

Grind Smarter, Not Harder: Inside the FD 32 Pro Hammermill

by Jonathan Iman, Sales and Business Development, USA & Sandra Mohr, Marketing Manager, Tietjen Verfahrenstechnik, Germany

The petfood industry is evolving fast. Shifting consumer expectations, premium product demands, and increasingly complex formulations mean manufacturers must constantly adapt. Yet many producers are still relying on outdated milling equipment to process modern, high-fat, high-protein recipes. Manufacturers fall short on capacity, they can't achieve consistent fine particle sizes, and they struggle with frequent downtime. All of this eats into margins and operational efficiency.

Petfood formulations have changed significantly over the years. Recipes today include higher levels of meat, bone, and fat that push traditional mills to their limits. Producers face bottlenecks, increased energy demand, limited space in mill towers, and the need for multiple grinding stages. On top of that, frequent screen clogs and time consuming part changes make the cost of inefficiency impossible to ignore.

German hammermill manufacturer, Tietjen is helping producers stay ahead by delivering solutions built for an industry where traditional solutions are falling behind. The new FD 32 Pro hammermill is designed specifically for today's petfood producers, delivering high-capacity, fine grinding along with



4B DESIGNS AND MANUFACTURES COMPONENTS FOR BUCKET ELEVATORS AND CONVEYORS



ELEVATOR COMPONENTS



CONVEYOR CHAIN



HAZARD MONITORS
& SENSORS

Improving the Safety &
Efficiency of Your Plant



www.go4b.com



The Batching
Experts

Precision nutrition. Healthier pets. Drive brand success.



Specialized in dosing & weighing
systems and smart automation
software for the nutrition and
solids industry

ksegroup.com



CIPEU

Visit us at stand S11



FD 32 Pro integrated into pet food production line

improved energy efficiency and reduced downtime. With features like quick-change screens and a beater frame changing system for easy and quick beater changes, it simplifies maintenance and boosts productivity.

Evolving ingredients

Over the past decade, petfood processing has undergone a dramatic transformation driven by advances in nutritional science and well-informed customers. What was once dominated by economy diets built on basic nutritional ingredients has evolved into a market defined by premium formulations and complex recipes. In addition to staples like corn, wheat, and soy, today's petfood manufacturers are incorporating a broader range of ingredients such as peas, lentils, pumpkin, chia, and quinoa to meet the demand for functional and health-conscious diets.

These modern ingredients bring significant nutritional value to petfood. Legumes such as beans, peas, and lentils are complex carbohydrates rich in protein and fibre, supporting muscle development and healthy digestion. They also provide a meat-free protein alternative for pet owners who prefer vegetarian or vegan diets for their animals. Pumpkin seeds contribute omega-6 fatty acids and antioxidants that promote a healthy coat and support immune function, while quinoa and chia deliver a wide spectrum of essential micronutrients.

When properly balanced, these ingredients create a nutrient dense product that not only supports overall pet health but can also reduce the volume of kibble needed to meet daily dietary requirements. While these ingredients have improved animal health and appealed to discerning pet parents, they also present new challenges in processing specifically during milling. Most legacy hammermills weren't engineered with these modern, high-fat, high-moisture, or irregularly shaped ingredients in mind. Many of these ingredients, such as legumes and seeds, require multiple grinding steps or even multiple machines to achieve the desired particle size. This not only increases energy consumption but also accelerates wear on critical parts.

Hammermills perform best with dry, brittle materials. Ingredients like pumpkin, chia, and other oil-rich seeds have a high fat content that tends to smear during milling, clogging screens and reducing grinding efficiency. These blockages lead to

frequent screen change and unplanned downtime. Some nutrients in these ingredients are sensitive to heat and can degrade when mills generate excessive temperatures in the effort to achieve a fine grind.

The benefits of fine grinding

Challenging ingredients aren't the only obstacle petfood producers face. Particle size requirements have also evolved. While the relationship between particle size, nutrient digestibility, and animal health has been well studied in the livestock feed industry, similar research for companion animals is more recent. However, the core principles still apply: finer particles lead to better nutrient absorption and improved digestive health in pets.

Beyond nutritional benefits, particle size has a significant impact on extrusion performance. A finer and more uniform grind improves water absorption and starch gelatinisation during the extrusion process. These factors influence kibble consistency, strength, and bulk density. Research shows that optimised starch gelatinisation not only enhances the structure of the kibble but also improves coating adhesion and palatability.

A narrow particle size distribution improves more than just processing performance; it affects the finished product's appearance making kibble more appealing to both pets and pet parents. Additionally, finer, consistent grinds reduce wear on extrusion equipment, lowering maintenance costs and downtime.

The challenges of fine grinding

While fine grinding offers clear nutritional and processing advantages, it also poses significant challenges for hammer mill systems. Achieving a finer grind requires smaller screen sizes, which often results in reduced throughput and increased energy consumption. It also raises the risk of screen clogging and generates more heat due to longer milling times. Excessive heat buildup can degrade sensitive nutrients and prematurely gelatinise starches before extrusion. This heat can also overheat mechanical parts and in extreme cases, increase the risk of fire.

Many hammer mill systems were not designed for fine grinding. Older systems were designed for coarser grinds, where medium fineness was more than adequate. Fine grinding demands higher rotor speeds, larger screen surface areas, optimised air handling, and smart process integration. Without them, producers face rising operational costs, production inefficiencies, and unnecessary losses that directly impact profitability.

The solution

Tietjen understands the challenges petfood manufacturers face at the mill. In response, the company set out to engineer a hammermill tailored specifically to meet the demands of high-capacity fine grinding in the modern petfood industry. The result: the FD 32 Pro. The FD 32 Pro features a newly designed airtight grinding chamber with an expanded screen area of 4.8m² (7440 in²) and a reduced gap between beaters and screens.

This optimised configuration enables efficient size reduction of fatty or exotic ingredients such as those commonly found in premium and super-premium formulations. Even recipes with a high meat meal content can be ground at high throughputs using perforated metal screens with 0.8 mm / 1/32" holes (comparable to 20 to 25 mesh).

In daily operation, the product delivers not just performance, but functionality. Large sliding doors on both sides of the machine provide quick, easy access for screen and beater changes. Its beater frame changing system further simplifies maintenance by enabling fast replacement while also reducing idle energy and dramatically lowering downtime.



Champions
in improving
intestinal health



plus4pet®Dog is a premix for dogs that contains a unique combination of botanicals and organic acids, specifically formulated to target canine gut health.

plus4pet.com



World Leaders in Microwave Moisture Measurement



Rice



Grain



Oil



Animal Feed



Coffee



Hydro-Probe XT

Hoppers, chutes,
belt conveyors



Hydro-Mix XT-FS

Mixers, conveyors,
Ducting System

Non Food-Safe available



Hydro-Mix HT-EX

Mixers, conveyors, Ducting
System, High Temperature

Non EX available



Hydro-Mix XT-EX

Certified for use in ATEX,
IECEx and NEC/CSA
Hazardous Locations (Dust)

Non EX available



Contact us for more details
enquiries@hydronix.com

hydronix.com

In comparison with traditional systems

Unlike traditional systems designed for coarse or medium grinding, the FD 32 Pro has been engineered specifically to handle the demands of ultra-fine particle size reduction with precision, efficiency, and safety. By delivering a consistently fine and uniform grind, the FD 32 Pro significantly enhances the efficiency and quality of the extrusion process.

It delivers a narrow particle size distribution that improves water absorption and promotes more complete starch gelatinisation during extrusion. These factors influence kibble texture, durability, and shape resulting in a high-quality finished product and a smoother extrusion process. This level of grinding precision not only improves product quality but also reduces energy use, minimises rework, and extends the life of extrusion equipment.

In addition to designing high-performance equipment, the company also applies advanced grinding system concepts to help petfood producers lower operating costs and boost profitability. The Tietjen engineering team works closely with manufacturers to help replace outdated milling systems with modern hammermill configurations that can reduce equipment footprint, reduce the kWh per tonne, minimise wear on components, and maximise overall throughput. These tailored system upgrades don't just improve efficiency; they can translate into significant annual savings in operating expenses.

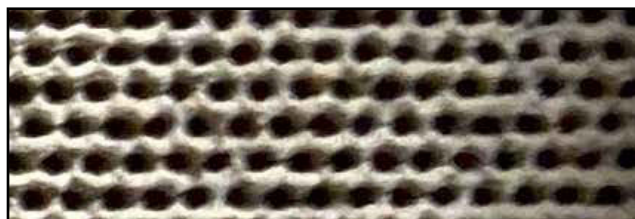


Fig 2. 0.8 mm screens in FD32 Pro after grinding protein and fat rich recipes without clogging

Global support for reliable operation

The company backs its equipment with expert service and worldwide customer support. Their global network ensures that producers have access to technical expertise and fast solutions to keep operations running smoothly and efficiently, no matter where in the world you are.

By addressing the core limitations of outdated hammer mill setups, the company helps petfood manufacturers operate efficiently, reliably, and profitably. The FD 32 Pro delivers the precision and capacity required for today's complex formulations. This is backed by smart system designs, global support, and decades of engineering expertise. Whether it's achieving finer grinds, reducing energy use, or improving extrusion outcomes, the company provides the tools to turn modern processing challenges into opportunities for growth. Find out more at www.tietjen-original.com or contact Jonathan Iman at j.iman@tietjen-original.com.

