

PACKAGING STRATEGIES

Brought to you by
 **AmbaFlex**
SCIENCE IN SPIRALS

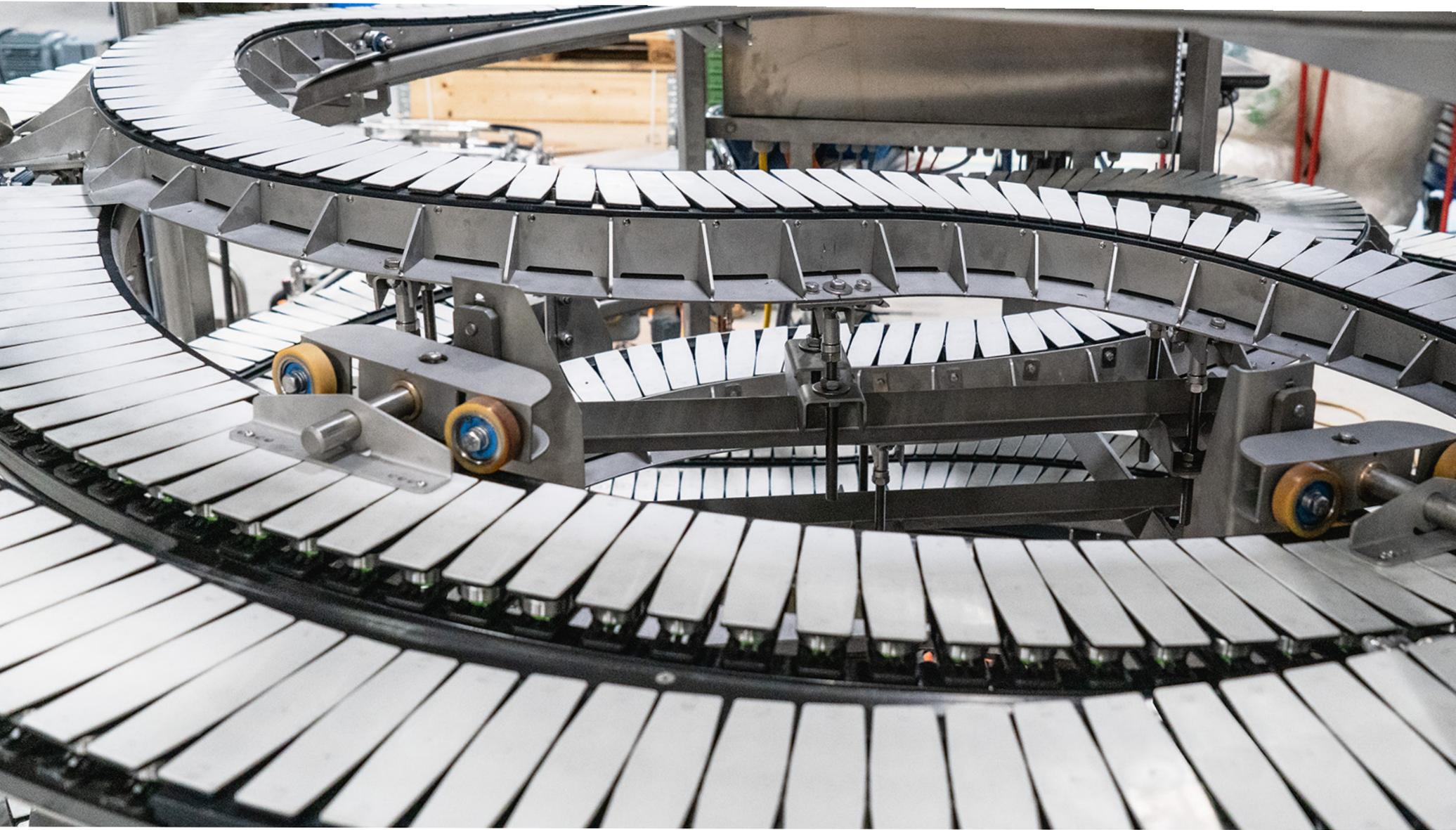


Table of Contents

- 4** Windings to De-elevate Cheese 
- 5** Make Vs. Buy Conveying Systems
- 10** Safe Passage 
- 12** Back to the Basics: When and How to Automate Your Packaging Line
- 16** The Ultimate Line Efficiency Booster 
- 19** 5 Topics to Discuss with Your Packaging Line Integrator

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AccuVEYOR AVH-SERIES



The Spiral shaped dynamic accumulation systems AccuVeyor will bring added value to your cheese packaging line. From the handling of flowpacks or top sealed trays upto dairy liquid containers the AccuVeyor will bring you benefits like:

- increase line efficiency
- eliminate loss on products and packaging materials
- creating balance
- continuous 'rhythm' in the line
- shorten ROI on your valuable machinery

108,000 sqft production plant in Canton, Ohio the largest spiral conveyor production site on earth.



LEADING SPIRAL CONVEYOR SOLUTIONS

Windings to De-elevate Cheese

A cheese producer, one of the largest dairy companies in Israel, was faced with a real challenge. They needed to connect their up-level processing area to the floor levels of the end of line environment.

Vacuum packed cheese blocks needed to be transported downwards at a rate of 40 per hour without damaging the plastic and losing any product lifetime. However, because of the **enormous de-elevation** required, traditional conveyors were not an option. Platform elevators could also not be used because of their low throughput capacity.

A spiral conveyor was the ideal solution for throughput and gentle product handling, but the challenge for a spiral conveyor was the minimum space that was available between the construction beams in the various floors. This was found to be too narrow for conventional spirals.

However the AmbaFlex SpiralVeyor® SVs platform, which was chosen, has a 140 mm wide belt and only requires a diameter of 1240mm, and so fitted

in. This machine comes from the Spiralveyor SlimLine programme and is especially designed with a small footprint to **overcome space issues** in packing areas.

The total elevation required **19.5 spiral windings** and that is at the higher end of what is possible, even for AmbaFlex. Fortunately, the **patented Triple-E** conveyor belt technology with 100% rolling friction makes such a number of windings possible in one go with one belt.

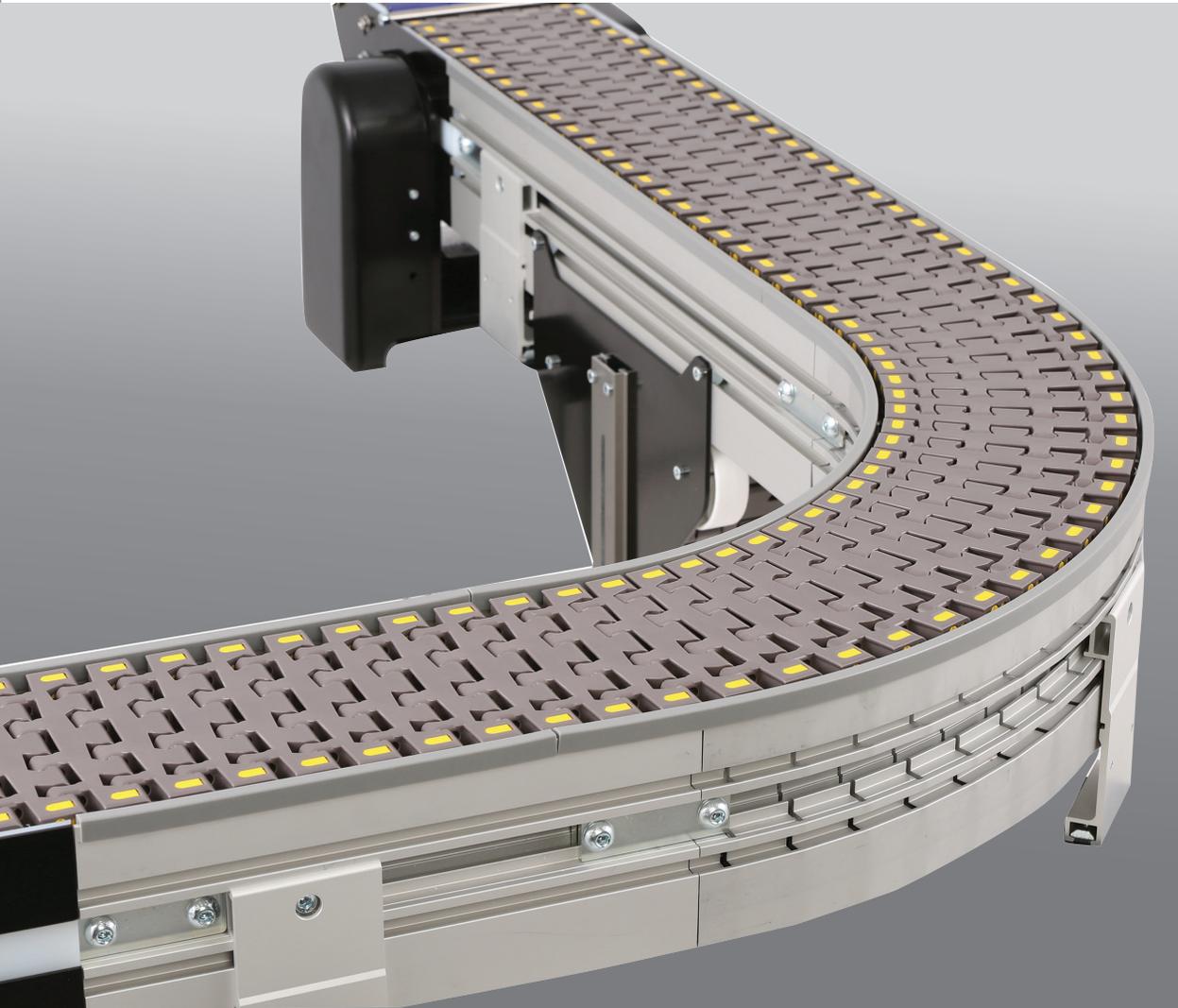
The customer was very happy that AmbaFlex could **fulfill all the requirements** without any compromises such as the number of winding to de-elevate, the compact build required, the speed, and good product handling. And on top of all that, the solution comes with a full, stainless steel, welded frame which does not trap any dirt and contains no soft metals like aluminium - a must to handle the aggressive cleaning detergents used in the dairy industry.

One more proof of AmbaFlex's leading position in Spiral Conveyor Solutions! ♦



Make Vs. Buy Conveying Systems

The decision to make or buy a conveying system relies on four main factors.

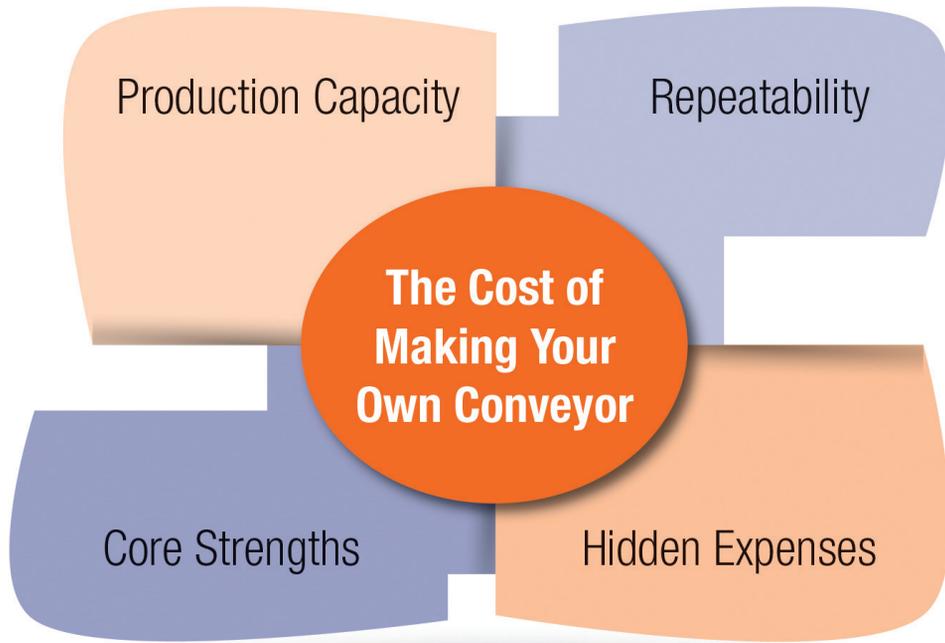


With a competitive, evolving global market place, changes in outsourcing and scarce availability of engineering talent, the decision to make or buy conveyors is one that many companies face every day.

For those integrators and OEMs that do choose to build their own conveyors, it can look like a smart choice. And in theory it seems like a money-saving idea:

1. You're already paying your employees.
2. It's less expensive to buy components.
3. You have a better understanding of your needs.
4. You have done it better.

When you dig deeper and look at all the issues associated with your conveyor system, the decision to make or buy becomes foggier as the cons outweigh the pros of building conveyors in-house. When factors such as production capacity, core strengths, repeatability and hidden expenses are added up, it's likely more efficient — and a better value — to purchase your conveyors from a reputable supplier. Here are four factors to help you with your decision:



Production Capacity

Production capacity centers on time. And time, as simple as it sounds, is perhaps the biggest factor that is often miscalculated. Although you are already paying your employees, the time spent working on building a conveyor is time that they could be designing, improving, expanding and manufacturing your current product. This includes time by the engineers designing, researching, modeling and creating a bill of materials for the conveyor, time spent by your purchasing department procuring the components, as well as time spent by production staff manufacturing, assembling, testing and debugging the conveyor. As many businesses continue to see growth and scarcity of engineering resources, the time that current employees spend away from your core product comes straight out of the bottom line.

Production capacity also includes space. Space in most facilities is at a premium, so creating and maintaining an area to develop, manufacture and test a conveyor takes away from your production output — not to mention the space required for storing excess components and inventory to support conveyors.

Core Strengths

Typical manufacturing companies have engineers that can design a variety of components as needed, but conveyors are not a core strength for most.

A company that specializes in manufacturing conveyors has done the necessary research. It has examined a variety of both environments and applications and invested time and money in testing the product in different scenarios. It also can predict the types of issues that will come with various environments and use. A specialist in manufacturing conveyors is current with the latest technologies — including belting, gears, drives and controls. It has worked with component suppliers to get not only the best volume pricing, but to ensure high-quality components. Reputable conveyor manufacturers have completed all the necessary upfront work to build conveyors — work that a company looking to build in-house will have to accomplish.

Another item that can be considered a core strength for many is aesthetics and customer perception. All components on the equipment or machinery that bears your company's name is a direct reflection on your business. The look and feel of the conveyor, as well as its dependability to run, can have a large impact on the customer's overall impression and experience with your company.

Quality of the conveyor can also directly impact the quality of your product. A smooth-running conveyor not only shows well, it can protect products in process from start to finish. Scratched packaging, dented products and damaged materials can cost you money. A dependable conveyor fitted to an application will get your product from point A to point B safely and efficiently.

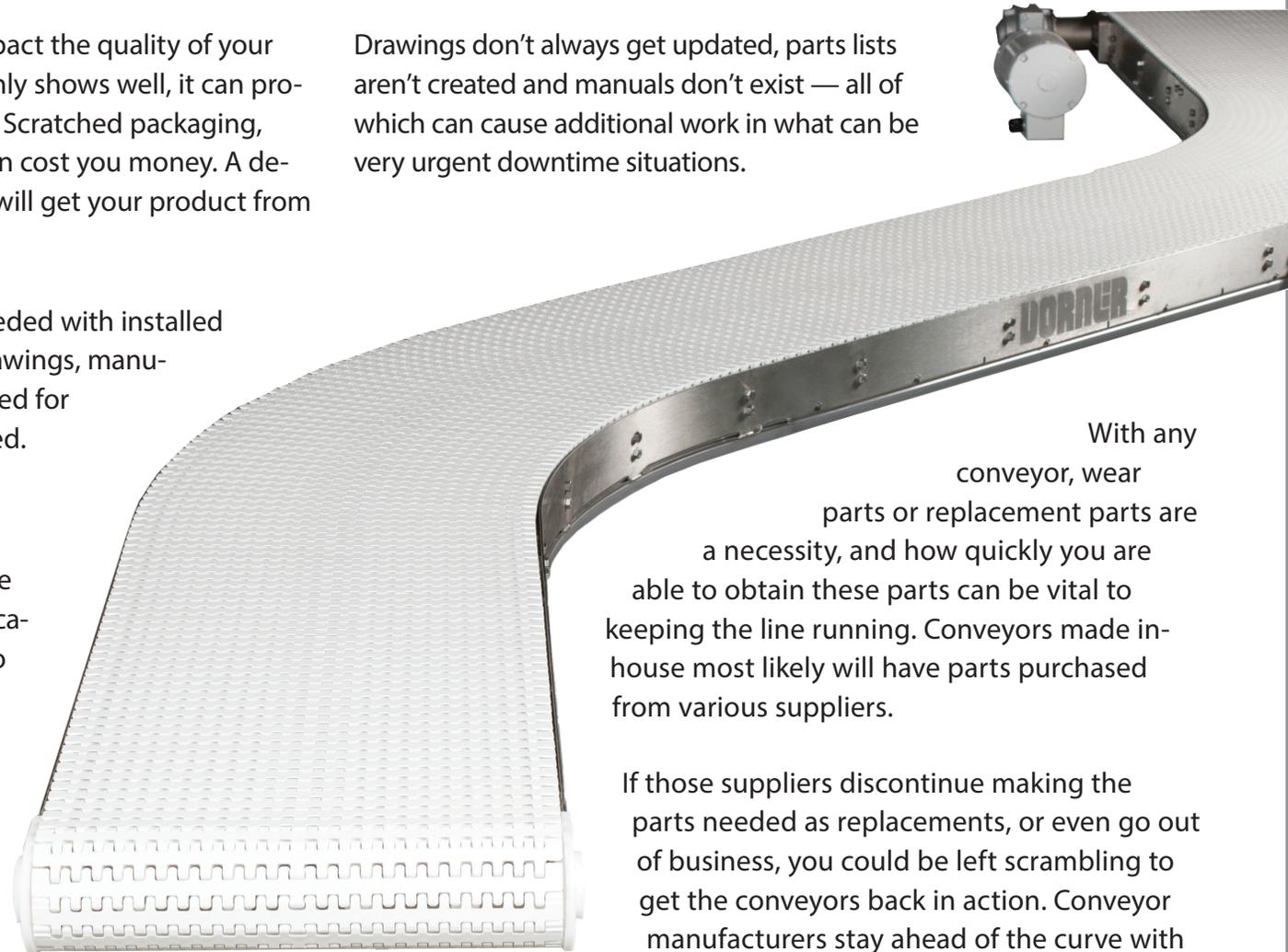
Finally, consider the service and support needed with installed conveyors. Conveyor manufacturers have drawings, manuals, spare parts lists and the expertise required for preventive maintenance ready to be accessed.

Repeatability

Typical in-house fabrication is assigned to one employee who designs it for that exact application. If that person leaves, it can be difficult to find someone who can step in with the required knowledge to properly design and service the conveyors.

Training and documentation are usually limited, plus re-training can be difficult and costly. The ability to call a dependable conveyor supplier can significantly help reduce downtime. Repeatability is very dependent on documentation. From routine maintenance to installation instructions, spare parts lists and troubleshooting, proper documentation can save a lot of time and effort. When building in-house, the conveyor will often undergo several modifications during the design and manufacturing process.

Drawings don't always get updated, parts lists aren't created and manuals don't exist — all of which can cause additional work in what can be very urgent downtime situations.



With any conveyor, wear parts or replacement parts are a necessity, and how quickly you are able to obtain these parts can be vital to keeping the line running. Conveyors made in-house most likely will have parts purchased from various suppliers.

If those suppliers discontinue making the parts needed as replacements, or even go out of business, you could be left scrambling to get the conveyors back in action. Conveyor manufacturers stay ahead of the curve with changes in components and can react quickly to your needs. They are prepared for emergency situations and can typically ship replacement parts as soon as the same day. This can save time and the hassle of trying to reengineer the product internally. They can also provide preventive maintenance training and parts auditing programs to make sure you're ready in case issues arise.

Hidden Expenses

With any project you need to account for hidden expenses — such as administrative costs. From processing a purchase order for each component in the conveyor to receiving and processing the parts into inventory, administrative costs can add up. Plus, there are shipping and logistical expenses to get the necessary materials, not to mention the time to manage, move and inventory all of these materials.

Changes can also contribute to hidden expenses. Starting with the design phase, changes can stem from vendor lead times and component changes to the product learning curve. In the manufacturing and installation process, design flaws, part problems, building obstacles and other unforeseen issues all contribute to last-minute changes — all of which result in delays and increased costs.

Another thing you'll receive when buying a conveyor is a warranty. A good warranty can take the stress out of wondering if you're purchasing a reliable product. It's a guarantee from the manufacturer that the product is of good quality and construction. If it were to contain any manufacturing defects, a warranty provides you the right to ask the manufacturer to deal with those issues.

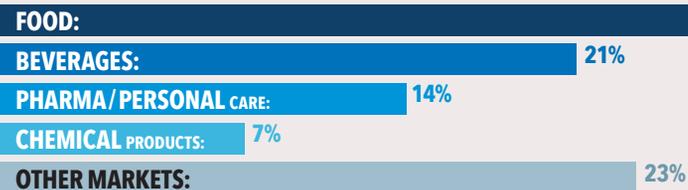
All of the above scenarios involve costs that can impact the overall bottom line of the company and have lasting effects on the production and quality of your core product. Ultimately, the decision to make or buy boils down to what's in the best interest for each company. ♦

GLOBAL PACKAGING MACHINERY MARKET

KEY TRENDS THROUGH 2023:

- The development of state-of-the-art packaging machinery technologies, including automated models.
- Increasing use of sustainable packaging material and the development of new packaging configurations.
- Rising mechanization of manufacturing sectors in developing nations.

GLOBAL PACKAGING MACHINERY DEMAND SHARE 2018 (\$)



Global Packaging Machinery Market to Hit 4.5% CAGR to 2023

A new Freedonia Group analysis projects 4.5% annual growth for the global packaging machinery market through 2023, driven by global increases in manufacturing activity, rising mechanization in developing countries and high-value sales of state-of-the-art equipment in affluent markets. The food and beverage markets will account for 56% of all new packaging machinery demand through 2023.

Global food and beverage production will expand, and suppliers will develop new products, which often requires new packaging configurations. As well, leading suppliers will increase spending on newly developed technologies (e.g., using more sensors to improve product performance and increasing the number of functions on a machine) and specialty models; and producers will invest in new equipment to comply with new technical and safety standards targeting the food and beverage industries. The Asia/Pacific region will account for a majority of new sales through 2023. The robust annual growth projected for the region will be driven by fast expected gains in countries outside of China, such as Indonesia, India and Thailand. *Source: The Freedonia Group*



Spiral conveying. Straight up!

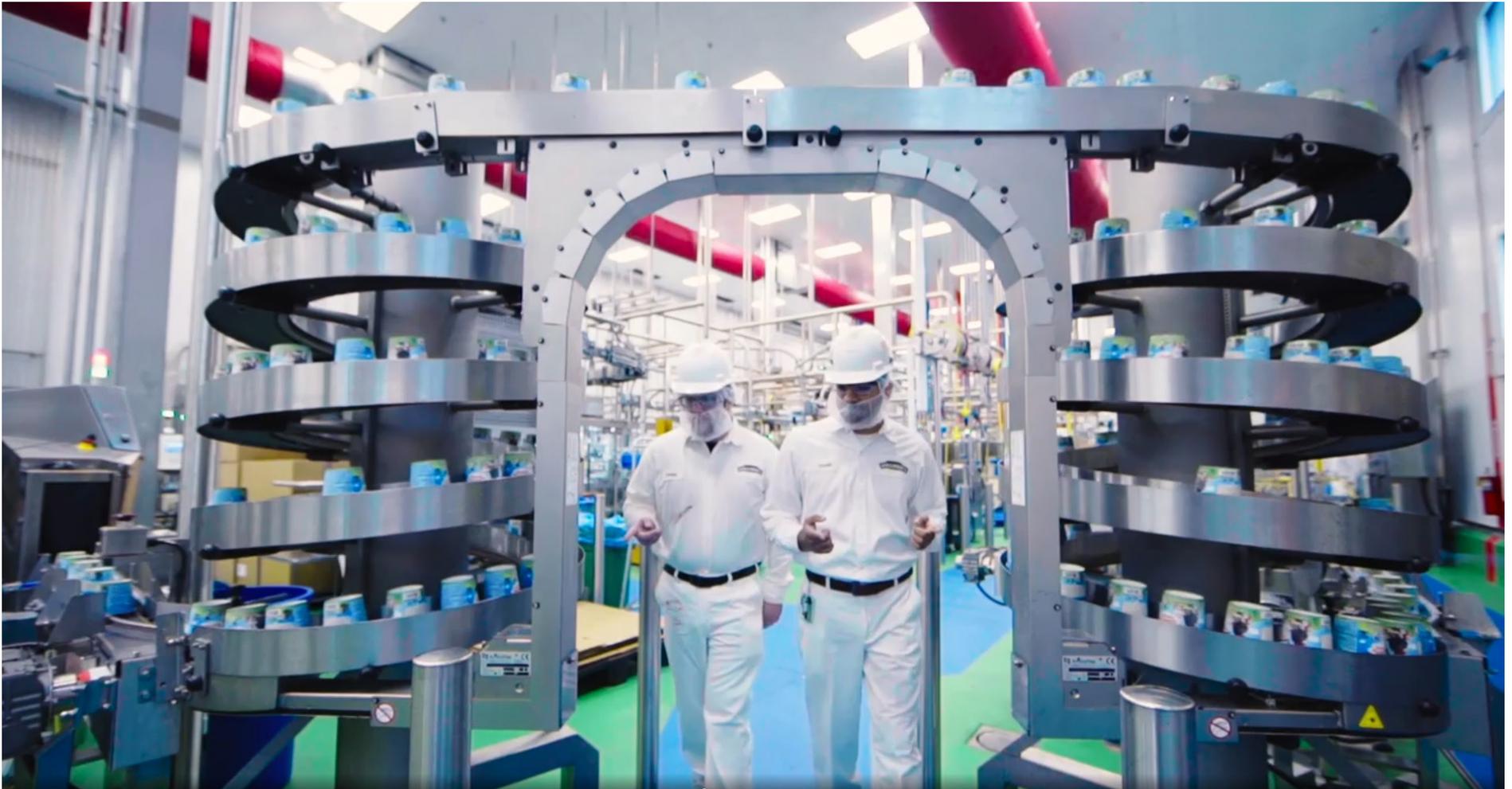
As the market leader in spiral conveyors in the packaging industry we think of solutions for elevating and accumulating packed items. It's what we do. At AmbaFlex it's not just about building the right equipment, it's about developing a special solution for you. Here's to spiral conveying.



Spiral Elevators & Accumulators for primary and secondary packaging handling.

 **AmbaFlex**
SCIENCE IN SPIRALS

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Safe Passage

When adding additional lines to your plant, it's almost inevitable that at some point, you have to cross existing machines, walkways, storage, or other crowded areas. This was no different for a well known, socially conscious, ice cream giant. Luckily, the unique Portal-ONE from AmbaFlex came to the rescue of everyone's favorite flavored ice.

In this particular case, the small carton jars full of delicious ice had to cross a busy walkway meant for both people and supplies. The new line had no other way but to go but up. One of the problems when you go up though, is that you need space for your incline conveyors to reach the height while keeping it at a safe inclination.



But even for spirals, there are challenges when creating a portal functionality. Generic solutions have transfers on both ends of the connection bridge high in the air to connect both the upward and downward machine. Especially for primary packed products, this can be troublesome as products may topple over. Or even worse, fall down and potentially harm a person walking underneath.

AmbaFlex solved these issues with the patented Portal-ONE solution. Connecting both spirals and the connection bridge with the same belt.

This means no extra transfers in high places. This results in a safe and efficient solution while maintaining the required high throughput.

LinkedIn video from Ben & Jerry's

https://www.linkedin.com/posts/ben-%26-jerry%27s_our-factory-teammates-who-make-the-best-activity-6539167971590365184-1ev3

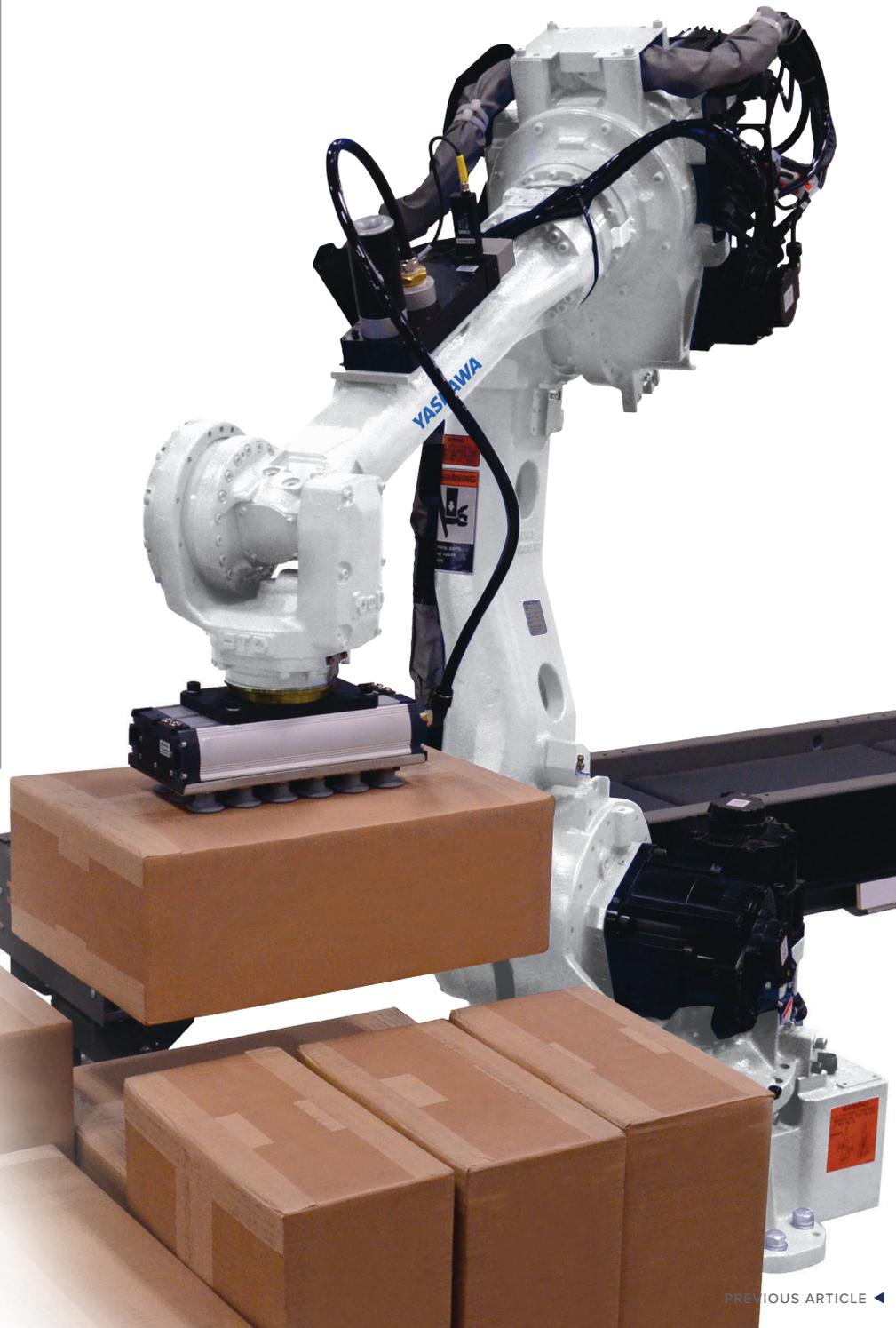
One more proof of AmbaFlex's leading position in Spiral Conveyor Solutions! ♦

BACK TO THE BASICS: When and How to Automate Your Packaging Line

You've worked hard to grow your business, starting out as a small company where you packed a few boxes per day to growing into one that requires packing a few boxes per second. While you've been able to keep up with the busy pace of change, you're wondering, "how long can I keep this up?"

Trusting your instincts and experience, you know you need some sort of automation, but you aren't sure what kind, let alone where to begin. Fortunately, experts can help you understand the basics of automation — when and where to use it, and how to implement it into your packaging operations.





The Basics of Automation

Once you've recognized your need for automation, the next step is to gain a clear understanding about automation basics. By definition, automation is, "the technology by which a process or procedure is performed with minimal human assistance." In other words, automation is a mechanical system that is good at doing the same thing time after time. That said, automation comes in several forms: hard, soft and flexible.

Hard Automation: Hard automation is a dedicated machine or robot that does a very specific task or group of tasks as fast, or faster, than a human worker. It is well suited for high-throughput operations with no variation. These machines are frequently custom made and expensive, but they make up for it in a reduced per-item cost due to their capacity. Examples include a case erector, bottler/canning machines, case sealers, sorters, conveyors, etc.

While hard automation is usually one of the first steps many businesses take in the implementation process, it has one major flaw — if product requirements change, modifying hard automation can be very expensive, often costing as much or more than purchasing new equipment.

Soft Automation: Often referred to as programmable automation, soft automation is a derivative of hard automation but with some built-in flexibility. It is frequently computer controlled and can have some mechanical adjustments to deal with changes in production. It can also take time to reprogram. Typically more expensive than hard automation due to the additional engineering required and the usual lower production rate, soft automation is a good solution for those who know how their needs will change in the future or those looking to run multiple batches of similar products.

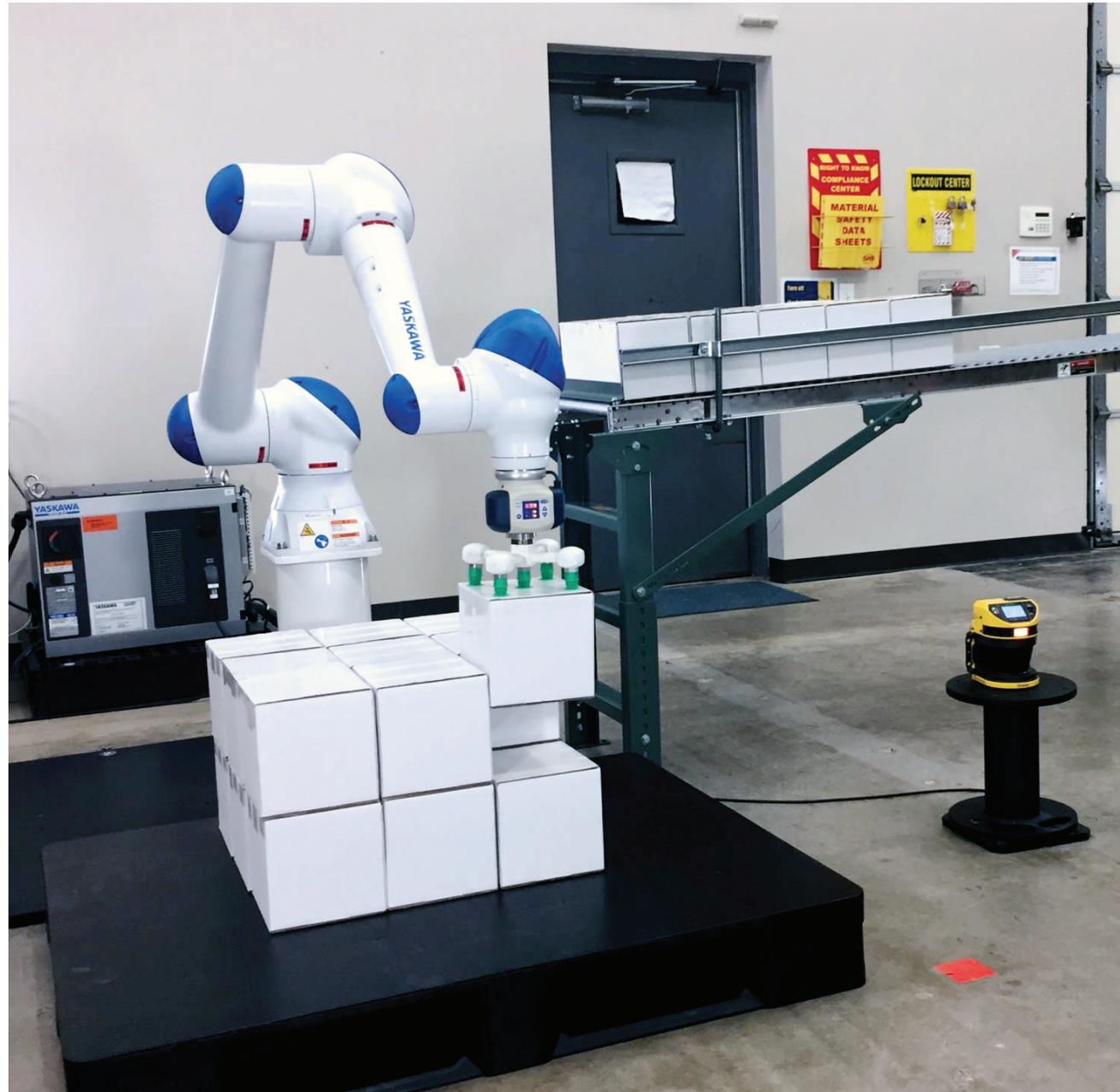
Flexible Automation: Flexible automation is designed to change with variations in production. This type of automation involves a programmable robotic arm with an off-the-shelf or custom end-of-arm tool. Typically slower, and potentially more costly than hard or soft automation, it has the advantage of adapting to changing products and production volumes.

While many consider flexible automation the “holy grail,” the best solution for your business is likely a mix of automation technologies. Fortunately, with various software and sensing options available, it’s possible to integrate all three into a seamless solution.

The Timing of Automation

Now that you have a general knowledge of automation, it’s time to think about the best time to automate. As you may have guessed, automation is a large investment that should be given considerable research and planning. As you move forward in the exploration process, there are several questions to ask when considering an automation solution:

What is your current demand? Where do you expect it to be in X months (or years)? If you’re nearing maximum capacity and you expect to grow, it’s clearly time to start thinking about



automation. Similarly, packages per minute (PPM) requirements will likely dictate what type of solution or solutions you need to consider.

What are your current bottlenecks? If line changeover eats up valuable time, inspection/sortation slows down production or products need to be transferred from one place to another, automation is a likely next step.

What simple, repetitive operations are currently being done? Robotic automation solutions excel at repetitive tasks. Depending on your requirements, this might be well suited to a hard automation solution, or you may require something more flexible.

What is the current cost of your packaging line? How would it compare to the cost of automation? Human labor is often the largest expense in packaging operations, and not only in wages. Depending on the demands placed on workers, expenses could include higher than average turnover rates or workers compensation, or lawsuits due to injury. Additionally, material costs, combined with lost production due to errors or equipment faults, can have a profound impact on costs.

At first glance, automation costs can appear staggering. When amortized out over the expected life of the equipment, it is generally very reasonable, especially when you consider production increases and increased reliability.

While these questions are likely to change depending on your industry, they are a good starting point as you venture into the world of automation.

Depending on your required results and budget, you may realize that you don't need to automate your entire line right away, implementing a phased approach to alleviate the main bottlenecks first. If workers can't keep up with end-of-line palletizing, it may be time to consider a robotic palletizing solution. If the application is for sortation and inspection, a delta robot with a vision system may be an ideal option.

While many consider flexible automation the “holy grail,” the best solution for your business is likely a mix of automation technologies.

The Next Step for Automation

Once you decide on the type of automation your business requires, it is time to figure out the approach. Do you have resources within your organization to plan out, order and self-integrate the chosen solution? In the unlikely situation that you do, congratulations! If not, it would be best to contact a reputable robot manufacturer that works in the packaging space. ♦

The ultimate line efficiency booster

The packaging of products is an art in itself. It's not just the colors, images, and patterns but also the package's shape that can be used to stand out. Using a unique form can set you out from the competition. On the other hand, it can also cause unique challenges for the production line.

Case in point, the Prisma packs. These are a variation on the standard rectangular 'brick' packages we all know. The shape gives your product a unique look and makes it easier to grip while on the go. The downside is that machines can have difficulty handling it while moving through the processes in a production line.

One of our customers wanted to implement a dynamic accumulator between the filler and the capper. As the filling machine is the most critical part of the line, and the capping machine is prone to suffer from various micro-stops, they needed to decouple those two operations.

Most accumulators have to touch the product to switch it from an accumulation track to a release track. This is a significant issue for delicate products that will be damaged if clamped or grabbed, but also for odd-shaped products like the Prisma pack, which will suffer from disorientation. This can result in jams on the connecting conveyor or the next machine's infeed.





The next generation of dynamic accumulators, designed by AmbaFlex, solved this issue. We designed an AccuVeyor that doesn't transfer the product itself but the belt it sits on. With a system called the Belt Transfer Unit, the machine lifts the track instead of the product. This ensures that every product stays on the exact same spot of the belt, keeping it in perfect condition.

With the AccuVeyor AVh-p between the two operations, any issues that might bother the capper will be caught by the AVh-p and accumulated until the problem is solved and enabling the filler to run

continuously. As the AccuVeyor can instantly respond to any changes, it will contribute to optimal line efficiency.

The AVh-p is a variation on the regular AVh platform where the two tracks aren't nested but run parallel to each other. This offers extra height clearance for tall products, further improved stability and a lower overall machine height.

AmbaFlex, elevating customers to greater heights! ♦

SPIRAL CONVEYING STRAIGHT UP

MULTI-LEVEL SPIRAL ELEVATOR

As the market leader in spiral conveyors in the logistic industry we think of solutions for handling cases & SKU's. It's what we do. At AmbaFlex it's not just about building the right equipment, it's about developing a special solution for you. Here's to spiral conveying.

Spiral elevators for goods-to-man systems, picking modules and sorting systems.



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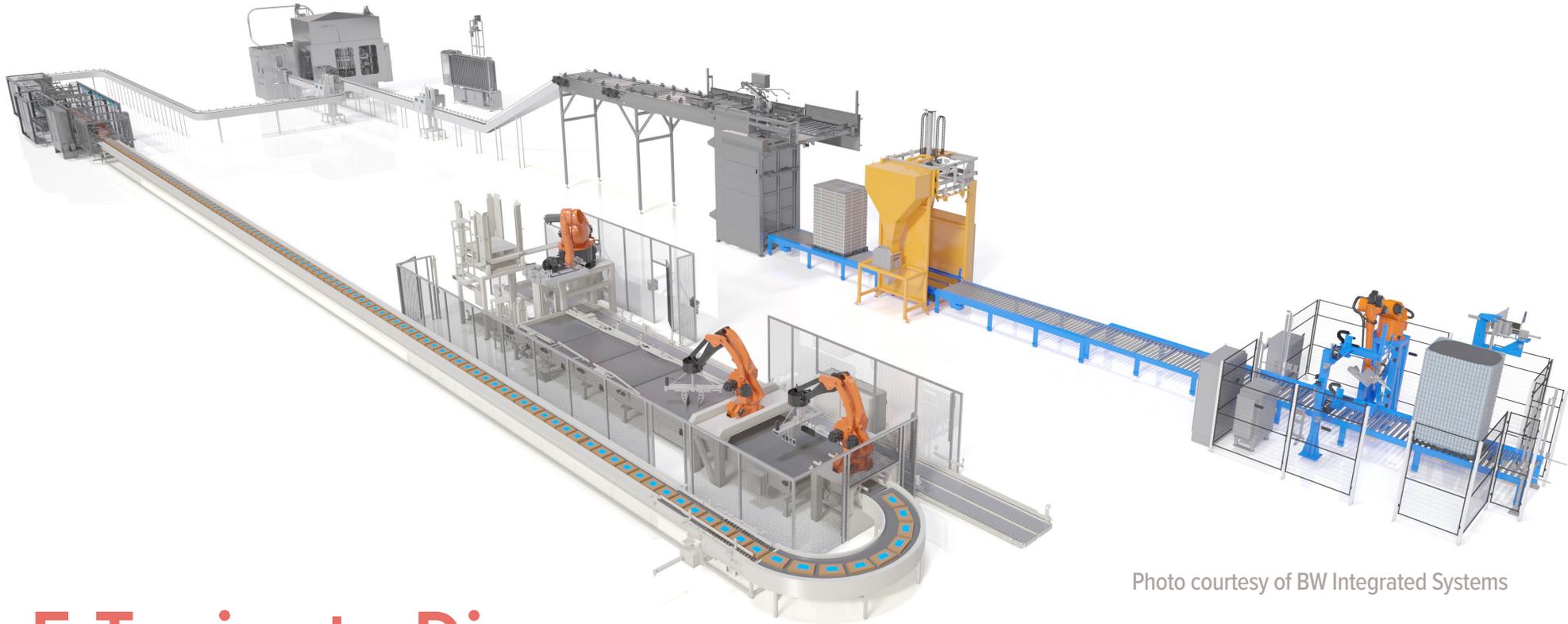


Photo courtesy of BW Integrated Systems

5 Topics to Discuss with Your Packaging Line Integrator

For many of today's top CPGs, packaging line integrations have become routine investments; necessary for meeting changing market demands and improving the overall efficiency of production lines. The relative success of a packaging line integration can be determined by answering "yes" to three questions:

- Was the project completed on budget?
- Did the line start up on time?
- Does the line run at its committed efficiency?

To check all three of these boxes requires diligent project planning and total transparency between you and your integrator. We'll recommend five key topics you should discuss with your prospective packaging line integrator to ensure your integration gets completed on time and on budget.

Why is Transparency Important to Packaging Line Integrations?

Before we jump into the topics, let's address transparency.

Transparency is an important component of any supplier/buyer relationship, regardless of the project's scale. It's important because when you spend company money with a supplier, you're not just purchasing equipment and services from that supplier; you're telling them "I trust you to deliver what you promised, to make me look good in front of my boss, and to make my job easier."

Having a candid, transparent conversation with your integrator is the first step you should take to ensure you're making the right decisions throughout the course of your project. It's likely more efficient — and a better value — to purchase your conveyors from a reputable supplier.

When you're responsible for overseeing a packaging line integration, which are often multimillion-dollar investments, the importance of that transparency is amplified with every dollar. The impact of the integrator you choose — good or bad — will be felt within your organization (and likely your career) for years to come. Having a candid, transparent conversation with your integrator is the first step you should take to ensure you're making the right decisions throughout the course of your project.

Top 5 Packaging Line Integrator Discussion Topics

1. INTEGRATOR EXPERIENCE

The quickest way to determine if your integrator is being transparent about their capabilities is to ask for proof of experience. Case studies are a great place to start. Ask your integrator for examples of similar projects they've completed so you can get an idea of how their solutions match up with your project.

You should also ask for references. This can include past clients, OEMs, installers or any other vendor that has worked closely with the integrator. Ask probing questions about their experiences with the integrator. What did they do well? Did everything go smoothly with the project? If not, how did the integrator respond to adversity?

2. FINANCIAL STRENGTH

Working with a large, financially strong integrator can be useful in managing your own financial risk. Such integrators, including BW Integrated Systems, usually offer creative financing agreements that can help you comfortably manage your cash flow as you invest in new packaging infrastructure. This is especially useful when weathering unforeseeable market disruptions, like those created by the COVID-19 pandemic.

Additionally, these integrators can leverage their own financial experience to guide you through ROI calculation and other hurdles associated with financing. If they're already acting as your advisors and analyzing market trends as they pertain to your investment potential, they might also offer to present these findings to upper management on your behalf.

3. OEM MANAGEMENT

If you haven't built relationships with suitable OEMs for your integration, then this is another opportunity to lean on your integrator. They should be able to recommend suitable, credible OEMs for your project and, upon request, provide examples of how they have seen success on similar projects working with those OEMs.

Regardless of who picks the OEMs, it's best to take a consultative approach with your integrator. If you've already identified the OEMs you'd like to work with, that's okay too. However, if you force an integrator to work with vendors they don't know or trust, they're likely to increase their fees during contract negotiations or make changes to the contract itself in order to protect themselves from risk.

4. CONTRACT NEGOTIATIONS

Strict contract demands — including tight timeline constraints, total control over OEM selection, and asking the integrator to sign up for terms such as “liquidated damages” — will often drive up your cost. This is because experienced integrators know that agreeing to such demands puts them at greater risk.

Understanding your own “risk profile” is also vitally important when it comes to negotiating a contract with your integrator. Your goal should be to strike the right balance between cost and risk. This requires looking inward at the depth and quality of your in-house resources. Are you equipped to handle the installation yourself? Who will be responsible for shipping? What risks are associated with owning those steps in-house? What assurances are granted by contracting the integrator to do them?

5. PACKAGING LINE DESIGN

Finally, it's important to discuss the considerations that will inform your integrator on how to design a packaging line that is well-optimized for your particular plant environment. This will require a thorough review of several factors including your footprint, utilities, material flow, and more. Your goal should be to lay out a packaging line that is efficient in its use of space, optimizes labors, and most importantly, is operationally efficient.

For example, if you have a flow-through facility, meaning materials come through on one side of the plant and the product ships out on the other, you'll likely want an inline packaging line design. By contrast, if both in and out are on the same side of the building, you probably want a “u” shaped line. ♦



About the Author – ERIC COLLIER

In 2018, Eric was named Vice President of Global Sales for BW Integrated Systems. He brings 15+ years of packaging industry experience to BW Integrated Systems and BW Packaging Systems and leverages considerable knowledge of both sales structure and strategy, as well as technical expertise in palletization, robotics and end-of-line solutions to rapidly expand our business in non-beverage markets such as dairy, home care, food, wine & spirits.