

TECHNICAL REPORT

Avoiding interface problems through efficient and safe production of pet food from Zeppelin Systems

Rödermark, April 2022. The production of pet food requires efficient production lines with high availability rates and reproducible quality. This only works with optimal system technology and processes that are designed to meet the specific requirements of the product in question. This article shows what else is important.

Pets have not only been popular companions since the Corona pandemic; in Germany alone, almost every second household has some sort of pet. As a result, the demand for high-quality pet food is increasing, and this is happening worldwide. "The USA, Europe and Asia are still growing markets in terms of pet food, and this means that we are in demand as plant manufacturers," says Ingo Pütz, responsible for global sales at Zeppelin Systems in Rödermark, describing the market situation.

In addition, the technological demands on plants and components are growing, as Pütz explains, "Pet food formulas now consist of 20 to 50 different raw materials, each of which has its own unique properties." This can be extruded material that is mixed in particularly gently or a moisture-sensitive raw material that has to be conveyed in a very dry state. Smooth production therefore requires not only knowing the properties of a wide range of products, but also understanding the process down to the last detail. "Ultimately, the consumer must be able to rely on the feed always having the exact composition as well as the same shape and consistency. The feed must neither stick nor crumble," says Pütz, describing the difficult balance.

Flexibility in plants is a necessity

In general, the production quality requirements for pet food are similar to those of human food. Among other things, this means eliminating or minimizing cross-contamination, easy to clean, maintaining clean production and compliance with hygiene standards. And as with food for humans, pet food is subject to special scrutiny and requires, for example, extremely accurate measurement technology. Moreover, in pet food, new formula concepts are being developed to meet the needs of individual animals, whether young, old, prone to obesity, wheat intolerant, etc.

At the same time, manufacturers must be able to deal with changing raw materials - for example, some raw materials used to be available as powders, but are now marketed as granules. Raw materials may also vary from region to region. These variations can, for example, affect different bulk densities, which in turn affects handling. Manufacturers therefore require a very high degree of flexibility in their plants. It must be possible to adapt them without major conversions. High reliability and availability of the plants, which run around the clock, are a given.

Coordinated plant processes

Zeppelin Systems accompanies almost every processing stage in pet food production. This starts with raw material intake, through filling into the silos, grinding technology, up to recipe-accurate dosing including inline screening machines upstream of the mixers and gentle dense phase conveying. Drying and coating processes have to be integrated just as much as systems for dust removal, temperature control, quality assurance measures, and concepts for explosion protection. A striking feature of developments in recent years: Plants are being operated ever closer to their peak performance without diminishing any accuracy. "This can only be achieved by keeping an eye on the entire raw material handling process. We master all process steps and the respective process and measurement technology. That's why we can offer comprehensive, perfectly coordinated solutions from a single source," Pütz explains further.

Kibbles without break

At first glance, the individual process steps do not appear complicated, yet the processes are changing. For example, gentle pneumatic conveying of dry feed now plays an increasingly important role. Neither the animal lover nor the producer wants to find crumbs in the feed. With Dense-Tec conveying and sometimes extended lines, conveying succeeds without destroying the structure of the raw materials. Dense-Tec is mainly used in the pet food industry as a continuous conveying system, because the individual process steps, such as cooling or coating, are also mainly carried out continuously.

Precise dosing of even the smallest quantities

When weighing and dosing very small quantities, such as vitamins, components in the 2-3 kilogram range have to be added evenly distributed throughout mixtures weighing several tons. "We have developed innovative manual and automated solutions especially for these small components," reports Pütz. For example, Zeppelin Systems offers customized solutions ranging from components for batch weighing to differential scales including controls. For handling liquids, on the other hand, volumetric systems or gravimetrically operating components such as liquid scales and mass flow meters are used. "It is crucial that the dosing and weighing is done accurately contamination-free," Pütz lists additionally. "After all, ingredients are being scrutinized more and more critically by consumers."

High demands on hygiene and quality

Hygiene requirements have also increased in the pet food sector and are now oriented toward the food industry. "For example, we have long relied only on stainless steel in our plants," says Pütz "Batches have to be traceable just as they are in human food. This is where the process management system we developed helps." This logs every change in the recipe and allows all raw materials supplied and batches delivered to be traced. All production data, batch records, etc. are archived and can be retrieved at any time. Accordingly, there is greater focus on control, automation and documentation. This gives the consumer peace of mind.

Summary and outlook

Regional differences require country-specific solutions. Since production follows the customer, plant engineering know-how is needed directly on site. Zeppelin Systems is globally oriented, which

ensures nationwide support. Moreover, digital services, such as remote access to the plants, are now part of everyday life.

Another topic of concern to the pet food industry is energy use and efficiency levels. This is particularly important for large plants with higher conveying capacities, for example, 40 to 60 tons per hour. "We supply solutions that allow more output from the plants. For example, we replace mechanical conveyors with pneumatic ones because they deliver faster and display higher performance with larger volumes. They also work more energy-efficiently, can cover greater distances, and require less maintenance," says Pütz, listing one example, but concluding with a completely different yet decisive factor for success: "Our customers don't really care how their process works; they want process reliability and high plant availability. We ensure this with on-site service, but also with intelligent automation technology and a wide range of sensors that safeguard the process.

Author

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Bildunterschriften:

BILDDATEN FEHLEN NOCH

About Zeppelin Plant Engineering

Zeppelin Systems is a global leader in plant engineering for the handling of high-quality bulk materials. With over 70 years of experience in process engineering and extensive knowledge in handling countless raw materials, Zeppelin Systems offers complete and reliable solutions. With 22 locations worldwide, the company supports its customers from plant design through implementation and provides all after-sales services locally, from a single source. At Zeppelin Systems, innovative processes are just as important as the clever automation solutions and full range of service they provide to cover the entire life cycle of your plant.

Each Zeppelin plant is customized to meet the requirements of each customer, be it in the plastic, chemical, rubber and tire, or food industries. With the world's largest technology center network for bulk materials, Zeppelin enables its customers to carry out tests on an industrial scale and verify and optimize their plant design. Zeppelin Systems develops and manufactures its own components for key plant functions, which are also used in third-party plants. For more information, visit www.zeppelin-systems.com.

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About the Zeppelin Group

The Zeppelin Group offers solutions in the construction industry, drive and energy systems, engineering and plant engineering. The Group provides customers with expertise in a range of areas, from the distribution and service of construction, mining, forestry and agricultural machinery, through rental and project solutions for the construction sector and industry as a whole, to drive and energy systems as well as engineering and plant engineering and enhances its offering with digital capabilities in all areas. Zeppelin is represented at more than 340 sites in 43 countries and regions worldwide. In the 2021 financial year, the Group workforce comprised almost 11,000 employees, which generated sales of EUR 3.7 billion. The Group organizes its activities into six strategic business units (Construction Equipment Central Europe, Construction Equipment Nordics, Construction Equipment Eurasia, Rental, Power Systems, and Plant Engineering) and the Zeppelin Digit Strategic Management Center. Zeppelin GmbH is the Group holding company. It is legally registered in Friedrichshafen and has its head office in Garching near Munich. The Zeppelin Group is a foundation-owned company. Its roots can be traced back to the establishment of the Zeppelin Foundation by Graf Ferdinand von Zeppelin in 1908. For more information, visit zeppelin.com

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