GLIDE-LINE™

CUSTOMIZED CONVEYOR DESIGN GUIDE

FROM
CONFIGURABLE CONVEYOR TECHNOLOGY
TO YOUR
AUTOMATION SYSTEM

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INTRODUCTION

What Makes Us Experts

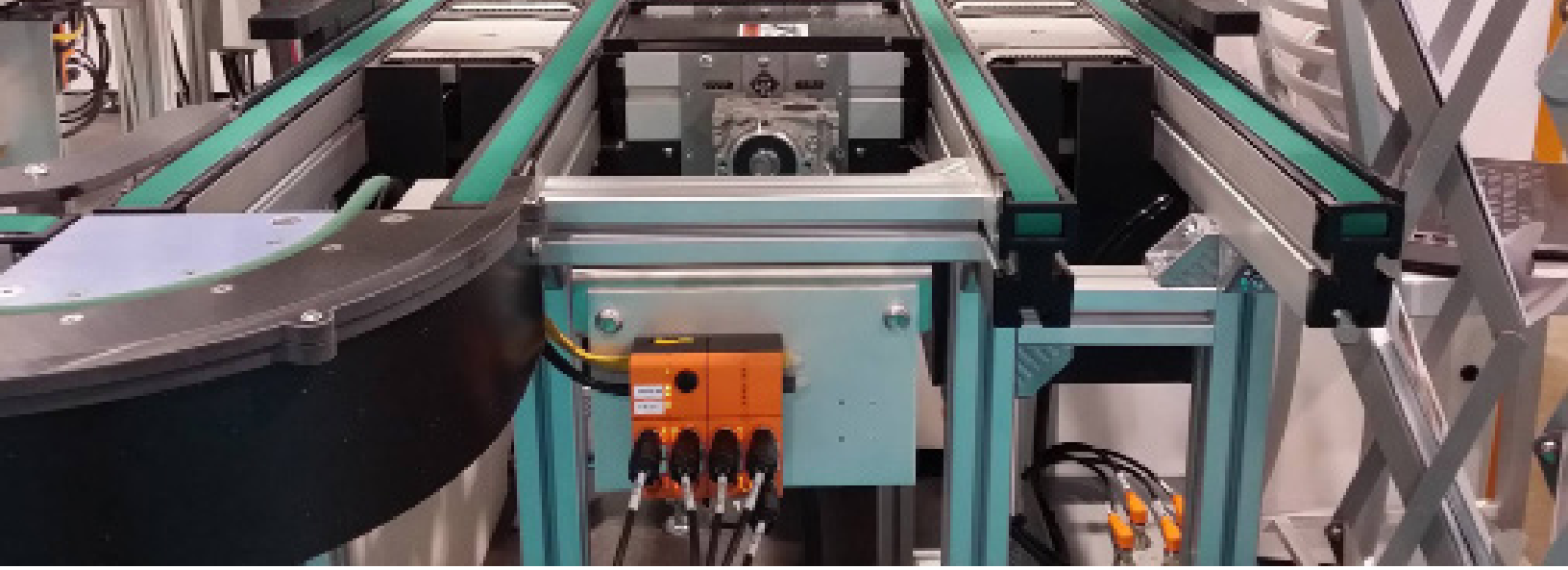
Custom and configurable conveyor systems are what Glide-Line does best. When we found ourselves dissatisfied with the market's current offerings – long lead times, poor customer service, inflexible designs, and rising (and unnecessary) costs – we decided we could do it better.

Following our own advice, we set out to create a product and supporting tools that would satisfy customer needs in ways no one else could. The result was Glide-Line, born from a conveyor system manufacturer with over a quarter century of experience – one who understood the market's needs firsthand. Our direct experience with the struggles faced by integrators day in and day out has given us the knowledge to build this guide.

How to Use this Information

This guide is built to address some of the challenges you might currently face when building conveyors into your automation system engineering designs. Not only do we provide answers, but we also provide potential solutions to help you solve these problems, and tips on how to inject creativity into your conveyor system designs.

Let's get started!



THE STATUS QUO: CHALLENGES WITH THE CURRENT AUTOMATION SYSTEM DESIGN PROCESS

Developing an automated assembly system layout, estimate, and proposal involves developing a layout and a budget for your customer. As you develop the concept automation strategy including the conveyor system element, accurate and impressive delivery to your client could be hindered by conveyor system software that lacks flexibility, innovation, or generally slows you down.

Lack of Flexibility

Your customer's space is unique to their business, and every automation system is unique to your customer's requirements. Your engineered automation system layout must be just as unique to fit their process, space, and business needs. Lack of flexibility in many conveyor systems today ties down your layout and forces you to make concessions in other parts of your design. What if, instead, you could engineer a conveyor system exactly as unique as the needs of your client?

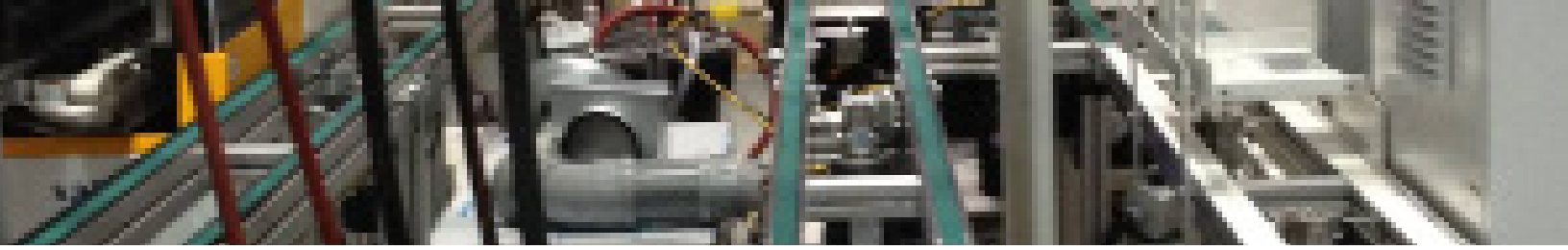
Limited Innovation

Today's conveyor configurators can be clumsy, rough estimators and CAD model generators that only sort of meet the needs of your automation system. Standard solutions are expected, but may not "wow" your customer. Worse still, they can be limited to outdated solutions that don't necessarily meet today's customers' needs. Instead, a conveyor system configurator should be innovative in the solutions it can access and innovative in the way it delivers those solutions to your final CAD layout.

Slow Revision, Pricing, and Delivery Process

The most accurate layouts and pricing come from a successful relationship between you and the salesperson at your current conveyor system provider. But slow pricing and revision exercises can slow down the process and get in the way of your delivering your proposal to your customer. What could you be doing with the time you would save by having instant, accurate pricing and solid models for your systems?

There is a better way to deliver accurate, impressive 3D solid model automation strategies to your customers. It's as simple as in-context, configurable conveyor technology.



CONFIGURABLE CONVEYOR TECHNOLOGY FOR YOUR CONCEPT AUTOMATION STRATEGY

Automation system engineers and designers have long desired an in-context configurator that combines access to 3D CAD and solid modeling tools with prices, part numbers, and capabilities in real time. Instead of configurators that deliver "fixed" models with no built-in intelligence, making models intelligent shortens (or eliminates) supplier interactions, saves time, and reduces costs overall. Ideally, it also incorporates advanced solid modeling techniques such as snap-to mating features, allows multiple operational states, and drives bills of material. It even allows automatic ordering of configured systems.

The concept of configurable conveyor technology can also be compared to what it is not:

- It is *not* relying on a conveyor salesperson and estimator's busy schedule to align with yours for identification of the best-fit solutions for your automation strategy.
- It is *not* dozens of phone calls to get on the same page with the manufacturer.
- It is *not* waiting a week or two for pricing each time you have a change in your system design.
- It is *not* risky, since pricing, assemblies, part numbers and even application engineering tools are available in the software, allowing 100% accuracy with the right configurable conveyor technology.

Glide-Line solved the challenges offered by other configurators with the only 100% configurable conveyor technology software for applications engineers to use when developing a concept automation strategy. It's called IMPACT!. It lives on your own computer, locally, and works directly with SOLIDWORKS. When you update details on your layout, the configurable conveyor technology software dynamically updates part numbers and pricing instantly from the millions of SOLIDWORKS configurations available. The heart of the system is Excel-based, so if you can use Excel, you can use IMPACT!.

The updated process using this in-context configurator cuts down your pricing and design process significantly while giving you high detail and accurate layouts perfect for 3D solid modeling. In short, the process would now look like this:

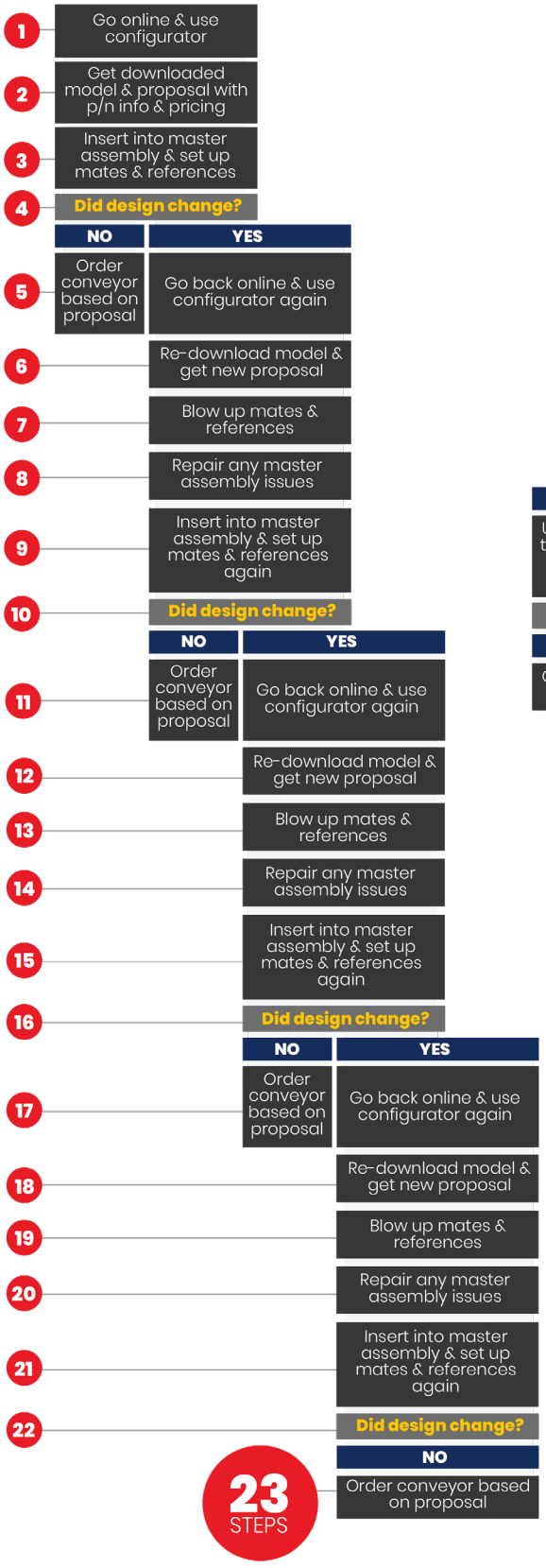
1. **Download the software files from the website and save locally**
2. **Open the Microsoft® Excel-based IMPACT! configurator**
3. **Develop configurations in Excel along with embedded applications support tools**
4. **Transfer the data from IMPACT! automatically (via behind the scenes advanced API bridge) to SOLIDWORKS (uploadable files are available for other CAD programs if you are not using SOLIDWORKS)**
5. **3D models are generated; Excel keeps accurate and dynamic part numbers and pricing**
6. **Modify to suit in SOLIDWORKS, and Excel bill of material where pricing and part numbers will remain accurate and be constantly updated**
7. **Once ordered, the conveyors for your automation system arrive in half the time compared to other suppliers, thanks to the automated nature of the configurations and the automated method that we have developed to drive our internal processes.**

You have eliminated the previously necessary "middle man," plus the time it took to go back and forth for accurate pricing and modeling. Your customers receive beautiful 3D solid models upfront, and fast delivery of the system you engineered.

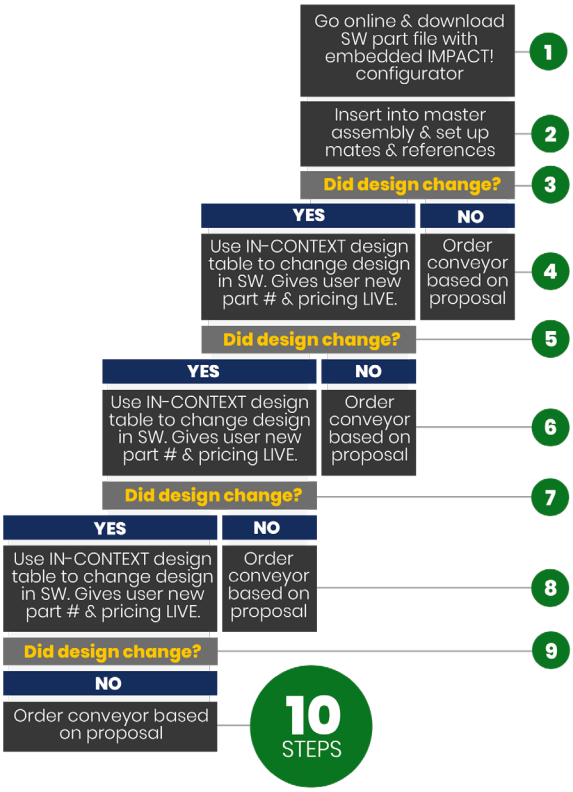
This graph highlights the difference between other configurators and an in-context configurator when it comes to design changes.

CONFIGURATION TOOL PROCESS DEPICTING 3 DESIGN CHANGES

TYPICAL ONLINE CONFIGURATION TOOL



GLIDE-LINE'S IMPACT! CONFIGURATION TOOL



Let's compare the IMPACT! process to a real-world analogy. When purchasing a new car, would you rather start shopping online, or go directly to all of the dealerships in your area to choose a vehicle? Online, you have access to hundreds of cars or trucks, models, features, colors, and pricing – all easily comparable and immediately available. In person, you spend time going from place to place, take your own notes, and wait for a salesperson to come back with numbers.

Using configurable conveyor technology software is like searching for a vehicle online; everything updates as soon as you change the filters. Other configurators are more like visiting dealerships; you download CAD blocks individually, wait for pricing or models from a salesperson, and generally take an extended amount of time to get the same information. And yes, just like seeing the car in person for a test drive before signing on the dotted line, we will do a detailed review with you prior to issuing a purchase order.

Dynamic Pricing and Modeling Tools

An in-context configurator's number one advantage is dynamic pricing and modeling. Design or layout changes made in SOLIDWORKS update immediately with variations in pricing and part numbers. The 3D CAD solid modeling process timeframe is reduced by over 100%, streamlining changes and engineering for you and your entire team. You get the high detail and accurate CAD files you need for quoting and delivering solutions to your clients. The CAD blocks are so detailed you can design around them with no fear of working with generic CAD files that are slightly different from real life.

Increased Flexibility

The entire world of conveyor possibilities is opened with an in-context configurator. Not only is pricing and modeling dynamic, but so are the variations for conveyors and what they can be created to accomplish. The next section covers some of the innovation and customization available, thanks to increased flexibility offered by configurable conveyor technology.

Constant Innovation and Customization for 3D Model Designs

As you are helping to develop an automation solution for your customer, innovation and creativity help set you and your team apart from others. Additionally, 3D CAD models help to drive the solution home. The more easily you can engineer creative systems, the more opportunities you have to 'WOW' that customer. Some recent examples of creative innovations we have developed to help our customers solve problems are:

- Open Center Lift and Locate – allows a process to be completed on the underside of the part at a lift and locate station
- Simple Pass Through – utilizing a simple mechanism to allow upstream pallets to pass underneath one being worked on slightly above the conveyor
- Double VTU – incorporating dual Z axis lifts in the same vertical transport unit frame assembly
- Magazine Loading – a 360 solution that feeds pallets to a fixed magazine for queuing or curing
- Centerline Adjusting Solutions – moving the conveyor strands independently from one another in the width dimension
- Lift and Locate in the "corner" of a lift and transfer application

Those are just some of the examples of unique configurations we've seen utilized to maximize space and meet a distinct need for our integrators' customers. The final section of this guide includes tips to help you think creatively when faced with similar needs from your customers.

Instant Model Updates and Pricing

One of the biggest challenges faced by applications engineers today is the time it takes to receive accurate pricing and model numbers. Typically, you might build in a 15% contingency to account for this. But with an in-context configurator, you know right away that your numbers, part numbers, and calculations are accurate for the solution you're building. Having accurate estimates for your conveyor system during the sales process is priceless.

SOLIDWORKS recently completed a case study about the IMPACT! configurator. Read more about how it works for SOLIDWORKS users.

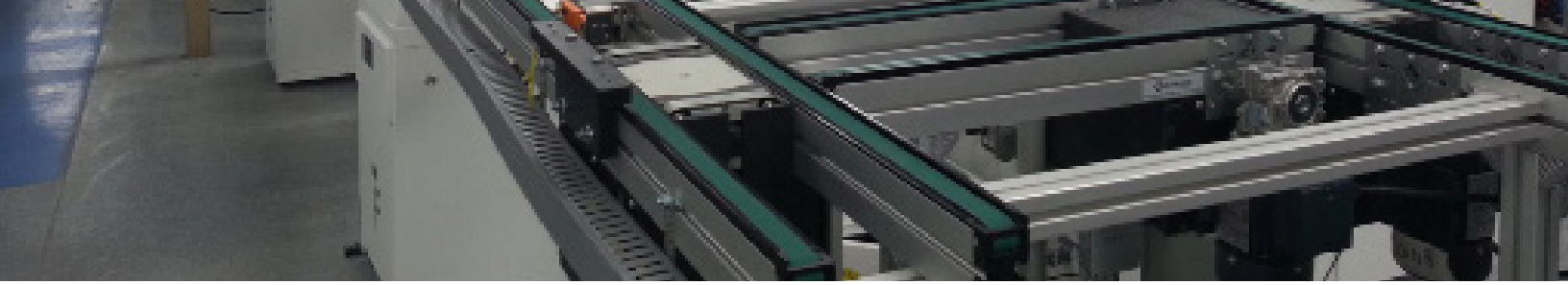
TOP 5 TIPS FOR CREATIVE SOLUTIONS TO YOUR CONVEYOR DESIGN

1 START WITH WHAT WORKS FOR CUSTOMER, YOUR SYSTEM, AND YOUR DESIGN

This is the most pertinent tip we can give you: always begin with your customer's needs and what truly works for the system you're designing. When you aren't locked into a specific set of conveyor options, you're able to offer flexibility in your engineered designs of what a conveyor system is able to accomplish.

Find a supplier who is already offering innovative solutions. For example, Glide-Line's 360 is a combination of powered timing belt based conveyors working together to meet almost any type of orientation change, sort, or shift for your customer's product in any space (even compact ones).This system allows for endless configurations and maximizes assembly workspace, including moving conveyors on a 45-degree angle. These types of innovation are available as a standard, not as a premium, which doesn't limit your creativity.

One customer in the automotive lighting industry configured our Glide-Line 360 for a robotic assembly station. The station was a very large Vertical Transport Unit (8 ft x 8 ft) that allowed totes to be picked up and maneuvered inside that eight foot square. Their only other option for their station would have been a completely custom design from a traditional conveyor manufacturer. However, using Glide-Line, the modular conveyor was configurable as a standard option; they received the flexibility they needed from their conveyor automation integrator to creatively solve the problem.



2 THINK VERTICALLY

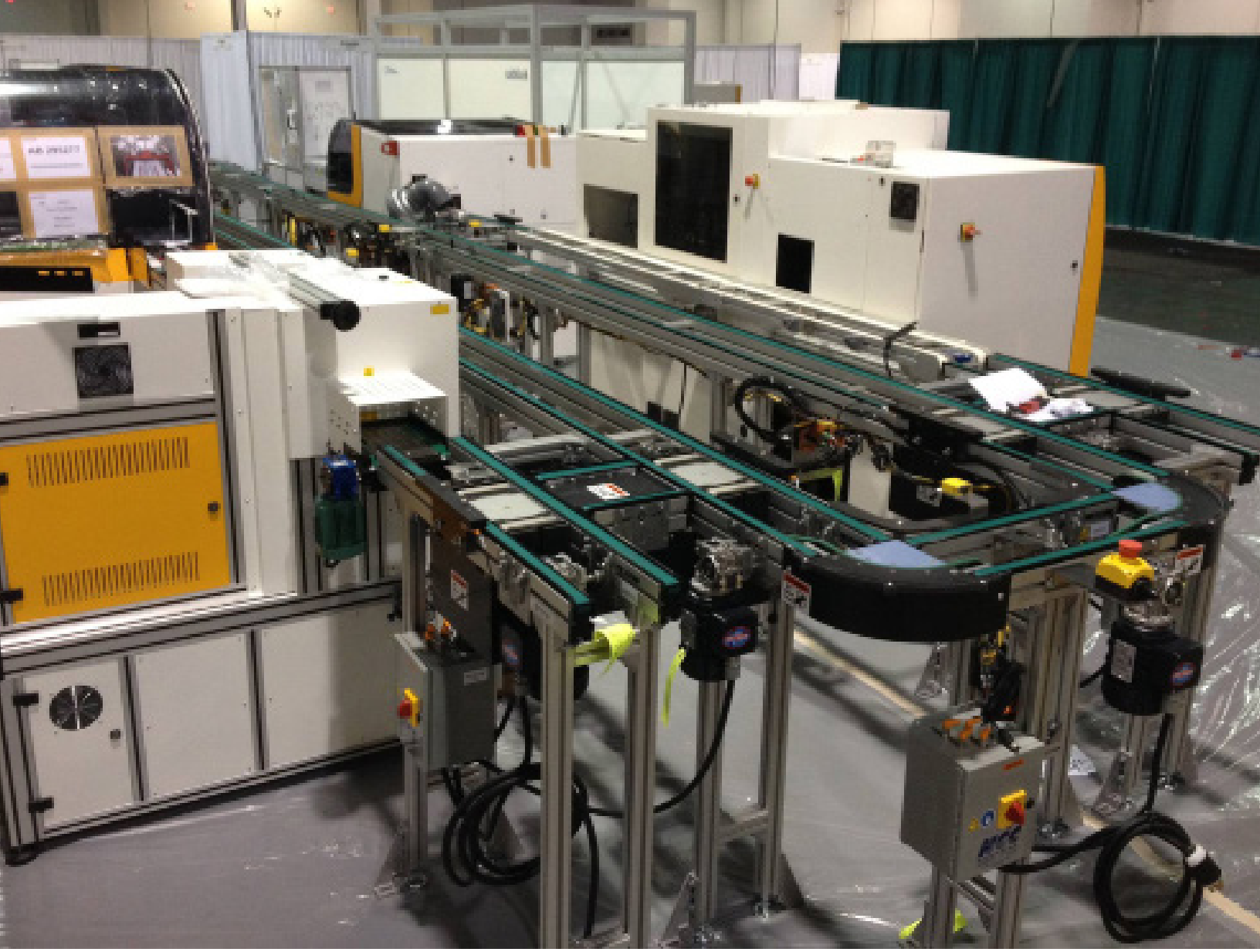
When it comes to conveyors, so often we think only horizontally of products moving from A to B to C. This setup can use up much of the space the customer has to work with for their automation system design.

Instead, think vertically to creatively use the space, sending product from A to C and back to A, then to B. The more efficiently you use the space, the more money and product the customer can make in the space they have, and the more conveyor systems (or other automation) you're able to provide them with.

3 USE VERTICAL TRANSPORT UNITS DIFFERENTLY

Using a better-designed vertical transport unit (VTU), engineers are able to use VTUs in a more innovative way. While the typical way of designing this unit is to put a pneumatic rodless cylinder on one side of the moving deck and then cantilever the deck out in one of two places, updated and newly designed VTUs solve challenges differently by:

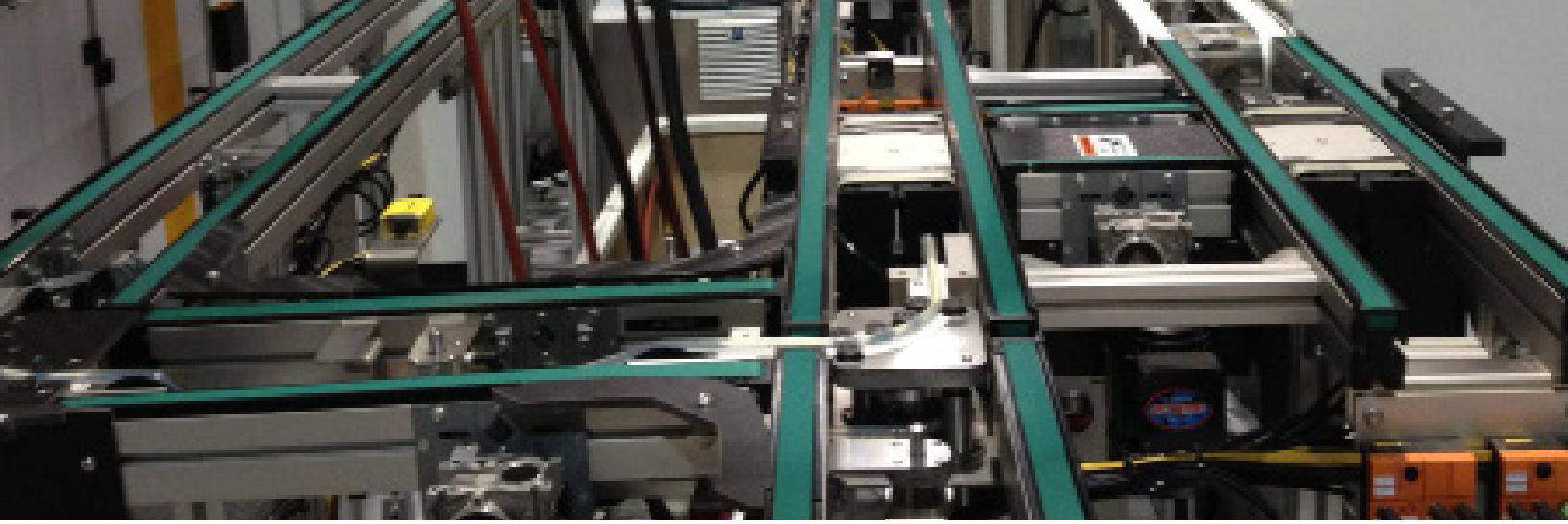
- Supporting the VTU deck on all 4 sides, resulting in a significantly more robust mechanical design vs. a cantilever design;
- Using an electric servo to control the positioning, which is smoother, faster, and more controlled; and
- Using the servo to stop the conveyor deck more precisely and at multiple positions for sorting and/or other multi-positioning requirements



4 ADAPT TO EXISTING PARTS, WHEREVER POSSIBLE

Reusing the customer's current equipment in a new, advanced conveyor system can save the customer resources. However, utilizing existing equipment doesn't have to hinder innovations in the design of a modular conveyor.

For example, Glide-Line can easily be adapted to the standards required for the plant where the automation will take place. We do this with modular and/or customized gearbox flanges to your specification. This brings us to our next point.



5 REDUCE THE CUSTOMER'S COSTS DURING YOUR ENGINEERING DESIGN PHASE

The return on your customer's investment with you hinges on your ability to efficiently create an automation system that meets their needs and, at the end of the day, makes them money. Maximizing their ROI involves using innovations in your systems, reducing their delivery and installation times, and reducing the maintenance needed long-term for the system put in place.

When you're designing automated conveyor systems, there are a number of ways to focus on reducing costs to your customer:

- Reduce maintenance costs by reducing backpressure caused by accumulation using an indexing conveyor style instead of traditional conveyors. Instead of causing unnecessary wear and tear on the entire system by continuously running the conveyors, this style only runs when product approaches and has a permissive from downstream, maintaining distance between products to eliminate backpressure.
- Reduce product damage and violent acceleration / deceleration forces by taking a more elegant approach to backing product up. This design reduces wear and tear on conveyors, pallets, and is much gentler to your product being conveyed. Products or pallets always retain a gap and never touch each other, but you still maintain an asynchronous overall design concept.

A large refrigerator manufacturer currently uses Glide-Line's Zero Contact Zoned Conveyor to index refrigerator doors. This solution works well for them because the faces of the doors can't be scratched. This set-up allows the manufacturer to index for each operation without damaging the doors in the process.

- Increase speed in delivery and set-up. When choosing a conveyor manufacturer, focus on one whose processes are precise and fast. Ideally, conveyors should arrive assembled, which reduces assembly time, project management/ engineering time, and human error in assembling.
- Make maintenance easy for your customer. Some manufacturers build conveyor systems to be overly complex machines requiring three degrees and a double black belt to maintain precisely. Others, Glide-Line included, make parts easily accessible should they need to be changed out or modified. When you have the choice, go for the latter; your customer will appreciate it.

CONCLUSION

Accurate and impressive delivery of any conveyor system shouldn't be hindered by software or lack of innovation in configurations. Focus on finding a manufacturer who enables you to do the best work you can, providing flexibility, innovation, and speed in your own process.

About Glide-Line

Glide-Line solves problems other conveyor systems manufacturers won't. We developed Glide-Line from the ground up with a few key, driving factors in mind. First, our conveyors had to be robust and reliable. Second, they would be simple – easy to maintain and service. Finally, we insisted on flexible configurability, creating an efficient, hassle-free customer experience. We've built the most versatile multi-strand panel and pallet-handling solution available for the assembly automation industry.

Glide-Line's IMPACT! offers a unique set of design tools that enable quick and accurate configuration. These tools are built into a standard Microsoft Excel workbook and provide real-time visual feedback for part number elements, pricing, and delivery. If you are a SOLIDWORKS user, you can also drive automatic and dynamic models in a real time environment.

About the Author

Kevin Mauger is the President of NCC and started his career here days after his college graduation in 1994 in the Applications Engineering department. In 2006, he purchased the company, instilled a new philosophy and has grown the company six-times over since.

His vision for NCC is to continually support the entrepreneurial spirit of his team and to create a positive and inspiring culture for both employees and customers. Outside of work, he enjoys spending time with his wife Danielle, children Kyle, Madison and Kelsey, deep sea fishing, and watching his Philadelphia Eagles.

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