Flexible Automation Solutions For The Offsite Building Industry







Modular Building Automation

Modular Building Automation BV (MBA) is a joint venture between JJ Smith Woodworking Machinery Ltd, based in Liverpool, England and H&M Houtbewerkingsmachines BV, based in Sneek, Netherlands.

MBA offers a complete range of equipment for the manufacture of wooden panels used in the construction of buildings, including walls, floors, roofs and other elements.

The combination of the long established JJ Smith with its extensive experience of the market and H&M with their leading edge manufacturing techniques means that the customer gains the benefit of the correct machine, efficiently designed and manufactured to a high standard.



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Framing Station

A high quality, heavy duty, automatic squaring and nailing station for timber frame panel wall manufacturing. The panel is held square and secure during the assembly and nailing of the studs and components. The operator is able to manually position the components for the panel, at a safe and comfortable working position in the centre, thus enabling the machine to be used with a single operator.





- Independent clamping of rail and stud to allow for timber tolerances
- Stud locator for accurate positioning of timber components
- Wide working tables allow sub-assemblies to be built, either in frame or in advance

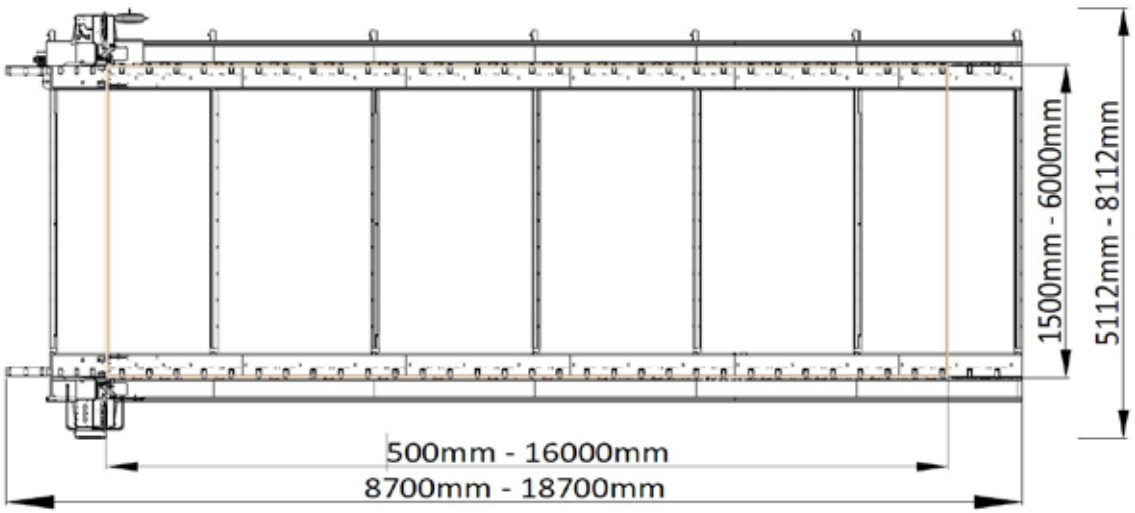
- Multiwalling can be configured in the software to help balance production work flow

- Two saws available as an option to partially pre-cut through the frames, whilst keeping them as one unit for any side 2 operations





- A range of optional stud / joist feeding carriages are available to supply the materials in a convenient location for the operator



Multi Function Bridge

A fully automatic station for the fixing of sheeting and cladding materials which can be mounted on its own dedicated table, or on floor mounted rails, to enable it to travel over more than one working table. Nailing / stapling operations can be completed accurately from data downloaded from the CAD package via our Design2Frame software (see software page). Multiple tools can be fitted to either one or two cnc carriages which can operate simultaneously to increase element throughput. Gluing systems can be fitted to this unit for flooring applications.





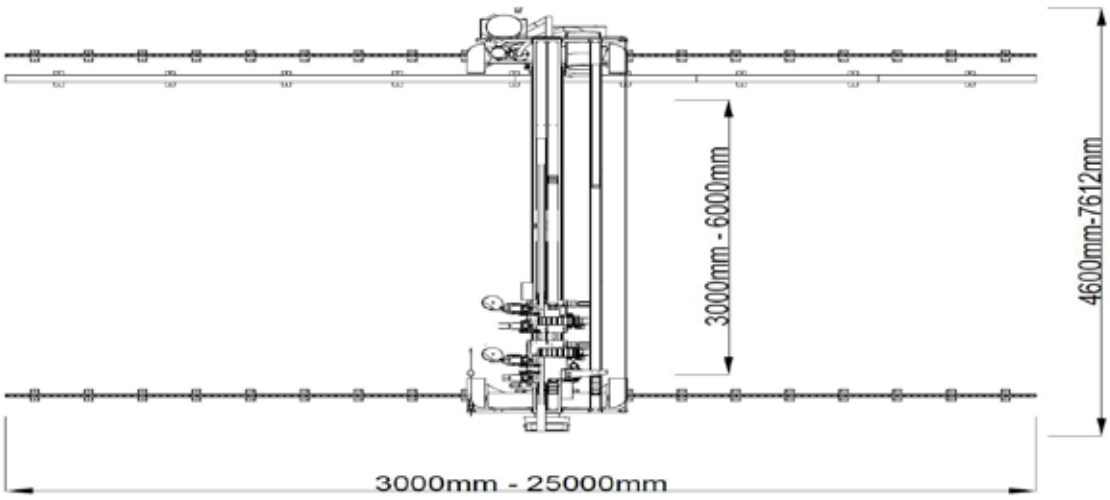
- Bridge can be mounted on its own tables (as shown left)
- Alternatively the bridge can be mounted on floor rails to travel over a butterfly table or multiple working stations
- Walk through operation to allow for easy transfer of panels in and out of the station
- Motorised transfer chains are available as an option



- Options include a router for apertures such as window and doors and for panel sizing
- Drilling tools can be fitted
- Saw units can be fitted with inclination for finishing the bottom of exterior cladding



- Special batten fixing attachments including locator and timber straightening device
- Vertical and horizontal options available
- Automated batten nailing possible fed from a magazine
- Cladding fixing options available



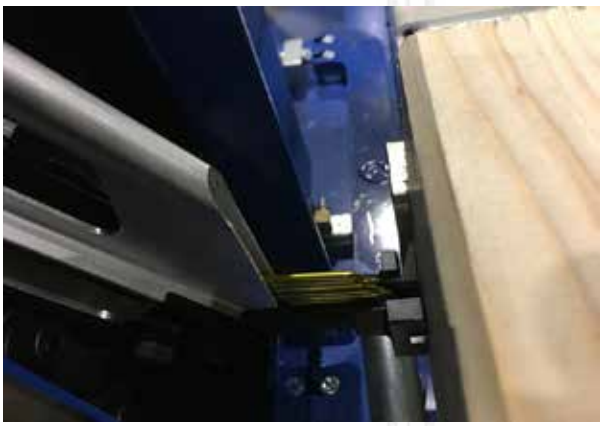
MOBI ONE

The Mobi-One is a complete assembly machine which combines all the functions of a framing station and nailing bridge in to One machine - less than half the floor space and One operator to achieve speeds up to 15 lm/h (framing and cladding only). As each panel is clamped from the first nail of the initial stud, to the last nail in the cladding, the Mobi-One ensures the even the most complex of panels are manufactured accurately and efficiently.

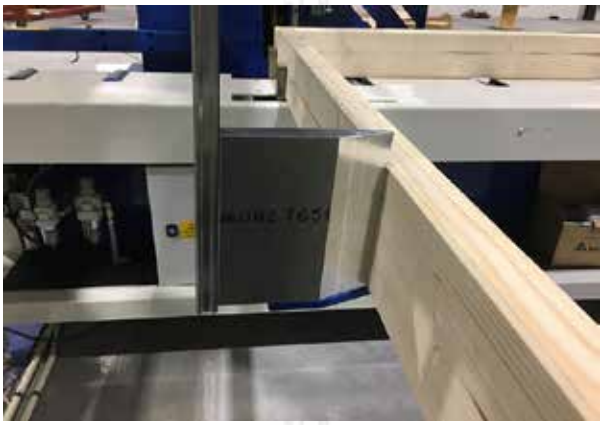




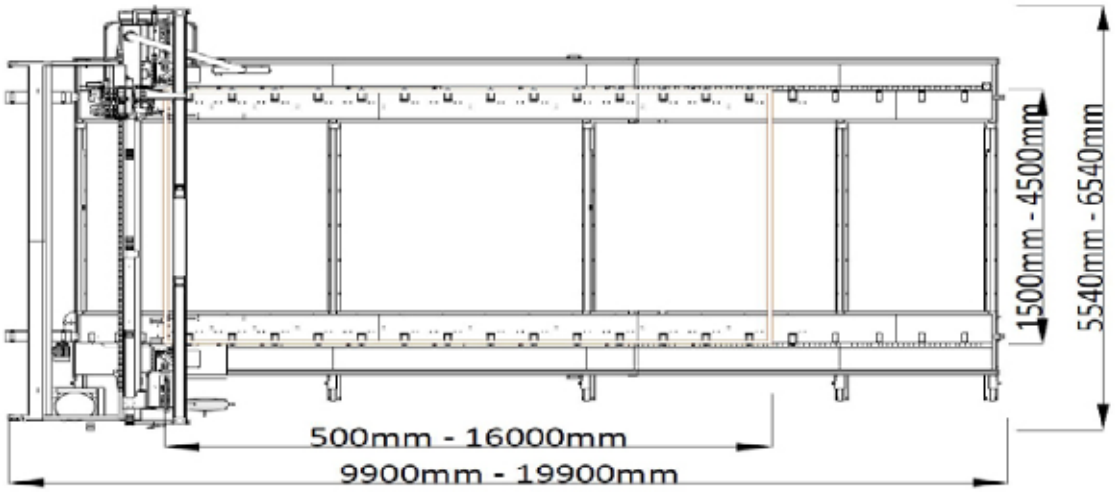
- A variety of stud and sheet feeding carriages available to present the operator with the materials in an ergonomic way
- Drop down pins keep the panel square as it is manufactured
- Laser alignment for stud nailing
- Pneumatic cable reel and tool holder



- Two off tool holders for CNC nailing of the frame
- Multiple tools can be then mounted on the bridge for frame and boarding in one location
- Router with integrated dust unit can also be fitted to the Mobi-One



- Intermediate stud support to hold short studs
- Use for both sub assembly and angled panel manufacture



Butterfly Table

A pair of hydraulically operated tables which enable the panels to be brought to the vertical position, passed to the 2nd table, and safely lowered back down on the opposite side for fitting of insulation and closing of the panel. The hydraulic lifting of the tables is controlled by a 4kw motor with fail safe locking cylinders, a floor mounted control unit featuring push button operation, light beacon and audible siren. A range of options to allow the tables to also be used as assembly bench for walls and floors and to integrate into a line.





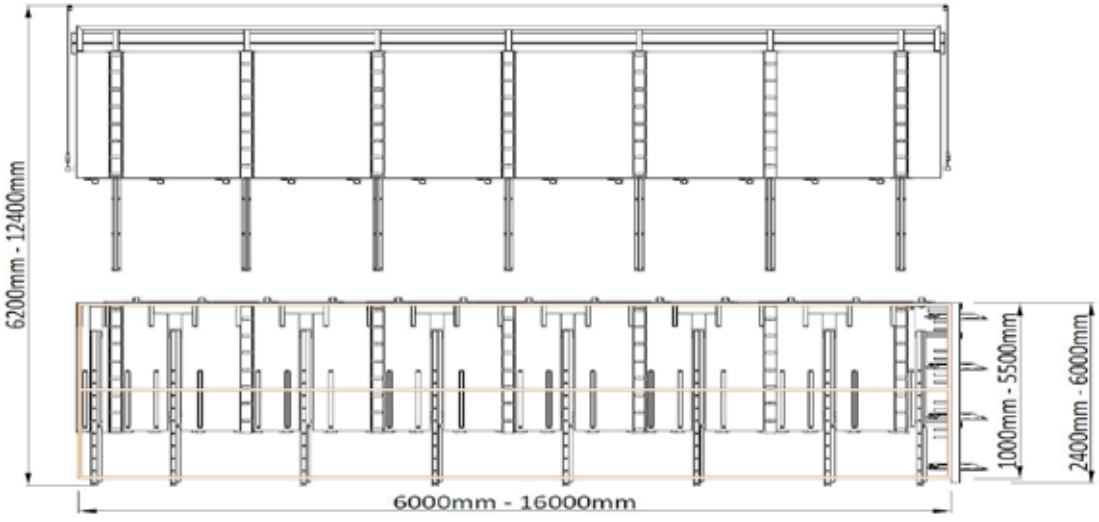
- Wide infeed rollers for simple transfer of panels in and out
- Tables can equipped with motorised sideways movement to suit different line configurations
- Transfer bars can retract to allow panels to be transferred laterally (flat) if necessary, with lateral transfer rollers

- Floor / Roof cassette option available with rows of pop up clamping pins running along the length of the table for assembly of these elements. This option allows the tables to be multi purpose
- Remote control of the unit allows for easy operation of the tables





- Bridge can run over a butterfly station to make maximum use of the space available
- Extension bars can be fitted to allow wide panels to be transferred as well as allowing easy access for working on the panel
- Different height options available
- Side and end clamping options available for holding and or squaring a panel if required



A low level jigging system with floor mounted units and manually adjustable pins for holding the joist square whilst rim beams and decking is fixed. The tables can be supplied in a variety of configurations to suit the production requirements:

- Manual stand-alone station with fixed units and manual pin movement
- Part of a line can have fixed units, manual retracting pins and roller transfer
- With dedicated nailing bridge available with fixed units, manual pin movement and CNC nailing
- Complete CNC operation with CNC controlled units, pins and nailing





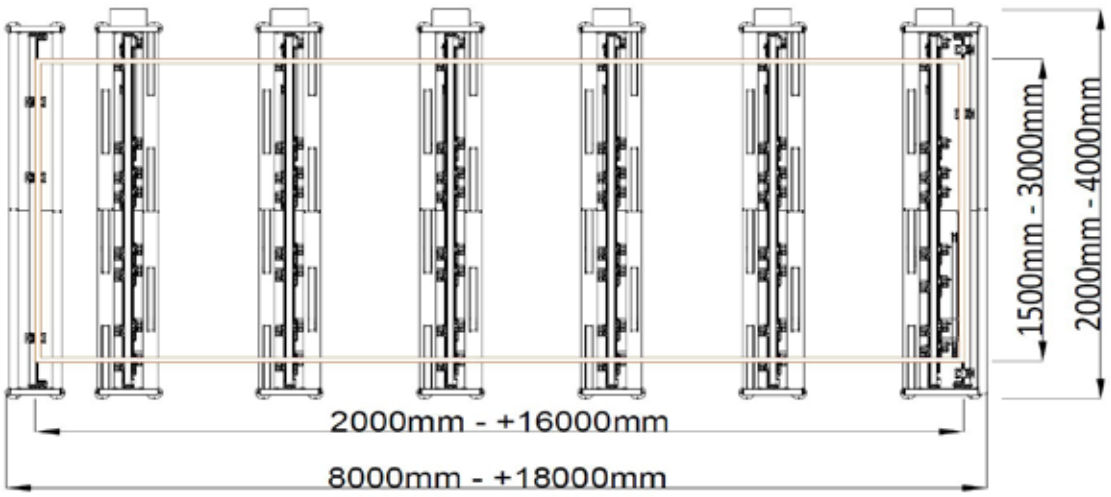
- Rim beam end clamping to keep the element square
- Pin height adjustable up to 400mm deep for I beam applications
- Adjustable pins for variable timber profiles
- Bars can drop down to allow completed elements to be rolled out to the next

- Tables can be covered by a multi function bridge
- Tandem table operation possible
- Pin positions can be CNC controlled with movement controlled by software
- Set up downloaded from the software





- Gluing applications for structural flooring applications
- Single or multiple gluing nozzles
- Separate heads for X & Y gluing possible
- Variable timings to allow for the fixing of decking materials



Robi - One

The Robi-One is a complete production cell for applying brick slip to a prefabricated element. With 1 man overseeing the operation, the machine is capable of producing 15 sq/m of finished walling per hour with the standard configuration.

Optionally, the machine can be supplied with double pneumatic grippers to allow the robotic arms to collect 2 slips each per cycle and give a much higher production output.

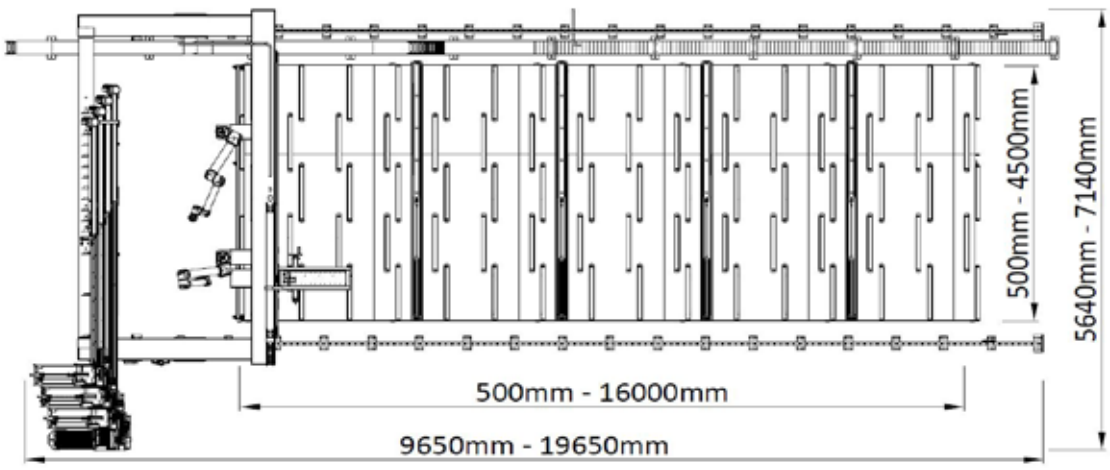




- Stand-alone working table with rollers and panel clamping
- 19” Colour touchscreen displaying brick and optimisation patterns
- Multiple brick feeding conveyors possible to give patterned finishes



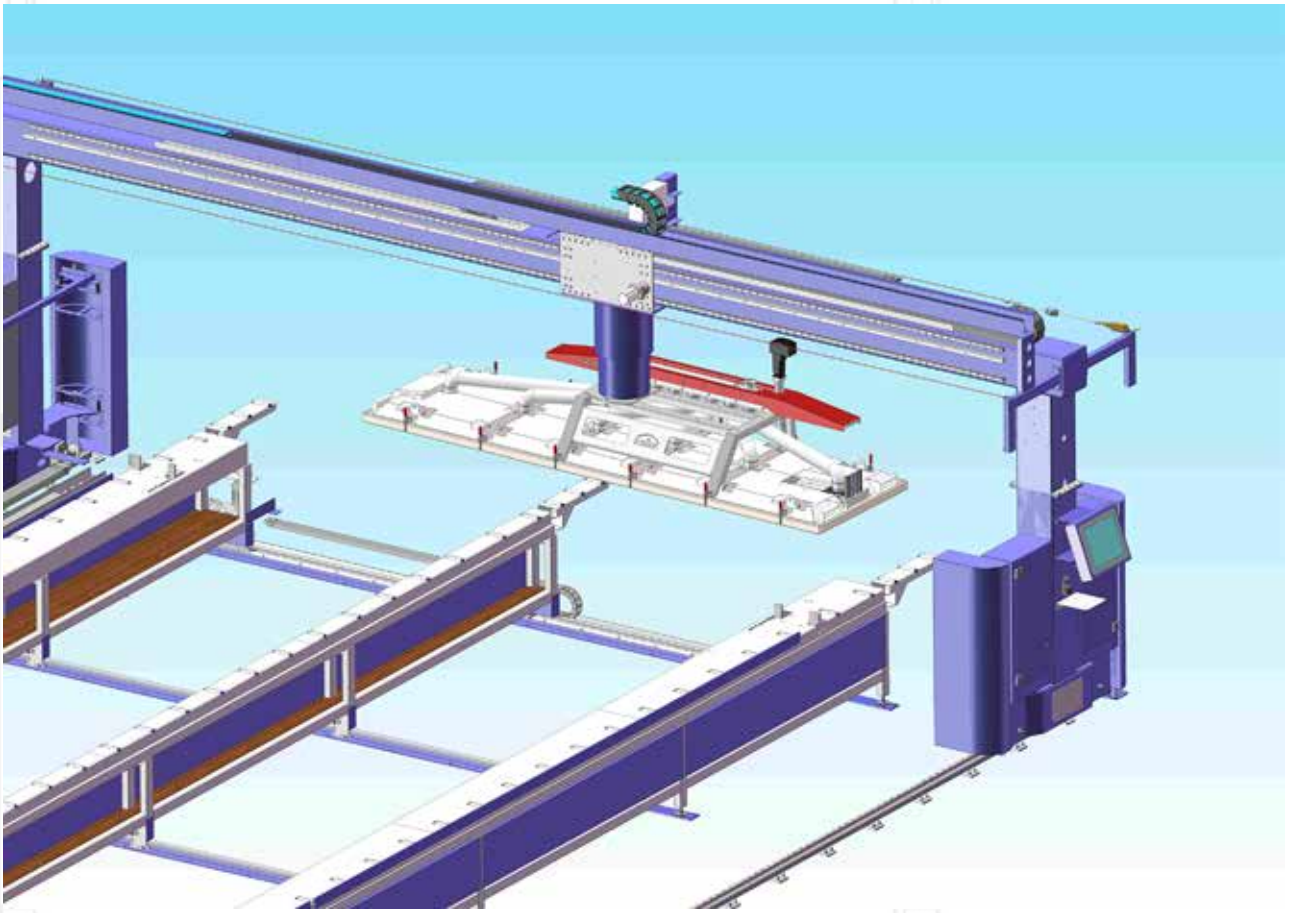
- Twin UR10 robots suitable for working in collaboration with operator
- Integrated gluing system that works in tandem with the brick laying operations to speed up the workflow



Insulation Bridge

An automated insulation blowing station for the filling of elements with cellulose, wood fibre, glass / rock wool as well as composite materials. The system is able to fill any size or shape cavity due to the modular construction of the blowing plate and each filling operation takes a matter of seconds.

Automated positioning in X & Y With customisable density control and variable cavity size.

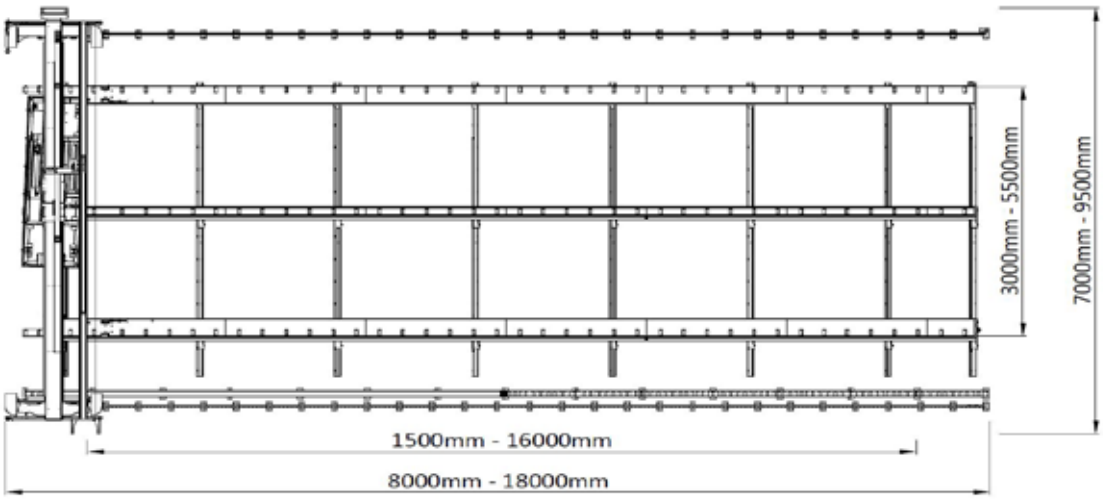


- Delta panel PC with Windows 10 operating system and a 19” touchscreen monitor with interactive display of positioning and cavity filling functions
- X axis floor mounted rails with servo controlled rack and pinion drive
- Blowing plate mounted to Y axis with servo driven positioning
- Pneumatic Z axis with pressure switch



- Proprietary blowing plates ensure the correct fill density in all the areas of the element
- Dedicated control unit of the blowing system independent of the bridge control system
- A variety of filling systems available depending on the insulation





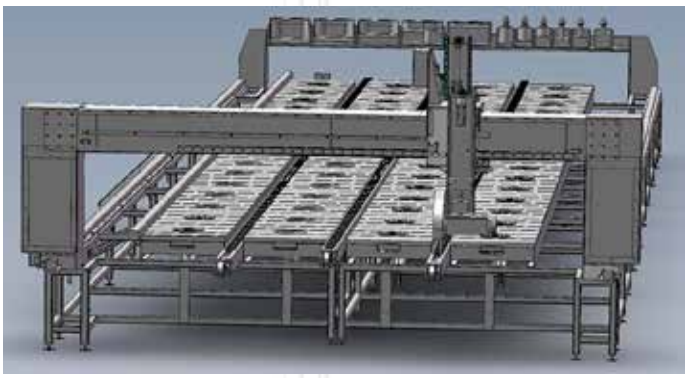
SIP Router

A solution for the sizing of structurally insulated panels (SIP) to a maximum depth of 300mm. Sizing of the panel is completed by a CNC controlled sawblade with 270° rotation and any aperture is machined with the CNC router. The panel is held secure by automated vacuum cups which are full retractable when the tools are passing.

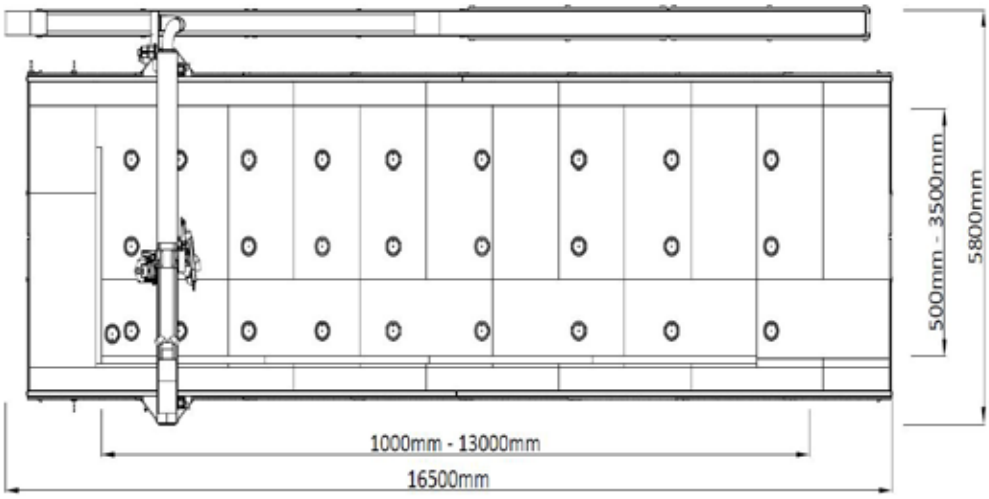




- Heavy duty dedicated working table with fixed 0,0 point and sacrificial MDF bed
- Driven in X & Y by helical servo drives with CNC controlled depths of the sawblade and router



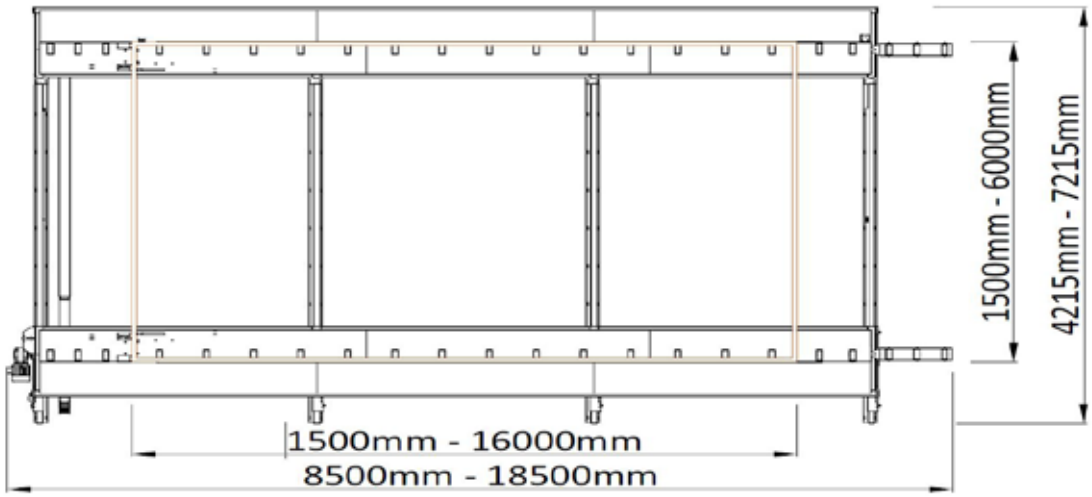
- A through feed option can be specified to automatically load and unload the elements and waste. With this option the 0,0 point becomes retractable end stops
- An automatic tool change can be specified if the elements require spline rebating. The machine will accept rebating tools to a maximum rebating size of 250mm x 60mm



Squaring Tables

A simple PLC controlled squaring table which can be used for manual boarding operations or in conjunction with a rail mounted nailing bridge. Elements can be easily rolled in using the pop up transfer wide rollers and automatically squared in X & Y by the 3 point clamping system. Once all operations are complete, the finished element can be released by push button operation and transferred to the next station.





Working & Buffer Tables

A pair of 300mm wide tables for the manual applications of membranes, insulation, cladding or simply used as a buffer for automated productions line. The rollers can be locked pneumatically to enable the element to be held whilst being worked on.



- One fixed table and one moveable table on guide rails with manual locking arrangement



- Optionally the working table can be supplied with a tilting option to allow the element to be lifted off with a vertical crane

A vertical working station for the installation of windows and / or cladding materials. The element is securely held by a guide rail and roller conveyor with manually adjustable locking handles to enable the element to be locked in position.



- Panel clamping at the base of the panel
- Rollers for easy movement of the element



- Stations can be used for the fitting of windows and doors or other fixing
- Design of system allows working on both sides of the element

Manual Working Tables

To compliment our CNC machine range we also offer a range of manual stations which include:



Modular Framing Tables

2m x 1m steel tables with PLY tops which can be assembled to create any panel size required. The tables can be fitted with pop up rollers to roll panel to the next station and side clamping to ensure panels are made square.

Component table

A solid steel table for the offline construction of stud / cripple groups, window and door subassemblies.



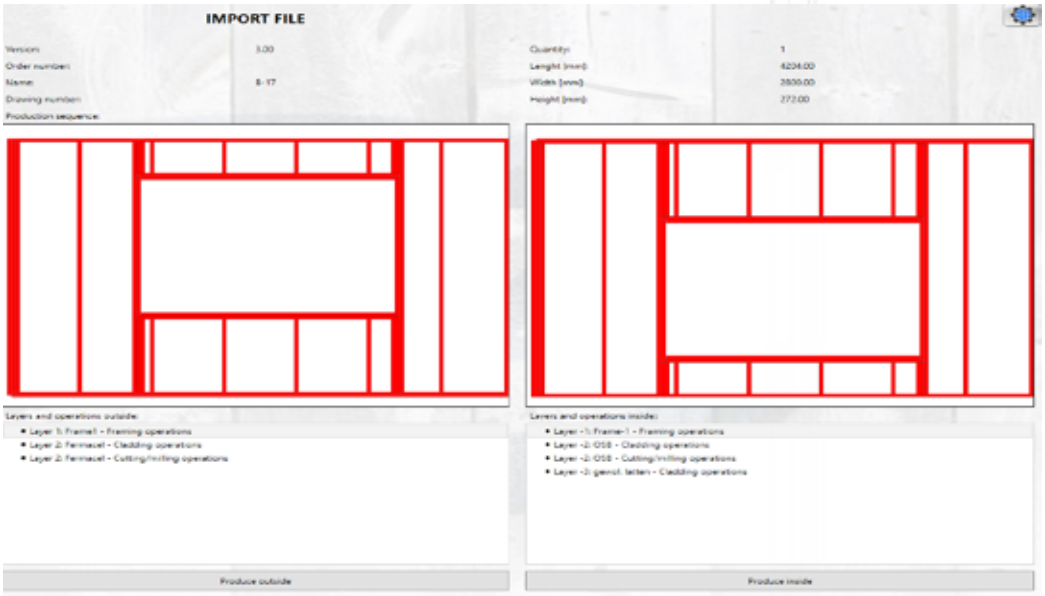


Window Element table

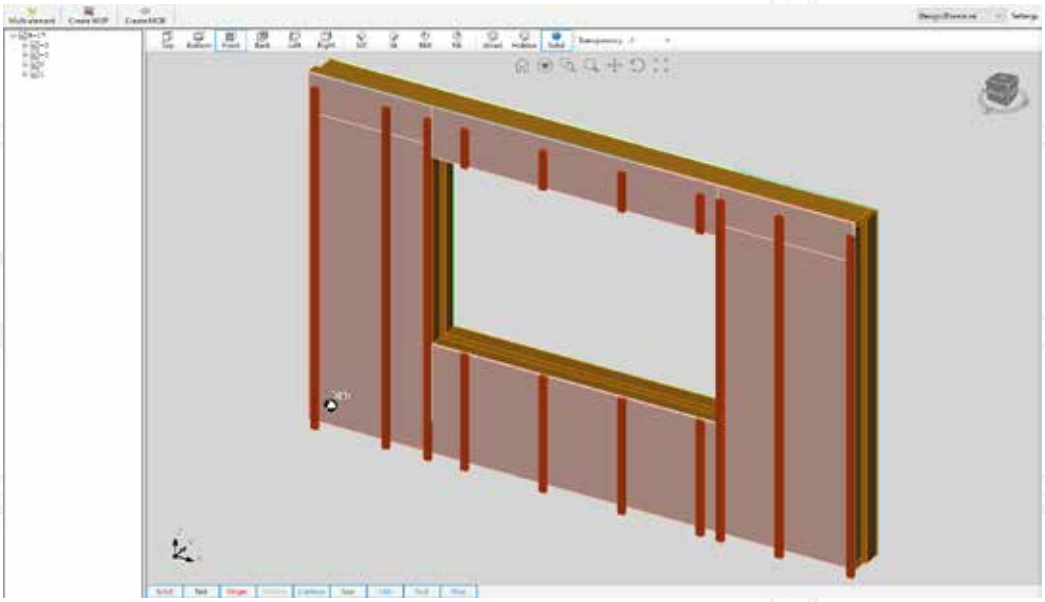
A table specially designed for the fitting of windows in sub assemblies, prior to them being placed complete into the main wall assembly. The table features: -

- Manual open & closing of the table by linear guide and handwheel & rack and pinion
- Special support for lateral studs

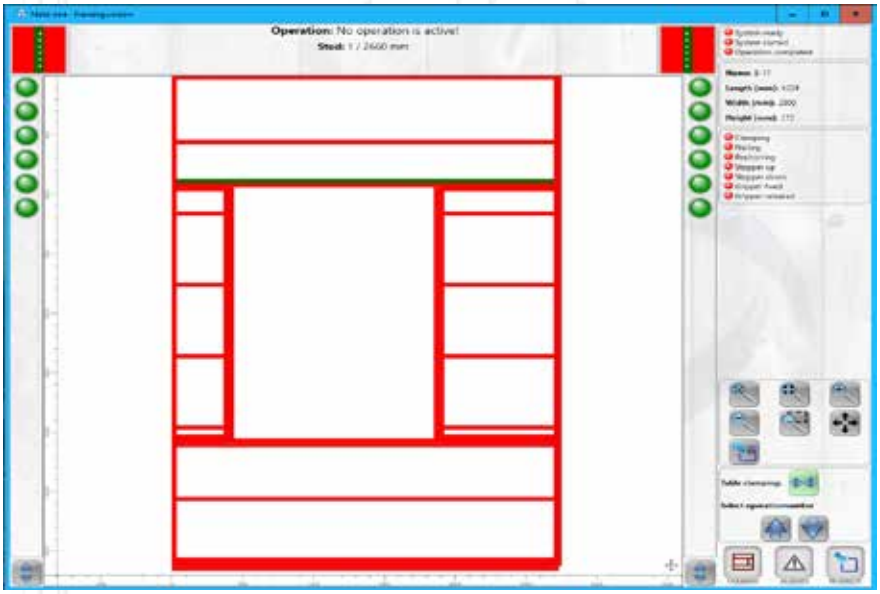
One of the key features of our equipment is its clear and simple to operate user interface. We have spent a lot of time considering how to make the operations of the machines intuitive, with a common interface across all stations. Our in house software Design2Frame is used as the link between the drawing software and the machine. It accepts files from all major design houses and exports an optimised element directly to the machine.



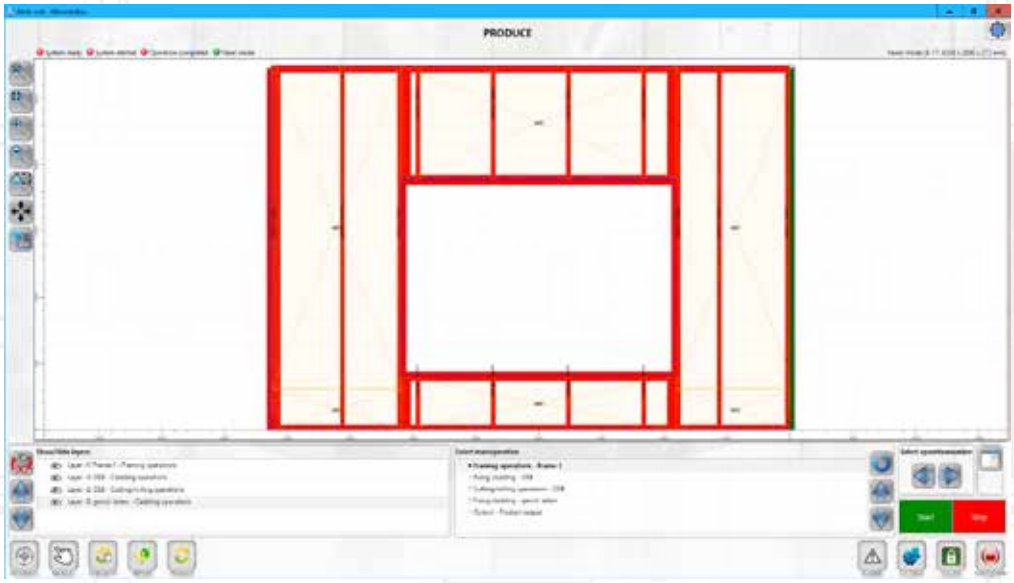
Within Design2Frame the 3D drawing can be rotated, zoomed and exploded to allow the frame detail to be reviewed and checked prior to conversion into the manufacturing format. The software allows for the configuration of multiple machines and orientations, with the correct version being exported to the relevant machine. Once imported into the machine, the file is then split into simple layers for both sides of the element. Each operation can be displayed with clear steps for the operator to follow.



When building a frame, a scaled drawing is presented to the operator stationed inside the machine in the correct orientation and full instruction of each operation displayed in the control panel. The relevant frame component lengths and reference numbers are displayed to assist the operator insert the correct timber component. The current operation is highlighted in green and the operator can easily skip or go back an operation should the need arise.

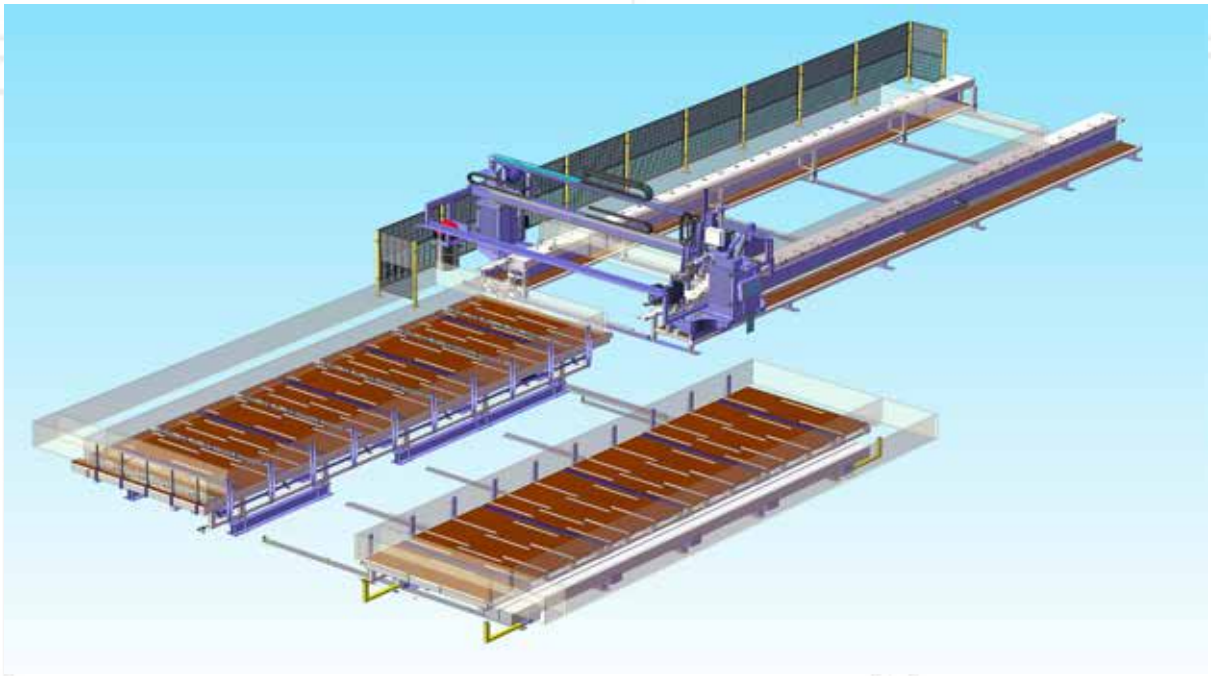


Once framing is completed the second touchscreen on the outside of the machine is used for boarding, routing and other sheet operations. Each layer can be switched on / off. Full zoom options are available and the working tool path is shown. A version of the machine software is available for the office, enabling full simulations of the tool paths after the drawings have been produced for initial review if required.

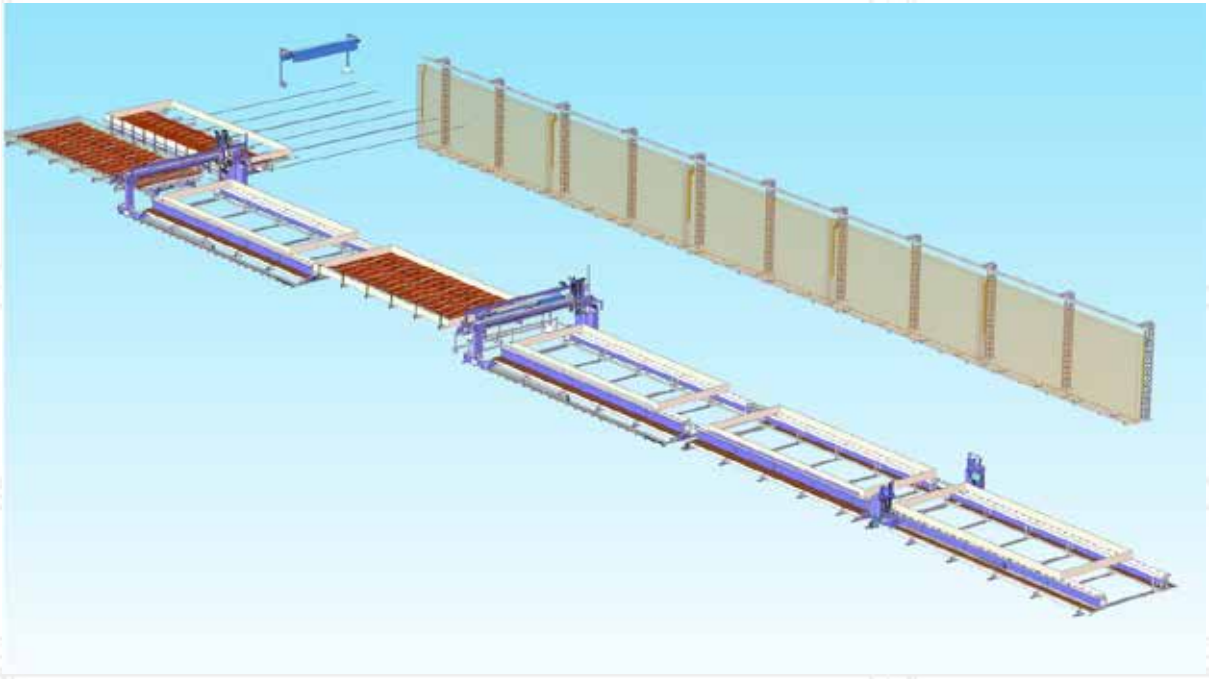


Production Line Examples

An entry level solution for closed elements and floors. Once side one is completed on the Mobi-One, it can be turned and insulated on the butterfly. The sideways transfer option allows the element to be rolled back to the Mobi-One for finishing of side 2 operations.

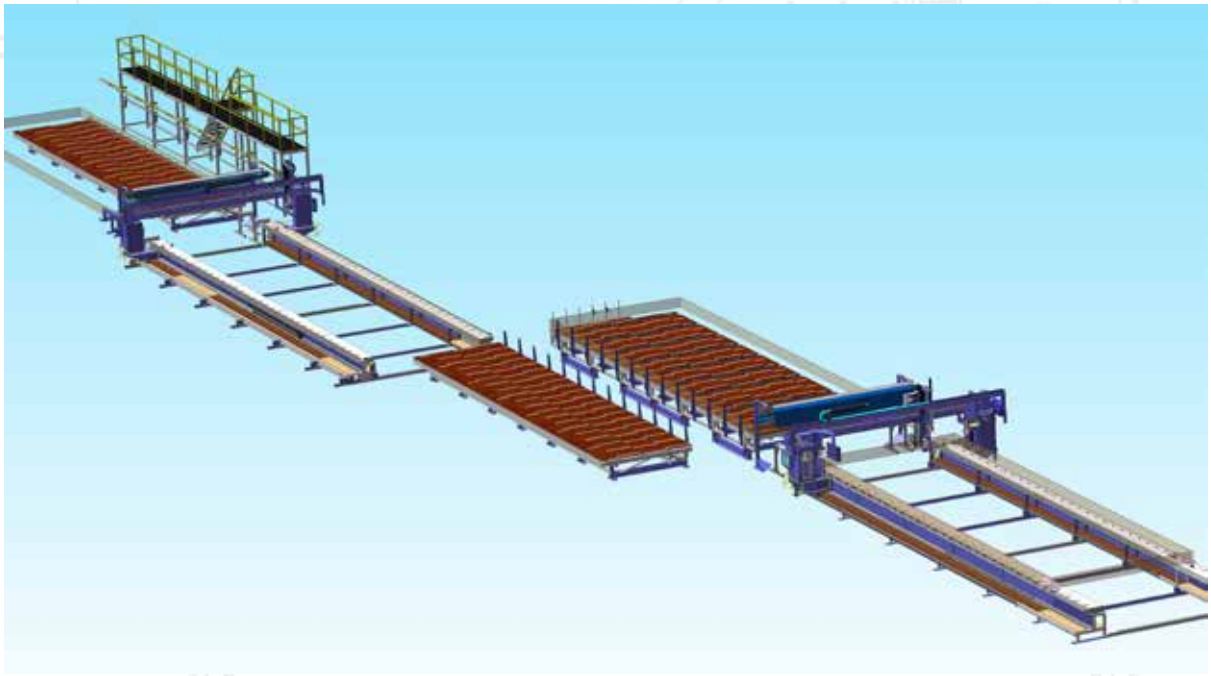


A highly efficient open panel wall line balanced with 3 manual stations and 3 CNC stations. The walls are fully finished on the line including the fitting of windows and external cladding in the vertical working stations before being stored vertically ready for transport.

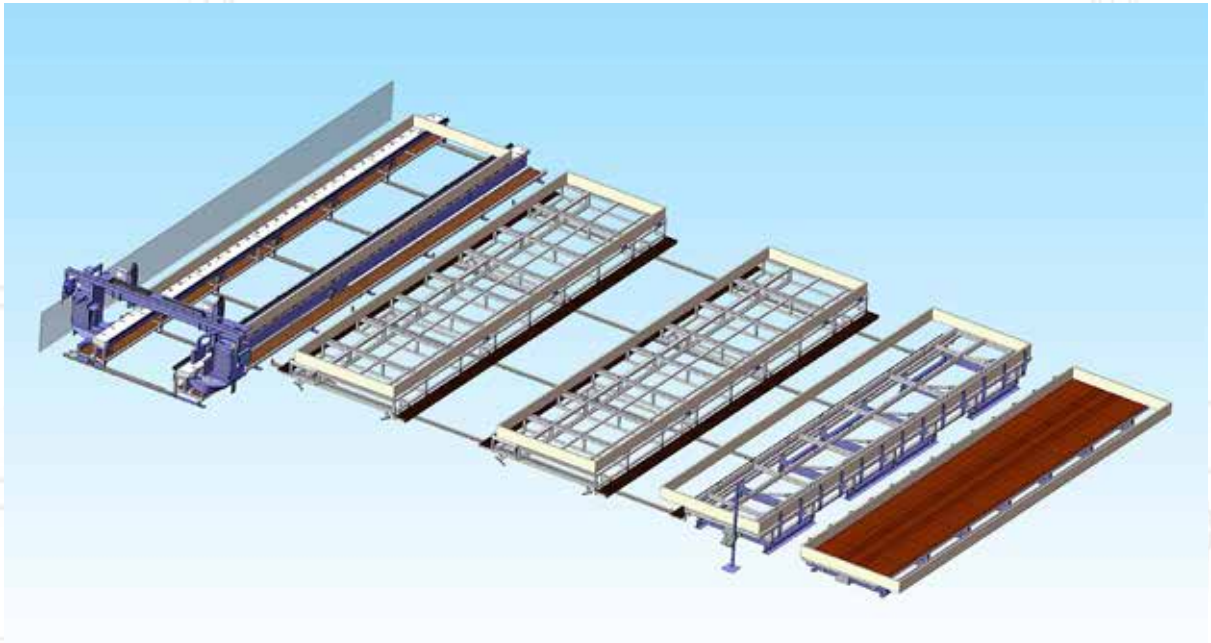


Production Line Examples

An all-encompassing 12m closed panel line producing over 300sqm of walls in per shift with 3 people. The line operates within 700sqm of space and includes a Mobi-One, butterfly table with flooring, multifunctional bridge and half butterfly with unloading platform.



For factories with restricted space, a sideways transfer line can be specified to reduce the overall footprint down to approximately 450sqm. The elements are moved laterally across each table and lastly, transported via gantry crane to a finishing system.

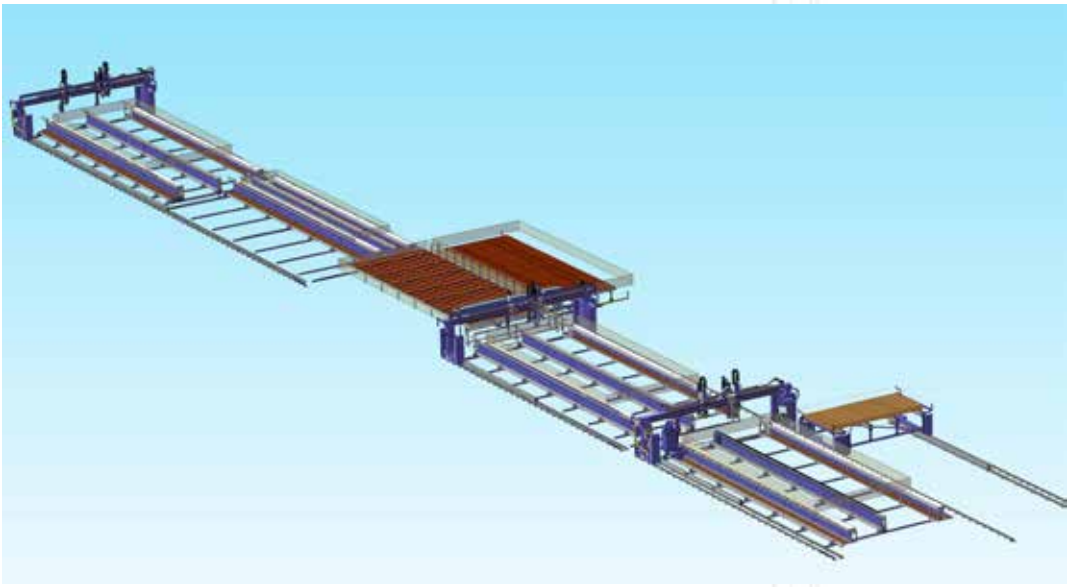


Production Line Examples

MBA also produce complete lines for the manufacture of modules. Supplied as 2 independent lines – floors & ceilings / walls this solution is capable of producing 4 finished modules per day.

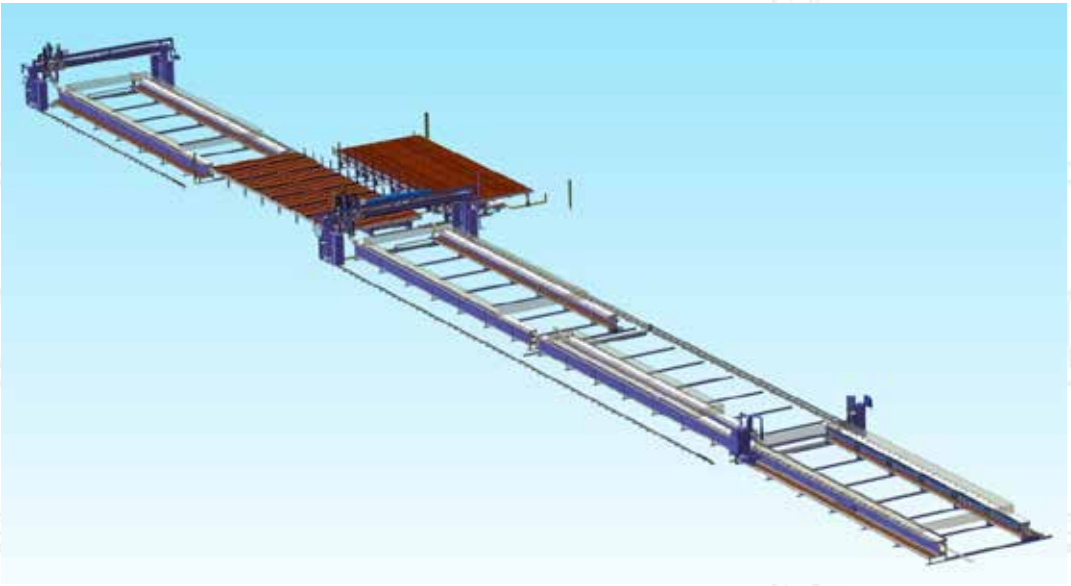
Floors & Ceilings

The line is complete with a HD framing station and stud feeder, 3 multi-functional bridges with automatic gluing, a butterfly table and a series of squaring tables. Floors can be produced to a maximum size of 13m x 5.5m 0.5m.



Walls

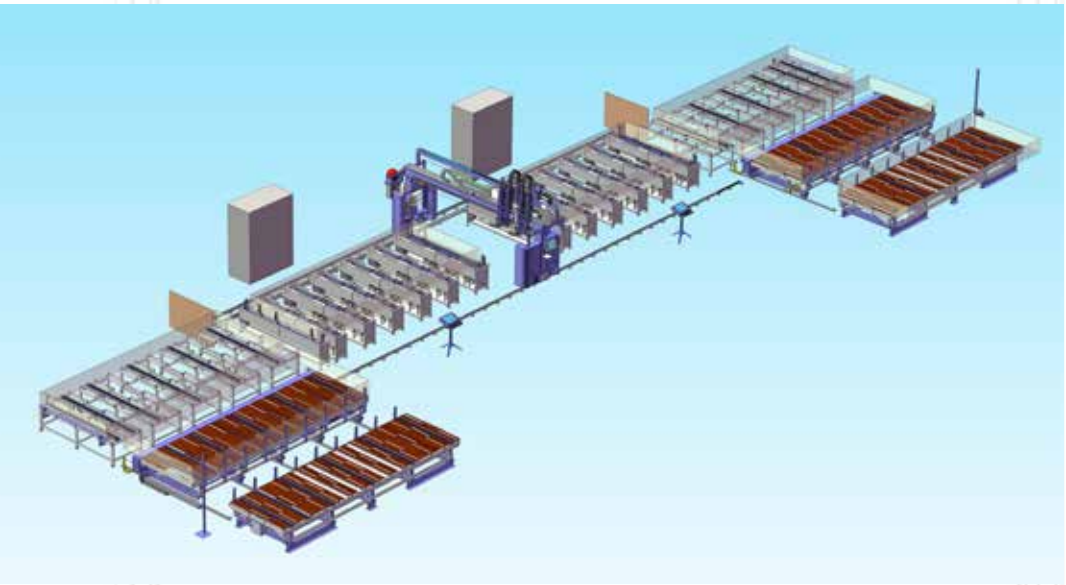
With a framing station, 2 multi-functional bridges, 3 squaring tables and a butterfly table, the wall line is capable of producing elements up to a maximum size of 13m x 4.0m x 0.35m.



Production Line Examples

We also specialise in dedicated lines for the production of structural floors and roof cassettes, each line is tailored to be a bespoke solution for the customers requirement.

This flooring line is balanced so that each station is either running in CNC (gluing / nailing) or manually with 2 operators (assembling / boarding). This ensures the maximum workflow from the minimum required floor space.



A tandem roof line with various working stations and 2 multi-functional bridges is a cost effective solution when a full CNC solution is not feasible. Using lateral transfer of the elements, it enables the bridges to pass over both lines and keep the CNC costs to a minimum.



Service and Support

In order to ensure you receive the maximum return from your investment, it is necessary to have confidence in the back up and support available.



- Our equipment is manufactured in our factory in Netherlands
- All our equipment is installed by an extensive team of factory trained technicians who install, commission and service the machinery around the world

- Worldwide technical support from our UK offices
- Software support contracts
- On line intervention
- Remote access and diagnostics
- Our software integrates with all the industry standard interfaces and we are in regular contact with their implementation teams to ensure





- Skilled installation and commissioning engineers to ensure a smooth installation team
- Detailed project planning for complete factory installations

Partners

MBA partner with a number of the leading industry suppliers to produce integrated solutions from the customer's point of view. These include:

Modular Building Automation BV

Sales & Technical Support

J J Smith & Co (Woodworking Machinery) Ltd
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Kirkby, Liverpool, UK
L33 7DR

Tel: +44 (0) 151 548 9000
Email: info@modularbuildingautomation.eu

Factory & Spare Parts

H&M Houtbewerkingsmachines BV
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Tel +31 (0) 515 - 42 92 72
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