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Press Release

ZSK 27 Mv PLUS twin screw extruder for flexible research and development work

Coperion supplies laboratory extruder for food applications to Zurich University of Applied Sciences

Stuttgart, July 2018 – Coperion GmbH in Stuttgart supplied a ZSK 27 Mv PLUS twin screw extruder to the Institute for Food and Beverage Innovation at Zurich University of Applied Sciences (ZHAW) in Wädenswil last year. With a screw diameter of 27 mm, the Coperion ZSK 27 Mv PLUS extruder satisfies the key food production regulations and has an impressively compact size. It is ideal for research projects and formulation development, as well as small batch production. With its specific torque of 10.6 Nm /cm³ and a maximum screw speed of 1,800 rpm, the extruder can achieve product throughput rates of 10 to 100 kg/h depending on the product. It is easy to scale the extruder up to other sizes. The food extruder supplied comes with a number of options that allow highly flexible use and convenient handling. The scope of supply also includes a KT 20 gravimetric twin screw feeder from Coperion K-Tron, which is ideal for accurately feeding free flowing to flooding powders and flakes as well as other difficult, poor flowing bulk materials.

The ZHAW uses its Coperion ZSK 27 Mv PLUS extruder for a wide range of research and development work, so it must be versatile and perform in a variety of applications. Coperion designed the extruder for exactly these requirements and equipped it with many quick-change features and devices for flexible processing set-up. For example, the solid feeder can be mounted to two different barrels of the process section. This allows processes to be extended or shortened easily and customized to the requirements of each individual product. Cereals and snacks are extruded with short process lengths, while pulping the by-products of the beverage industry such as grape pulp requires a longer residence time and therefore a longer process

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section. Process borings also make it possible to add liquids and measure the temperature in different barrels. A peristaltic pump with various hoses and nozzles enables liquids of different viscosities to be added.

Flexible extruder structure for wide range of processes

In order to test different processes and product developments, Coperion delivered additional screw elements with the extruder. Different screw configurations can cover a broad range of possible applications. Everything from research and development work on simple processes such as direct expanded cereals to complex processes such as the extraction of moist pressing residue or mixing it into a starch or protein matrix can be done using the same extruder. And Coperion also provides process technology support to ZHAW for developing new formulations and products.

A further benefit of the new extruder is that the machine and all units such as the vacuum pump, feeder frame and water tempering unit are movable. The extruder is not permanently wired. Instead, both the extruder and the units are supplied with connectors that allow ZHAW to use it in any room, adjusting it to fit the relevant space requirement. Coperion pre-assembled the extruder so it could be quickly commissioned on site. The start-up of the extruder took less than one day. For fast, convenient remote service – and significant savings of time and costs – the Coperion ServiceBox was integrated into the system. For future research purposes, Coperion added extra devices to the ZSK 27 Mv PLUS twin screw extruder that allow the system to be expanded easily. For example, it is no problem to retrofit a centric pelletizer or add liquid and solid feeders. And a range of die plates is available for various product shapes.

“With the ZSK 27 Mv PLUS food extruder from Coperion, we have the ideal extruder for our development and research work. The extruder’s flexibility and the ease with which it can be adjusted to the process at hand allows us to explore various issues in the food and beverage innovation market,” said Ansgar Schlüter from the Institute for Food and Beverage Innovation at ZHAW Zurich University of Applied Sciences.

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Coperion is the international market and technology leader in compounding and extrusion systems, feeding and weighing technology, bulk materials handling systems and services. Coperion designs, develops, manufactures and maintains systems, machines and components for the plastics, chemicals, pharmaceutical, food and minerals industries. Within its four divisions – Compounding & Extrusion, Equipment & Systems, Materials Handling and Service – Coperion has 2,500 employees and nearly 30 sales and service companies worldwide. Coperion K-Tron is part of the Equipment & Systems division of Coperion. For more information visit www.coperion.com or email info@coperion.com.

The Department of Life Sciences and Facility Management (www.zhaw.ch/lspm) at ZHAW currently has approx. 1,500 students and more than 600 employees. The education and training program comprises five bachelor's and three master's degree programs as well as a broad range of continuing education offerings. With its expertise in Life Sciences and Facility Management, the Department makes an important contribution to solving challenges in our society in the areas of environment, food and health as well as to enhancing our quality of life. Five institutes in the fields of Applied Simulation, Chemistry and Biotechnology, Food and Beverage Innovation, Environment and Natural Resource Sciences as well as Facility Management provide services in the form of research, development and consulting.

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The Coperion food extruder ZSK 27 Mv PLUS is equipped it with many quick-change features and devices for flexible processing set-up to allow the Zurich University of Applied Sciences to use the extruder for a wide variety of research and development work.

Image: ZHAW Zürcher Hochschule für Angewandte Wissenschaften, Departement Life Sciences und Facility Management, Wädenswil/Switzerland