

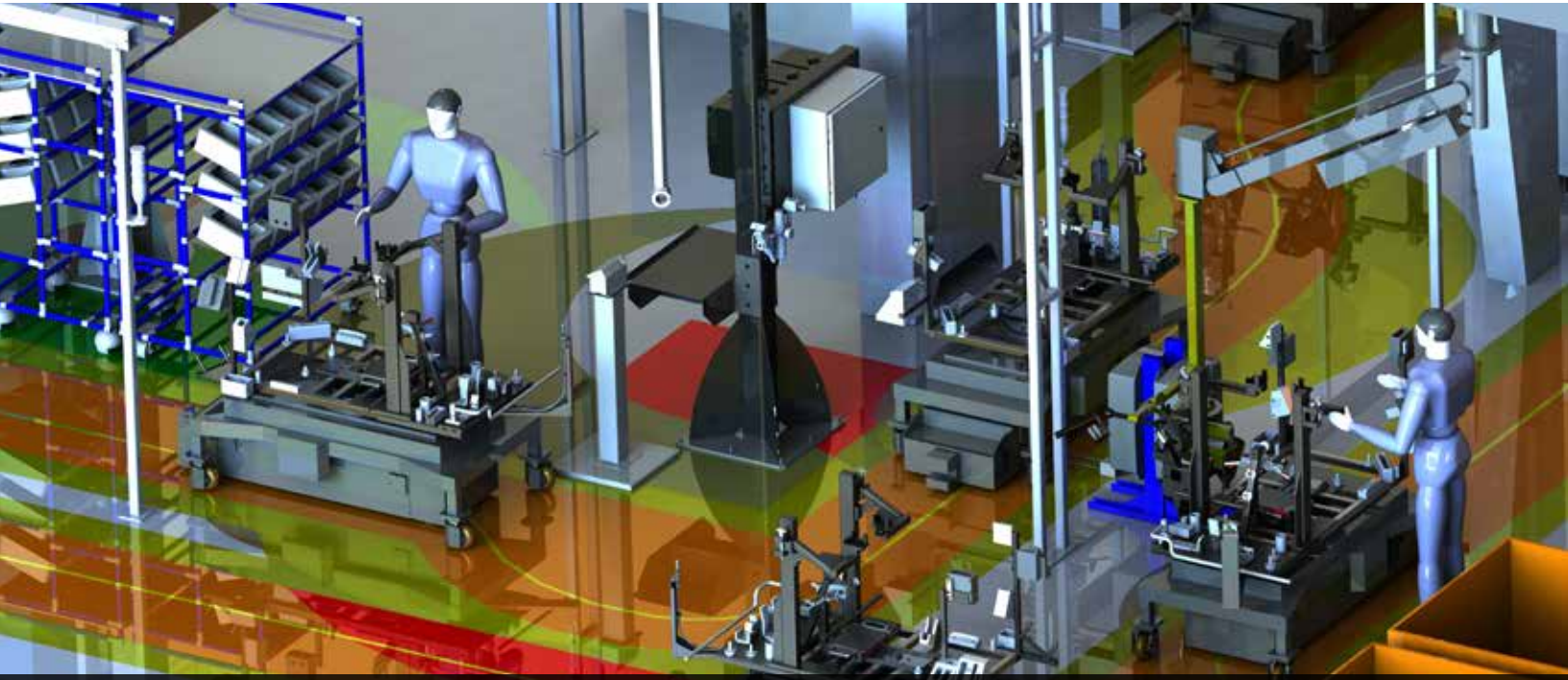


Whitepaper

**BENEFITS OF A
MODULAR TOP-DOWN
AUTOMATION STRATEGY**

When considering the move to automation, greater economies may be found by consolidating processes across the entire production facility.

The Future of Automation



Consolidating Production Processes and Building Throughput with Automation

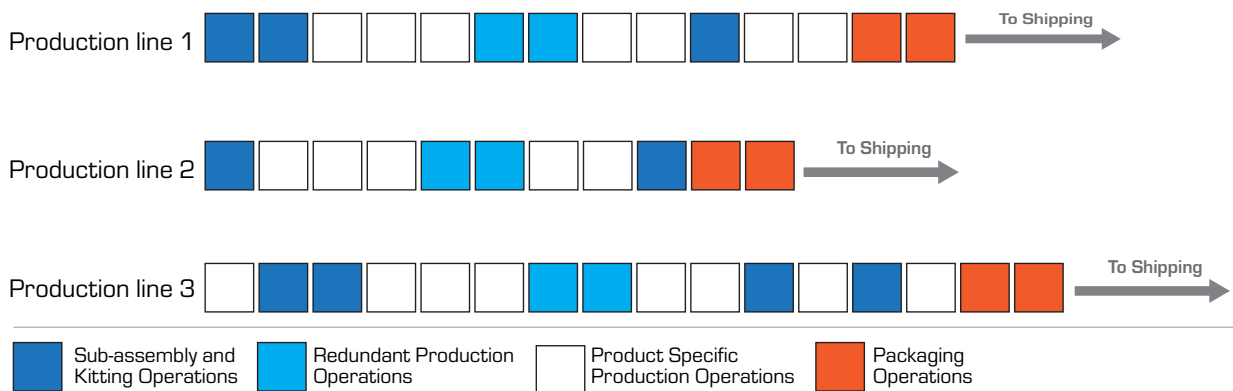
The price of automation may seem out of control, but if executed properly it can be highly rewarding for a manufacturing operation. With a total facility view of production coupled with a well designed and implemented operations plan, automation can be even more rewarding. This is where an experienced integrator can help assess what can and should be done to get the most out of adding automation.

A holistic approach to adopting automation

Moving to automate a production facility that produces several SKUs of products is an expansive prospect. When there are a number of production lines, determining which should get attention first or receive the most investment can be a challenge with few simple answers.

At MWES, we've automated countless manufacturing operations. Our experience points to a different method for pursuing automation: a holistic, modular approach that looks for commonalities across SKUs and production lines to create value. In this approach, the entire production facility is analyzed for very specific areas where the greatest impact can be had with automation.

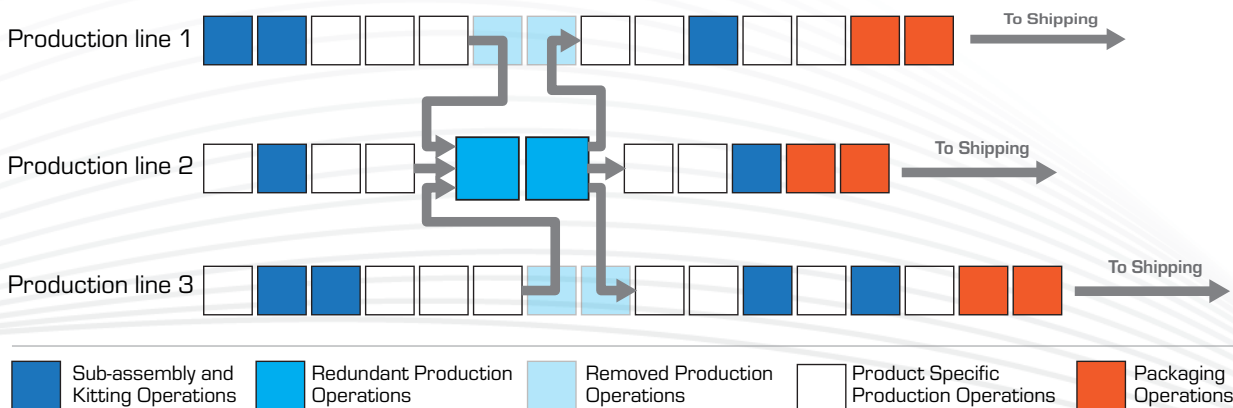
Standard Serial Production lines

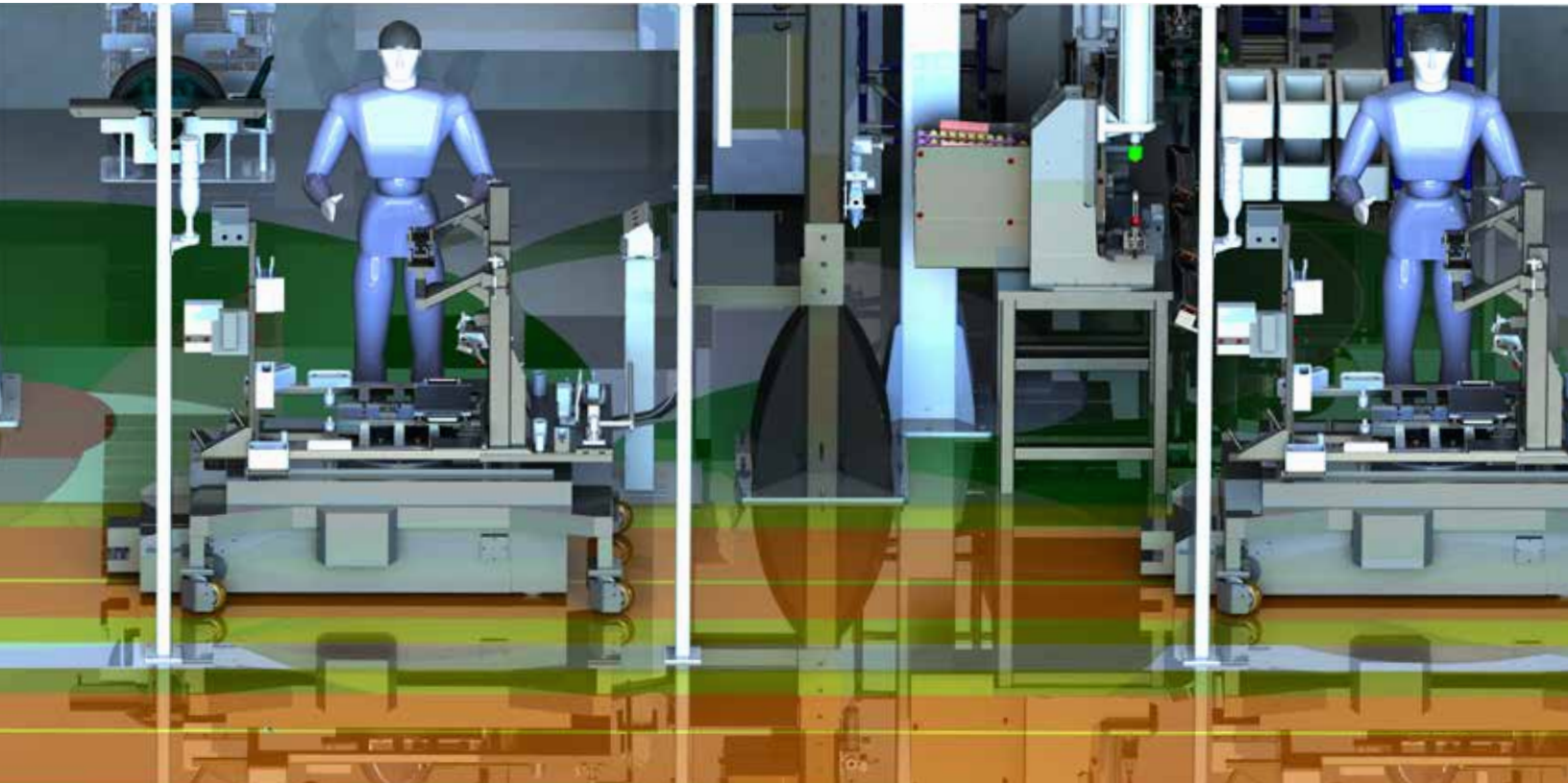


The process starts by taking an all-encompassing look at the products being made at the facility. Not separately, but together. If there's enough commonality and similarity in a few different categories, there may be opportunity to aggregate the automation for these aspects where the investment can have a positive effect on many lines rather than just one.

Identifying common production processes

Production lines with shared automation cell





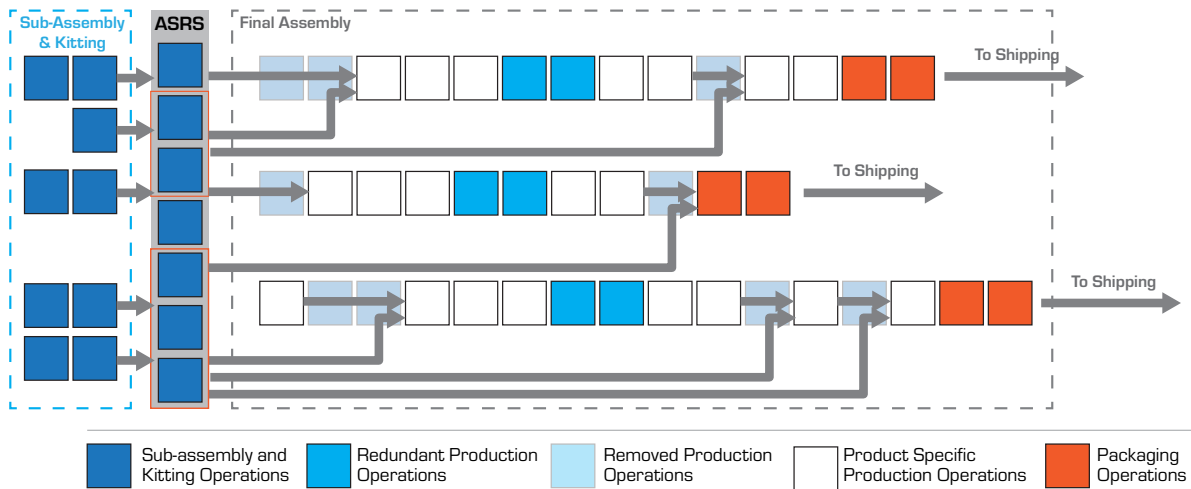
Production processes that perform the same operations can be broken out from being replicated over several production lines. If the products that utilize these duplicated processes are similar enough, an automation implementation can be built where fixtures absorb the differences. One high performing cell can be made to support a number of lines using quick change tooling.

Identifying common sub-assemblies

Many times, a series of products share common components. The greater the number of these shared components, the greater the gains in efficiency can be had by pulling these parts into their own production operations rather than duplicating similar operations on a number of lines.

Asynchronous production operations also offer a degree of resiliency to supply chain issues and production stoppages. Asynchronous processes instead produce their sub-systems and parts to send to a temporary storage location until needed by production. With these operations not lock-stepped to upstream or downstream operations, they can continue to be productive if an issue develops in the systems around them.

Standard Serial Production lines with asynchronous infeed operations



A number of lines sharing the same feeder operations allows those newly combined and automated processes to be much more efficient. The cell could be built with faster equipment for a sum less than the price of building separate systems for each line. Breaking the process from the demands of different production lines means this automation system is freed to operate on schedules that are more efficient for the automation cell, reducing bottlenecks.

Identifying unnecessary part routing complexity

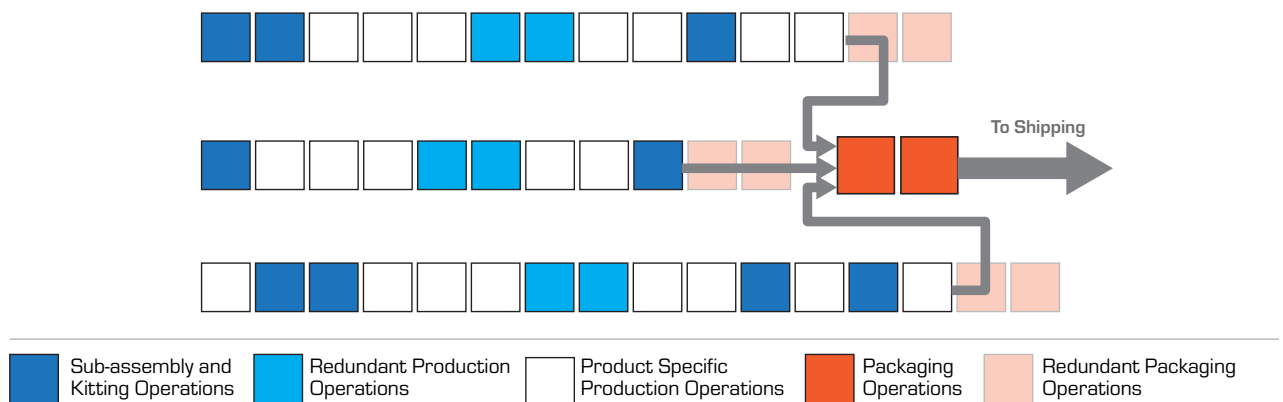
The manufacturing of products typically requires a group of components to be made and assembled in a multi-step process. That process requires the components to arrive at specific points in the overall process. Not only do the parts have to arrive at the right location and on-time, they have to be the correct parts or production slows and rework rises. Looking to remove problems along that delivery process helps assure the production line operates smoothly.

Reducing opportunities for confusion in the process is key to streamlining part delivery process. Opportunities for errors also exist where components are checked in or out repeatedly or relabeled. Looking for steps where parts are transferred between storage and travel containers or other aspects where parts are handled more than is absolutely necessary are prime targets.

Combing over the component delivery and presentation aspects of a production system is an area that few give enough attention to but can produce appreciable results in helping a facility increase its throughput. Looking closely at these areas can also be a place where automation can make an impact in reducing errors and skewing production schedules.

Standardizing packaging operations

Standard Serial Production lines with combined Outfeed automation



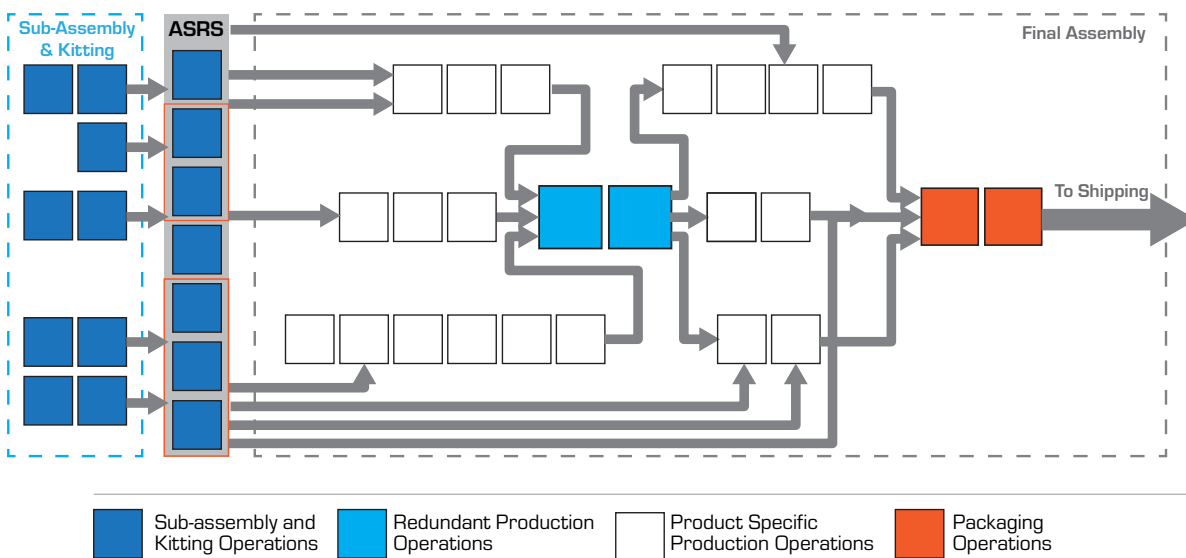
Given the increasing speeds and configurability of packaging automation, cells can now keep up with all but the fastest of production lines. Many cases, these machines are so fast that they spend large portions of their time waiting for product to arrive.

Chances are high that related products may have packaging and packing processes that share a high degree of commonality. That commonality could be in box or bag dimensions, included items or master pack contents. If the similarities are close enough, it makes it easy to run more than one line or product on a single packaging cell. Collating the output of a number of production lines to one packaging automation cell increases the utility of the system while reducing the required ROI time horizon for dedicated packaging systems for each line.

Even greater utility can be had down the road by analyzing the packaging of the products produced for dimensional or packing process changes that could make more SKUs compatible with the packaging automation system.

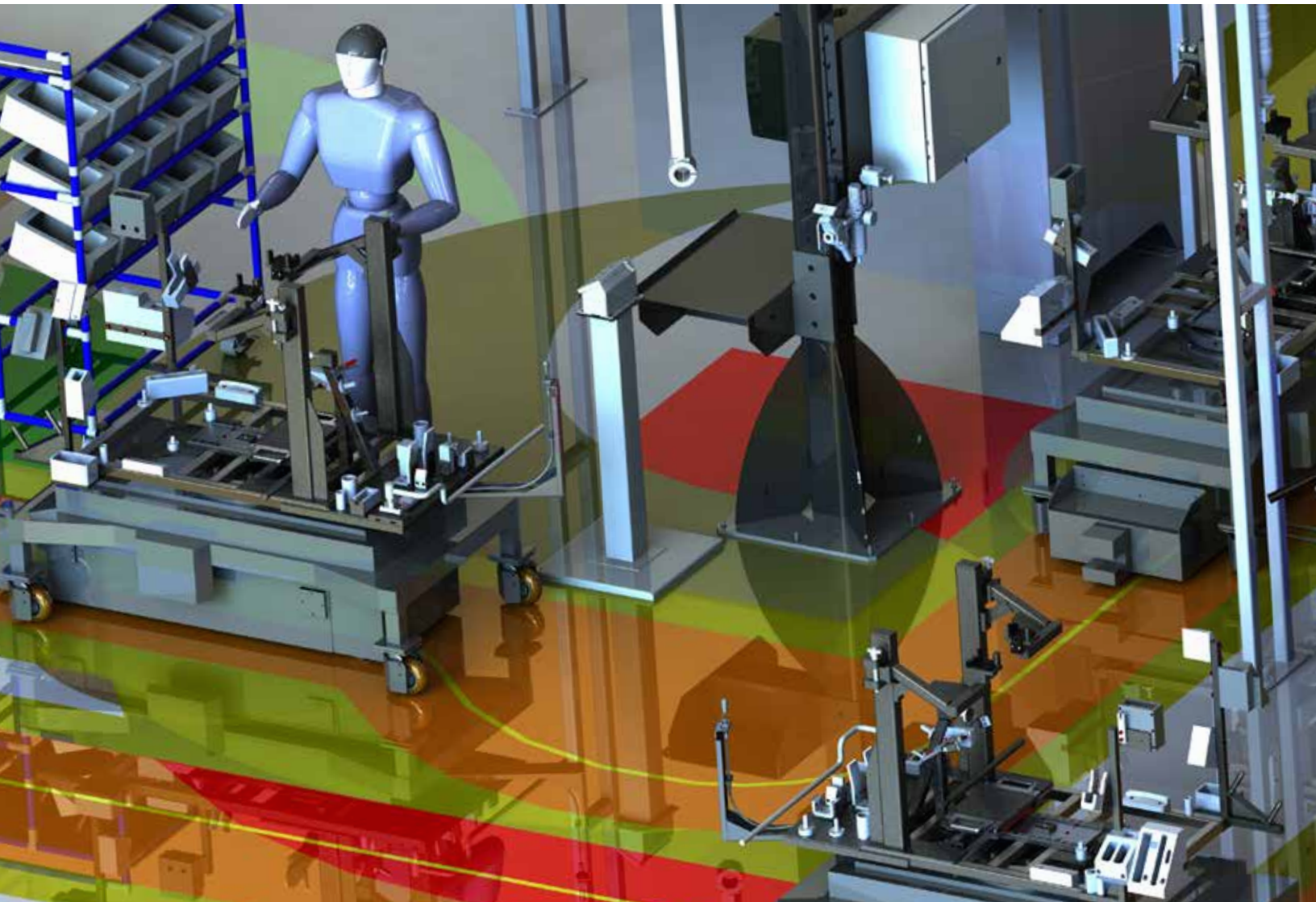
Moving to a modular production approach

Fully Modular Production lines



What this analysis provides is the entry point for modularizing a production facility. There are a few benefits to pursuing this mode of thinking. Moving to break out the production of common components and common manufacturing processes reduces the need for redundancy in developing and deploying automations systems, instead allowing the firm to concentrate on sourcing higher quality, higher performing centralized automation cells. Streamlining the component delivery process helps make sure the overall process runs smoothly.

Thinking about manufacturing in a modular fashion produces a production system that's far better positioned for expansion than having to build another high priced production line for each new product introduction. With a modular approach, much smaller portions of the operation will need to be installed to add new products when necessary with much less investment.



While these changes seem like seismic changes to a production operation, in practice a transition to a modular production operation can happen gradually, over time as new automation systems take the place of older operations. This gives the facility time to understand and prove the benefits of the approach without making large changes to the entire production operation.

If you're considering adding automation to your production operations, contact us today. Our highly trained, experienced engineers can help walk through analyzing your current system and developing automation systems that lead to total production facility efficiency.

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