BUILDING YOUR
PET FOOD PROCESSING FACILITY



THE STELLAR ADVANTAGE IN TODAY'S
selective, premium & competitive market

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Building Your Pet Food Processing Facility:
The Stellar Advantage in Today's Selective, Premium and Competitive Market

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2900 Hartley Road
Jacksonville, FL 32257

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PREMIUM FOR PETS

The U.S. pet food market is booming, and higher quality food is in greater demand than ever before as more consumers view and treat pets like family.

Just look at the numbers:

Last year alone, Americans spent $72.56 billion on their pets, more than any years past.

Millennials have overtaken Baby Boomers as the largest pet-owning demographic in the country, and these consumers are more likely to purchase high-end pet food.

The global pet food market is projected to reach $98.81 billion by 2022, exhibiting a 4.3 percent compound annual growth rate (CAGR).

Perhaps you're a smaller pet food maker who currently uses an independent manufacturer, and you're looking to make the jump to owning your own facility. Or perhaps you're an established company wanting to build a new pet food facility to manage growth. Maybe you're even considering the refrigerated pet food space.

No matter what's driving your capital investment, why should you choose Stellar to design and build your next pet food facility? We're a natural fit thanks to our:



- **Sanitary design EXPERIENCE** 4
  - FSMA: New standards for food safety
  - Traceability and QC in motion
  - A partner who understands what's at stake
- **RENOWNED refrigeration expertise** 7
  - Venturing into refrigerated pet food
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- **Greater efficiency and cost savings as an INTEGRATED FIRM** 9
  - Cost savings
  - Increased speed to market

SANITARY DESIGN **EXPERIENCE**



FSMA: NEW STANDARDS FOR FOOD SAFETY

The passage of the **Food Safety Modernization Act (FSMA)** in 2011 is the most comprehensive update to U.S. food safety regulation in more than 70 years. It created **new requirements and mandatory product safety standards** for virtually all U.S. human food and pet food makers.

According to the **Pet Food Institute**, FSMA requires pet food makers to:

- **Implement current good manufacturing practices** (CGMPs) that include requirements for employees, facility design, equipment upkeep and maintenance
- **Identify and evaluate hazards** (biological, chemical or physical) that may be associated with the foods they make, and put into place procedures ("preventive controls") that address those hazards
- **Develop and implement a food safety plan** detailing the steps they are taking to ensure product safety, from sourcing ingredients to carrying out a product recall if ever needed
- **Comply with FSMA requirements** regarding foreign suppliers and sanitary transportation for both finished pet food/treats and ingredients

As a result, pet food manufacturers must operate in facilities that maintain this rigorous level of product safety.

TRACEABILITY AND **QC** IN MOTION

Product recalls are incredibly expensive, not to mention damaging to your brand's reputation. Plus, pet food facilities can manufacture upwards of 10 tons of product per hour, meaning the ripple effect of a recall can be massive.

The ability to trace and track product accurately is paramount in any type of food processing, but it's especially critical in pet food processing, where scale and throughput is even greater.

THE MORE GRANULAR YOU CAN GET WITH YOUR TRACKING, THE MORE YOU CAN *avoid wasting product.*



THE PAST:



Companies would store a week's worth of manufactured product in warehouses while quality testing was performed, but this is no longer practical in today's fast-paced market.

NOW:



Many facilities hold two days' worth of product and then ship it to outside warehouses for distribution before it's technically cleared by quality control. Getting product out on these **"rolling warehouses"** faster helps get product to consumers faster, but this is only possible thanks to accurate traceability.

accurate traceability

How can that work? Product can only get so far down the distribution chain before it is officially approved. So if an issue is discovered with a particular batch during the QC process, today's technology can pinpoint the affected batches so manufacturers can pull those "unapproved" products from the outside warehouses before they actually reach the consumer.

IT'S QUALITY CONTROL *in motion.*

The accuracy of this traceability also helps minimize the amount of product that must be "recalled" back from the warehouses, so that otherwise good product isn't unnecessarily wasted, saving manufacturers from unnecessary cost.



A PARTNER WHO UNDERSTANDS **WHAT'S AT STAKE**

In this era of increased traceability and higher expectations, Stellar's experience designing food production systems and environments is invaluable for pet food companies. We know the regulations at play and how to design and construct a facility that exceeds food safety standards.

Our approach starts with designing the process equipment layouts with our clients and original equipment manufacturers (OEMs). Then we incorporate the building and infrastructure requirements with a keen eye on sanitary design elements to ensure your product is produced in a safe environment.

Automation controls are key to advanced traceability, so our process and packaging design is increasingly addressing these important parameters as well.

RENOWNED REFRIGERATION **EXPERTISE**



VENTURING INTO **REFRIGERATED PET FOOD**

If you're considering the refrigerated pet food space, there are important differences to keep in mind when it comes to processing and distributing these chilled goods.

Compared to a facility that manufactures dry pet food, one that produces a chilled product requires a fully refrigerated facility. **Rather than producing and storing dry kibble, refrigerated pet food needs to be kept at proper temperatures throughout processing, storage, packaging and distribution.**

As a global leader in building refrigerated facilities and providing industrial refrigeration solutions and services, our team understands the nuances of designing and building these unique spaces.

Here are some of the ways refrigerated facilities are different from your average pet food plant:

Roof

In a standard ambient warehouse, roof insulation would only need to be designed to meet the local code requirements. With a refrigerated building, the roof insulation is designed for thermal considerations (higher R-value and greater thermal efficiency), which also costs more.

In a new facility, the thermal envelope would be placed on the roof. If retrofitting an existing building, this specialized roofing would hang from the existing roof inside the building — essentially, a "box within a box" design.

Walls

In a traditional pet food facility, walls only need to meet minimal building codes. However, with a refrigerated facility, walls are designed with a greater R-value to avoid heat transfer and to maintain optimum temperatures within the building.



Dock height

The design of truck docks differs greatly in a refrigerated facility compared to your typical industrial building. First, a refrigerated trailer has insulation in its floor system, making it taller than an ambient trailer. Therefore, you must design the facility's floor elevation to accommodate this specialized trailer height.

Dock seals

Refrigerated facilities feature unique, cushioned dock seals to prevent heat loss where a trailer meets the door of the loading dock. These airlock seals are an added cost compared to a typical facility.

Dock levelers

Ambient facilities often have traditional dock pit levelers, which store horizontally. These basic levelers act like a ramp and compensate for the difference between the building floor and trailer bed height.

In a refrigerated facility, however, a vertical-storing dock leveler is preferred. Although they require a greater initial investment, these levelers allow for a better seal at the dock door, which minimizes temperature loss.

Electricity capacity

Due to the energy required to power the refrigeration system, the electrical capacity in a cold facility must be higher compared to a traditional plant. If retrofitting an existing building, its electrical system must be upgraded to support the refrigeration equipment, such as the motors for compressors and fans.

Refrigeration system safety

Many modern cold facilities feature ammonia refrigeration systems, which come with their own set of safety requirements and standards. If any one location has more than 10,000 pounds of ammonia charge, the federal government requires a project safety management (PSM) program be established so that employees know how to deal with a potential ammonia leak in the event of an emergency. (Stellar provides PSM training, education and a digital management platform for facilities with these systems.)

PARTNERING WITH A **REFRIGERATION SPECIALIST**

While other aspects of a pet food plant would essentially remain the same — such as lighting, rack systems and water/sewer infrastructure — when it comes to a refrigerated facility, there are a variety of design elements that need to be specialized for the cold environment.

If you're considering venturing into refrigerated pet food manufacturing, it's important to team up with an experienced firm with a track record of designing and constructing refrigerated buildings.

WHY WORK WITH A FULLY INTEGRATED DESIGN-BUILD FIRM?

A fully integrated design-build firm, like Stellar, provides process engineering, building and infrastructure design, and construction services — all with in-house resources.

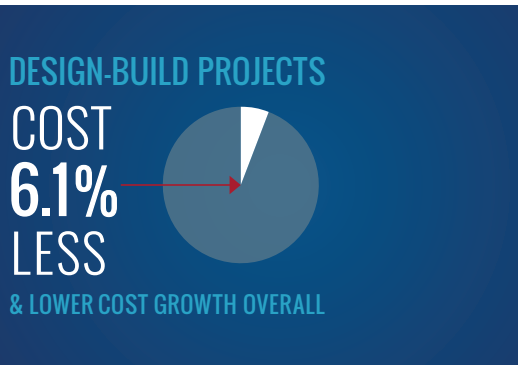
If you're planning on building a new pet food facility, there are two major benefits to working with a fully integrated firm:

COST SAVINGS

INCREASED SPEED TO MARKET

Combine these efficiencies with the fact that **design-build projects cost 6.1% less and have lower cost growth overall compared to the design-bid-build approach**, and it's clear why design-build with an integrated firm makes so much sense.





COST SAVINGS

real time

1 Leveraging speed to market to gain a competitive edge

The nature of the design-build model means your project gets completed quickly and more efficiently because **designers and contractors collaborate**, streamlining project delivery. With an integrated approach, **designers can get feedback in real time from construction professionals** in order to make better, faster decisions in the design development process.

In the consumer-driven pet food industry, **demand can be here today and gone tomorrow**. A sudden change in consumer demands can change the nature and scope of a project — it can spoil any head start you have and, at worst, derail a project. However, working with an integrated firm gives you the ability to pivot throughout your design-build project, despite any curveballs that may come your way.

Change happens fast and can be an opportunity for growth, but if you can't adapt quickly enough, unexpected change can spell disaster for your project.

2 Reducing energy costs

Minimizing energy consumption isn't just good for the environment; it's also good for your budget. The key to **managing utility costs** is building efficiency into your facility's design and construction, before you ever cut a big ribbon and flip on the lights.

Traditionally, an owner may handle the processing design internally or with a separate firm, meaning those elements are compartmentalized — there isn't open communication between the processing team and the designer and builder.

On the other hand, **a fully integrated firm takes a holistic approach to each project**, giving you better control over what goes into your pet food plant today that will affect your energy and operational efficiency in the long term. By handling the design, construction and process engineering under one roof, an integrated team constantly analyzes and considers how those three factors impact process optimization and energy consumption — and thus, your bottom line.

3 Offering creative process engineering solutions

Stellar works across a variety of different industries. That means we have experience with a broader range of technologies and solutions compared to an in-house team or a firm that only focuses on a certain category. Ultimately, that creativity may save you money.

As a pet food producer, you may have only dealt with other pet food producers and original equipment manufacturers (OEMs) that provide solutions for the pet industry. However, there may be sectors within the human food category that are approaching a similar problem with a different solution that could benefit your pet food processing.

A FULLY INTEGRATED TEAM CAN BRING THOSE NEW IDEAS TO THE TABLE AND MAY HELP YOU THINK *outside of the box.*

Stellar works across the spectrum of food processing, exposing our experts to new ideas that can be leveraged into cost-savings on your next project.





INCREASED SPEED TO MARKET

The design-build methodology, by nature, is **faster than the traditional design-bid-build approach**. But if speed to market is your goal, then you can't beat the agility that a fully integrated firm offers.

1 The project developer is involved in daily design progression

Choosing a fully integrated firm means the project developer is sitting in meetings from day one. During the design phase, the managers from each critical team (process design, building and infrastructure and construction) gather for regular meetings to discuss the project.

Having the project developer involved in this process from the beginning means he can make constant adjustments to his budgetary estimate, tweak the project schedule and provide constructability recommendations, all as design decisions are made. Translation: **You're getting faster turnaround on budgets and schedules** compared to a traditional, non-integrated approach where a general contractor is subcontracting these specialized elements to outside vendors.

Plus, regular involvement of the project developer means potential issues are caught and resolved along the way during the design process. This is much faster than the alternative: waiting for the entire design to be complete before any of those issues are noticed and addressed by a separate subcontractor.

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2 Collaborating on 3D models is seamless and fast

Today, everyone likes to think they can work remotely with cloud-based software. Sure, saying that makes you sound cutting edge, but the reality is that modern-day **3D modeling technology** requires a great deal of computing power that can be difficult to harness across different locations.

Large-scale 3D models are huge files that take a long time to transmit via the internet. If you're working with a non-integrated firm that must repeatedly send these massive files to different vendors in different locations to review, analyze and incorporate, that dramatically slows down your timeline. Not to mention that this might deter them from sending updated models to the construction team as regularly, which would only slow things down even more.

On the other hand, **the staff at a fully integrated firm can view 3D models in real time, any time**. This allows teams to collaborate easily and get your project moving along, since everyone's working under the same roof and within the same system. Also, it makes it easier for owners to view the most up-to-date 3D models via a 3D model viewer such as 360 Glue.

3 On-site construction issues get resolved quickly

Once your project has entered the construction phase, even more variables are introduced into the equation. No firm or project is perfect, and **occasional mistakes are inevitable** — a forklift bumps into something, an anchor bolt gets bent, etc.

In these situations, a non-integrated firm's process can be a dizzying chain of unnecessary (and sluggish) communication that can look something like this:



- **Superintendent photographs issue and reports problem to project manager**
- **Project manager receives report and communicates issue to appropriate specialist** (e.g., structural engineer, design manager, etc.)
- **Specialist sends recommendation to project manager**
- **Project manager forwards recommendation to superintendent**
- **Superintendent relays to staff and implements resolution**

Meanwhile, a fully integrated firm's approach streamlines the entire process. The superintendent would simply call the structural engineer — his co-worker — directly, and the structural engineer would send him a solution (typically within minutes rather than hours or even days). This prevents minor snags from becoming colossal roadblocks in your project's timeline.

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4 Submittals and Requests for Information (RFIs) are processed efficiently

If a submittal comes through for a piece of **mechanical equipment** for your project, it can typically go through a variety of people before final approval:



- **Construction manager** (to make sure it answers to the requirements of the spec)
- **Design manager**
- **Mechanical engineer**
- **Electrical engineer** (to power the equipment)
- **Structural engineer** (to support the equipment)
- **Architecture team** (to ensure the equipment aligns with exterior design)

At a fully integrated firm these different staff members simply walk down the hall to discuss submittals, ask questions and get approvals. **This eliminates the time-wasting back and forth with multiple vendors you would find with a traditional, non-integrated firm.** Sure, email and construction management software have helped make the process more efficient than it used to be, but nothing compares to having the entire team together in one building.

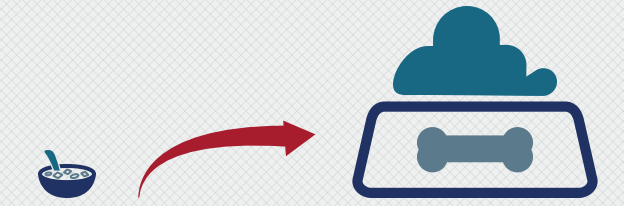
The same goes for Requests for Information (RFIs) from the field. At an integrated firm, if the superintendent submits an RFI to the design team, the design manager can easily round up the right staff for a quick in-person meeting to develop a solution and send it right back to the field (and if a certain engineer is out of the office, they can just go to the next office over to grab another in-house engineer to provide the answer).

One small hiccup doesn't have to stall an entire project. A truly integrated firm eliminates the need to jump through unnecessary communications hoops.

BUILD YOUR NEXT PET FOOD FACILITY **WITH STELLAR**

There are a lot of design and construction firms out there. Why choose one that has experience in the human food industry to build your next pet food facility?

When it comes to processing, the biggest difference between your food and your pet's food is scale. Where a breakfast cereal factory may produce about **2,500 kg of product** an hour, a pet food facility can produce upwards of **10,000 kg per hour**. Our engineers understand how to scale equipment and design processing to meet these demands.





Aside from the scale of production, much of the equipment and processing is the same from pet food to human-grade food. Stellar is a leader in building manufacturing facilities, and we have decades of experience helping some of the largest brands in the world.

WITH PET FOOD UNDER MORE SCRUTINY THAN EVER, DON'T YOU WANT TO PARTNER WITH A FIRM WHO IS USED TO *prioritizing food safety?*

Let us help you build your next pet food plant by focusing on high quality and sanitary design to meet the preferences of today's selective pet parents.

decades of experience

READY TO CREATE YOUR PET FOOD PLANT OF THE FUTURE?

We're here to help craft your goals into visions and turn those visions into reality. Contact Jason Moore, Corporate Business Developer at jmoore@stellar.net for more information.

ABOUT STELLAR

Stellar is a fully integrated design, engineering, construction and mechanical services firm that provides the industry's most comprehensive range of self-performed services, including planning, design, pre-construction, construction, refrigeration, mechanical and utility, building envelope, and total operations and maintenance services. More than 750 Stellar employees worldwide create award-winning food processing plants, refrigerated warehouses, distribution centers, commercial buildings and military facilities. In addition to its Jacksonville, Florida, headquarters, Stellar operates nearly 50 support locations and offices throughout the United States, China and in the Middle East and North Africa (MENA) region. The company also serves Central and South America, Europe and India. For more information, visit **stellar.net**.

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