Process heat is propelling the transformation, AI is becoming part of energy management

Rising energy prices and ambitious climate goals are changing industrial food production. Anuga FoodTec 2027 shows how digital energy management systems, electrified process heat, high-temperature heat pumps and retrofit concepts contribute to controlling energy flows more transparently, reducing load peaks and adapting production processes more flexibly to energy and network situations.

Low energy costs provide a decisive competitive advantage in the food industry. At the same time, climate and environment protection require that companies consistently reduce their CO₂ emissions and increase their use of energy from renewable sources. But not at any price: electricity and heat consumption must be controlled in a targeted fashion to avoid load peaks and supply shortages.

Decarbonising energy-intensive processes

"Due to its high need for heat, its waste heat potential and its continuous production cycles, the food industry is one of the most promising sectors for the integration of heat pumps", Isabel Osteroth, Senior Director Sustainable Engineering Solutions at GEA, explains. Against this background, high-temperature heat pumps are developing into a central element of the energy transformation. With the latest technologies, industrial waste heat can rise to temperature levels of 135 to 160 degrees Celsius and be recovered for thermal processes.

Technologies like electrode boilers, electrical steam generators or power-to-heat systems create new possibilities for efficiently providing process heat and gradually replacing fossil energy sources. Especially in areas like pasteurisation, sterilisation, drying and the generation of hot water and steam, new approaches for a more flexible and more resource-efficient process management arise. Corresponding solutions and supply concepts will play an important role at Anuga FoodTec 2027. Here, Bosch Industrial Heat will show solutions for electrified steam generation, hydrogen-capable boiler systems as well as hybrid supply concepts on the basis of individual production and load profiles.

Retrofit instead of complete replacement

Parallel with this, retrofit and modernisation concepts are increasing in importance. This is a development that is also reflected at Anuga FoodTec 2027 - for example, in



Anuga FoodTec
23.02. - 26.03.2027
<https://www.anugafoodtec.com/>

Your contact:
Paul Schubert
Tel.
+49 17612563104
e-mail
p.schubert@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

Chairman of the Supervisory Board:
Mayor of the City of Cologne
Torsten Burmester

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

the form of retrofit solutions for existing drying systems on a heat pump basis, as are being developed by Harter. The condensation drying thereby takes place in an energetically closed cycle. The process air is dehumidified, reheated and guided back into the drying process. Through closed air supply concepts, heat recovery and exhaust-free systems, energy consumption and CO₂ emissions can be considerably reduced without having to completely replace production systems. This results in new possibilities for efficient drying of temperature-sensitive products as well as for the use of bypass flows like apple pomace.

"The decarbonisation of industrial process heat is developing into a technology-open transformation task. Which technologies can ultimately be used sensibly in economical and technical terms depends upon the individual production processes, load profiles and existing infrastructures", says Carola K. Herbst, Deputy Managing Director of the Competence Center Agriculture and Food of the German Agricultural Society (DLG). Accordingly, hybrid supply concepts are increasing in importance that flexibly combine electrical process heat, heat recovery, energy storage and hydrogen-capable systems with one another.

Monitoring becomes an efficiency factor

One way to encounter this challenging situation leads through systematic energy monitoring. Energy consumption can in this way be analysed more transparently and load peaks and performance progressions be evaluated in a targeted fashion. This transparency provides the foundation for operational energy management pursuant to the ISO 50001 norms and for regular energy audits.

However, efficient energy management requires precise registration and analysis of data. This is not possible without reliable measuring devices for monitoring system processes and energy consumption. The recording of energy data can thereby also be assumed by protective and switching devices capable of communication in addition to measurement devices. New device classes today go one step further: they bring measurement values and status data from operational infrastructure into the IoT (Internet of Things), to incorporate them into cloud-based energy management systems - this is how the digitalisation of existing systems becomes the key to the energy transformation.

Networked systems reduce load peaks

"The digital transformation of production is fundamentally changing dealings with energy and resources. Real time data, intelligent control systems and AI-supported analyses allow companies to record energy consumption with significantly greater precision and to dynamically optimise processes. This means that resource efficiency becomes an integral component of modern production strategies", says Roland Thiemann, Director Anuga FoodTec. Demand-side management is also gaining in importance. Through the targeted activation and deactivation of energy-intensive consumers, load peaks can be reduced and production processes be more flexibly adapted to energy prices and network situations. Microgrid controllers, energy storage and cloud-based monitoring platforms make it possible to automatically control energy flows, reduce network strains and more flexibly incorporate

renewable energy into industrial processes.

Page
3/4

The next development step lies in predictive energy management. AI-supported forecast models analyse production plans, load profiles, energy prices and weather forecasts to predict energy needs at an early date and automatically control consumers - a theme that also plays an important role in the trade programme of the new SUSTAINABLE community hub. Another key area there lies in the flexibilisation of industrial energy systems. The focus is on hybrid supply concepts that link electricity, heat, refrigeration, storage technologies and potentially also hydrogen with one another intelligently. "Discussed will be how production processes can be adapted more to the availability of renewable energy through energy monitoring, digital control systems and AI-supported forecasts", Roland Thiemann, Director of Anuga FoodTec, explains. In this, the hub addresses a central challenge of the energy transformation: the decarbonisation of energy-intensive production processes with the simultaneous securing of economic efficiency and supply security.

Sector coupling increasing in importance

The background is provided not least by the increasing feed of wind and solar electricity, which will in future more strongly couple industrial production processes to the availability of renewable energy. Energy-intensive consumers, storage, refrigeration systems or electrical process heat systems can react flexibly to electricity prices and network situations as a result. "Although volatile energy markets allow access to new savings potential, many industrial production processes have to date only been flexibilised to a limited extent. Existing systems were for decades optimised to high performance and continual operation to the greatest extent possible", Carola K. Herbst explains.

Correspondingly, hybrid energy systems that intelligently link electricity, heat, hydrogen and storage with one another are increasing in importance. Research institutions like the Karlsruhe Institute of Technology (KIT) are already working on AI-assisted processes for the prediction of power consumption, load developments and energy prices that might in future provide the foundation for a proactive and for the most part autonomous operation of industrial energy systems.

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.

Note for editorial offices:

Anuga Food Tec photos are available in our image database on the Internet at www.koelnmesse.de.

anugafoodtec.com in the "Press" section.
Press information is available at: www.anugafoodtec.com/pressinformation.

Page

4/4

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

Anuga FoodTec bei LinkedIn:

<https://www.linkedin.com/company/anuga-food-tec/>

Anuga FoodTec bei Facebook:

<https://www.facebook.com/anugafoodtec>

Your contact:

Paul Schubert
Public and Media Relations Manager

Koelnmesse GmbH
Messeplatz 1
50679 Cologne
Germany
Mobile +49 221 821-3217
p.schubert@koelnmesse.de
www.koelnmesse.com

Elena Fischer
Public & Media Relations Managerin

Koelnmesse GmbH
Messeplatz 1
50679 Köln
Germany
Mobile +49 17612562802
e.fischer@koelnmesse.de
www.koelnmesse.com