

Medical Device Assembly

Scaling Automation to Meet Your Needs

Answers to Automation's FAQs

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Medical device manufacturing is precise and complex.

With over 25 years of experience in the industry, we've compiled the answers to some of your most frequently asked questions when it comes to ensuring quality with automation.

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How Do I Determine the Right Level of Automation?

Clearly defining your goals and return on investment will help determine what kind of system meets your budgetary needs as well as the manufacturing goals of your product.



Manual Systems

When a manual approach is a good fit

When you're implementing a process change.

Manual systems can help operators increase the efficiency of a tedious process by making it less cumbersome and more ergonomic.

When your product (or budget) doesn't lend itself to automation.

Sometimes automation doesn't make sense. This could be due to a product with intricate sub-assemblies or a low ROI over the life of the machine.

Semi-Automated Systems

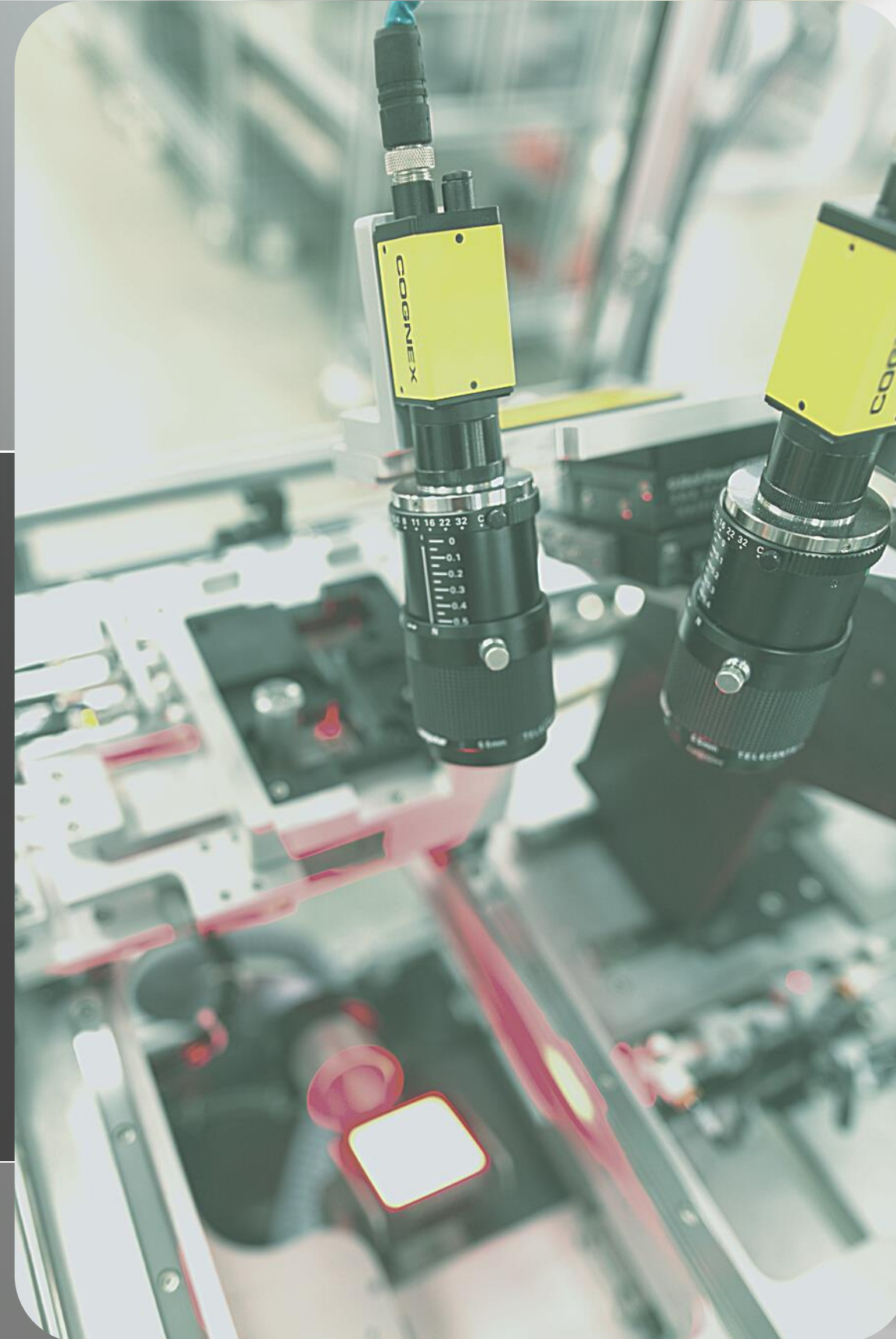
When to choose semi-automation

When automation would add value.

Semi-manual systems allow you to integrate automation into manual processes to help reduce human error, improve safety, or decrease cycle-time.

When an operator assistance is necessary.

Some operations can't be automated reliably or economically due to intricacy or volume. Semi-manual systems retain the adaptability of an operator's input.





Fully-Automated Systems

When to leverage total automation

When your goal is to increase production volume without increasing workforce. Fully-automated systems can help cut production costs when parts lend themselves well to automatic feeding and assembly.

When your product will be manufactured long-term. The added cost of automation may be justified if the same product is going to be made for several years.

How Do I Design My Product for Vision?

Vision technology relies on contrast for accuracy during inspection. When selecting components for your product, keep this in mind to improve the functionality of your vision system in production.

Here are some tips for creating contrast in product design:

Use Distinctive Materials

Help vision systems recognize components by making them from contrasting materials. If using different materials is not an option, you can vary the finish or texture of components for a similar effect.

Optimize Lighting

Understand the lighting in your production environment and ensure your vision system is designed accordingly. Then design features in your product that are unique to take advantage of lighting and enhance recognition.

Create Geometry

Similar to lighting, reflection can help a vision system distinguish components. Create part geometry in your product by incorporating a pattern or texture that helps manipulate reflection for better visibility.

How Can I Improve My Operators' Efficiency & Consistency?

Automated inspection and validation equipment help reduce field defects in critical applications. Here's how to integrate these tools into the assembly processes.

We recommend customers focus on three key areas:



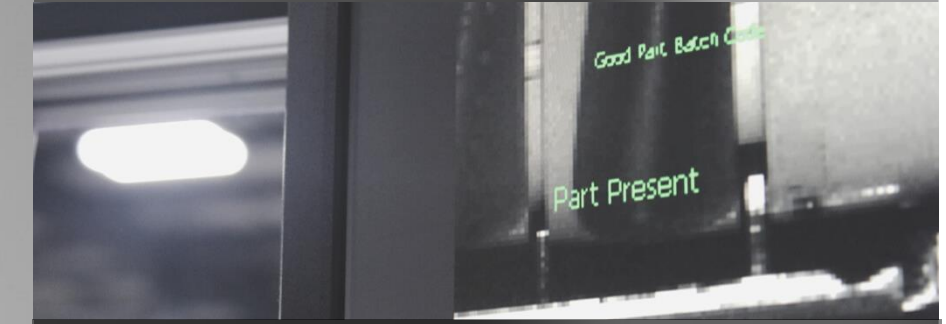
Familiarity

It's important to consider your operators' familiarity with automation. If your current process is completely manual, introducing a fully-automated solution can become a challenge. Integrating machine vision systems and error-proofing tools to create a semi-automated solution may be more productive.



Safety & Ergonomics

Understanding your production environment will help you enable operators to perform precise, repetitive assemblies effectively. Are operators standing or seated? How large of a footprint do they cover? Addressing these questions up front can improve ergonomics and safety—maximizing productivity.



Error-Proofing

Some products don't lend themselves to automation. In these cases, integrating error-proofing tools into manual stations can provide part identification, orientation and assembly verification, and dimensional inspection—helping improve accuracy and consistency.

How Do I Scale-Up My Production?

When it comes to designing a system for your manufacturing process, deciding what to automate will help you scale-up production in a way that meets your goals and your budget.

Here are a few tips we give our customers to start the process:

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Assess your current process and your desired improvements.

Understanding where your current process falls short—increasing production volumes, integrating a product variation, improving cycle-times, or reducing errors—will help determine the type of equipment you need and the amount of automation that makes sense.

Define success.

Consider what problems you need this solution to solve and prioritize what fits realistically into your budget and schedule. Use this information to design a system that addresses your current needs and can accommodate changes in the future.

Analyze the costs.

Justify your decisions and your investment by knowing the cost of your current process as well as the cost of not meeting your production goals. Weigh that against the cost of the equipment that is needed over the life of your product.

Understand your production environment.

Keep ergonomics, workflow, and space limitations in mind throughout the design process to ensure you scale-up production at the right pace with the right equipment.

Want To Learn More?

Invotec designs and builds custom assembly, test, and inspection equipment for medical device manufacturers. We specialize in applications with small-to-medium-sized components and complicated assembly processes—providing a range of robust, reliable, fully-automated and semi-automated solutions.

Learn more about how we can help you at www.invotec.com.



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