Grayway

Data:
Key to Exceeding Pet Food Manufacturing Standards

→

Welcome.

Stephen Gray
President and CEO
GRAY, INC.

According to a recent study by the American Pet Products Association (APPA), U.S. pet ownership rose to an all-time high of 70% in 2020 as pets played a comforting role during the pandemic.

The ever-increasing pet food market has shown steady growth near 5% annually for the last several years and is expected to add nearly $15B to the market by 2025. This market boom, caused by a shift in consumer behavior, is forcing the hand of manufacturers to become more fluid and adaptable within their processes.

Like other consumers, I know I want the best for my pets. In this issue of the **Grayway**, we take a look at how pet food consumers are becoming more intelligent and informed about the products they select, including the ingredients used in the process.

We also look at how manufacturers are responding to these changes and the opportunities to utilize data that enables a higher-quality, human-grade pet food exceeding previous industry standards.

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Pet Food Manufacturing Data Enables Quality Product

What's on the Inside. →

Driven by Data:
Pet Food Manufacturing & Data Management

If one peruses the pet food aisle at their local grocery or even picks up a bag of food, the ingredient list and number of claims on the package can often read like a human food product. New forms of protein, fewer fillers, gluten-free, low-carb, healthy joint & heart—all are claims seen regularly on pet foods. The quest for customer loyalty has increased as pet health becomes more important than ever to a large swath of the population. According to the American Pet Products Association, 70% of U.S. households are pet owners.

Clearly, the lines between food for human consumption and our canine and feline (and other) family members is blurred. Often, the same standards of production and quality exist in both industries, as well as the desire to stay ahead of the curve. Equally important is avoiding costly recalls or product delays.

Driven by Data

Food and beverage manufacturers have long been adapting to a data-driven economy. In fact, according to a recent Food and Beverage Monitor report from RSM, some 68% of food manufacturers either have increased or plan to increase their technology investments in the next five years. Pet food manufacturers have quickly followed suit. A September 2020 *Pet Food Processing* article noted that, "as the production of food and treats for cats and dogs more closely matches the product formats and processes seen in human food productions, managing quality becomes more complex."

In fact, the standards for pet food are rising dramatically. *Pet Food Processing* stated that an important factor in ensuring a high level of quality is being able to monitor key quality parameters of raw materials and finished product—and delivering the data to the decision-makers in real-time. This helps promote a proactive approach to assuring quality, rather than one that is more often reactive and control-based. Most importantly, it assures the production of consistently high-quality pet food while also reducing waste and increasing efficiency.

A digital transformation requires the ability to track and record data with an ever-complex set of supply chain management issues. Gone are the days of Excel spreadsheets: welcome to the world of strategic master data management (MDM) technology. Human error and inefficient product management can be nearly eliminated with the constantly more sophisticated means available to collect information—as well as share, track, and provide transparency using that data. MDM gives manufacturers the ability to integrate data across disparate systems into one solution, thus reducing opportunities for error and making it easier to track product and customer information.

Traceability, flexibility and the ability to adapt quickly are of premium importance in the pet food industry. Commented Walker Mattox, CEO at

70%
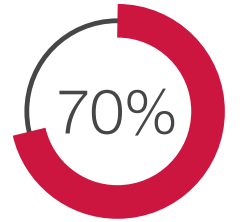
U.S. households who are pet owners

68%
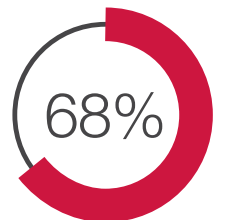
pet food manufacturers that have increased/plan to increase technology investments within the next 5 years

Gray Solutions, A Gray Company: "As consumers demand premium pet products, it is becoming increasingly important for processors to have a strong data architecture in place that allows them to adapt to changing formulas and recipes, but maintain traceability."

Risk Mitigation, Increased Quality

To fully comprehend the impact MDM can have on pet food manufacturing, it is important to consider its main benefits. They consist of mitigating risk and increasing quality.

No manufacturer wants to deal with a recall, but the best protection against such a disaster is being proactive with risk-mitigation management. With ingredients coming from more producers and having more stops before reaching the pet store, recalls can happen. Finding the source of an outbreak can be overwhelming. MDM can help.

Because MDM provides manufacturers with a single view of their product, supply, and distribution information, it also ensures they're equipped to track their products from origination throughout the supply chain. This allows food manufacturers to determine trouble spots and alter operations before the product is a consumer (pet) hazard.

And, by leveraging MDM, if the dreaded recall should occur, pet food manufacturers can react quickly and manage the process smoothly, thus protecting their customers' pets—as well as their bottom line. The ability to track where ingredients were sourced and used; where products were created and packaged; and where they have been sold, manufacturers can quickly determine which specific batches are affected and issue a highly targeted recall.

Quality Control

Another benefit of MDM is that it can help manufacturers keep product quality consistent. Product MDM enables manufacturers to incorporate one of industry's fast-growing trends—product lifecycle management (PLM)—into their data hub. Said *Food Manufacturing*, "Through PLM, development teams can maintain all production data, from planning and ideation to sampling and sourcing, in one system, increasing collaboration and cutting down time-to-market." Also, companies can use the visibility from in-market product performance data around consumer preferences and sales data, collected and cleaned by MDM, to find a product that connects with consumers. This helps drive better decision-making about future products.

> ## "As consumers demand premium pet products, it is becoming increasingly important for processors to have a strong data architecture in place that allows them to adapt to changing formulas and recipes, but maintain traceability."
>
> **Walker Mattox,** CEO
> GRAY SOLUTIONS

Adopting an MDM solution allows the production team to ensure consistency from their ingredients, raw materials, and formulas. Because the data is stored in a central location, it allows manufacturers to maintain data quality through staff turnover or other corporate changes.

Conclusion

Pet food manufacturers that use data to streamline processes and reduce costs see many benefits. Master data management is a great way to give your pet food production facility a strategic, targeted approach that can provide visibility, connectivity, and traceability. This helps companies mitigate risk—and deliver a great product with solid customer loyalty.

Data's Role in
High-Meat Pet Food

Pet owners want the very best for their best friends. The new trend in pet food is products with a high-meat percentage. With this trend comes its own challenges. High-meat inclusions of various kinds require specific attention, including sanitation and maintenance of the machine due to the meat percentages.

Automation and AI are adapting pet food production, making the process more efficient. Data plays a role throughout the entire manufacturing process by sharing the parameters of each step from procurement of ingredients, production, packaging, shipping, and finally, into the customers' hands. The continual sharing of data between the machines (IoT) allows the manufacturer to ensure the safety and quality of the product.

From the Beginning

Consumers are more conscious about sustainability and more concerned about where the ingredients are sourced. GPS sensors, radio frequency identification (RFID) tags, and lot number tracking provide transparency with traceable data during transport and receiving of the product into the facility. Manufacturers can keep track of the ingredients' costs, quality, temperatures, and environmental conditions in shipping containers of the ingredients, throughout their supply chain journey. How the ingredients are transferred depends on process data parameters, including material characteristics, distance, transfer rate, and the type of container it arrives in.

Processing

Once the ingredients have arrived in the facility, data aids in sorting them. Raw meat can contain all kinds of foreign material that need to be removed. Optical sorters have double-sided lasers, enabling sorting according to color, structure, and biological characteristics that detects the containments.

In the past, pet food companies only produced a limited amount of different formulas. However, today's product various lines are evolving to meet consumer demand. "Several trends have emerged in the pet food industry, which has caused equipment manufacturers to either amend or enhance their technology and educate the market on their abilities to process," states Sharon Nowak, business development manager for industrial equipment manufacturer Coperion K-Tron USA. For example, the increase of formulas that can be breed, age, gender, or health condition-specific, increases the complexity of the manufacturing processes.

To be considered high-meat pet food, the product must meet standards set by the Association of American Feed Control Officials (AAFCO). The pet food industry and AAFCO have agreed that dog food with at least 30% protein can claim to be "high protein." And, for cat food, the protein levels should be 26% for adult maintenance diets and 30% for growth and reproduction-focused formulas.

Automatic measuring, mixing, and balancing of the various ingredient quantities and specifications for the high-meat product relies on the data generated by various sensors. When it comes to ingredients, pet food deals with several materials that have different densities, consistencies, and flow rates. Maintaining the right balance can be a challenge. Gilles Maller, vice president of sales and international for Clextral, states that high-meat pet food "requires an understanding of the meat ingredients, special handling and storage, a focus on hygiene, and modifications in extruder parameters as well as upstream equipment."

Automated extrusion controls are equipped with multiple sensors across each zone to measure temperature, pressure, and steam. This data is then used to automatically adjust for raw material variations and aid technologies to efficiently mix various ingredients.

> "Extrusion systems must be able to process higher levels of meat and effectively and efficiently process recipes containing many ingredients that were not included in recipes in the past, or they cannot or will not be used in the future."
>
> **Galen Rokey**
> **Director, Process Technology, Companion Animal Division**
> WENGER

❯ *As one of the first pet food facilities in the U.S. to bring multiple phases of the freeze-drying manufacturing process under one roof, Petsource by Scoular produces high-protein freeze dried ingredients for pet food manufacturers.*

"Extrusion systems must be able to process higher levels of meat and to effectively and efficiently process recipes containing many ingredients that were not included in recipes in the past or cannot or will not be used in the future," says Galen Rokey, director, process technology, companion animal division for Wenger. "Many of these ingredients are heat and shear sensitive, so the extrusion process must be able to employ operating parameters that maintain the functionality of the ingredients."

Sanitation

An important aspect when dealing with high-meat products is hygiene and the prevention of pathogens in the product. Moisture control is essential when dealing with the quality and hygiene of the product. Sensor data help maintain the proper balance for each formulation and is key to controlling durability, palatability, texture, and shelf-life.

Petsource, an indirect, wholly-owned and independently operated freeze-dried ingredient manufacturing subsidiary of The Scoular Company, opted to integrate maximum sanitary design inside its newest plant. The facility, which was designed and built by Gray, utilizes pet food industry's best practices to detect contamination that may be present in the food.

Shipping out the Door

As with the similar processes that are used to monitor the ingredients coming into the facility, GPS sensors, RFID, and lot number tracking supplies the product data to increase traceability down to a specific package and more transparency as the food makes its way to the stores and their customers. Smart contracts can automatically send data between vendors.

Efficiency is crucial, with manufacturers seeking various ways to ensure high-meat mixes don't slow production down. Automation and AI streamline production, but data is the backbone that the machines and manufacturers rely on. Through the complete process of making high-meat pet food, data ensures that the product that customers want for their pets is the best quality and provides pet food manufacturers the knowledge to produce it efficiently and effectively.

GRAY—WE'RE BUILDING Global Leader in Food Plant Solutions

Nestlé Purina PetCare

WILLIAMSBURG TOWNSHIP, OH / EDEN, NC

Nestlé Purina PetCare selected Gray for two monumental projects: the company's first greenfield facility since 1975 in Williamsburg Township, OH, and a renovation and revitalization of an old brewery into a world-class pet food facility in Eden, NC. Through Gray's family of brands, fully integrated, robust services are being implemented for both projects.

Greenfield Facility
WILLIAMSBURG TOWNSHIP, OH
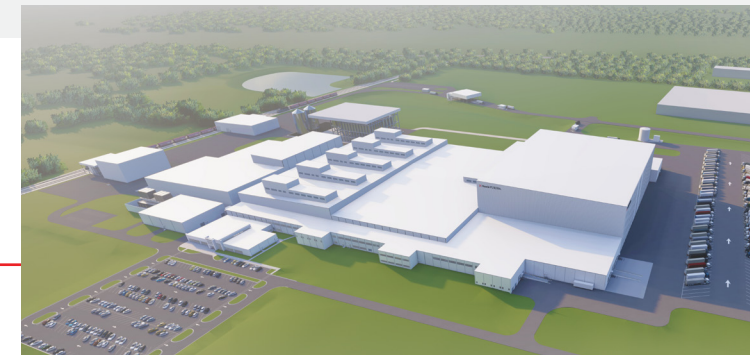
Facility Renovation
EDEN, NC

The Ohio project will be transformed into a more than 1 million s.f. pet food facility built to Purina's world-class quality and food safety standards. The North Carolina project will measure nearly 1.4 million s.f. and sit on more than 1,300 acres.

Each facility will be technologically advanced, utilizing robotics and innovative digital tools. The facilities will also feature on-site training centers to promote learning and development.

Nestlé PURINA®

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Global leader in **engineering, design, construction, smart manufacturing, and equipment manufacturing.**