

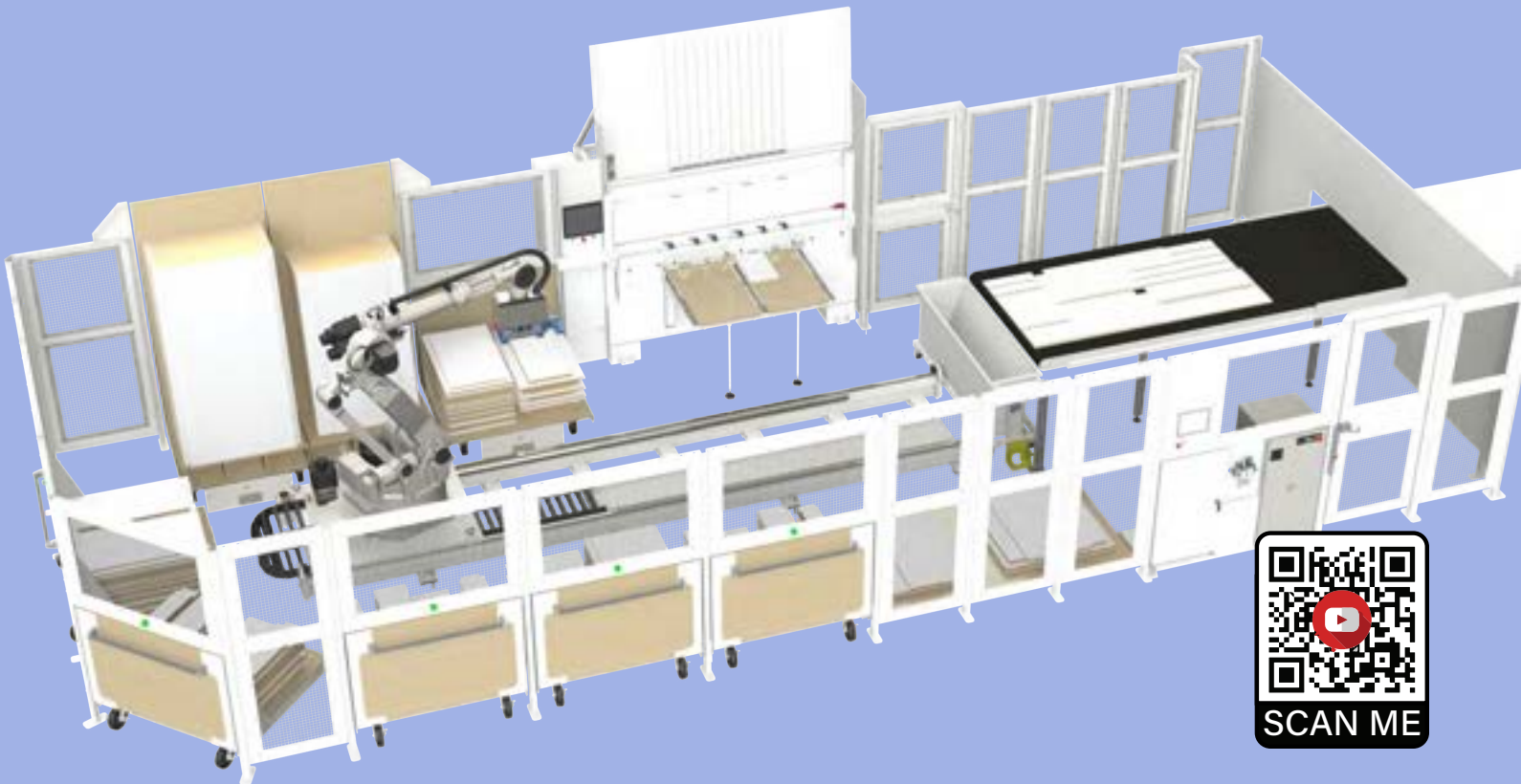
CabSort™

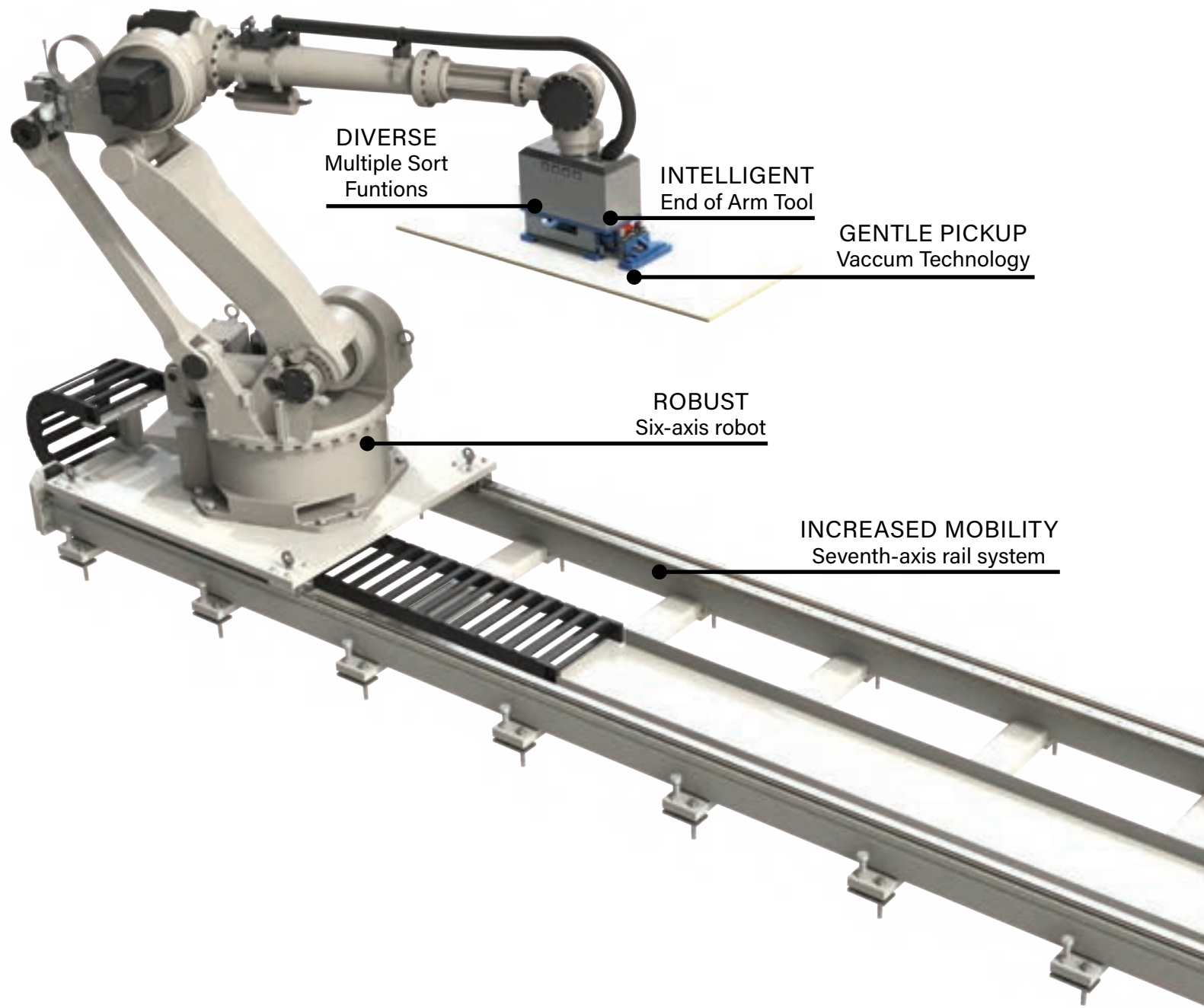
Robotic Unload Sort Cell for Woodworking Applications

EDGEAutomation

Designing *practical* solutions

363 Sovereign Road
London, Ontario, Canada
www.edgeautomation.ca





Quick Facts

This cell has a wide range of benefits, and sorting abilities, to automate the cabinet sorting process, maximize efficiency, decrease waste, and reduce the overall production footprint of multiple processes. It combines CNC offloading with doweling and part sorting, increasing the efficiency of all of these processes, and providing processed panels at the end.

Increased part tracking allows for more downstream efficiency, and greater awareness of where your parts are at all times - decreasing misplaced or duplicate parts. It also allows for nests to be routed on the CNC table as tightly as you like, with parts spread out across multiple sheets, and tracked by the robot's system.

The customizable and flexible panel sorting options are suitable for small to medium production shops, as it is able to handle both mass production and custom style cabinet operations. The cell can be easily manipulated to integrate seamlessly with existing machinery, and requires very little operator training - it's intelligent systems take care of all of that for you.

High end safety protocols reduce risk of accident, ensuring that your employees remain safe at all times while operating the machine.

We provide a rigorous maintenance schedule, and unmatched customer service - if this is your first venture into automating cabinet production, you're not alone! We think of every robotic sort cell installation as the beginning of a relationship with automation, and we're here to support you every step of the way.

Unparalleled efficiency



Faster than manual sorting

Decrease Waste

Maximize material efficiency by nesting panels as tightly as possible.

Reduce Operator Handling

Reduced labour costs, increased efficiency.



100% accurate, with perfect sorting every time.

Customizable and Flexible

With a variety of operator chosen sort functions to suit your production needs.

Unmatched Customer Service



When you call to ask questions about your machine, you can talk to the technicians that designed and installed it.

Reduce Overall Footprint

Decrease total square footage required to tend these machines.

CabSort™

Robotic Unload Sort Cell

Robust Machine Guarding

Large Panel Management

Panel Sorting

Precise Doweling

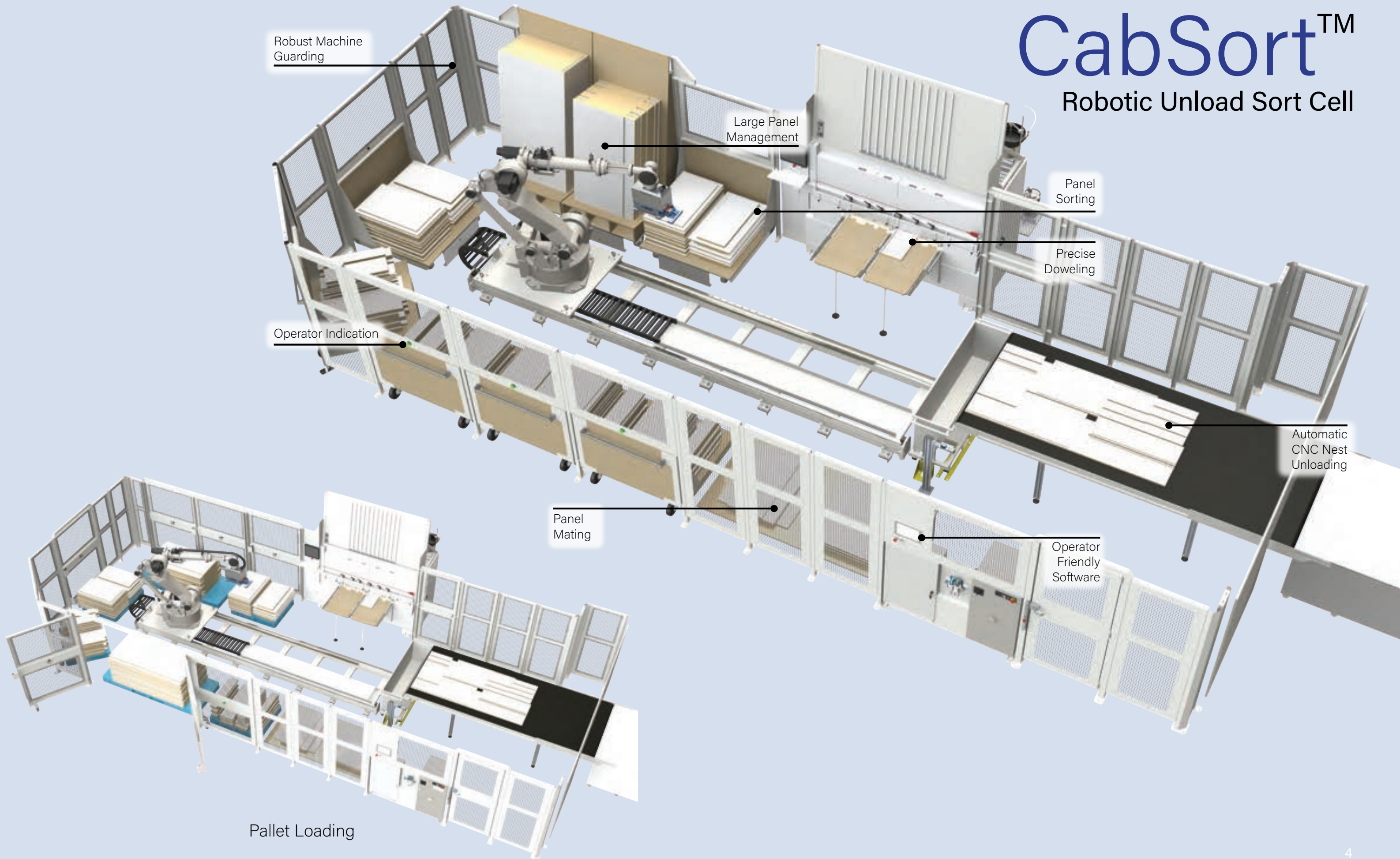
Operator Indication

Automatic CNC Nest Unloading

Panel Mating

Operator Friendly Software

Pallet Loading



Cell Overview

Edge Automation has created this sorting solution with our partner SCM. This Robotic Nest Unloading solution is placed at the outfeed conveyor of a nesting CNC machine equipped with automatic labelling.

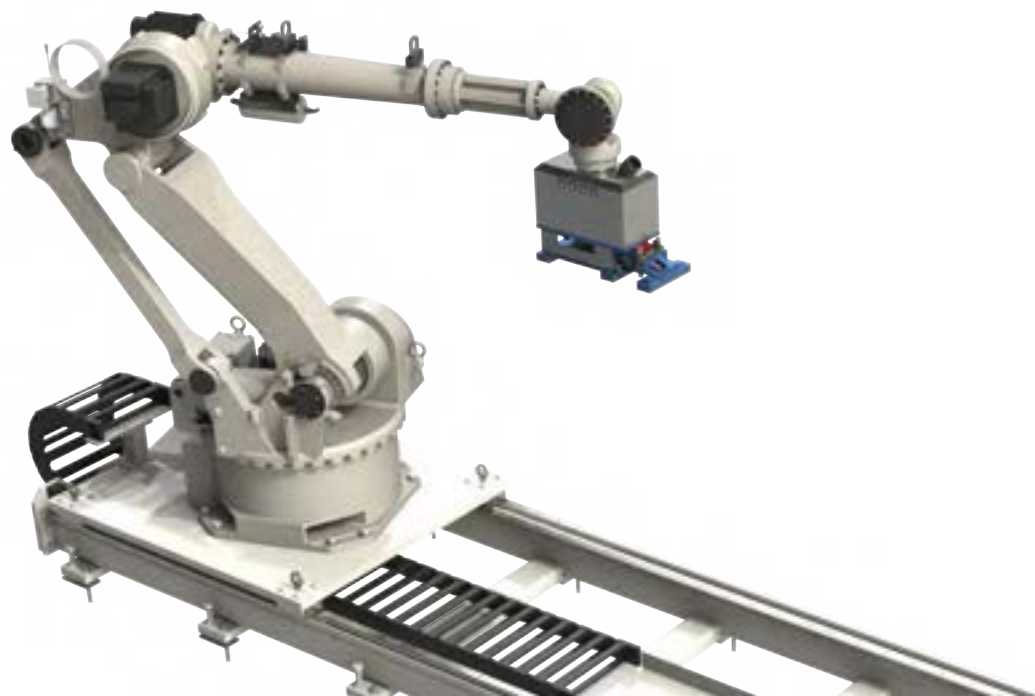
This Robotic Cell uses an intelligent vision guided end of arm tool to identify and pick up each panel from a nest and process accordingly.

The cell is equipped with a bore and dowel machine. The robot uses it's intelligent end of arm tool to precisely load and unload each panel, providing a very efficient process.

The cell has the ability to sort parts based on part family, by kitchen, as well as by common dimensions. It has the capability to handle a vast assortment of panels, with dimensions as small as 3" wide, and as large as 84" long.

The Robot is also placed on a linear 7th axis rail system to allow for maximum sorting capabilities while keeping the cell footprint within the facility minimal.

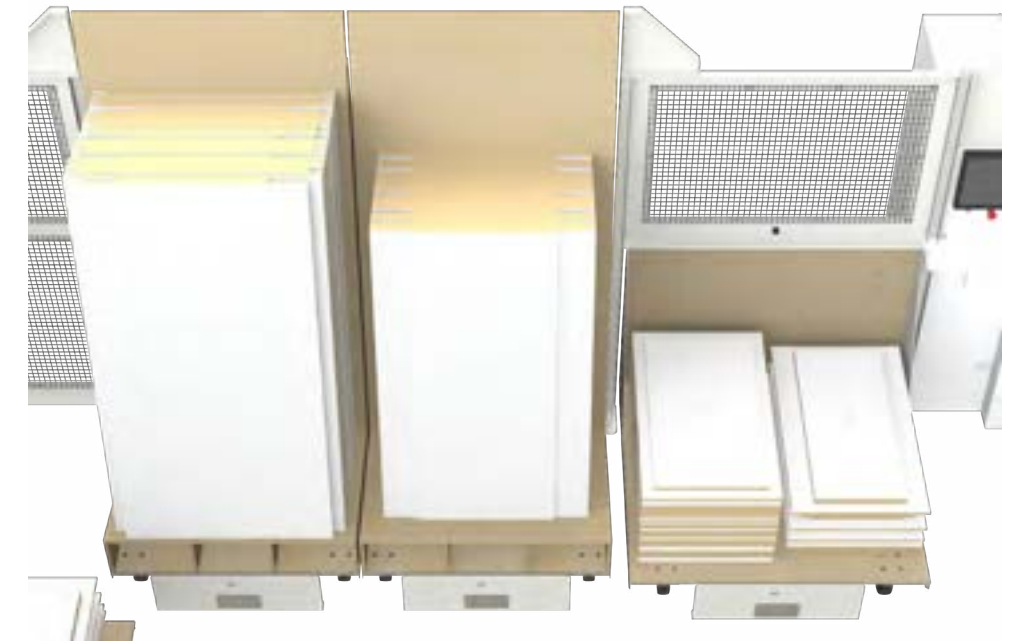
Material carts are placed around the perimeter of the cell. These material carts are used for sorting all nested panels into defined stacks and are integrated into the cell using safety interlocks - making it impossible to disengage them while the machine is running.



Features

The use of carts allows for a multitude of sorting functions, which can be adapted to suit your individual manufacturing process.

Our integrated cart system is equipped with safety switches that allow for safe and easy loading and unloading from the robotic cell, creating seamless workflow throughout your shop.



The use of both horizontal and vertical carts allows for flexibility - accomodating a wide variety of panel dimensions. We have also integrated a variety of safety features into the cell. The use of safety light barriers and switch operated entry ensure operator protection, making it impossible for an operator to enter the cell while it is in motion.

Our Intuitive Human Machine Interface (HMI) minimizes the amount of training required to safely and efficiently operate the robotic cell.

The software we have integrated within our robotic sorting cell provides a variety of manual, automatic and hybrid sorting modes that can be catered to your production needs.

Our software included within the Robotic cell comes equipped with a web interface which provides an added benefit of being able to operate the cell from an offline PC and or a tablet device.

This feature allows our customers to be more efficient, having the ability to remotely set-up panel sorting recipes for future production from the comfort of their own workspace.

Software

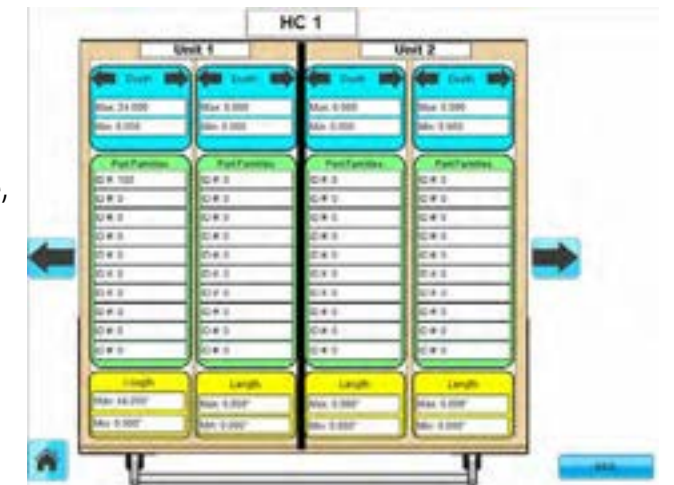
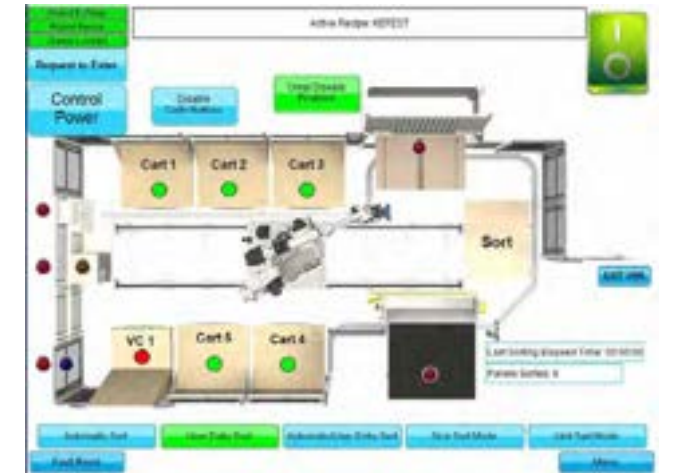
In an effort to provide a software that is user friendly and intuitive, a variety of pictorial diagrams combined with user input is used throughout to ensure easy navigation and adoption. The software design is such that this system can be used even by beginners in factory automation.

The easy-to-use Home Screen on the HMI is designed to provide an easy way for operators and supervisors to see what is occurring within the cell at a quick glance. This screen displays Power Status, Safety System Status, Sorting Mode Selected, Sorting Recipe Selected, and Individual Cart Status.

This screen also provides a drop-down menu to quickly navigate to all other software screens within the HMI such as: Edit Sort Recipe, Select Recipe, End of Arm Tool Status, Robot Part Tracking, as well as Active Faults/Fault History. These screens have all been designed to ensure complete functionality but also provide the tools required to troubleshoot the robotic cell effectively.

With a plant network connection, our service technicians have the ability to login to the HMI screen in real time and troubleshoot any issues that may come up during production. We pride ourselves on providing the tools required to quickly diagnose any problems that may arise, reducing any down time.

When creating Sorting Recipes, a very visual edit recipe screen is used. This screen allows the operator to visualize each stack location within a specific cart and set parameters as required. This intelligent system ensures that all data input is within the parameters of the cart design. The recipes for each cart can be updated throughout the production run as needed to cater to developing needs.



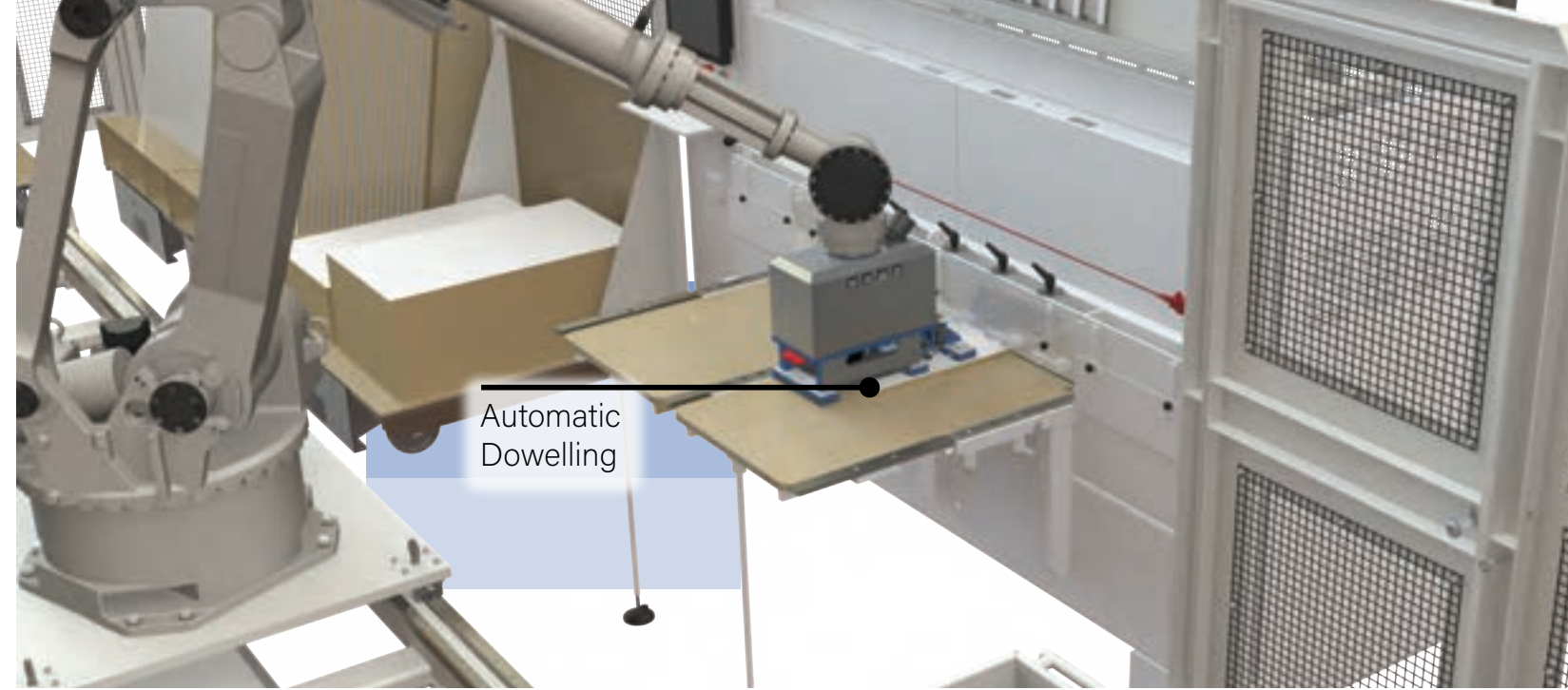
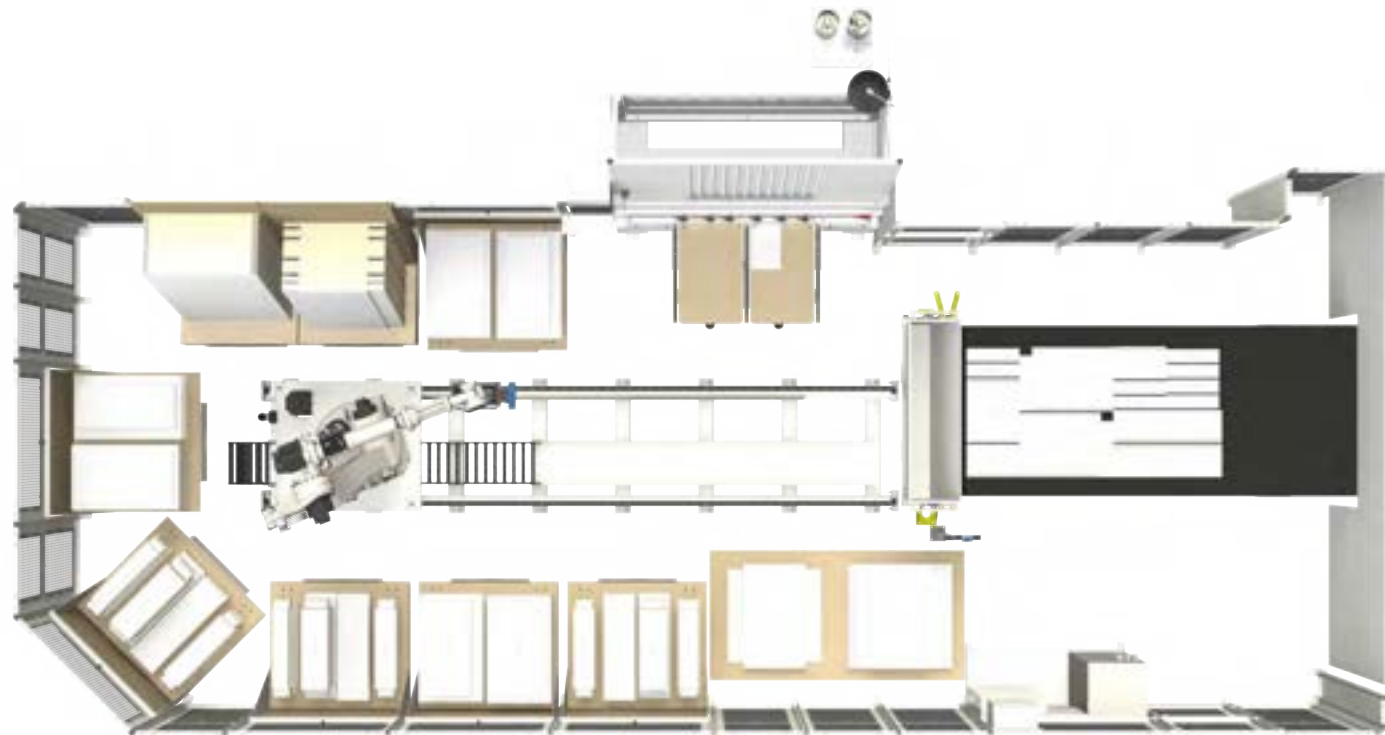
Benefits

Maximizes Material Yield

The sorting capabilities within the Robotic Sort cell allows our customers to maximize their material yield coming out of the CNC machine. Our customers no longer need to ensure that they keep jobs separated, which results in wasted material for ease of sorting. Mixed jobs can run together and be later sorted by the Robot, decreasing the amount of wasted material.

Provides CNC Nest Unloading

One of the most obvious benefits provided by the Robotic sort cell is the CNC nest unloading. The robot has the capability to quickly unload a wide range of panel sizes including oversize gables and end panels with ease. Although all production is different, our customers average between 50-70 sheets (4'x8') per shift though the robotic cell. This benefit alone has provided our customers with an added peace of mind, as this task sets the pace of their entire production. In addition, this benefit has assisted our customers in reducing their chances of a workplace injury.



Completes Dowelling Process

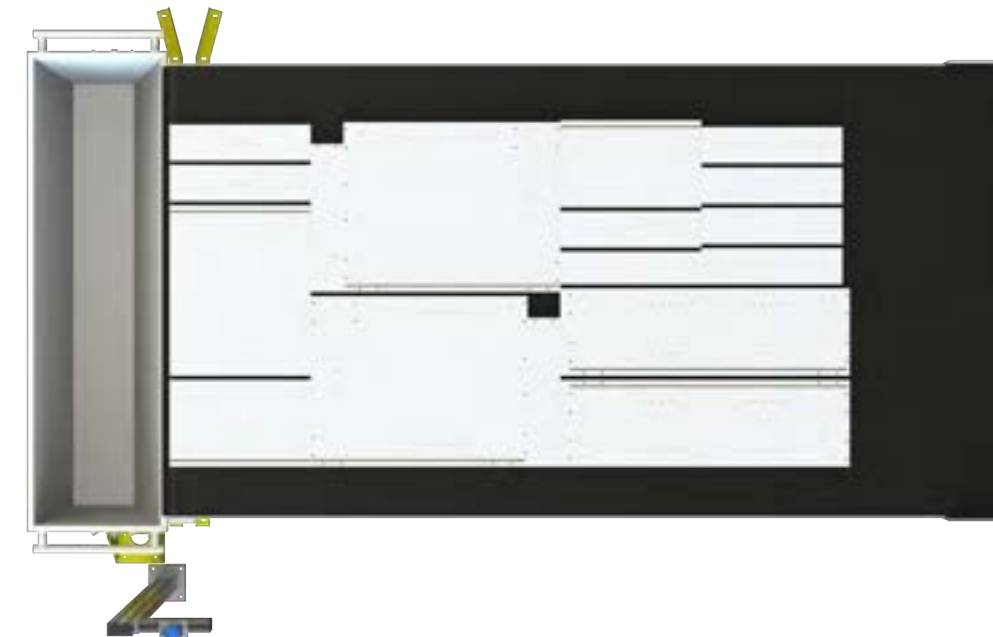
The Robotic Sort Cell alleviates the need for an operator to perform the repetitive process of dowelling panels, as the robot takes care of all your dowelling needs within the cell. The intelligent end of arm tool has the required sensing feedback to load each panel precisely into the dowel machine, ensuring quality each and every time. The robot also has the capability to communicate with the dowel machine to select various programs based on part type or panel dimension.

Ensures Panel are Sorted

The Robotic Sort Cell provides one of the most sought-after benefits within the cabinet industry, the ability to sort panels. The cell is designed using a variety of horizontal and vertical carts that provide a complete solution for sorting panels. The easy to use software has the ability to sort panels based on part family, by job, by kitchen/order/floor, etc. The robot cell software has been designed to cater to the needs all sizes of cabinet shops and production needs.

Includes Panel Mating

The Robotic Sort Cell offers a well-received sorting feature called "Panel Mating". This feature allows for defined panels such as end panels and gables, or tops and bottoms, for a specific cabinet to be mated together prior to down stacking on the horizontal carts. This feature has proven to help operators be more prepared and make less errors with edge banding and cabinet assembly.



Sorting Functions

The panel sorting functions of the robotic cell operates in three modes:

Automatic Sorting

When in "Automatic Sorting Mode", the robot will populate the storage locations based on predefined sorting rules as laid out in the software interface. This mode is most effective as long there are enough available storage locations for the nested product. The robot will continue to operate until all storage locations have been filled. If any position is filled, the operator must simply request to exchange the cart and the process will continue with the new empty cart.

Operator Defined Sorting

When in "Operator Defined Sorting Mode", the robot will reference the "User Defined Sorting Location" parameters. In this mode the operator will use the HMI to define each storage location within the robotic system, and use a drop-down menu to populate the product to be downstacked at each location. The operator will choose the specific part families, or common panel dimensions, to be placed on defined carts within the system. This allows the operator to choose to keep high volume panels in a storage location closer to the CNC outfeed to improve overall cell cycle.

Hybrid Sorting

When in "Hybrid Sorting Mode", the robot will reference any storage location parameter inputted into the system, as well as populate the remaining storage locations automatically. This allows for some flexibility between the two modes and provides a good balance for the operator. This allows the operator to identify the high-volume panels and pre-define sorting to improve overall cycle time, while minimizing the amount of customization required, as the robot will populate the remaining storage locations.



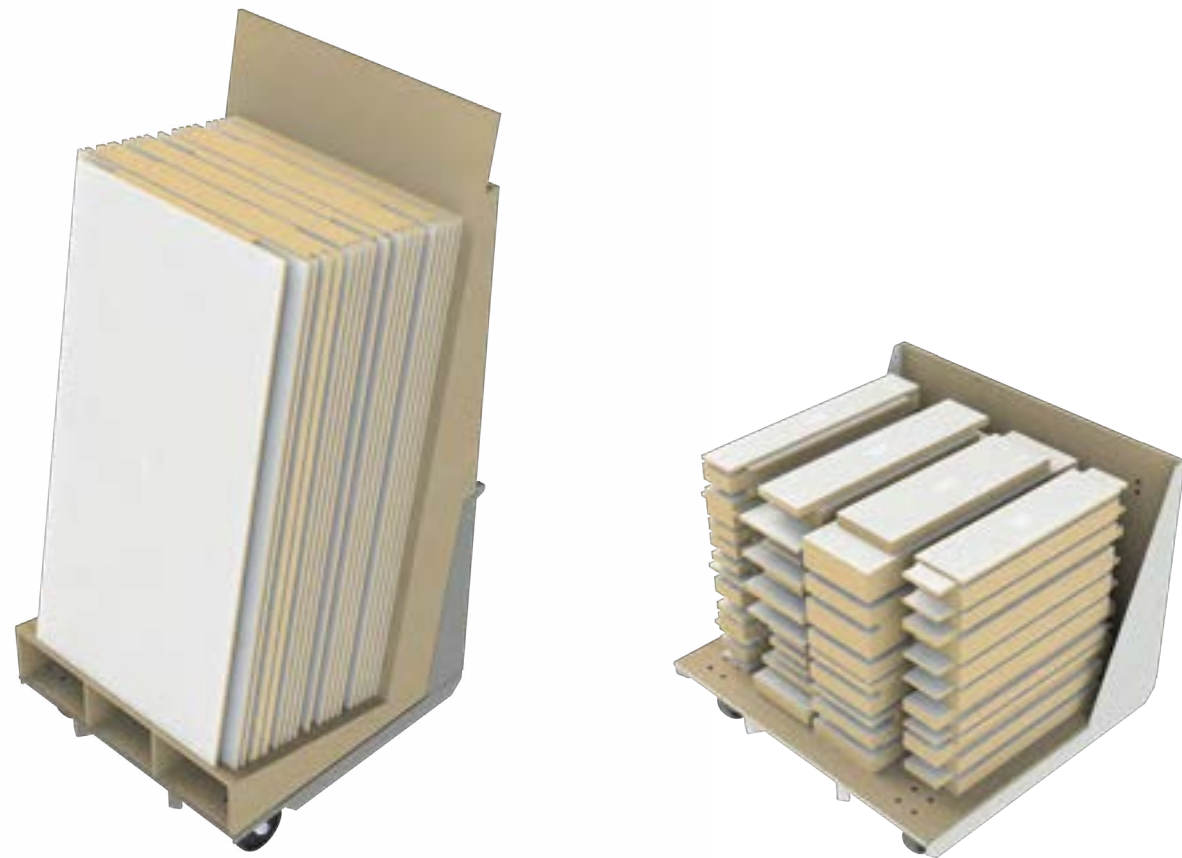
Unique Features

Integrated Cart System

The sorting cell uses an integrated horizontal and vertical material cart system. The horizontal carts are designed to manage all upper and lower cabinet parts while the vertical carts are designed to manage oversize cabinet parts as well as offcuts. These carts are built right into the guarding, providing a very functional solution. A magnetic safety switch is used for each cart dock location within the cell, ensuring the highest level of safety for the operator.

Although expandable, the integrated cart system provided in the standard cell offering includes a total of 8 carts. The standard configurations can be chosen based on your production needs:

- 5 Horizontal Carts & 3 Vertical Carts
- 6 Horizontal Carts & 2 Vertical Carts
- 7 Horizontal Carts & 1 Vertical Cart



The Horizontal Cart specifications are as follows:

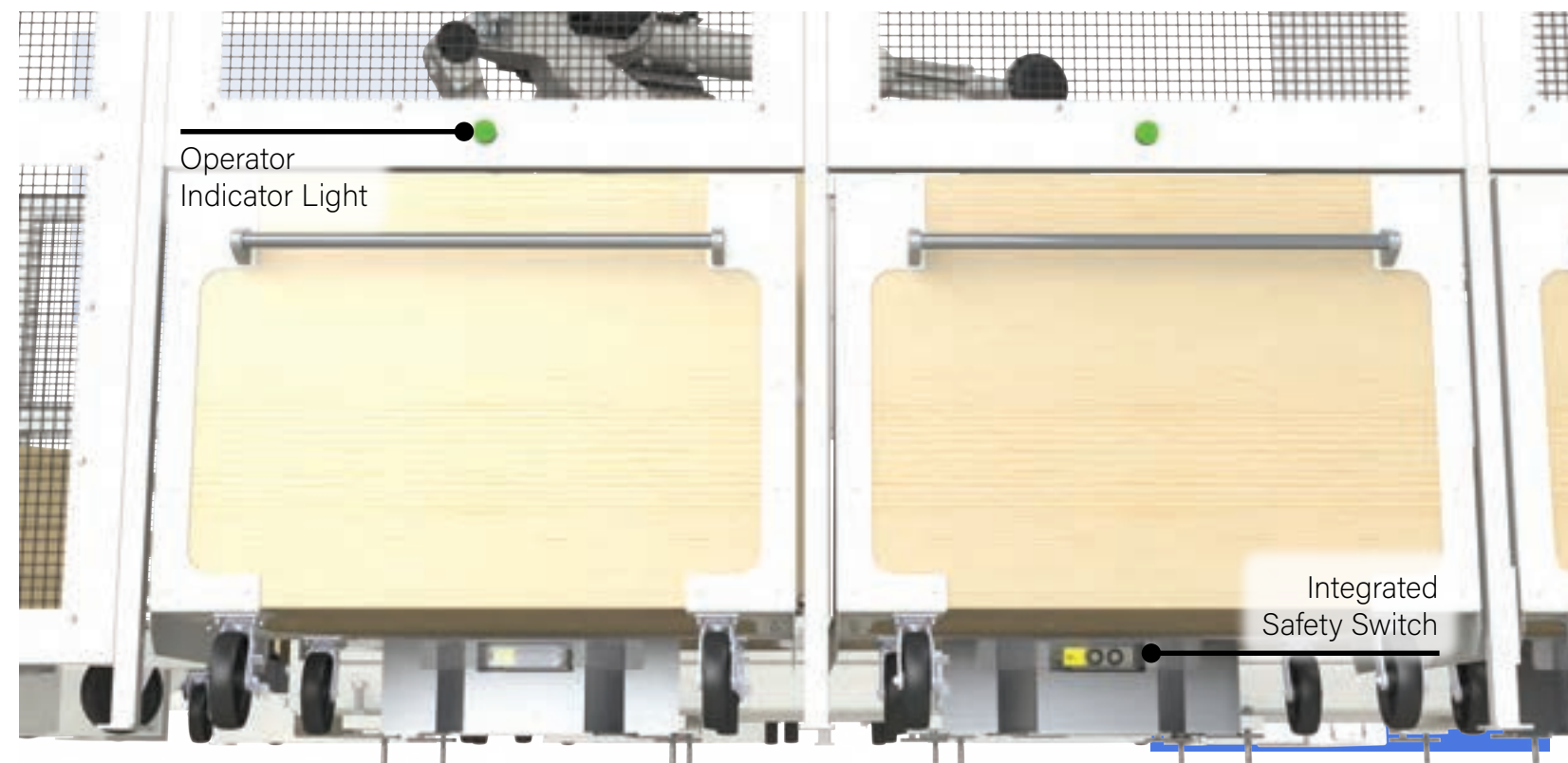
- Max Horizontal Stack Height – 36"
- Overall Dimensions – 48" x 52"
- Max Panel Size – 48" x 48"
- Min Panel Size – 3" x 10" – High density Stacking available for small parts.
- Max Stack Positions 4 (All Upper Cabinets)
- Min Stack Positions 1 (Panel Larger than 36" in Width)
- Cart design to allow for:
 - 2 Lower Cabinet Panels (24") OR
 - 4 Upper Cabinet Panels (12") OR
 - 1 Lower Cabinet Panel & 2 Upper OR
 - 1 Over Sized Lower Cabinet Panel and 1 Upper Cabinet OR
 - 3 Over Sized Lower Cabinets (up to 15.5")
 - Combination of any panels must be equal to or less than 48"
- Cart density will be reduced and frequency of exchange of cart will increase when sorting over sized cabinet panels.

The Vertical Cart specifications are as follows:

- Max Horizontal Stack Height – 30"
- Overall Dimensions – 44" x 84"
- Max Panel – 44" x 84"
- Min Panel – Varies
- Single Position – Center Stacked

Operator Indication

In an effort to maximize efficiency and reduce labour time, the robotic cell has a very effective operator intervention indication system, to ensure it is very clear what is required from the operator. Each material cart utilizes a tri-light indicator with an opto touch-button that allows the operator to know when a cart is full and needs to be exchanged. With a single touch of the button, the operator can signal the robot that an exchange will be taking place. At this point, the robot cell will de-energize the magnetic safety switch and let the exchange occur. Once complete, the operator will then touch the button and the robot will resume production.



Customer Testimonial

"Edge did it in such a way that not only is it easy, but, you know - I'm not an engineer. I'm a guy who just knows how to turn it on"

"The robot's role right now is to do everything. People ask me, what does it do? And I say, 80% of what needs to be done is done with that cell. There's nothing we don't cut on that cell. From drawers to doors, to the carcass components."

"When I look at like other companies, they have [storage and retrieval systems], and that's not robotic automation. That's just suction cups, moving sheets around and, you know, getting it to one place or another. I think of my machine as like a human



being - it's the real deal. It knows everything that is going on at all times... in my opinion, there's no comparison."

"They kind of made [the cell] with the way our system works with the way we want to cut and the way we want to organize our shop, which is mostly - we do high rise. So we'd want to be cutting by unit or by part family. That's really, what they did - they took how I want it done and just made it easy for me to be able to cut it.

Even up until last week, I never used the function to sort "by unit". I press the button, and now it saved my life. It literally like itemizes on the carts, everything by unit, which is insane."

"I think that for everything, even for little shops to bigger shops, the cell can work. I remember my first meeting with Edge and telling them all my needs - I still do that odd custom kitchen, you gotta make it compatible. Did I know that they already thought 10 steps ahead of me? No."

ANTHONY SINISCALCO
Solea Kitchen & Bath
Leader in High Rise Kitchens

Vaughan, Ontario

"WATCH IT, IT SPEAKS FOR ITSELF"

Factory Requirements

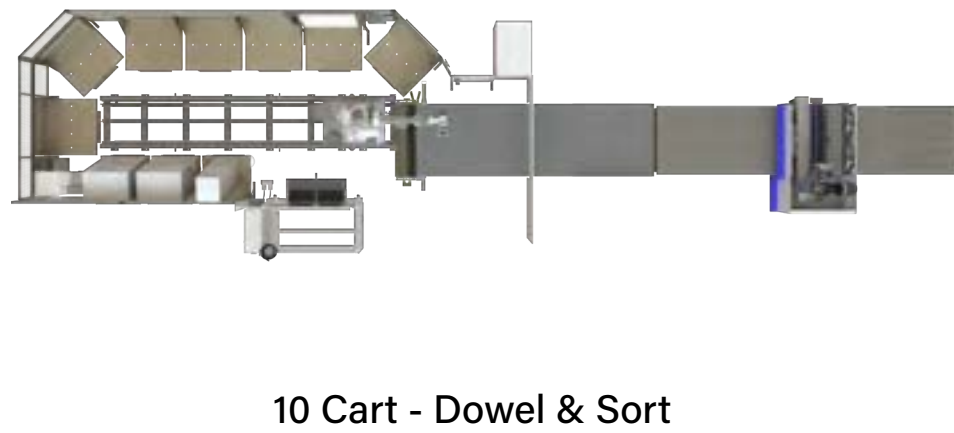
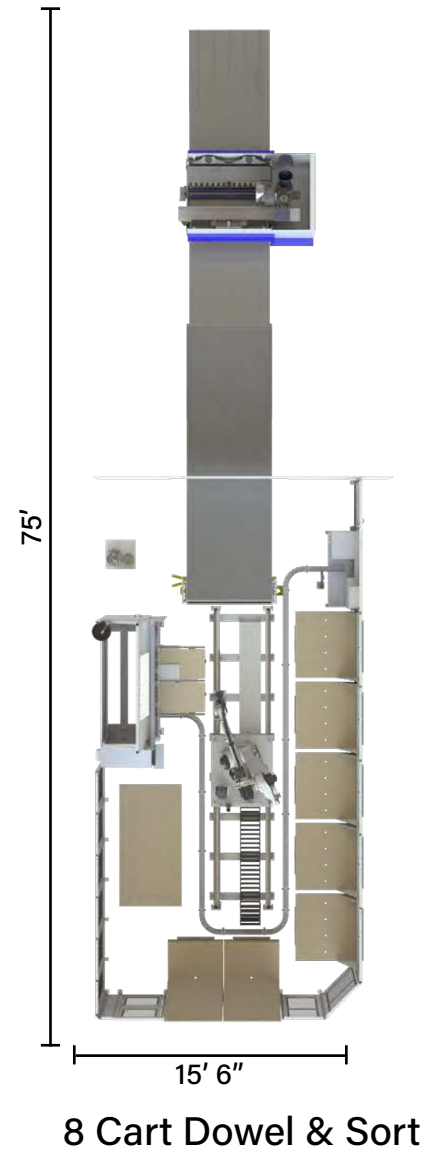
Electrical Power Requirement:	480Vac/40A/60Hz (For robot cell only)
Compressed Air Requirement:	¾" air line @ 90 PSI (Approx. Avg. 9 CFM)
Upstream Machine:	CNC Nesting Machine with Auto-labelling
CNC Nesting Software:	Customer defined
Doweling Machine:	Customer defined
Floor Space:	See configuration layouts (custom options available)

No specialized technical staff required

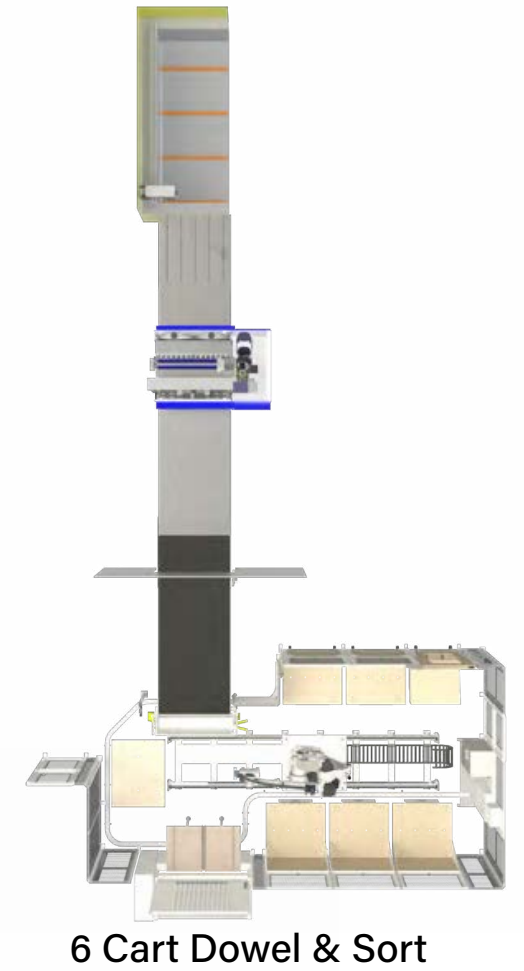
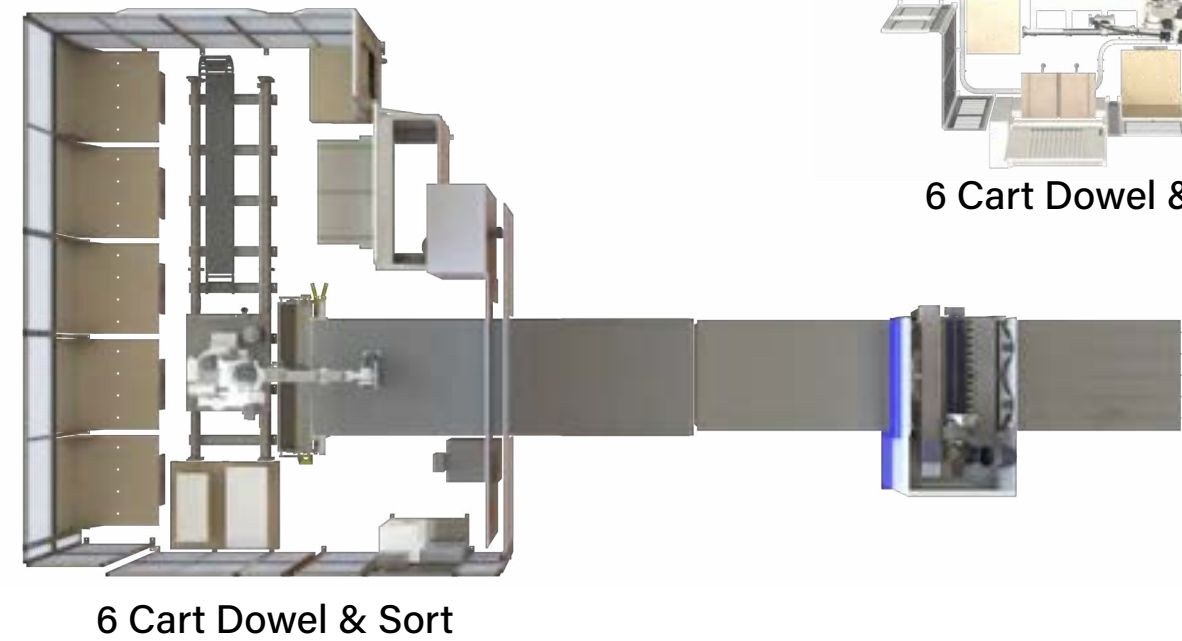
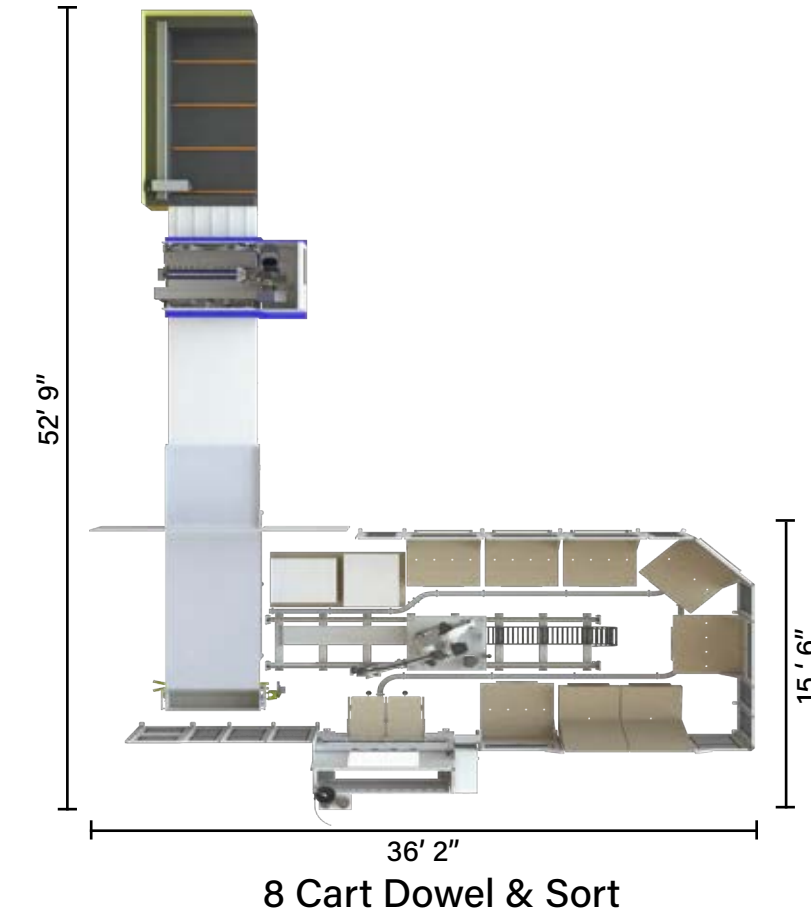


Layout Configurations

Straight



90 Degrees

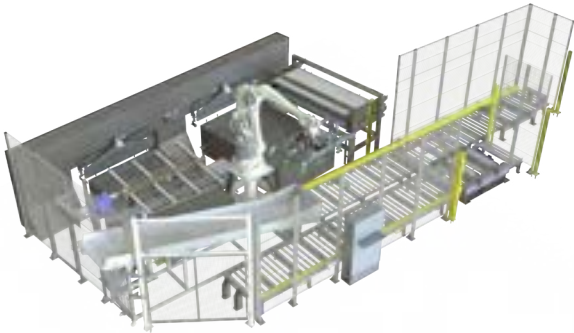


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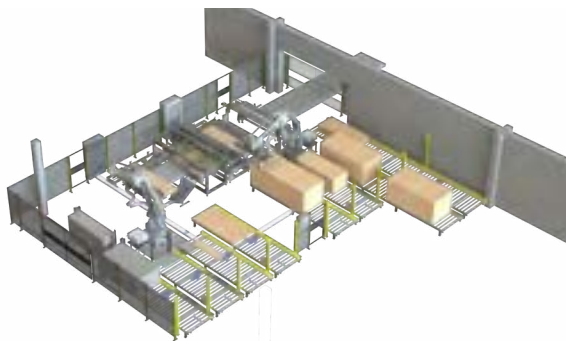
Other Woodworking Projects



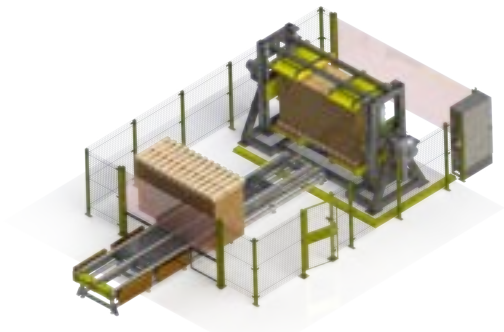
Machine Tending CNC Router



CNC Tending Cell with Automatic Labelling





Finished Door Robotic Destack Custom Wrap




Door Stack Flipper

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Contact us today to get started!
woodworking@edgeautomation.ca