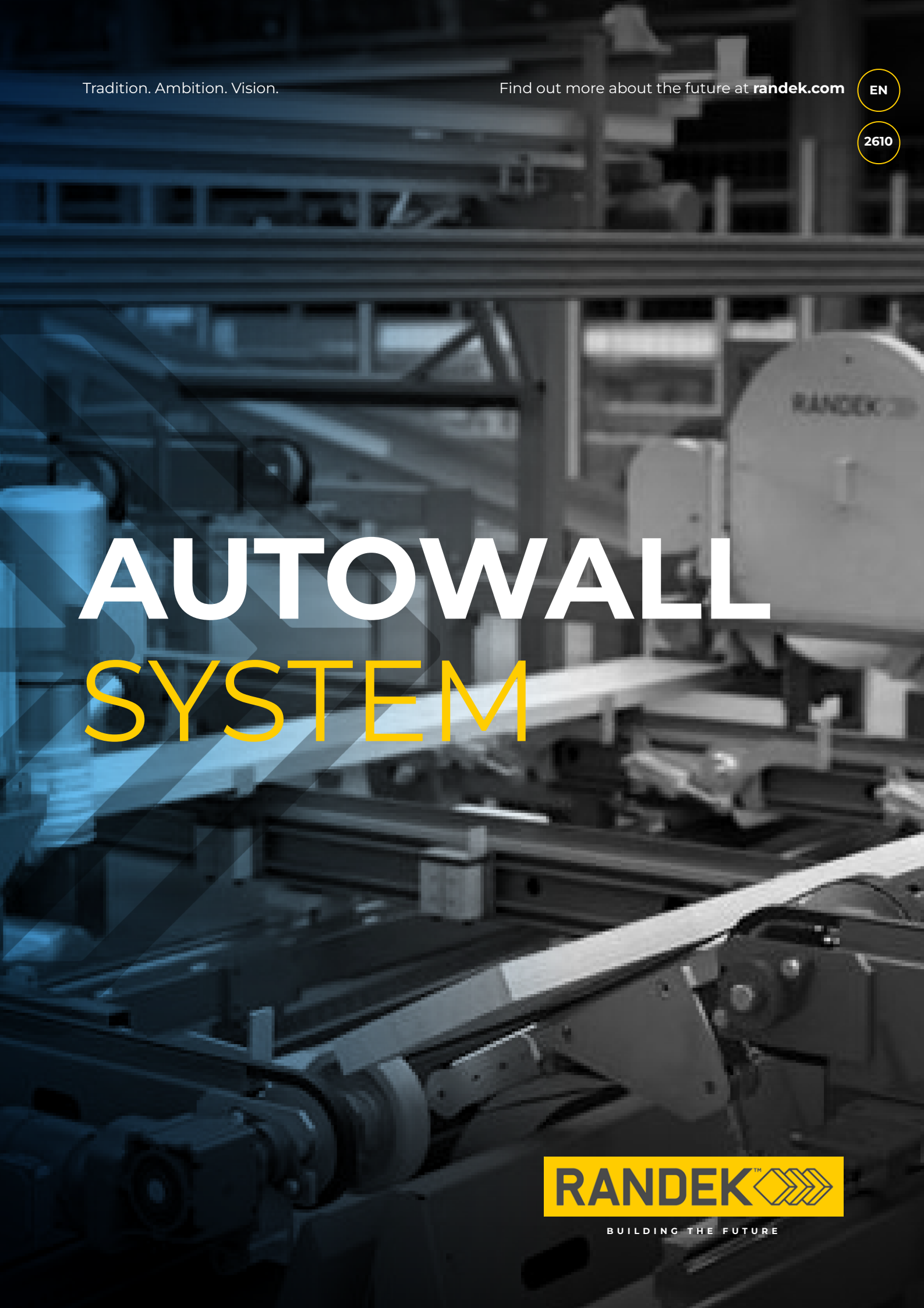


Tradition. Ambition. Vision.

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EN

2610

# AUTOWALL SYSTEM

RANDEK™

BUILDING THE FUTURE



# AUTOWALL SYSTEM

AutoWall enables leading-edge automated manufacturing of wall elements, with great precision and high quality. Accelerated project schedules, streamlined on-site assembly with minimal disruption, and a substantial reduction in labor requirements.

Depending on the type of walls you intend to manufacture, we customize our production lines using a variety of machines to meet your specific requirements. These machines are integrated into a comprehensive control system, allowing you to access both production and consumption data directly from the production line.

**INDEX** **PAGE**


Production Planning. . . . . 4
AutoWall Frame. . . . . 8
AutoWall Open Panels. . . . . 12
AutoWall Closed Panels. . . . . 18
AutoWall Mixed Panels. . . . . 22

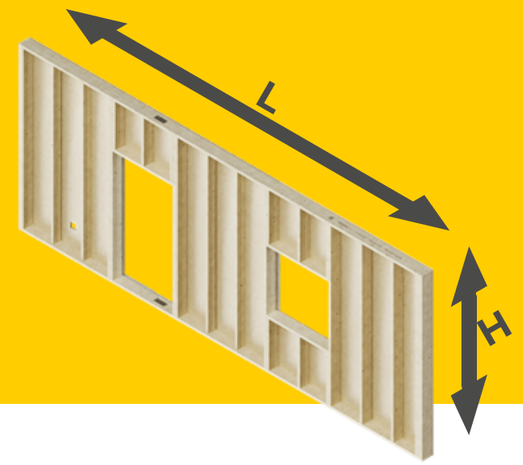
Framing Area. . . . . 28
Sheathing Area. . . . . 34
Insulation. . . . . 38
Membrane. . . . . 40
Turning System. . . . . 40
Work area. . . . . 41
Stack & Storage. . . . . 42






# ELEMENT LENGTH DIMENSIONS

The machine line is based on the maximum element length at each station. We work in increments of 1200 mm (~3.94 ft) between each maximum element length.



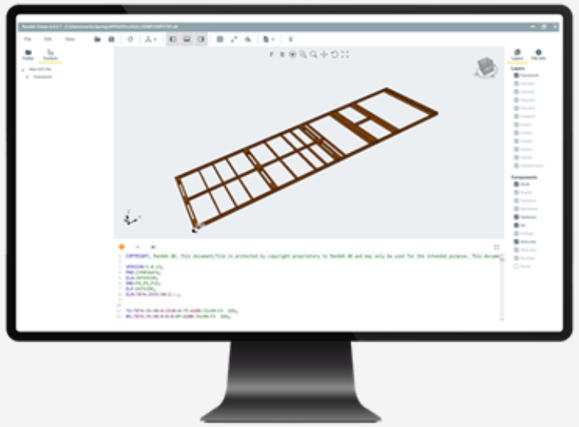

| | Maximum Length (L) | Standard Height (H) | Extended Height (H) |
|---|---|---|---|
| Imperial [feet] | 20 | 6.9-10.8 | 7.87-12.82 |
| | 23.6 | 6.9-10.8 | 7.87-12.82 |
| | 27.6 | 6.9-10.8 | 7.87-12.82 |
| | 31.5 | 6.9-10.8 | 7.87-12.82 |
| | 35.5 | 6.9-10.8 | 7.87-12.82 |
| | 40 | 6.9-10.8 | 7.87-12.82 |

| | Maximum Length (L) | Standard Height (H) | Extended Height (H) |
|---|---|---|---|
| Metric [mm] | 6000 | 2100-3300 | 2400-3900 |
| | 7200 | 2100-3300 | 2400-3900 |
| | 8400 | 2100-3300 | 2400-3900 |
| | 9600 | 2100-3300 | 2400-3900 |
| | 10800 | 2100-3300 | 2400-3900 |
| | 12000 | 2100-3300 | 2400-3900 |

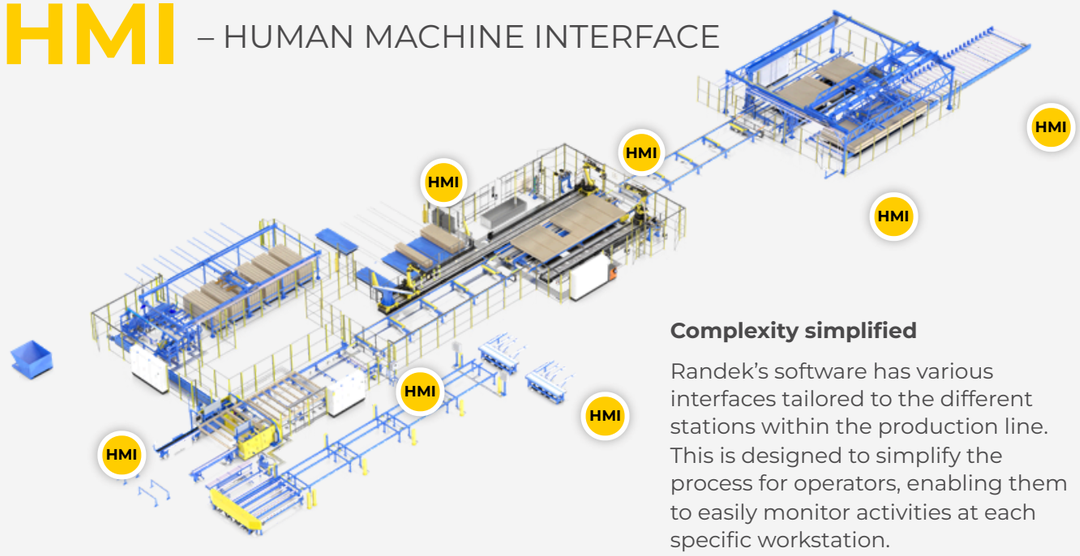
# CAD

**CDT file workflow**

Your designers create buildings and wall element drawings using their CAD software. All major timber framing CAD applications can export data to Randek machines. They export the data from their CAD software as a .cdt file, which the Randek machines can interpret. The .cdt files can be opened and verified with Randek Viewer and easily transferred into Randek Planner.

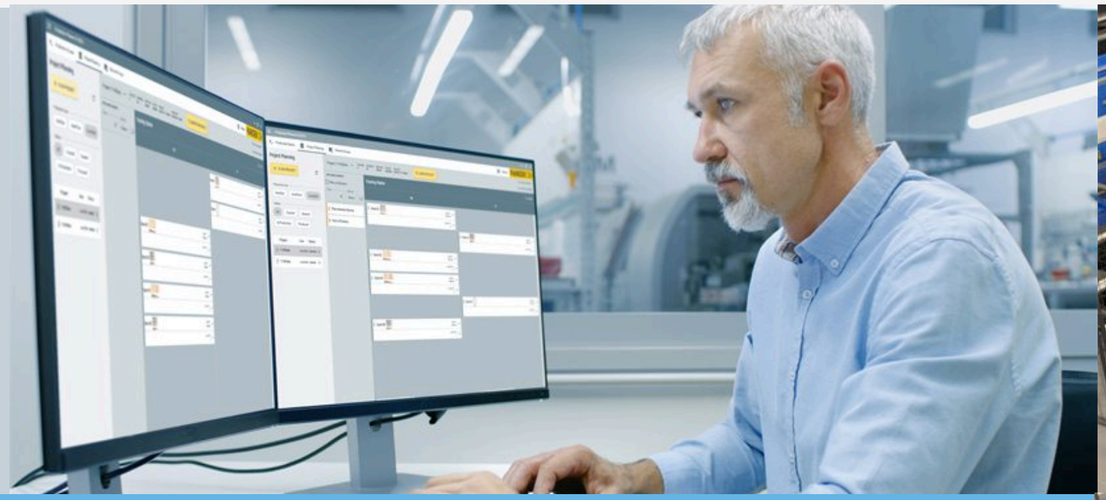


# HMI – HUMAN MACHINE INTERFACE




**Complexity simplified**

Randek's software has various interfaces tailored to the different stations within the production line. This is designed to simplify the process for operators, enabling them to easily monitor activities at each specific workstation.

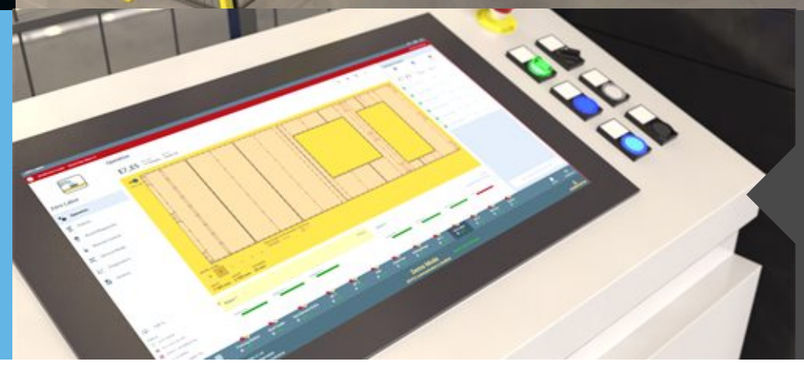




# RANDEK PLANNER

**Transform your production planning process with Randek Planner**

We offer user-friendly production planning software that lets you plan work orders and prepare finished stacks.

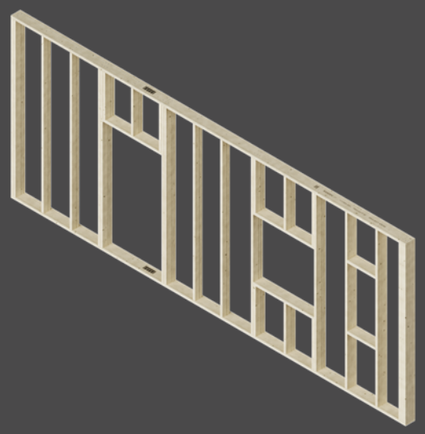


**User-friendly HMI**

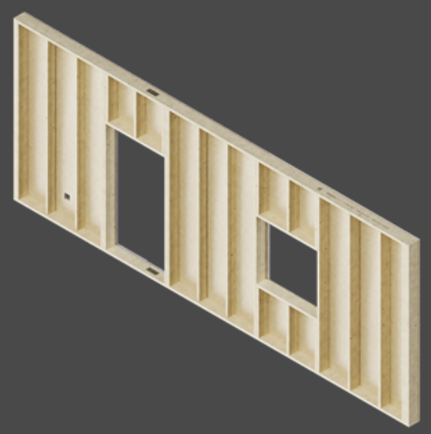
# LINE TYPES

**Turn your CAD files into perfectly finished walls with Randek Planner**

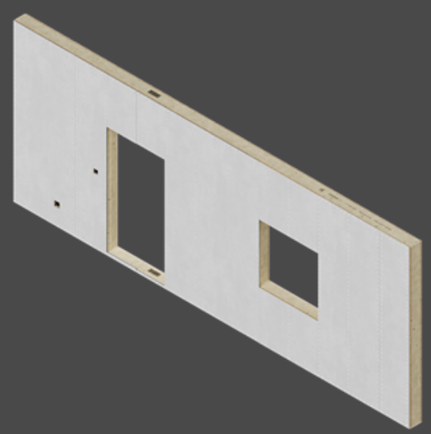
## AUTOWALL FRAME



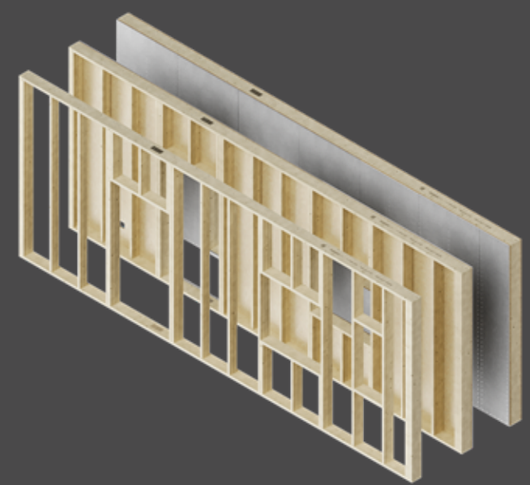
## AUTOWALL OPEN PANELS

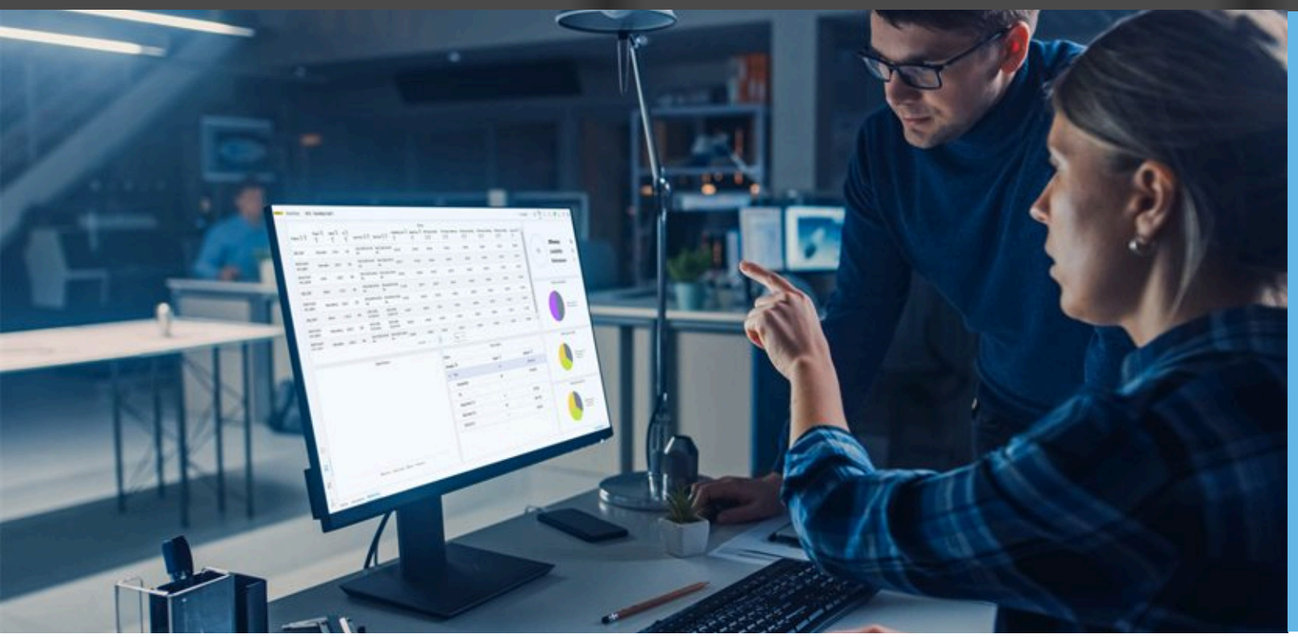


## AUTOWALL CLOSED PANELS



## AUTOWALL MIXED PANELS

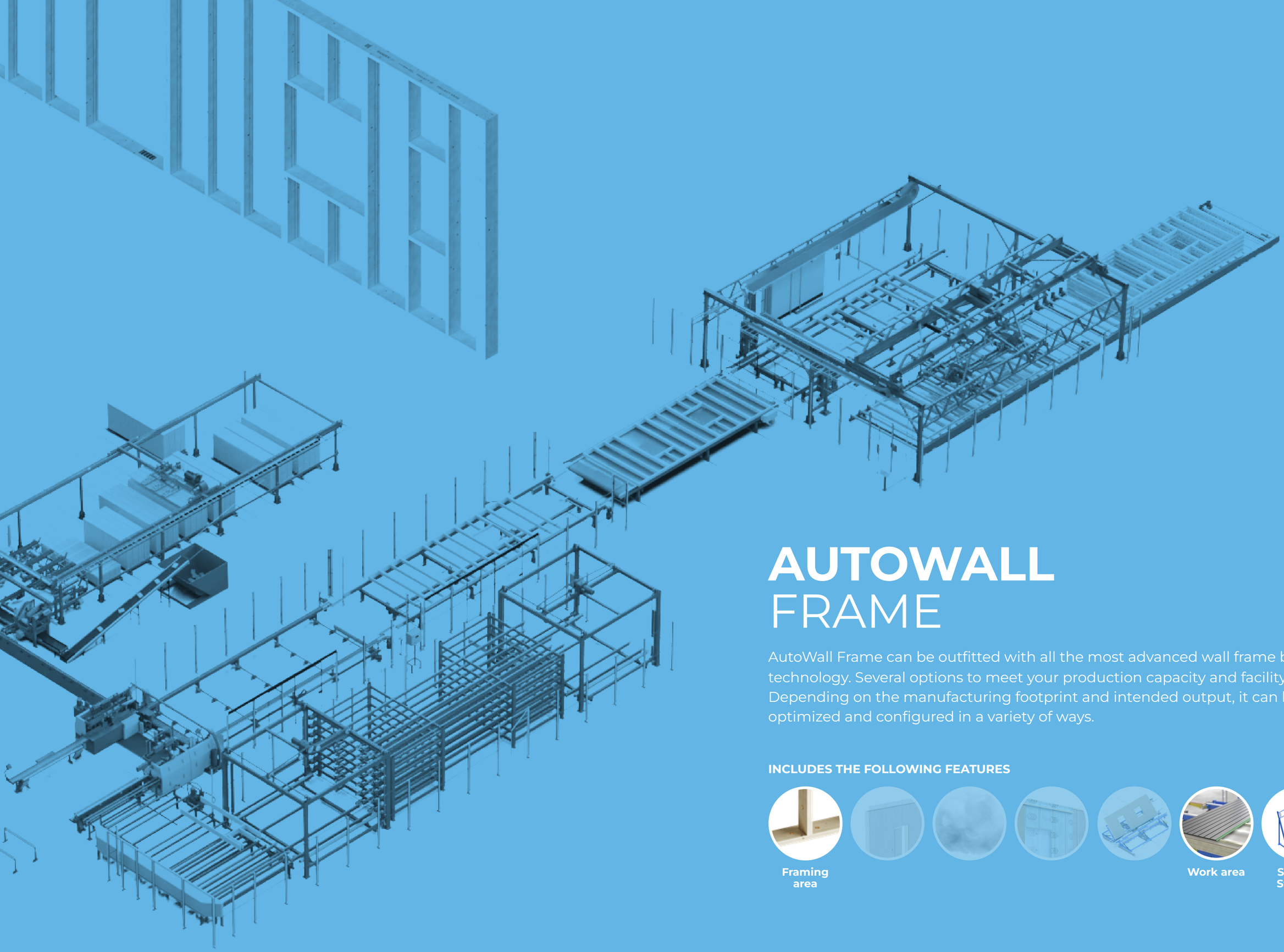




# RANDEK IIoT 4.0 PRODUCTION DATA

**Analyse your data from the production line**

The platform and its connected devices provide data collection capabilities as well as user-friendly tools for analysis, monitoring, and report creation. It permits data analysis from the supplier's perspective in order to maximize equipment availability for the user.



# AUTOWALL
# FRAME

AutoWall Frame can be outfitted with all the most advanced wall frame building technology. Several options to meet your production capacity and facility. Depending on the manufacturing footprint and intended output, it can be optimized and configured in a variety of ways.

**INCLUDES THE FOLLOWING FEATURES**



**Framing area**



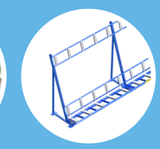








**Work area**



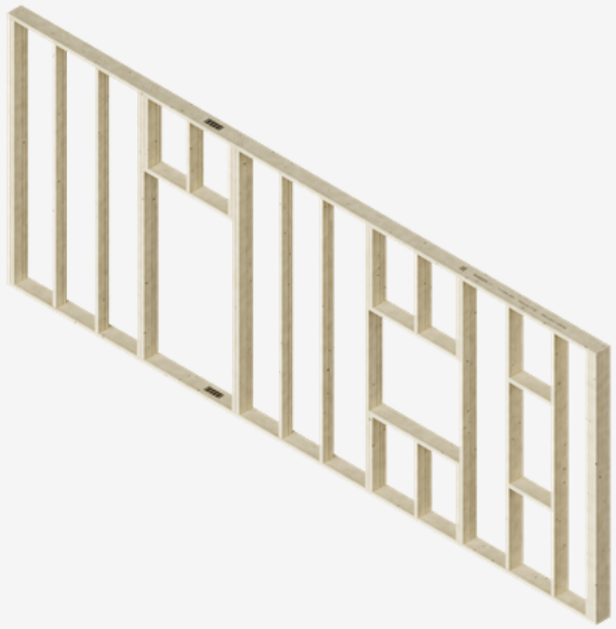
**Stack & Storage**

# AUTOWALL
## FRAME

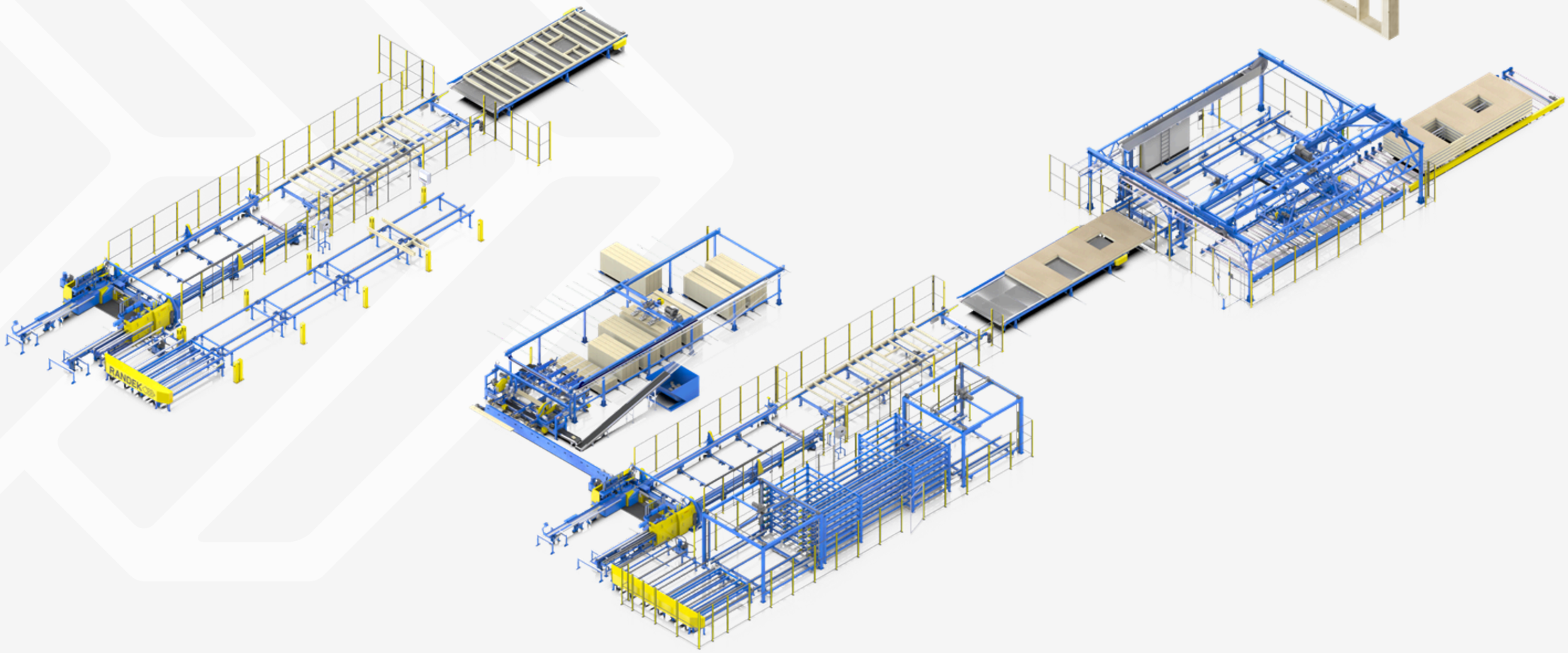
Specifically designed for frame builders, making it the perfect machinery for customers who wish to automate their production processes. We can offer several different line types depending on your specific needs.

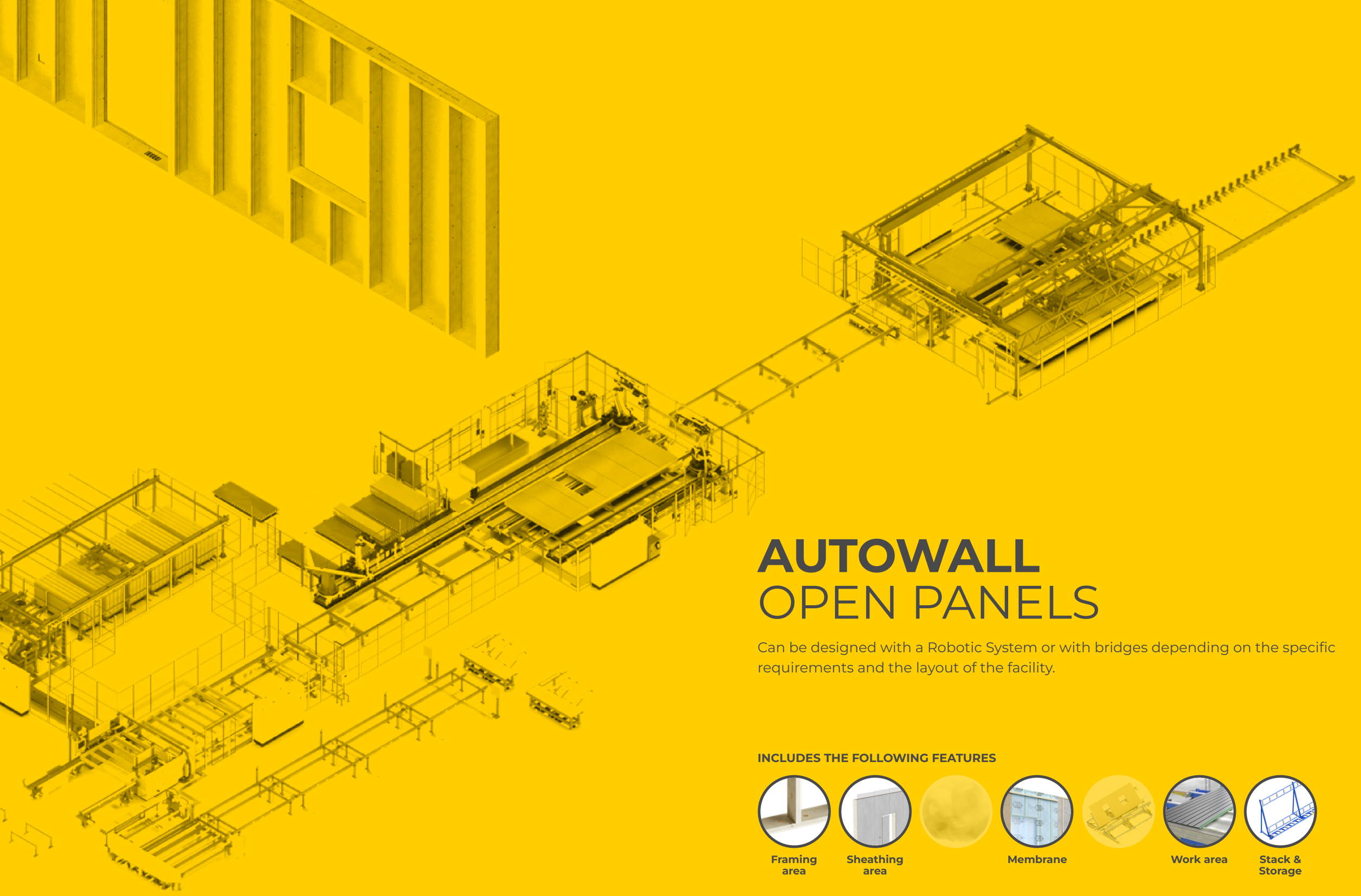
- Build with the Multiwall function
- Plan your production
- Elements delivered in stacked packages *
- Reduced staffing needs
- Increased quality
- Lucrative return on investment
- Long-lasting machinery

** Requires a stacker unit.*



### EXAMPLE LAYOUTS
**OPTIMIZED FOR FRAME MANUFACTURING**





# AUTOWALL
# OPEN PANELS

Can be designed with a Robotic System or with bridges depending on the specific requirements and the layout of the facility.

**INCLUDES THE FOLLOWING FEATURES**



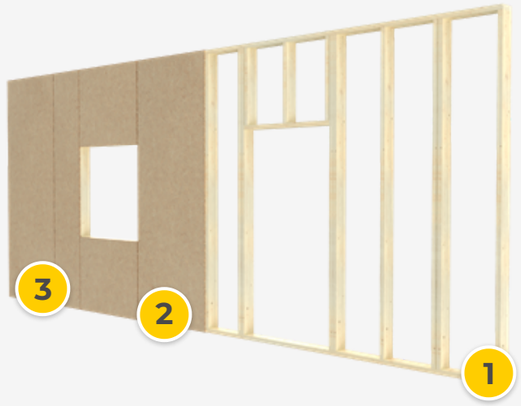
**Framing area** · **Sheathing area** · **Membrane** · **Work area** · **Stack & Storage**

# AUTOWALL
# OPEN PANELS

Suitable for manufacturers who prefer one open side in their wall panels during the production process. The production line can attach screws, nails, clamps, and membrane to one side of the wall element, as well as mill and cut openings.

- Build with the Multiwall function
- Plan your production
- Elements delivered in stacked packages *
- Reduced staffing needs
- Increased quality
- Lucrative return on investment
- Long-lasting machinery

** Requires a stacker unit.*

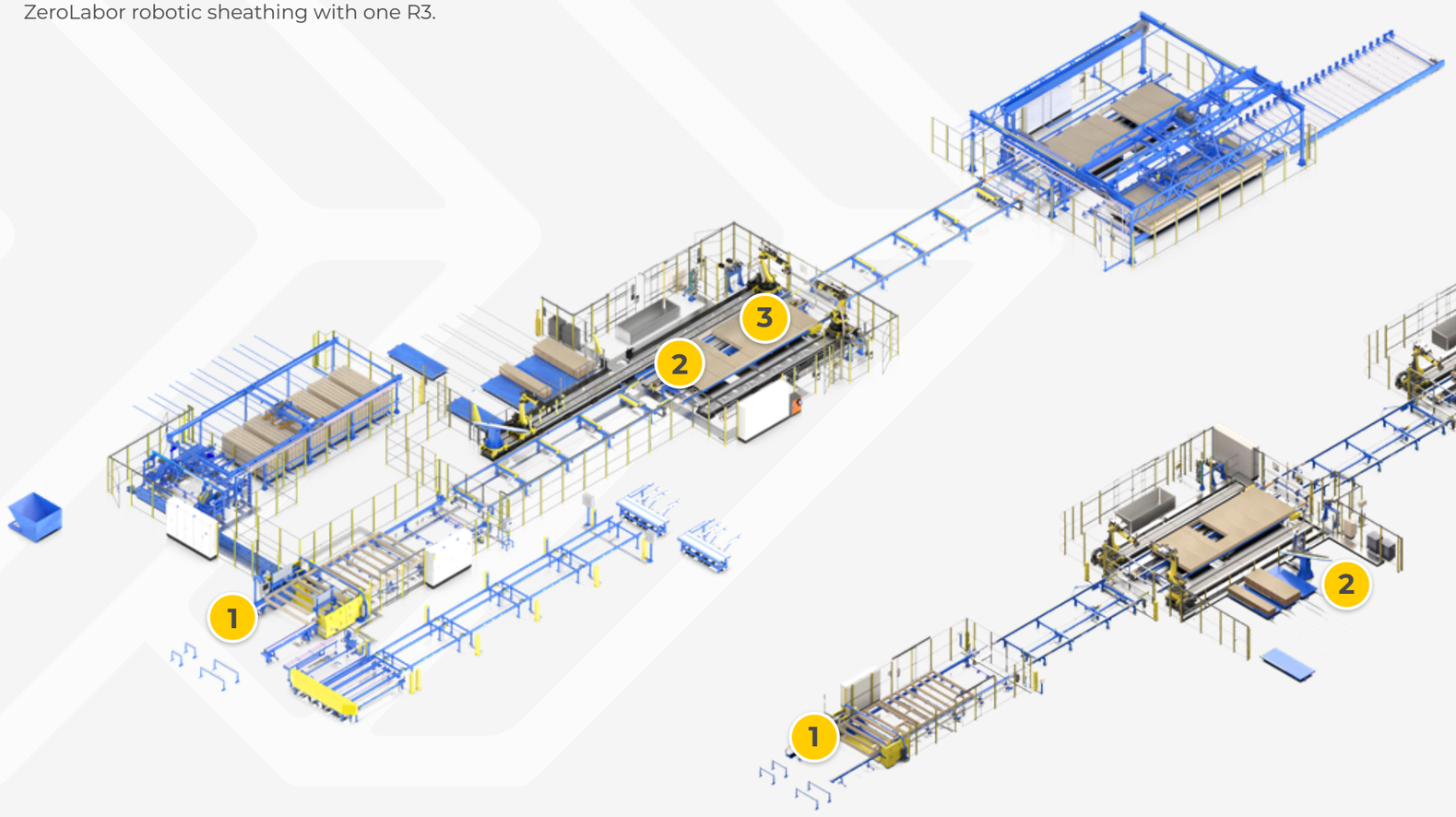






## EXAMPLE LAYOUT
**OPTIMIZED FOR OPEN PANELS**

ZeroLabor robotic sheathing with one R3.



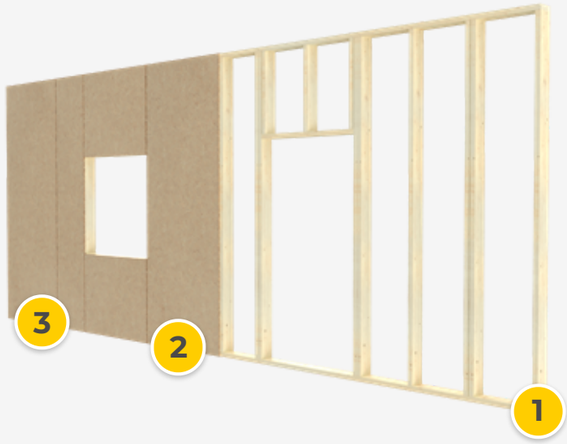




## EXAMPLE LAYOUT
**OPTIMIZED FOR OPEN PANELS**

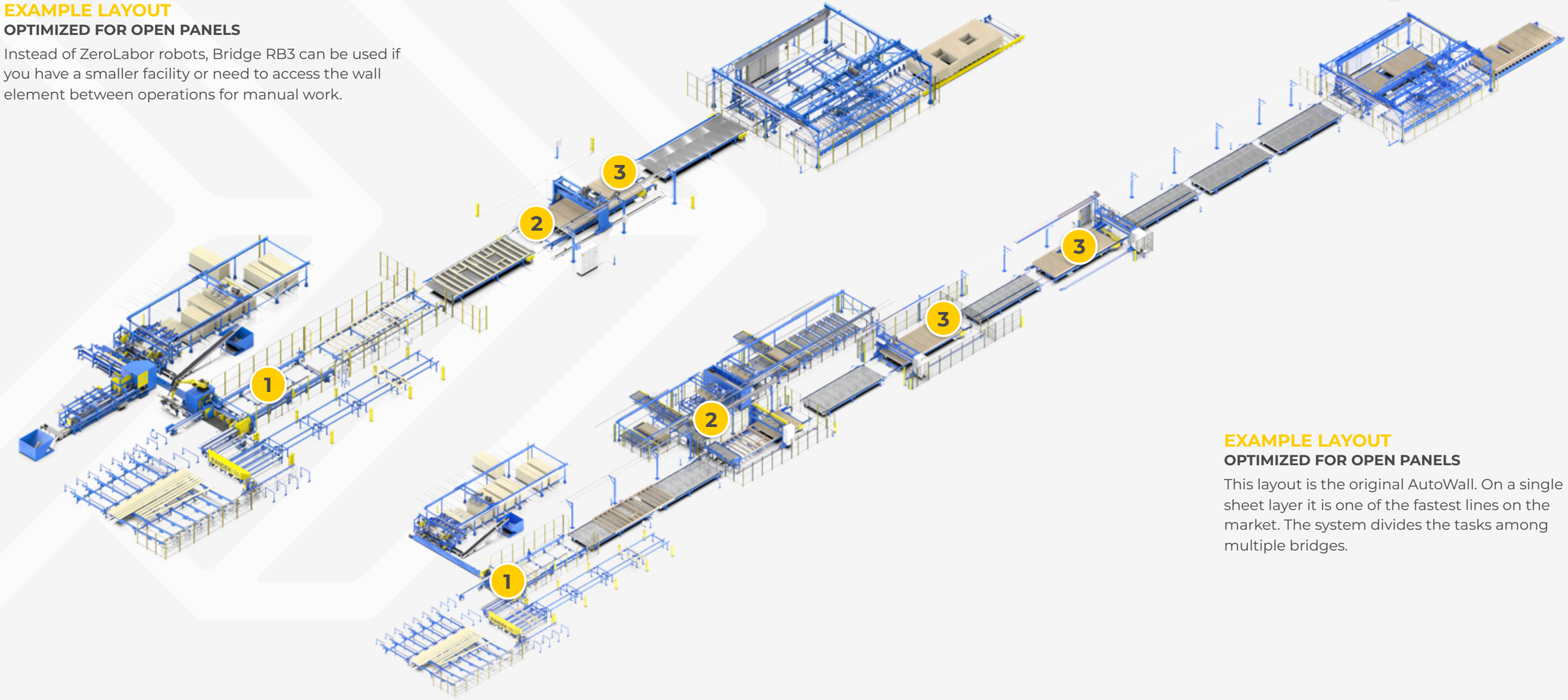
**ZeroLabor System** including Robotic Sheathing with two R2. The layout is optimized for double sheathing or effective single-layer sheathing with the sheathing operation split between two ZeroLabor R2 cells.

# AUTOWALL
# OPEN PANELS




## EXAMPLE LAYOUT
**OPTIMIZED FOR OPEN PANELS**

Instead of ZeroLabor robots, Bridge RB3 can be used if you have a smaller facility or need to access the wall element between operations for manual work.




## EXAMPLE LAYOUT
**OPTIMIZED FOR OPEN PANELS**

This layout is the original AutoWall. On a single sheet layer it is one of the fastest lines on the market. The system divides the tasks among multiple bridges.

# AUTOWALL
# CLOSED PANELS

This product is designed and built to maximise and incorporate enhanced value into the wall element. It allows you to control all the production steps whilst building closed panels in your factory.

**INCLUDES THE FOLLOWING FEATURES**

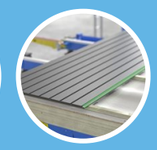

**Framing area**


**Sheathing area**


**Insulation**


**Membrane**


**Turning System**


**Work area**


**Stack & Storage**

# AUTOWALL
## CLOSED PANELS

Suitable for manufacturers who prefer to build closed walls in their production process and add more value. The production line can attach screws, nails, clamps, and membrane to both sides of the wall element, as well as mill and cut openings.

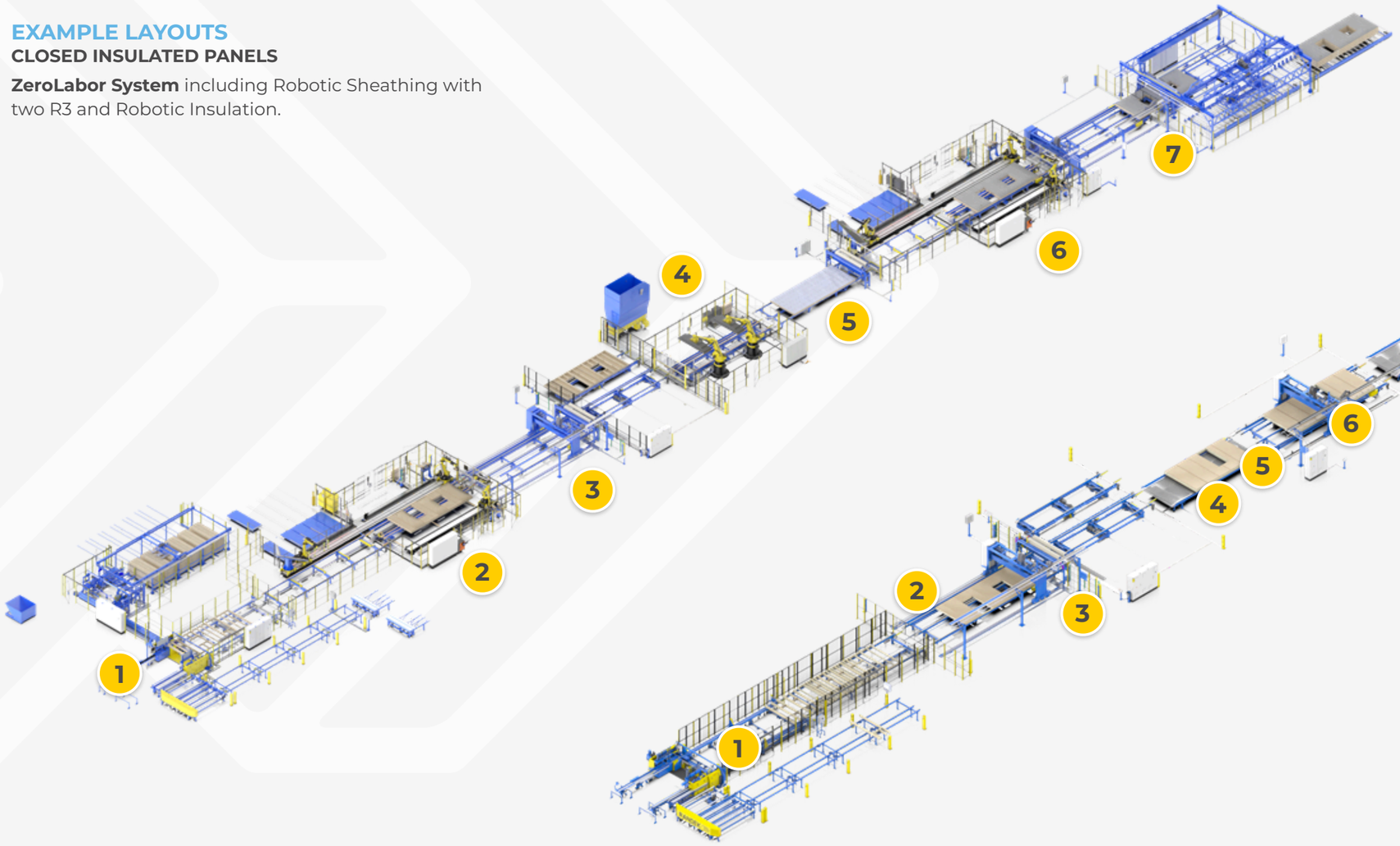
- Build with the Multiwall function
- Plan your production
- Elements delivered in stacked packages *
- Reduced staffing needs
- Increased quality
- Lucrative return on investment
- Long-lasting machinery
- Eliminates unnecessary steps at the construction site and reduces on-site time

** Requires a stacker unit.*




### EXAMPLE LAYOUTS
**CLOSED INSULATED PANELS**

**ZeroLabor System** including Robotic Sheathing with two R3 and Robotic Insulation.

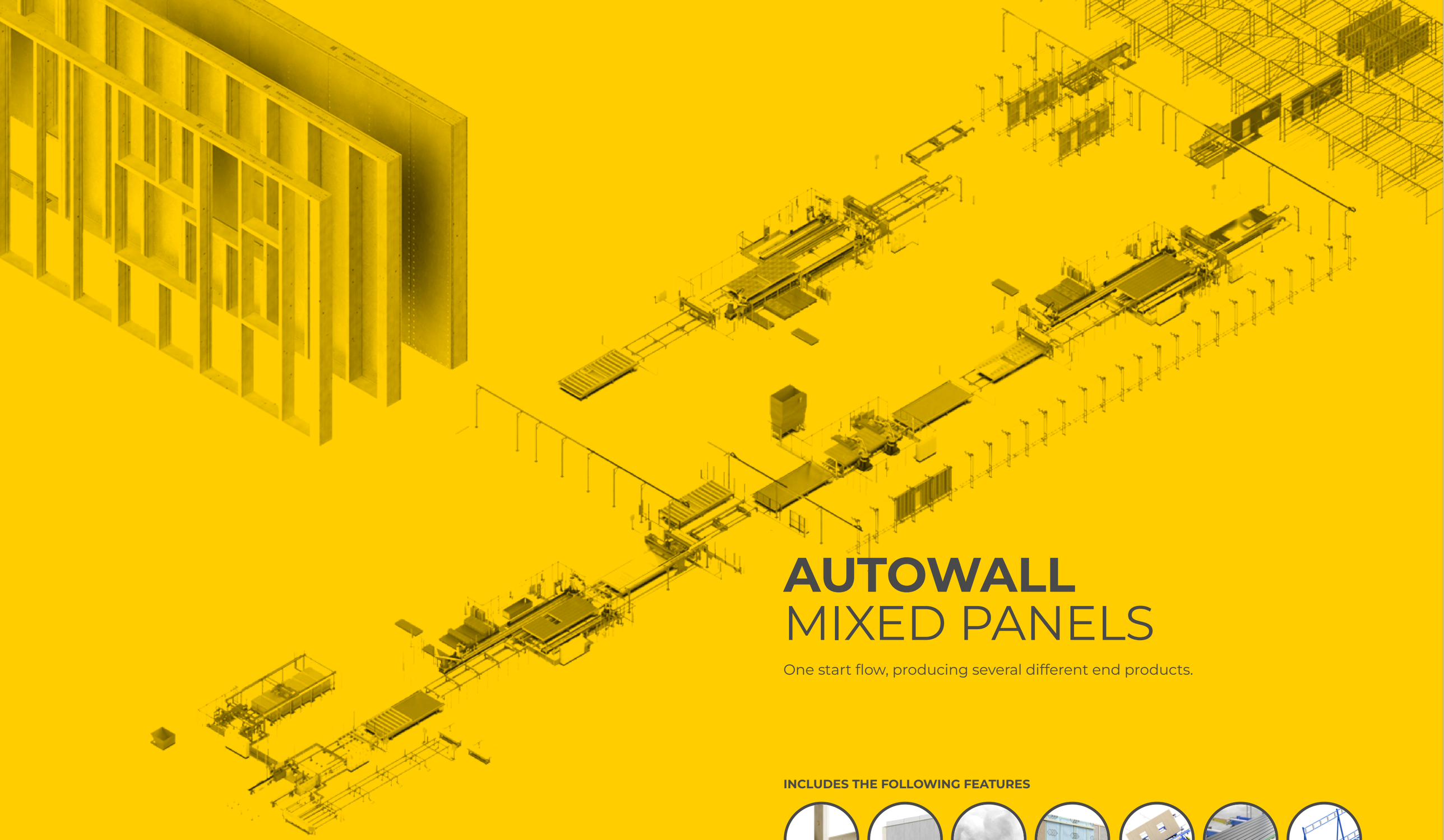






### EXAMPLE LAYOUTS
**CLOSED ELEMENTS**

A production line in which the operator places materials at various stations and collaborates with bridges to expedite fastening and cutting openings. This line is suitable for manufacturers who wish to automate only a few steps in their process or have a highly diverse product range, allowing for multiple manual work steps.



# AUTOWALL
# MIXED PANELS

One start flow, producing several different end products.

**INCLUDES THE FOLLOWING FEATURES**



**Framing area** | **Sheathing area** | **Insulation** | **Membrane** | **Turning System** | **Work area** | **Stack & Storage**

# AUTOWALL
## MIXED PANELS

Randek can provide various types of manufacturing production lines, tailored to accommodate modular manufacturing, whether for major companies or smaller ones with lesser output requirements or smaller facility spaces.

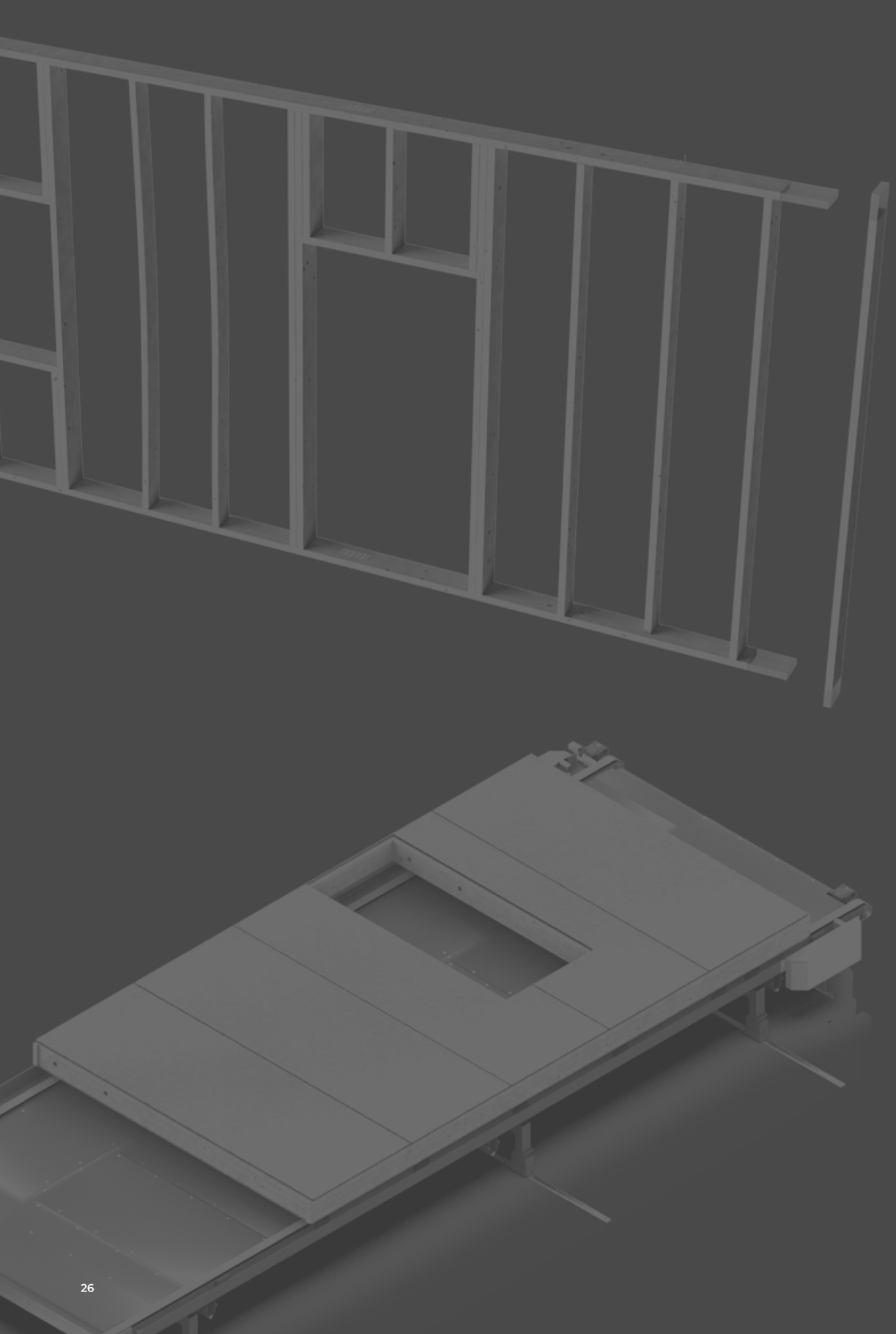
- Build with the Multiwall function
- Plan your production
- Elements delivered in stacked packages *
- Reduced staffing needs
- Increased quality
- Lucrative return on investment
- Long-lasting machinery
- Eliminates unnecessary steps at the construction site and reduces on-site time

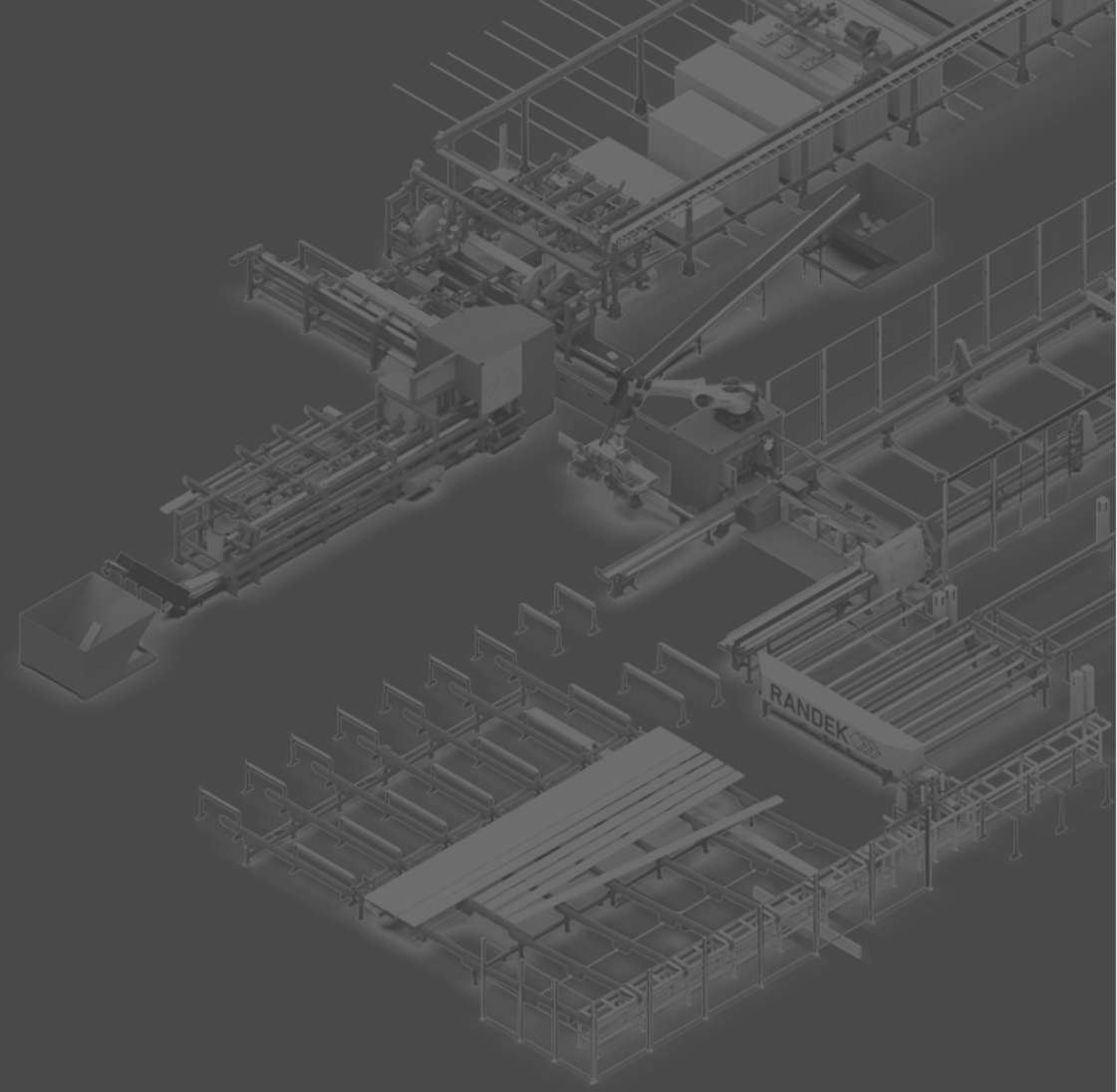
** Requires a stacker unit.*






1. Framing
2. Placing sheets
3. Laser guidance for manual work
4. Bridge for manual work
5. Split of line
6. Insulation
7. Manual work in vertical stands
8. Closed wall element
9. End Storage






# AUTOWALL FEATURES

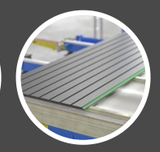

Framing area


Sheathing area


Insulation


Membrane

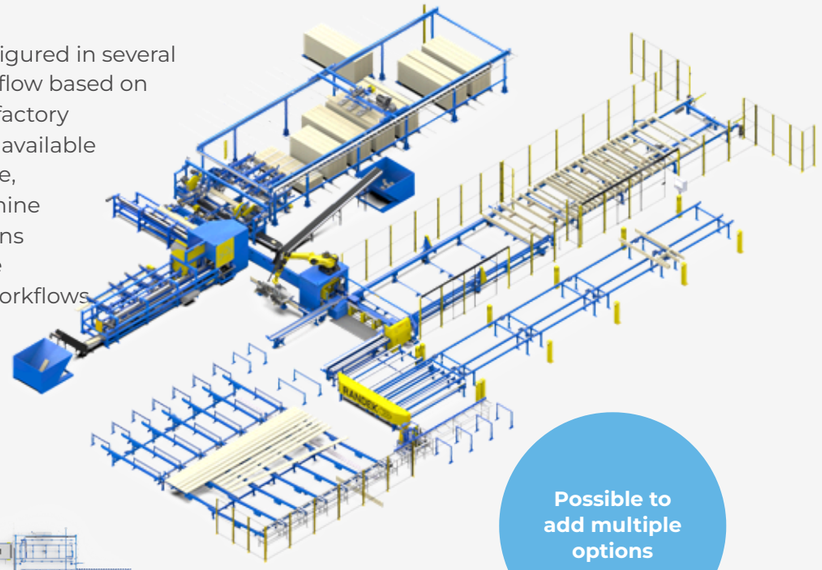

Turning System

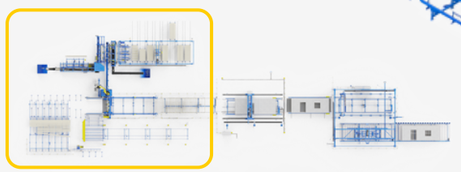

Work area


Stack & Storage

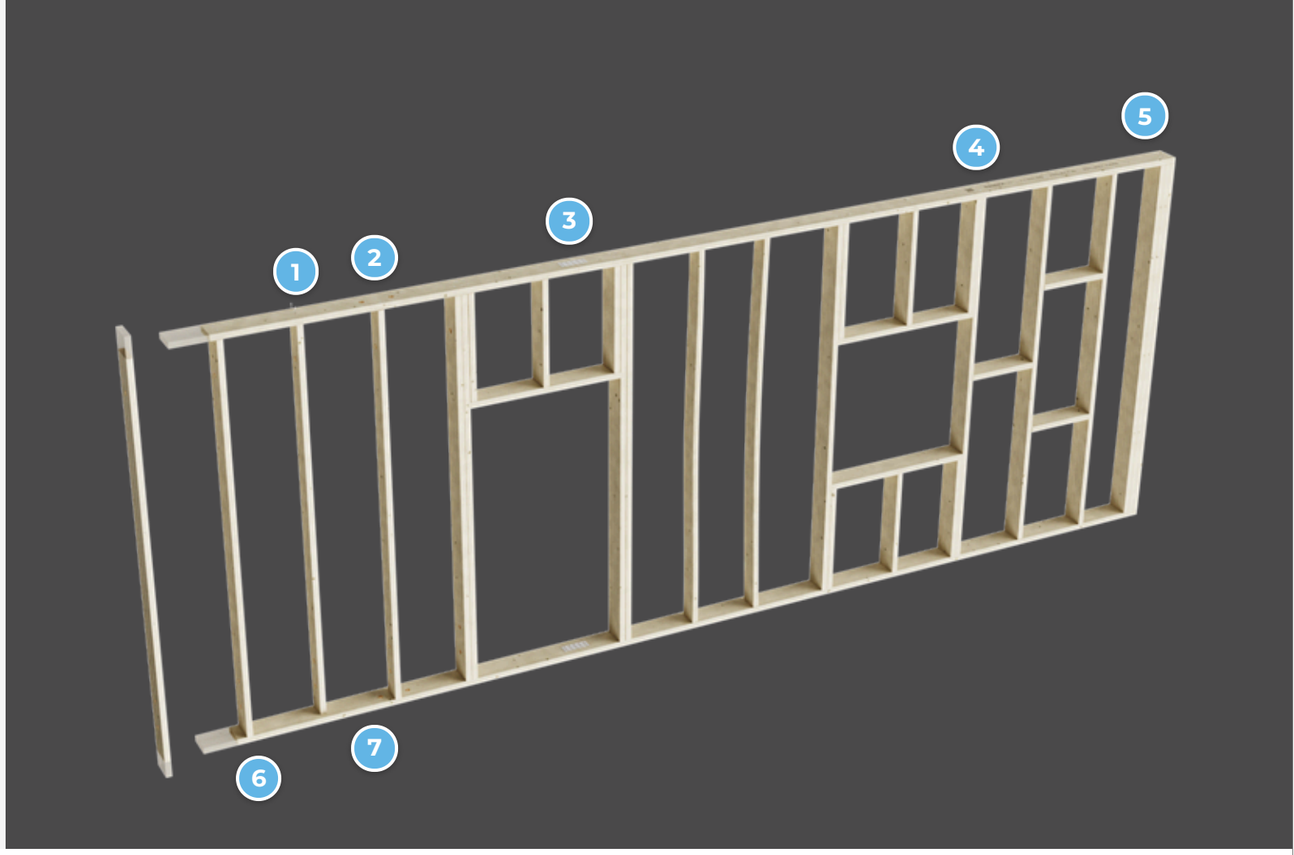
**Framing area configuration**

The framing area can be configured in several ways to optimize production flow based on the desired output level and factory footprint. Various options are available for customization, for example, adjacent to the framing machine unit, multiple support solutions can be positioned to facilitate daily planning and internal workflows.





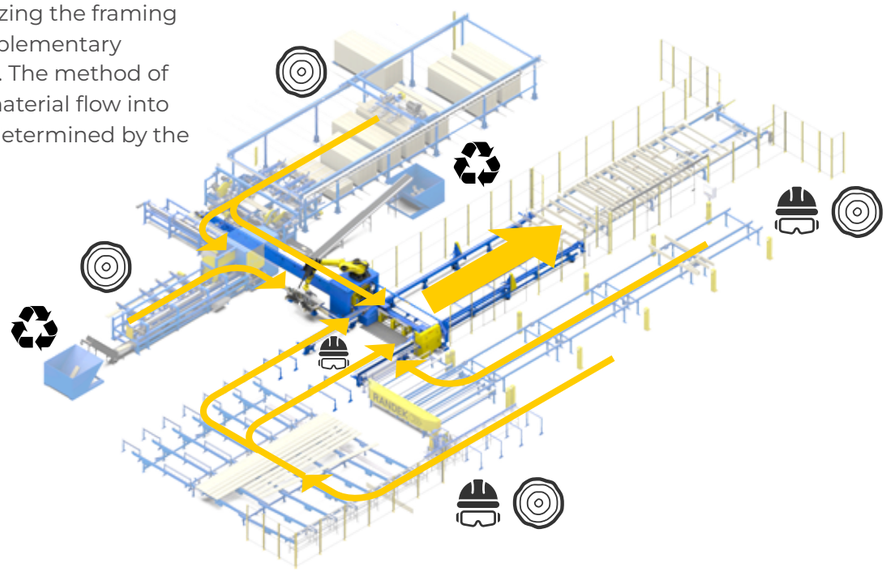
**Possible to add multiple options**




# FM3 FRAMING STATION

**Workflow**

The frame can be assembled in numerous ways, utilizing the framing machine and its supplementary features and options. The method of splitting incoming material flow into multiple streams is determined by the desired output.



Worker

Timber

Recycle bins




Add industrial nail guns to securely fasten the studs to both the top and bottom plates.




Possible to drill holes in the top and bottom plate to facilitate easy threading of electric cables and/or lifting slings.




Splicing plates and pressing nail plates.



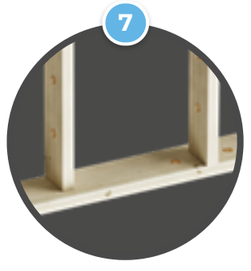

Inkjet printer to label your projects.




Multiple load-bearing studs.




Cut top and bottom plates.

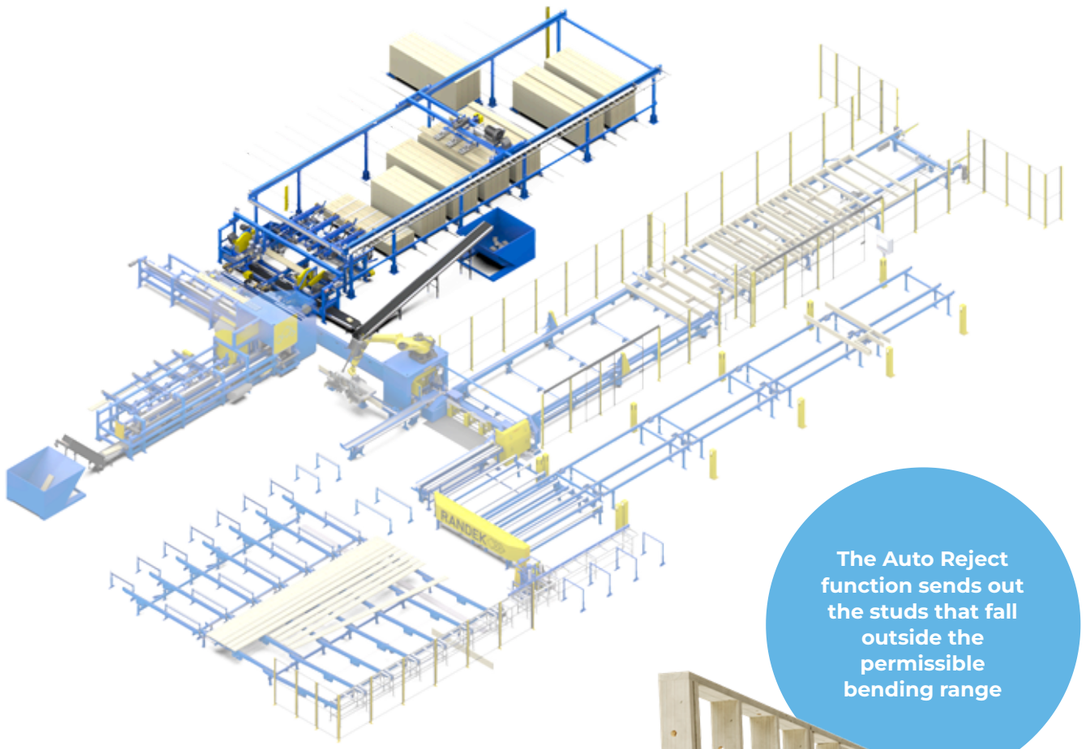



Staggered stud function.

# STUD FEEDER

**Beneficial standardization**

The stud feeder handles packages of studs placed directly on trolleys. It can be equipped with several optional functions that prepare the studs before they are assembled in the frame. This enables standardization, using basic wood lengths, which facilitates inventory management and procurement.



**The Auto Reject function sends out the studs that fall outside the permissible bending range**

**Automated inspection**

The Crown check function is an automated quality control: lasers inspect each stud for crowning and flip it so the crown always faces the same direction.



Example of studs in a wall element correctly crowned.







Trim cut the top and bottom of the stud.



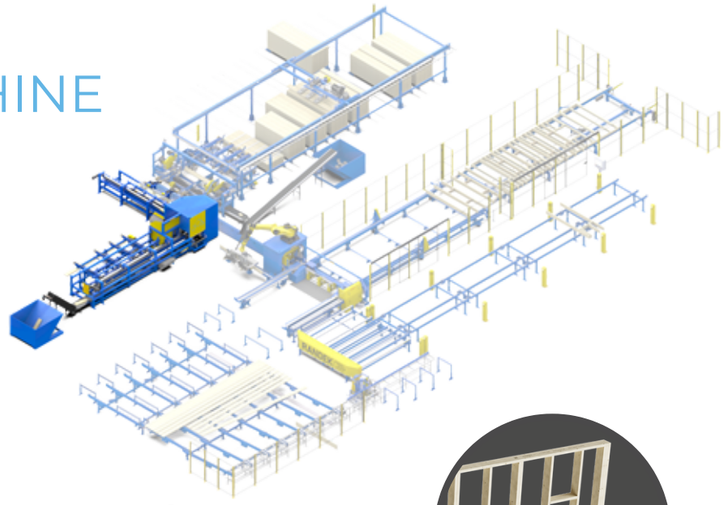


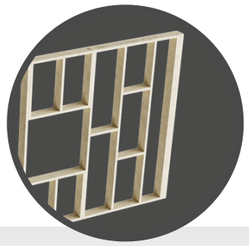
Drill holes in the studs for easier cable threading.

# NOGGIN MACHINE

**Ensuring frame accuracy**

The machine cuts the noggins to the correct lengths and secures them in the desired positions. The length of the noggin is determined by the actual distance between the studs. This ensures the correct dimensions, even in cases of deviations in stud thickness, resulting in the correct overall dimension of the element.



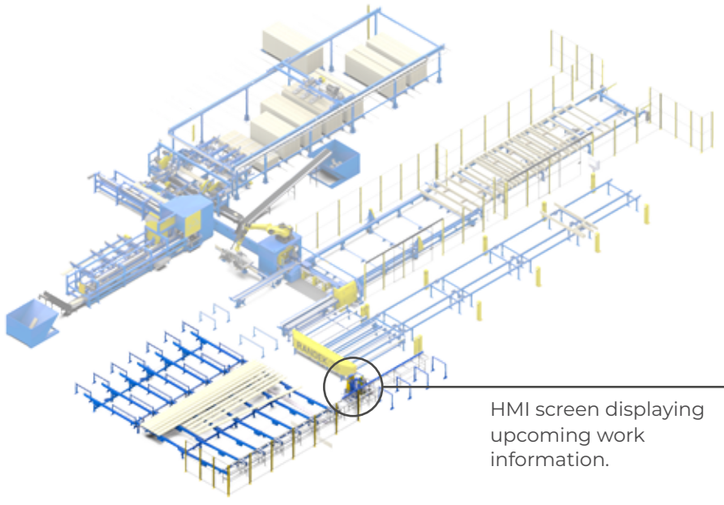


Cut and place the noggin, centrally or two pieces evenly spaced.

# SPLICE AND PRESS

**Accelerate the pace**

To prepare and accelerate the pace of the production line, it is possible to separate the pre-production of the top and bottom plates. This enables standardization to a basic wood length, facilitating inventory management and procurement.





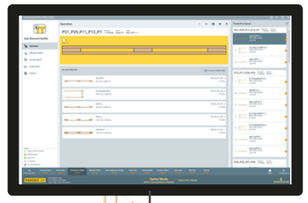


HMI screen displaying upcoming work information.



# SUBELEMENT BUFFER

HMI screen for sub-element production planning.

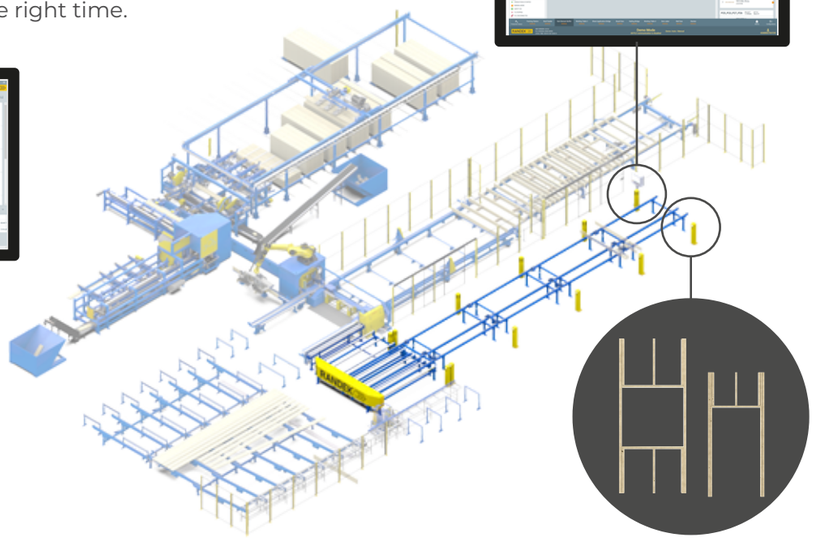


**Subelement buffer option**

Option to install a sub-element buffer, where multiple H-elements and various parts can be arranged in the correct sequence, ensuring that the operator receives the correct element at the right time.



HMI screen enables visual overview and offline production of sub-elements.



**Prebuild and add extras**

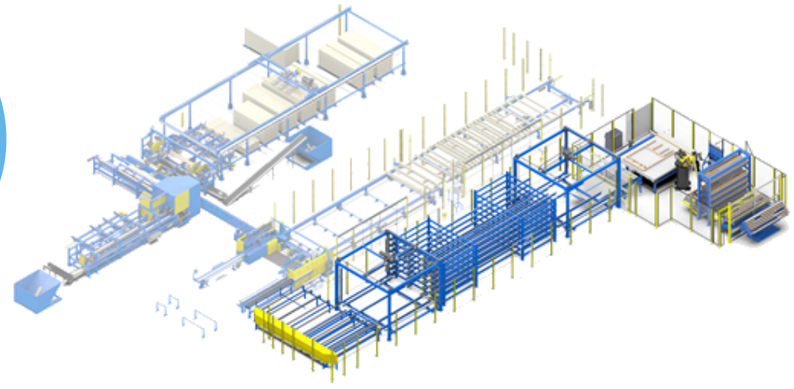
Enabling the pre-production of H-elements, triple studs, window installations, or the addition of other prebuilt components. Equipped with an HMI screen that allows an overview of work orders and pre-production.

# SUBELEMENT AUTOMATION

**Automated subcomponent assembly system**

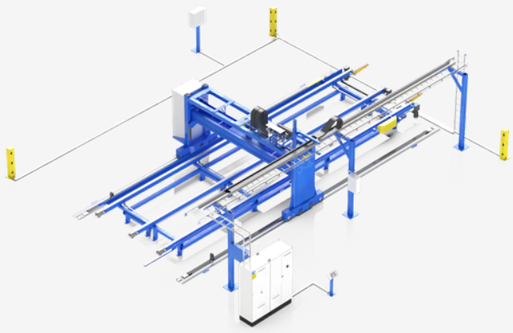
ZeroLabor Robotic Sub-Assembly is designed to automatically produce and assemble complex subcomponents, such as rough openings for doors and windows and multi-studs, in timber wall elements. This flexible solution works either as a standalone unit or as part of a larger, high-precision production line. In this layout, we've added a sub-element buffer with expanded multi-level storage, enabling pre-production and efficient handling of multiple sub-elements.

**Several automated solutions are available to ensure a continuous workflow.**

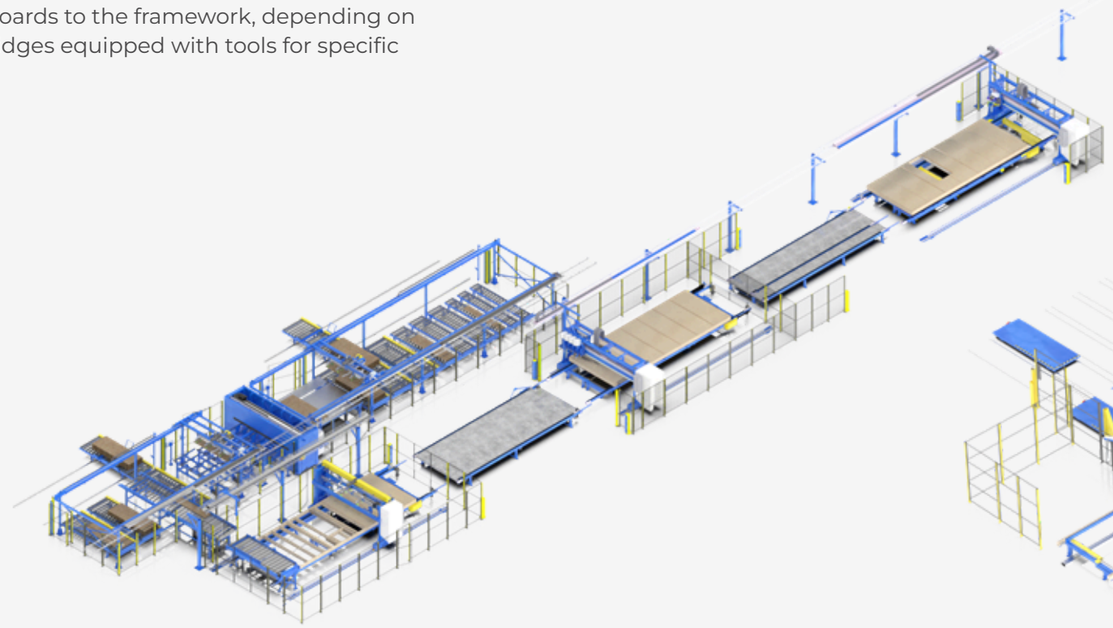


**Automated board application**

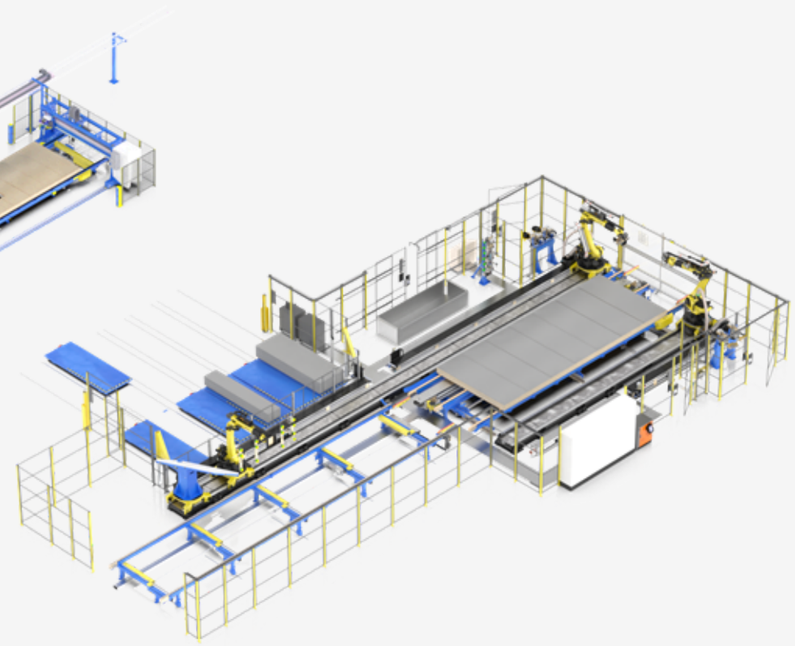
We offer various solutions for applying and attaching boards to the framework, depending on the desired level of automation. Options range from bridges equipped with tools for specific operations up to fully robotic ZeroLabor sheathing.



**BRIDGE RB3**



**SHEETSAW S3 + RB3**

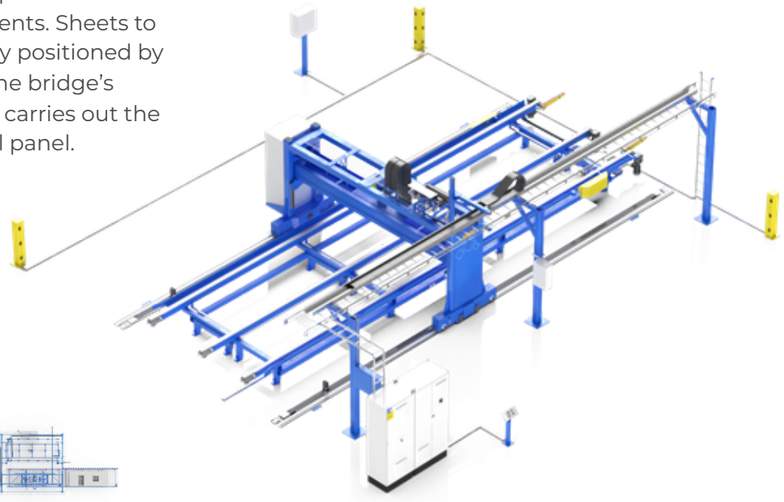


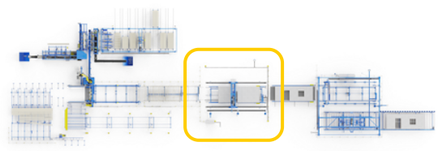
**ZEROLABOR ROBOTIC SHEATHING**

# BRIDGE RB3

**Configurable Bridge**

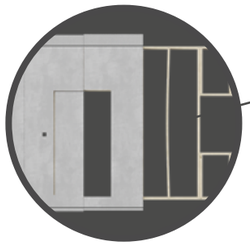
Randek Bridges can be equipped with various tools for processing wall elements. Sheets to be attached must be manually positioned by the operator. Depending on the bridge's configuration, the equipment carries out the desired operations on the wall panel.



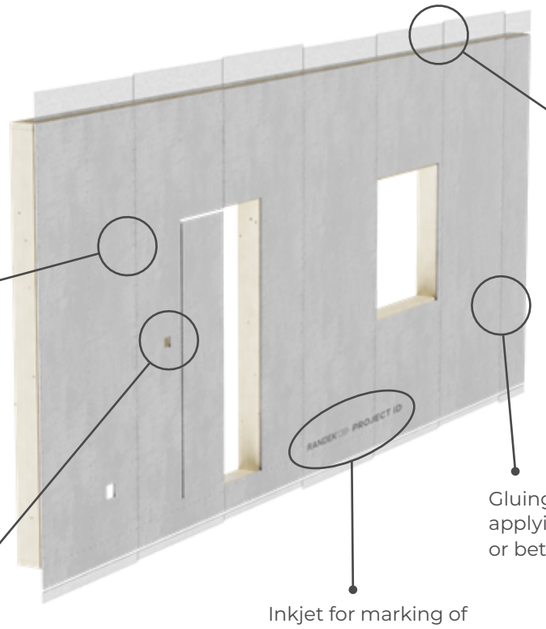


**Bridge RB3**

1-8 fastener tools can be added based on the type, required output, or speed needed. The bridge can be designed for clamping, nailing, screwing, or nail pushers.



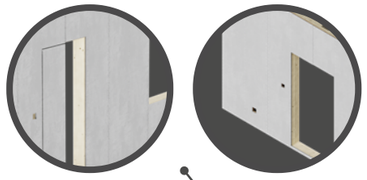
Equipped with a function to straighten bowed studs before nailing.



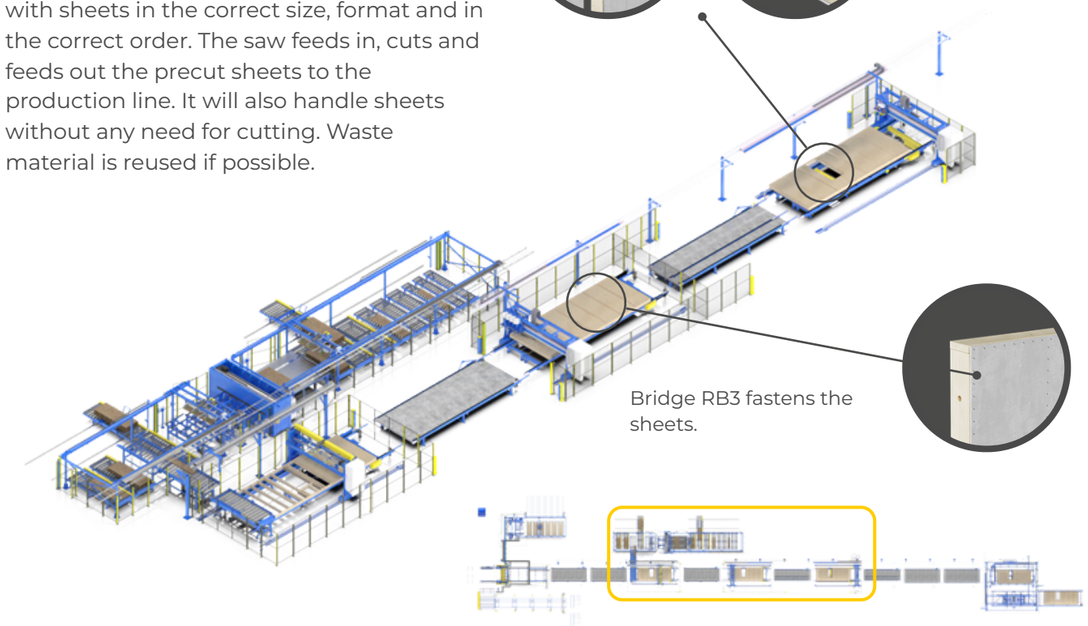
# SHEET HANDLING

**Precision cut**

The sheet saw supplies the production line with sheets in the correct size, format and in the correct order. The saw feeds in, cuts and feeds out the precut sheets to the production line. It will also handle sheets without any need for cutting. Waste material is reused if possible.

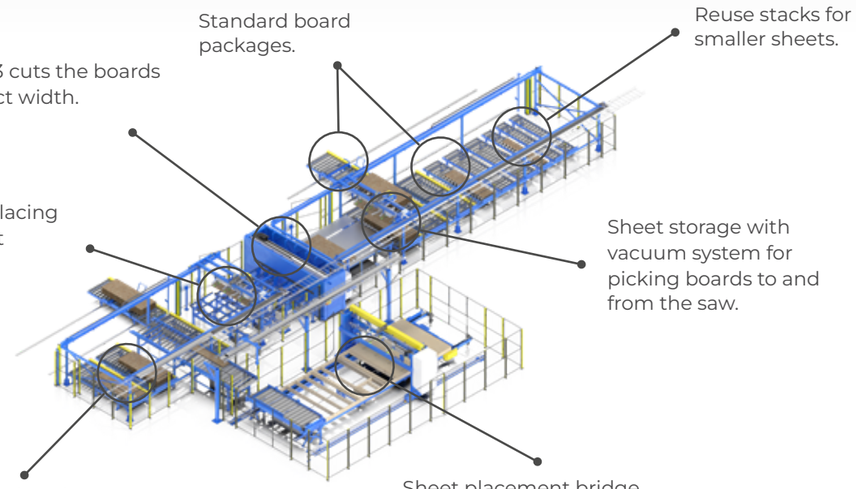


Bridge RB3 performs routing and sawing.



Bridge RB3 fastens the sheets.

# SHEETSAW S3



Standard board packages.

Sheetsaw S3 cuts the boards to the correct width.

Vacuum system for placing sheets onto the sheet placement bridge.

Standard board packages.

Reuse stacks for smaller sheets.

Sheet storage with vacuum system for picking boards to and from the saw.

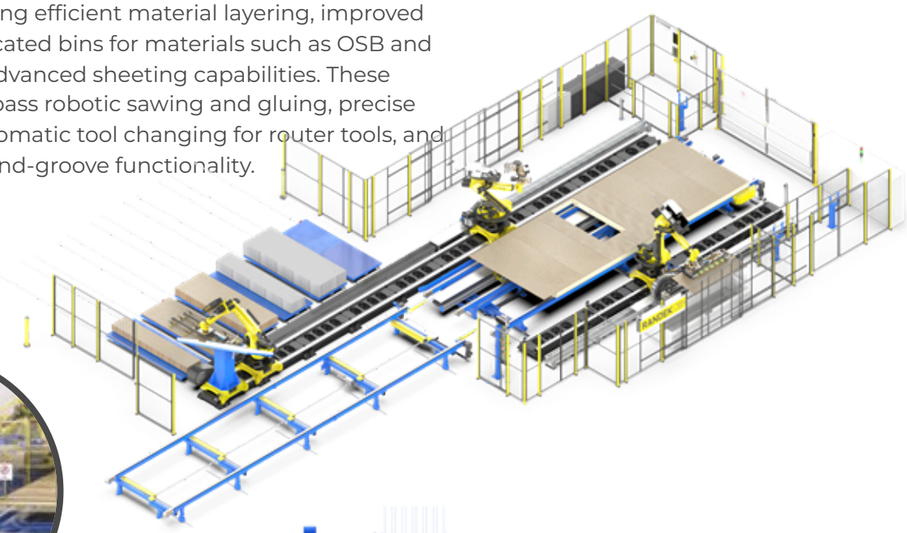
Sheet placement bridge.



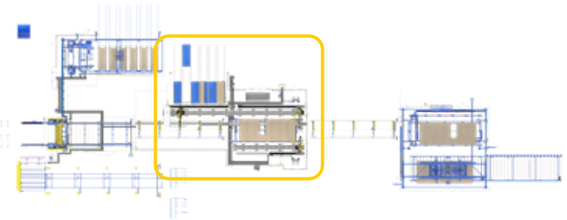
# ZEROLABOR ROBOTIC SHEATHING

**Handles the following processes**

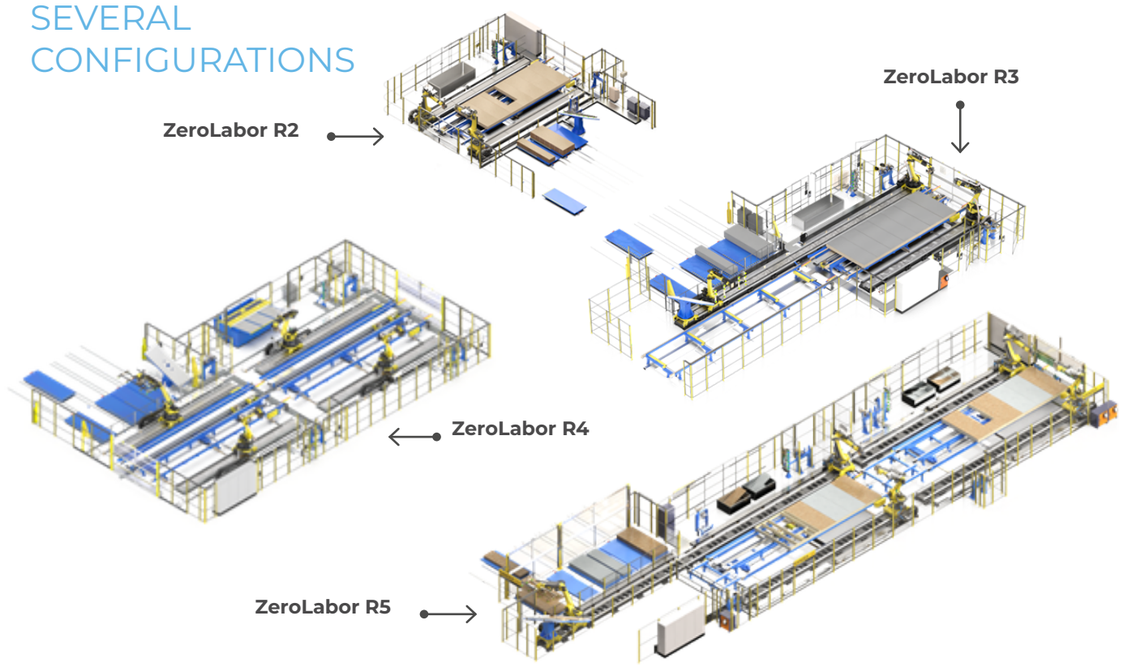
ZeroLabor sheathing streamlines the production of building elements by providing efficient material layering, improved recycling with dedicated bins for materials such as OSB and plasterboard, and advanced sheeting capabilities. These capabilities encompass robotic sawing and gluing, precise sheet handling, automatic tool changing for router tools, and advanced tongue-and-groove functionality.







## SEVERAL CONFIGURATIONS



**ZeroLabor R2**

**ZeroLabor R3**

**ZeroLabor R4**

**ZeroLabor R5**

# ZEROLABOR ROBOTIC INSULATION

**Application equipment**

Our fully automatic ZeroLabor Robotic Insulation of elements allows you to increase the efficiency and quality of your insulating process. This becomes more cost-effective and removes the repetitive and strenuous job of manually fitting the insulation.



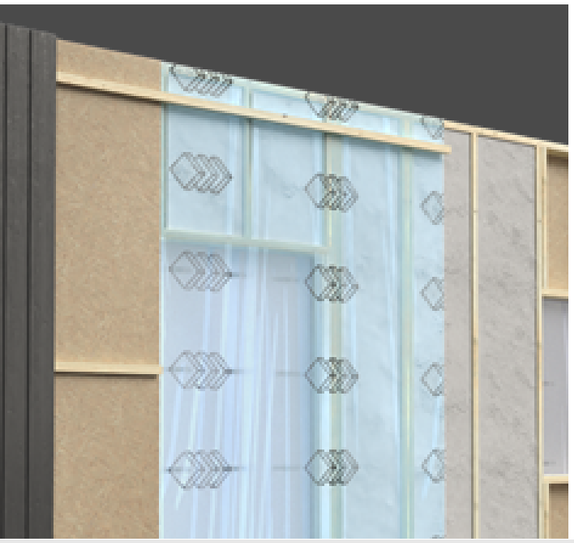


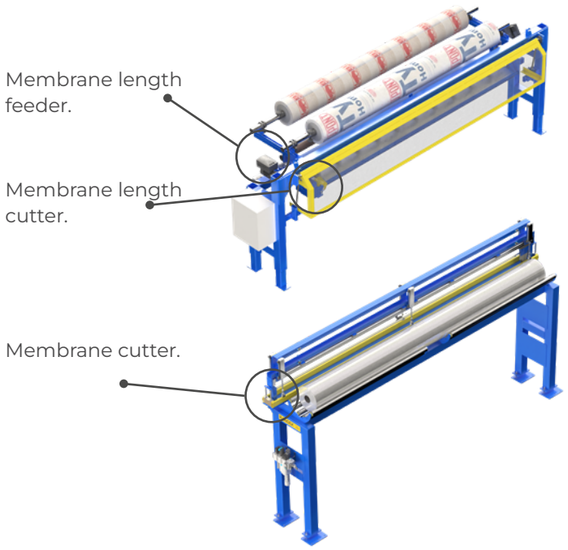
**Off-element service position.**

# MEMBRANE SYSTEM

**Membrane handling**

Holder for securing the membrane layer. Automatic or manual feed. Includes an automatic cutting blade for precise cuts. The holder is positioned in the production line to assist you. The cutting solution cuts the correct length, based on CAD data or decided by the operator (depending on machine type).





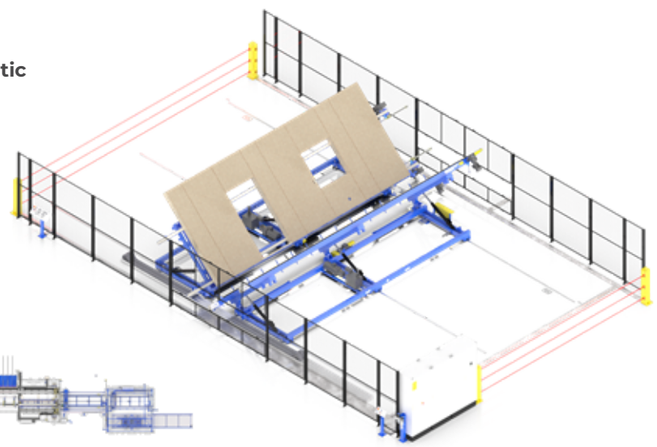

# THE RANDEK TURNING SYSTEM

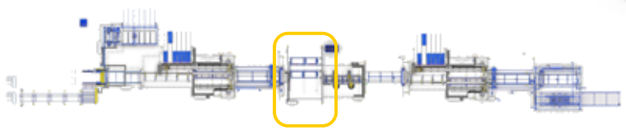
**Level of automation**

Randek's turning system uses a hydraulic upriser and receiver to turn full-size elements without cranes, with the operator supervising every move through a hold-to-run control.



**Semi-Automatic option**



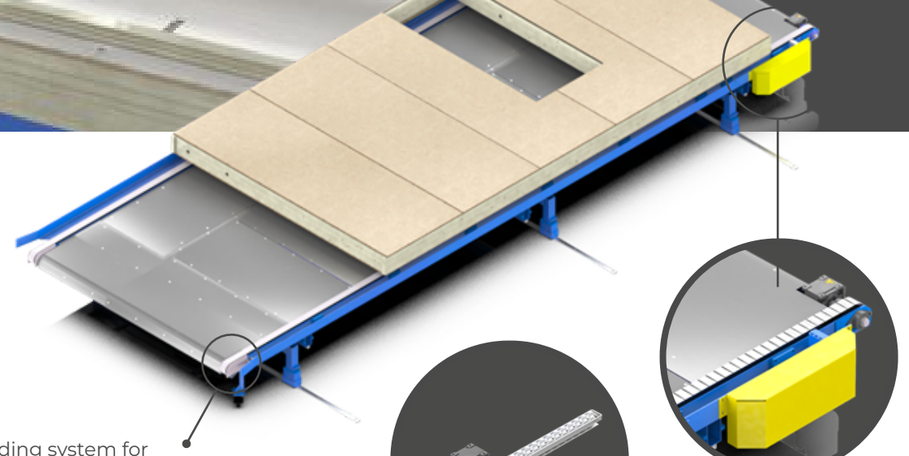


# WORK AREA

**Manual work area**

The stations automatically adjust themselves based on CAD data. The element can be fed automatically or through operator functions on the control panel. Additional functions, such as squaring or holding the element in the correct position, can be incorporated. LAP CAD-PRO laser projection simplifies tasks. An HMI screen can display instructions for necessary manual steps.



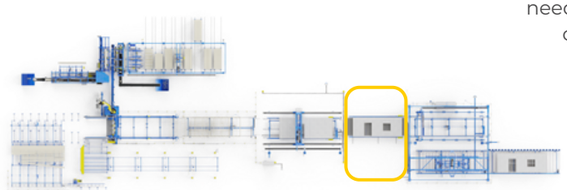
Guiding system for incoming elements.



Option, adjustable saloon door solution when the operator needs to perform manual work on different sides of the element.



Robust solution for positioning the wall elements.

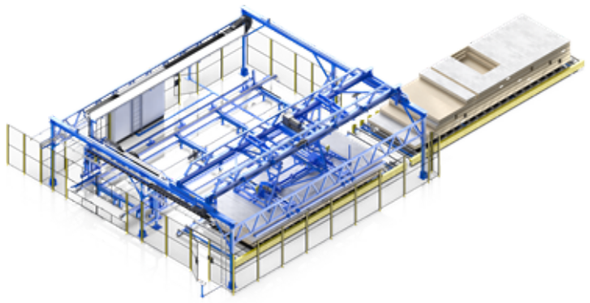


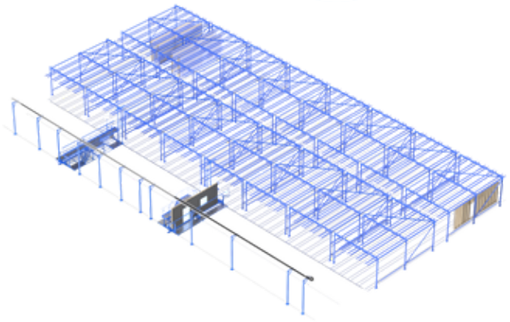
# STACKING AREA

**Multiple stacking and storage solutions are available**

We offer several different stacking solutions. Horizontal placement in a stack or vertical placement. We also offer various types of storage systems, including adjustable systems that are manually adjusted based on the incoming element's height, as well as angled systems that tilt the wall element using a roller rack solution.

**Stackable in a specific order according to CAD/CAM data**

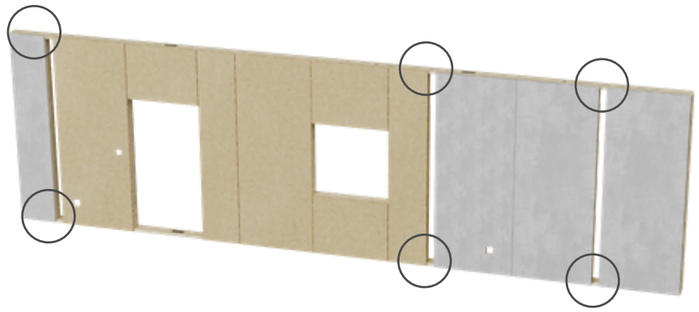


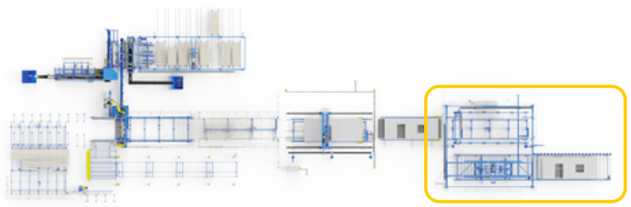


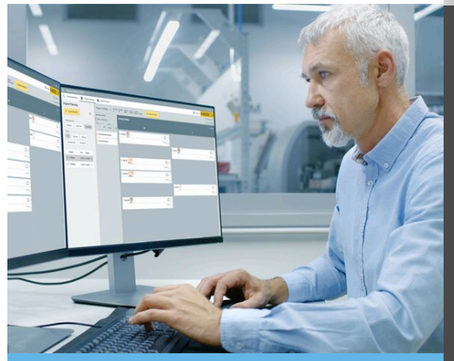
# STACKING AREA - MULTIWALL

**Effective assembly solution**

Combine and assemble multiple smaller walls into one during the planning phase using the Multiwall function.







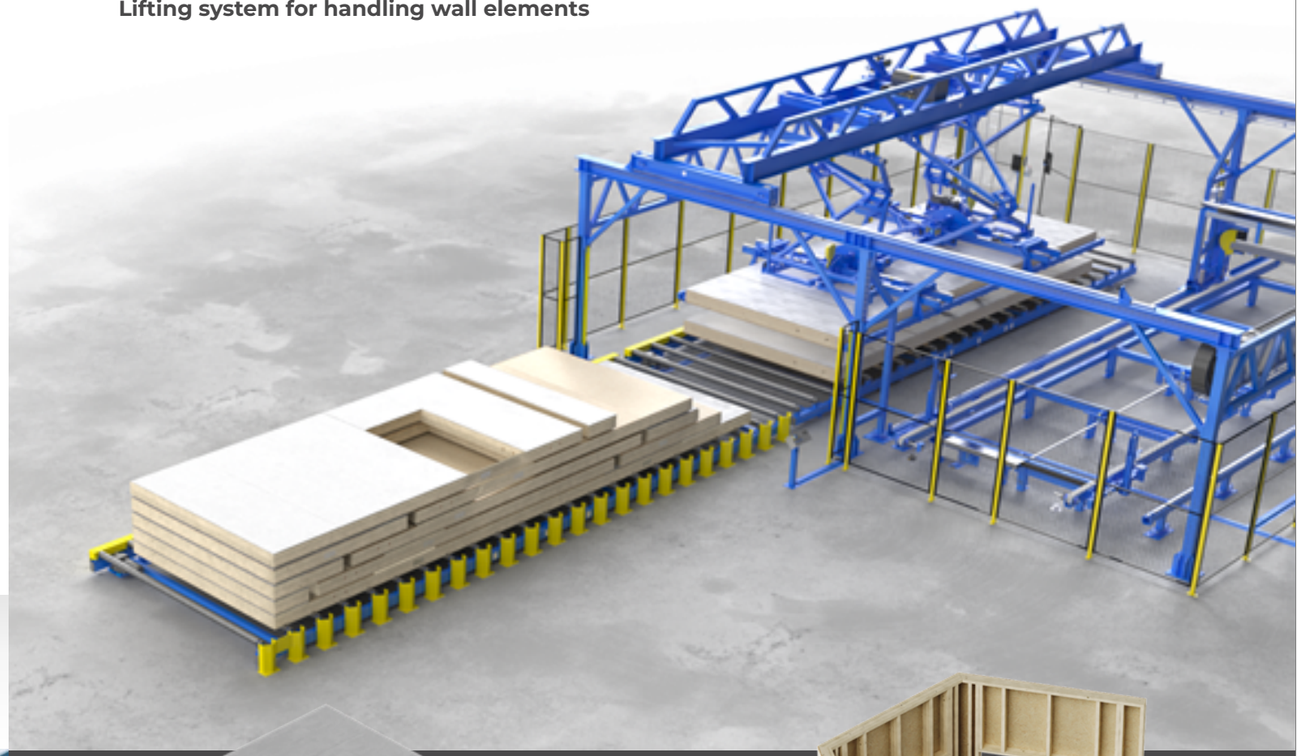
**Effective stack planning**

Determine the order of the stack in the planning phase, using Randek Planner.



# STACKING AREA - LIFTING SYSTEM

**Lifting system for handling wall elements**





Loading area for completed stacks prepared for transport to the construction site.



Multiwall saw function: angled cuts, e.g. for bay window walls.

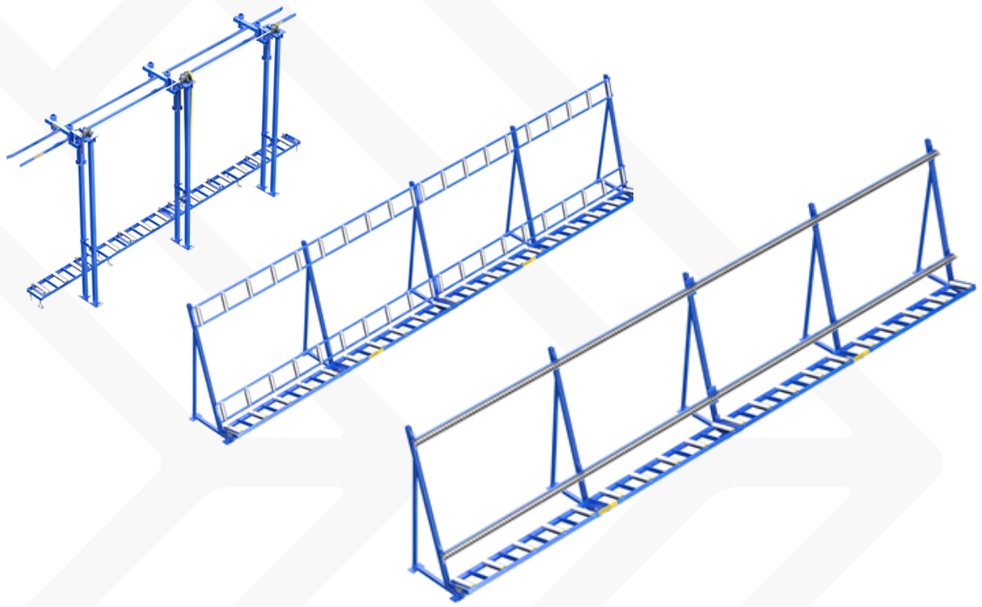


Multiwall saw function, straight cuts.

# STORAGE AREA

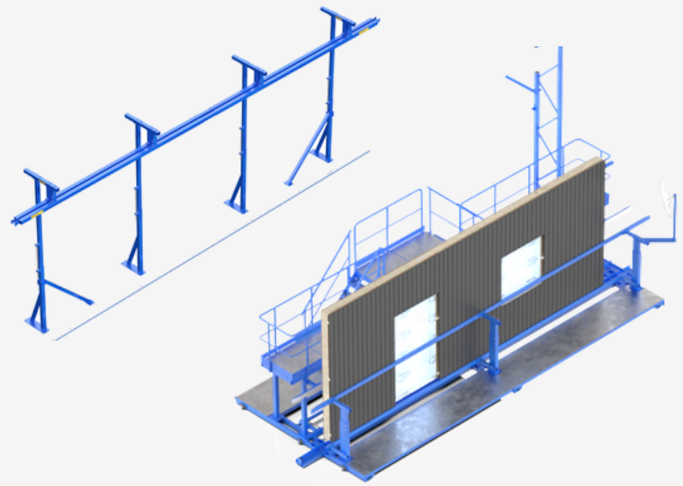
**Flexible storage options**

It’s possible to conclude your production line with a storage area. You can choose whether you want your wall elements to be stored vertically or at an angled position, guided by rollers.

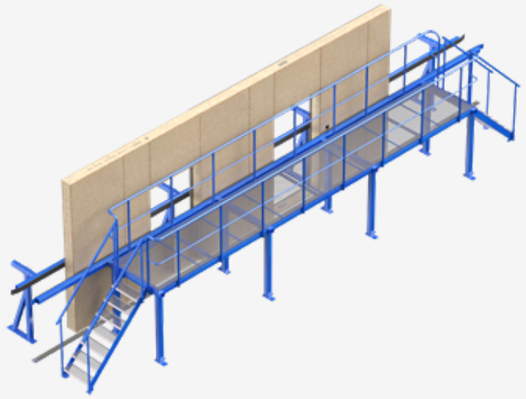


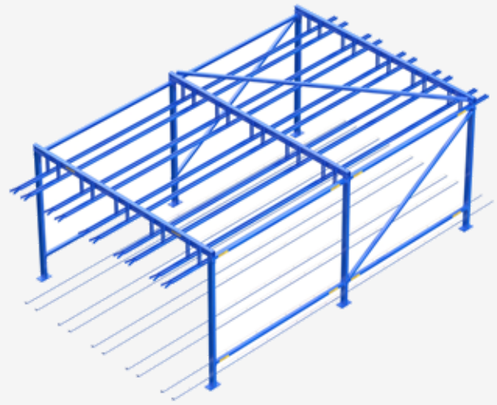






**If you require a larger storage system we can provide one with a movable platform for loading and unloading**





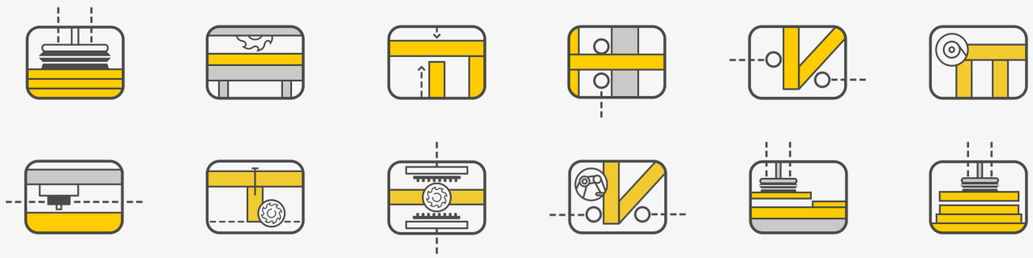


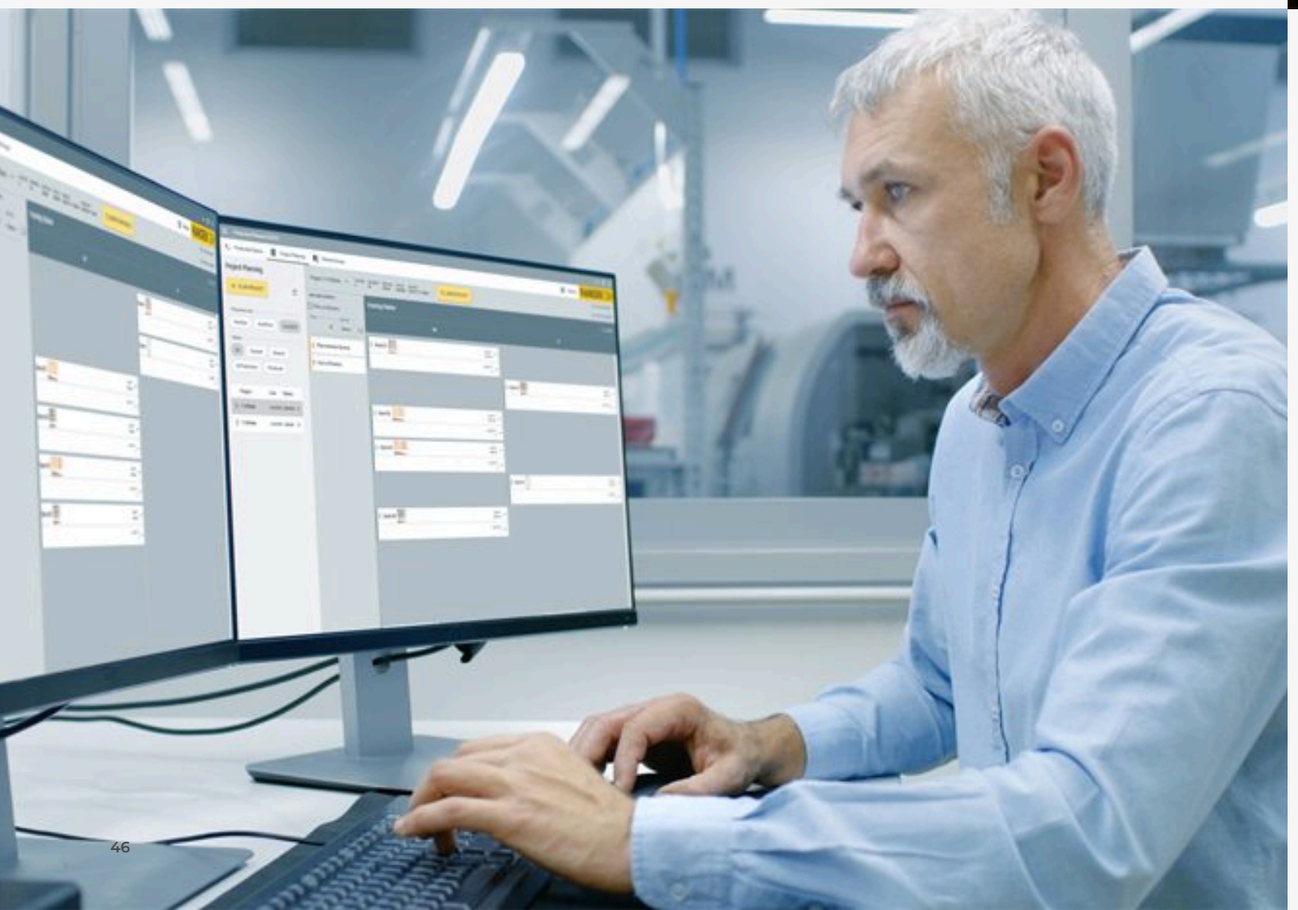
# RANDEK PLANNER

**Production planning is an important function for all manufacturers, but it varies amongst companies.**

Randek offers easy-to-use planning software to businesses who want to manage their production planning process more effectively, bridging the gap between leading CAD vendors and the production line.

Furthermore, we provide completely automated APIs that allow ERP or SCADA systems to control the planning process via API calls.








# MYRANDEK ADVANCED IIOT PLATFORM

MyRandek is a comprehensive Industrial IoT (IIoT) platform designed for real-time monitoring and KPI tracking. It enables users to continuously analyze production processes, optimize workflows, and identify bottlenecks. By assessing potential upgrades and automation opportunities, MyRandek enhances efficiency and maximizes productivity.

# BUILDING THE FUTURE

THE TREND IS ENERGY-EFFICIENT TECHNOLOGY, MODERN INDUSTRIAL BUILDING METHODS, PREFABRICATED HOUSES, AUTOMATED PROCESSES AND ROBOTIC SOLUTIONS. RANDEK IS BUILDING THE FUTURE.

OUR VISION IS TO BE A WORLD-LEADING SUSTAINABLE PIONEER IN THE INDUSTRY WITH A GLOBAL MARKET PRESENCE

**THE SWEDISH METHOD**
Randek develops and delivers high-performance machines and systems to wooden house manufacturers across Sweden. The houses are delivered as fully prepared, closed, energy efficient wall, floor and roof elements. Everything is prebuilt off site and can then be assembled quickly on the construction site.

**THE FUTURE IS PREFABRICATED**
The concept “Swedish housing” is becoming well known around the world. The trend is energy efficient wooden multi-storey houses, built quicker than ever thanks to prefabricated modules lifted and mounted into place.

Exciting times lie ahead as new building techniques and offsite building give us the opportunity to develop in new markets.

**AN AUTOMATED CRAFT**
Fast, cost effective and excellent quality is the winning concept for the future. Randek Robotics is part of the solution, combined with traditional automation systems. For us it’s about standardizing in a flexible way. A good example of this is how we can now produce various types of roof trusses in one machine which earlier was only able to produce a single model. We have many years of experience yet remain motivated to continue to develop this innovation further.

RANDEK™
BUILDING THE FUTURE

# **CUSTOMER** COMMENTS




## Kodumaja, AutoWall with ZeroLabor robotic sheathing, exterior walls

Kodumaja mainly builds multi-story apartment buildings. They specialize in the construction of high-quality timber frame housing. They use an effective and future-oriented construction method that conforms to the construction requirements and standards of their strategic markets.

“Before we needed to have many quality checks in production, to eliminate human errors. The ZeroLabor Robotic System is highly automated, we can remove manual operations and quality checks which will increase our productivity dramatically. In general, it is difficult to find workers in the labor market, we need to hire people outside Estonia which is demanding. To have workers not speaking the same language is also challenging. We also struggled with the cost of introduction and training which is a significant cost to consider. We also like the fact that the system is future-proof as tools and functions can be added in the future if needed. The system is flexible if we would change the building system”

***Marti Mets, CEO Kodumaja Element OÜ***




## Arcabo, AutoWall Mixed Panels with ZeroLabor R2 and robotic insulation

Arcabo, one of Europe’s largest makers of winter-proof modular chalets with over twenty-five years of expertise, has long used Randek equipment and invested in AutoWall with a ZeroLabor R2. The ZeroLabor Robotic System is integrated into a wall production line and several new functions were developed during the project. The robots will handle sheets, perform cutouts, remove and sort waste, handle nailing, screwing, stapling and gluing. All automated operations are based on CAD drawings.

“The ZeroLabor Robotic System is the most automated robotic system on the market for the production of wall elements, the system will be a great asset for us in order to increase our growth and profit!”

***Rijk Houthuijzen, CEO Arcabo***




## BoKlok, AutoWall with ZeroLabor robotic sheathing

BoKlok, jointly owned by IKEA and Skanska chose Randek as a supplier to their modular factory. Randek delivered a highly automated robotic wall production line for exterior and interior walls. The ZeroLabor concept was further developed to increase the overall capacity and intelligence of the system.

“Randek is an important supplier for us. Our new production line will enable us to double the production rate and we will be able to produce our new multifamily type of houses faster.”

***Sacha Pardon, Press Officer, BoKlok***



# RANDEK PRE-STUDY

**Experience the Expertise**
Randek boasts extensive experience in developing new systems for offsite automation. Many existing systems, including functionalities within the AutoEye, ZeroLabor, and AutoWall product range, have been refined through pre-study agreements.

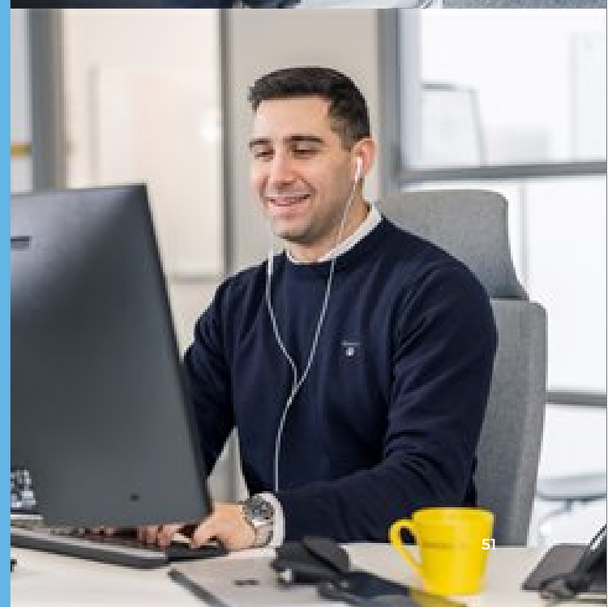
**How it Works**
Randek assigns a dedicated project leader to spearhead the development and configuration of the optimal automation system for your requirements. This personalized service encompasses a comprehensive pre-study that involves utilizing existing automation equipment from our extensive portfolio or crafting new machines and systems explicitly based on your requests.

**Key Features of the Randek pre-study**
Tailored Development and Configuration: Our skilled team ensures a customized approach to meet your specific needs, considering factors such as available production surface, capacity demands, automation levels, acceptable staffing, and your existing or future building system.

- Transparent Cost Agreement
- Comprehensive Pre-study Outcomes
- Detailed Layout
- Visualization
- Simulation
- Capacity Assessment
- Function Development
- Prototyping
- Technical Specifications
- Delivery Time
- Quotation







# **SWEDISH** QUALITY LASTS

Randek has developed automation for the prefabricated house manufacturing industry since 1943. Today Randek supplies high-performance machines, robotic solutions and complete production lines to house manufacturers in 40 countries on four continents.

## PRODUCTS/SYSTEM



### SP720 SERIES CUT SAWS

Sturdy, reliable cut saws for house and roof truss manufacturers, with computer-controlled length stops.




### WALL, FLOOR AND ROOF LINES

Tailor-made systems for prefabricated walls, floors and roofs. From manual to fully automated.



### ROBOTIC SYSTEMS

Randek Robotics develops the ZeroLabor Robotic System: robot cells for sheathing, sub-assembly and insulation.



### ROOF TRUSS SYSTEMS

Randek Truss System NT for traditional truss production and the AutoEye System for automated pressing.



### BUTTERFLY TABLES

Wall-turning tables, a Randek invention from 1963. From a single manual table to a full line.

## RANDEK SERVICES




### RANDEK PRE-STUDY




### MAINTENANCE



### GLOBAL SUPPORT



### MYRANDEK

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