GLIDE-LINE™

HOW TO **REDUCE TIME SPENT DESIGNING** AND **UPDATING** YOUR CONVEYOR PROJECT

CONTENTS

INTRODUCTION

Designing conveyor applications shouldn't be a complicated, unpredictable, tedious part of your automation system design process. But for many design engineers, that's what it's become. Maybe your applications engineering and/or sales team has already started the process with a concept model, and you're taking over with the fine details to ensure the conveyor applications fit where you need them. Or maybe you were involved from the beginning on the design process, but constant changes to your design are taking up valuable time and resources you could be dedicating elsewhere.

In this ebook, the flexible conveyor experts at Glide-Line share how to combat surprises in your design change management more easily, efficiently, and precisely. Using an in-context configurator, you're able to combine steps and maximize the time you spend designing your project, and minimize time spent on changes and updates to your designs.

Specifically, Glide-Line's in-context configurator, IMPACT!, is the most advanced, yet simplest, automation conveyor design software available – and it's all in-context. We'll dive into what "in-context" means in this ebook, as well – but the end result is that it will save you many hours of back and forth and result in more accurate models along the way.

IMPACT! combines the five elements every conveyor system design integration needs:

- Solid-model-based CAD blocks
- Snap-to (magnetic) pairing/mating in SOLIDWORKS
- Firm pricing
- Application calculations
- Part number generation

CHAPTER ONE

HOW AN IN-CONTEXT CONFIGURATOR MAXIMIZES YOUR DESIGN TIME

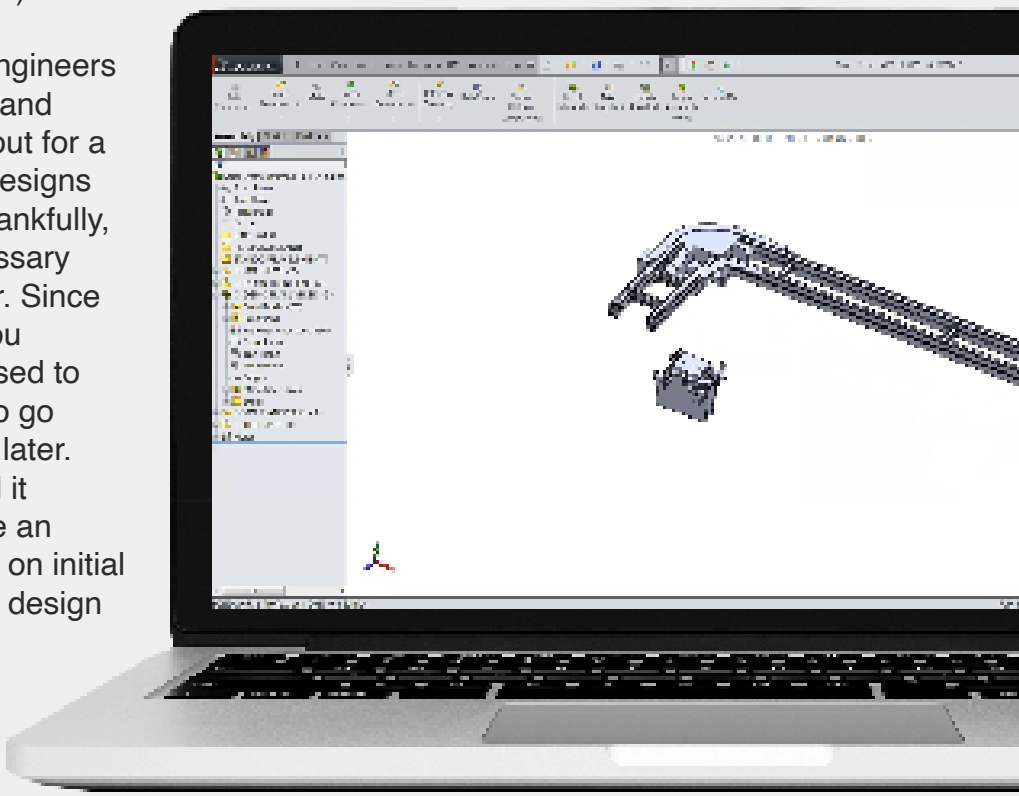
IN THE INITIAL DESIGN PHASE

The most significant time savings you'll see as a design engineer using an in-context configurator is in the initial design phase. Efficiency is the main gain. It allows you to complete steps on your own that others would normally have to do (and wait hours or days for them to do so) or would require a lot of model hunting, gathering, and downloading. If working with a manufacturer to support you, you'll save the effort of describing your design to someone else at a conveyor manufacturer, getting in line to wait for them to do it, reviewing what they did, communicating what was wrong, and waiting for the vendor to do it again.

Instead, with an *in-context* configurator, you can eliminate most of these steps by completing the design and making changes to fit your SOLIDWORKS master assembly all on your own. Many of our design engineer partners are truly designing *on the fly* using software built to support their creativity and need for detailed, precise solutions.

Here's what we mean. IMPACT!, Glide-Line's in-context configurator, with a proprietary API that bridges Excel with SOLIDWORKS, takes care of these steps within the software so you don't have to depend on anyone else:

- Evaluates the throughput, weights, lengths, and heights handled by the conveyor you're designing (Applications support)
- Provides accurate, dynamic pricing (Estimating support)
- Enables easy, accurate model creation (CAD support)
- Allows magnetic snap-to mating (CAD enhancement)
- Shows device actuations (various operational states) (CAD enhancement)
- Saves your design for future use, changes, or repeatable configurations (CAD enhancement)



So many times, we've seen engineers take generic conveyor blocks and mash them into a general layout for a customer. But that results in designs that are not very accurate. Thankfully, that practice is not even necessary with an in-context configurator. Since IMPACT! is so easy to use, you can build it the way it's supposed to be, which means not having to go back and change the designs later. It's quick and painless to build it right originally. Whether you're an applications engineer working on initial design recommendations or a design engineer working on detailed, precision application designs, the configurator gives you the flexibility and time to do it right the *first* time.

Here at Glide-Line, we assist integrator design engineers in creating adaptable designs for their clients. We have a few phrases that our in-house designers live by:

1) Be the Operator.
2) Be the Mechanic.
3) Be the Product.

By adopting these three perspectives, you will end up with a good design for your assembly-based conveyor system that is product-, mechanic-, and operator-friendly. IMPACT! allows users to accomplish this goal in the initial design phase and throughout change management, order processing, and assembly.

IMPACT! IN ACTION

When it comes to designing conveyor application systems, precision is your forté. The simplest details capture your attention until they're just right.

It's great practice to double-check that all moving parts in your design fit all aspects of your master assembly. And what better way than to use software that shows conveyors' moving parts in all extremes of their states. For example: if a lift and locate moves vertically from point A to point B, the model should be validated in both states. With many of Glide-Line's conveyor models, the motion state can show both extremes with just a click.

IN THE CHANGE MANAGEMENT PHASE

The time savings in the change management phase of a project is a close second in terms of the biggest benefits, next to the efficiencies a design engineer gains in the initial design phase. Throughout the entire process, changes are inevitably required or requested, updates need implementing, and rework of the master assembly is needed.

With just a few clicks, you're able to reconfigure the conveyor applications in your master assembly and have instantly updated model numbers, pricing, and accurate models using an in-context configurator.

Updates to Mates & References

Setting up the right mates and references is good practice. It allows designers to design the system, make changes, and keep equipment in the proper relation to another. Designers with complex models in an in-context configurator see significant time savings when changes are requested. Here's why:

> One of the drawbacks of most conveyor configurators or vendor-provided models is the models are not easily modified. With configurable models, a designer can change variables associated with the new overall design and not have to blow up previous mates and references, then go through the process of obtaining new blocks and starting from scratch. Using an in-context configurator, with just a few clicks, the model changes in the context of your design.

The more complex your overall master assembly, the more important these existing mates and references are. The more deletions, re-modeling, re-downloading and re-insertions you implement, the more time the process takes. We designed our models, and our configurator, to be configurable within the SOLIDWORKS environment in order to save design engineers significant time during the change management phase.

Changes to Application Demands

Using IMPACT!, when a design engineer receives the concept model from an applications engineer, it is simple for him or her to open the original concept and tweak the original layout to meet the exact system requirements. It's incredibly flexible to work with; one millimeter increments in positioning legs, cross members, drive locations, conveyor splice points (and much, much more) to allow designers to define exactly what the system needs.

If a client's demand for the conveyor application changes, an in-context configurator allows a design engineer to easily check the conveyor system's current weight, size, throughput, or lengths able to be handled. Then, if the system cannot accommodate the application demand change, it is simple to update the conveyor system mechanical components using IMPACT! and apply the new demand information.

For example, if a client's product manufacturing process changed and the product now needs to use a much more complicated fixture on the pallet and the final pallet weight is now twice as heavy. Using IMPACT!, a design engineer can open the current design and change the weight to see if the system can support the added weight. If not, IMPACT! will tell the engineer that a larger motor or gearbox may be needed. This critical information is calculated in the software, rather than relying on manual fact-checking throughout the change process.

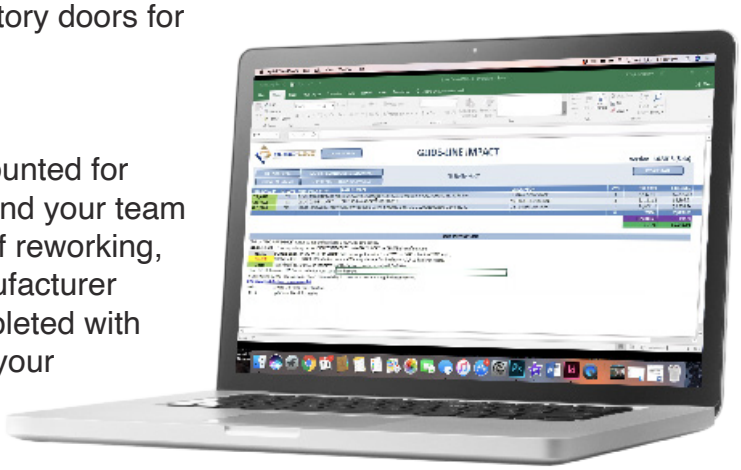
EXAMPLE

Imagine you purchased a part for a car. You spend time installing the new part and putting the engine back together again, only to discover that the new part is the wrong size or model for your vehicle. Now, you need to disassemble the engine a second time to remove the part, and install the correct one in its place. This is how most configurators work when it comes to change management. As a design engineer, you need to "disassemble" your assembly any time there's a change request, create a new CAD block, and re-assemble your system around the updated part.

Now imagine the car engine again. What if, instead of needing to remove the incorrect part, you were able to simply tell the part to adjust where needed to fit your current system? It would accomodate any change you needed it to make, and all parts around it would reattach where they needed to, and the engine would run smoothly. This is what IMPACT! does. IMPACT! makes any change you apply configurable in the context of the CAD system with the click of a button, keeping your system intact and updating only where needed to accomodate any modification.

When a design engineer receives the concept model from the sales and apps team, their main priority is diving into the details. You ensure the legs and other important equipment such as robot arms are in the right place, the conveyors work within the manufacturing process, and double check details – even down to whether or not the system is able to fit through the factory doors for installation!

Using IMPACT!, all the details are accounted for when changes are implemented. You and your team stay on the same page without hours of reworking, rechecking, and resubmitting to a manufacturer to get updated information. It's all completed with the click of your mouse and applied in your SOLIDWORKS model.



IMPACT! IN ACTION

Making use of mate references within Glide-Line's in-context configurator saves time with driven models, which are set up to allow easy alignment in your SOLIDWORKS assemblies.

To activate these within SOLIDWORKS, hold down the ALT key when inserting models from IMPACT. You'll be able to precisely locate pallets, conveyor legs, and other conveyor pieces in your assembly - and alter them simply when changes are required.

IN THE PROCUREMENT PHASE

One of the drawbacks of most conveyor configurators or vendor-provided models is that these models are not easily modified. We've discussed how changes are easily and simply made using the IMPACT! in-context configurator, and how mating and references update cleanly in SOLIDWORKS.

When modified, typical configurator-driven models can also lose the integrity of the part number, pricing, and application information. The team must start over with an updated quote from a conveyor manufacturer or re-do the online process of validation. When using IMPACT!, models are integrated with a master Excel spreadsheet. Despite changes to the design, all information remains intact and updates instantly; part numbers and pricing all update dynamically along the way. This easily translates into savings during the order phase, since part numbers are already listed and are updated with the latest version of each application design.

Instead of filling out multiple purchase orders and re-translating your design for someone else to create a proposal and an accurate Bill of Material (BOM), it's all in an Excel file at your fingertips from Glide-Line as-is.

CHAPTER TWO

COMPARING TYPICAL CONVEYOR CHANGE MANAGEMENT TO IMPACT!

It's easiest to explain an in-context configurator if you haven't used one before by comparing it to products you've been using up until now. Other solutions include downloading single CAD blocks to upload into SOLIDWORKS, or other configurators that still require communication with the manufacturer to receive the blocks. IMPACT! is proprietary with its in-context changes and automatic pairing. This conveyor configurator is so unique that SOLIDWORKS featured IMPACT! in a case study.

Differences in Design Execution

There are two main differences between an in-context configurator (IMPACT!) and the other conveyor configurators provided by other manufacturers today.

First, is the precision with which you're able to execute a design. With other configurators, you may be able to get a rough concept of what your conveyor automation system looks like in SOLIDWORKS, but it won't be nearly as detailed as it should be. Your master assembly cannot rely on assumptions and rough concepts; you need precision and accuracy.

The second is flexibility. Other configurators don't have as much flex. You may be able to specify some very basic parameters with other configurators but in IMPACT! you get to map in far more granular detail very specifically. You're able to locate cross members and drives exactly where you want them and even pre-orient the gearbox location (one of four positions) and angle (one of twelve positions). This is customized for your specific application. Think of this as Bespoke Design Engineering. The entire point is to make your design the best it can possibly be and to make it easier than ever to achieve.

You have a million things to worry about and details to catch, but it all comes down to fitting machinery, accessories, workstations, and processes into a small space. The more precision and flexibility a conveyor system – and its supporting software – are able to offer, the easier it is to work around changes that come up.

IMPACT! IN ACTION

CONVEYOR EXAMPLE:
Many other configurators are not as customizable, and don't have as many variables that can be configured. IMPACT! has 11 configurable variables, which means hundreds of millions of available configurations at your fingertips. Variables include:

- **number of conveyor strands**
- **length of conveyor**
- **width of conveyor**
- **location of drive**
- **location of motor and gear boxes, and**
- **break-points for shipping/transporting**

You configure in a way that makes this conducive to the work environment, maintenance requirements, and needs of the conveyor. When conveyors are integrated into other work units, we can break it up into pieces that are easily transported and installed more logically.

Differences in Change Management

One of the drawbacks of most conveyor configurators or vendor-provided models is the fact that these models are not easily modified. With configurable models like those in IMPACT!, a designer can change variables associated with the updated overall design without needing to start from scratch with mates and references. Plus, there's no need to go through the process of obtaining new blocks; with a few clicks, the model updates.

Differences in Timing

Traditional configuration processes are time-consuming, there's no argument about that. Assembling a conveyor system using CAD blocks from a website is tedious and requires multiple rounds of changes through conversations with the manufacturer themselves. Then, once it's together, part numbers need to be received, then a bill of material needs to be submitted, and all of this is subject to someone else's schedule.

Our system is an intelligent model; when you make changes, the pricing updates immediately, part numbers are accurately updated right away, and the whole process is infinitely quicker. The more the changes you see on a daily or weekly basis, the better a fit IMPACT! is for you.

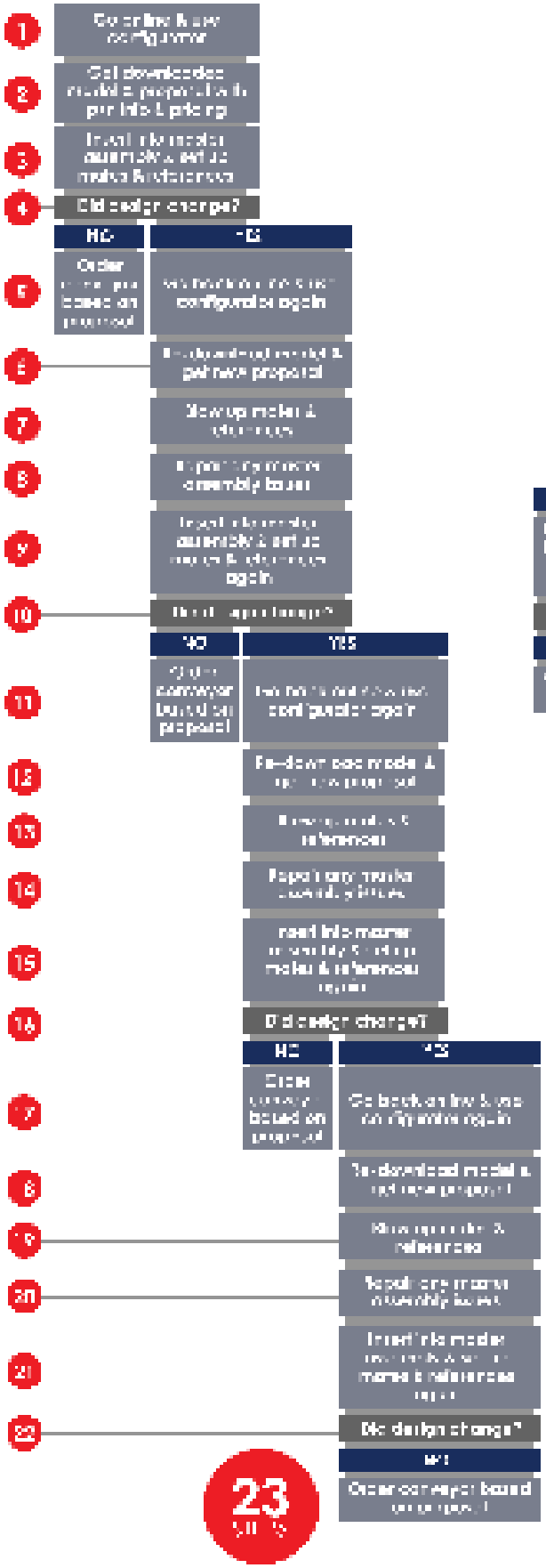
CHAPTER THREE

THE DEVIL IN THE DETAILS OF CHANGE MANAGEMENT

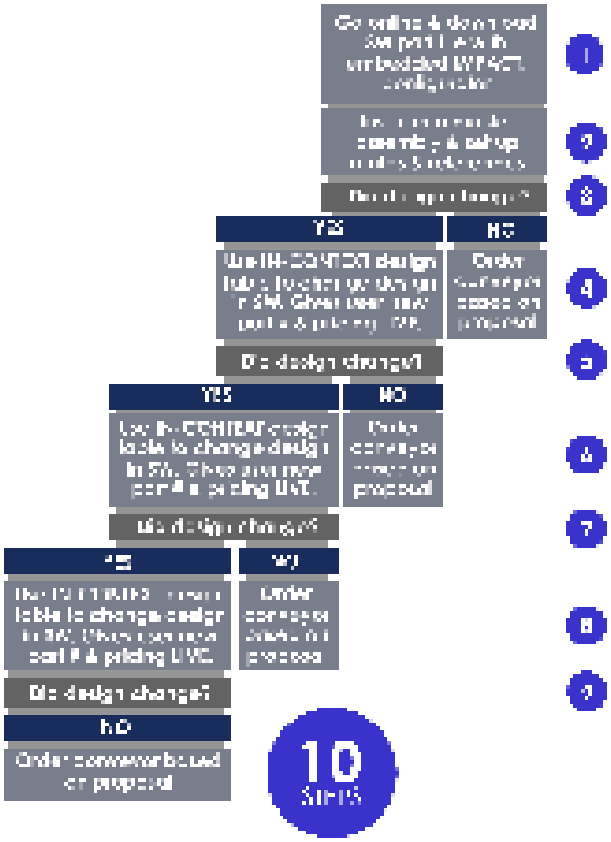
The purpose of using an in-context configurator is to eliminate unnecessary “hold times,” where you’re waiting for information from someone else, and unnecessary busy work, where you’re repeating steps you’ve already taken because of a change. In this chapter, we discuss the details of how you’re able to eliminate these inefficient steps. To start, take a look at the comparison infographic on the following page.

CONFIGURATION TOOL PROCESS DEPICTING 3 DESIGN CHANGES

TYPICAL ONLINE CONFIGURATION TOOL



GLIDE-LINE'S IMPACT! CONFIGURATION TOOL



Configuring CAD Blocks

Using a typical conveyor, as we talked about earlier, requires you to go back to the configuration tool (whether it's a web application or a locally installed application) and configure a new device to adopt requested changes. You're essentially re-creating a new part, downloading the file, uploading it to SOLIDWORKS, and starting from scratch on any mating and referencing for that part. Rinse and repeat for each part that needs changing. That's several steps and lots of time required for what could have been a simple request from the client.

IMPACT! talks to SOLIDWORKS via an advanced API; there's no need to upload anything. When you select "create and insert SOLIDWORKS model," it'll insert that configured part in a model form. Once you create the model, the model exists - you can even have the Excel sheet count how many instances exist. It's always live and working together; there is no need to duplicate efforts.

IMPACT! also catches potential errors when changes are made. An example for comparison: if you're fixing your car's windshield wiper blades and purchase new ones on Amazon, you're able to tell Amazon the make and model of your car to avoid buying the wrong blades. IMPACT! catches similar errors before you're able to sync or purchase the wrong size part.

Fast, Detailed Master Assembly Resolutions

As a design engineer, you're concerned with the nitty gritty details of a conveyor process design: where motors, cross members, leg locations, gearboxes, and splice joints are located. There is a lot of manual work going into your master assembly to account for all of those details.

IMPACT! talks directly to SOLIDWORKS and gives you the flexibility you need to adjust any piece, part, size, or shape to meet your needs. If the line won't support a drive package in a particular location, no problem - shift the drive wherever it needs to be. If the application needs a hole in the middle so part of the product is able to hang down for inspection, great - an open center design can be applied to accommodate that need.

Immediate Feedback on Cost Implications

With many configurators, there is no price component. To get feedback on cost implications of changes you're making, the only way to do it is to wait for a quote and go back and forth with the vendor for answers. This is not the case using IMPACT!. Pricing updates instantaneously using the Excel-based system; you make a change, and a new price is calibrated.

NEXT STEPS

IMPACT! gives you complete control. Your conveyor automation system will come in exactly as you specify, down to the millimeter.

All of this can lead to absolutely revolutionary design for your conveyor application system. When you have the freedom and flexibility to design exactly what your client needs and apply it precisely in your master assembly, you're truly managing change effectively. Spend time doing what you love - designing - and less time with busy work. Support your efforts using an in-context configurator.

Learn more today at glide-line.com/impact.

ABOUT

GLIDE-LINE

Glide-Line offers the most versatile multi-strand panel or pallet handling solution available for the assembly automation industry. Our advanced configuration tools enhance the design experience, allowing our customers to configure the Glide-Line product exactly as they need. And, our digital manufacturing process allows for your specific configuration to be built quickly and efficiently, allowing you to meet your project's tight deadlines. Flexible, precise, easy, and fast – that's what we promise. Glide-Line is more than the next step in custom conveyor configuration; it represents the next generation in the conveyor design and fabrication process.

THE AUTHOR: KEVIN MAUGER

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.