



BUILDING THE FUTURE

	Your reference:	Our reference:
Customer No.:	Reference No.:	Date:
Revision:		

BEG 106 - Wall Line ZL 8,4M

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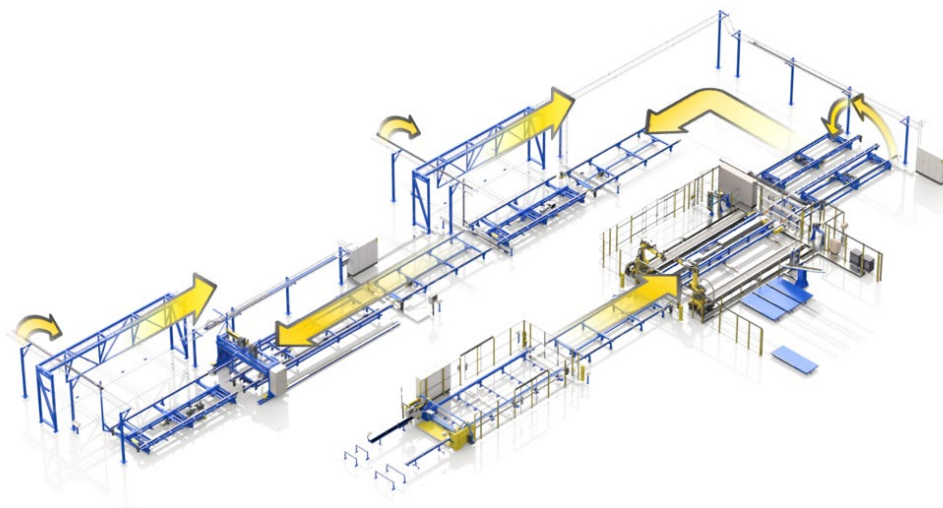
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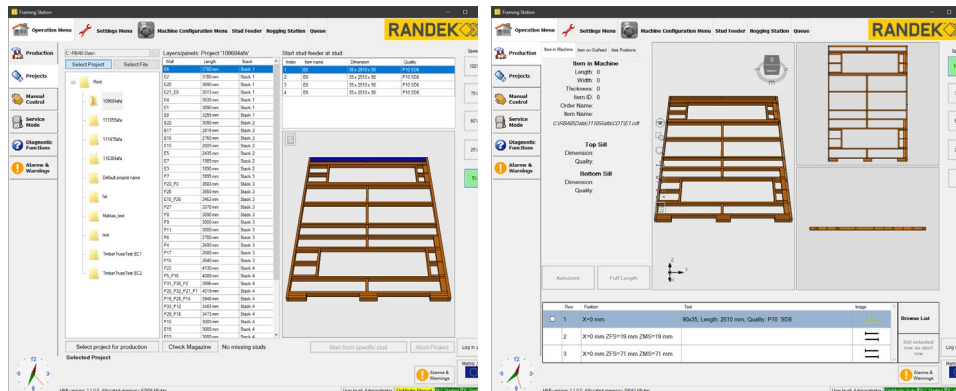
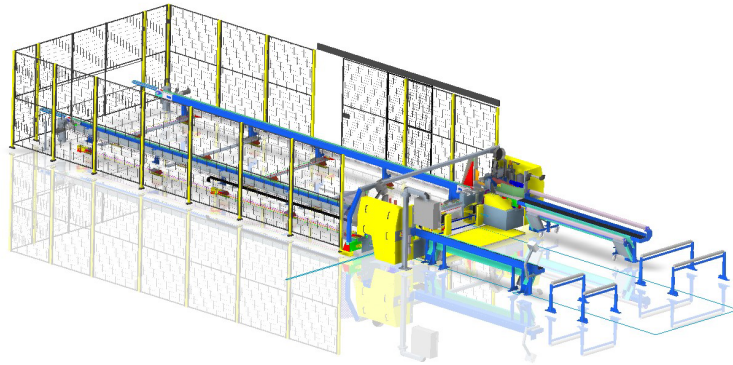


Overall limitations for material dimensions

Wall height:	Max. 3 300 mm. (Station 2, 5, 6, 7: 2250 - 3300 mm) Min. 2 100 mm. (Station 9: No width adjustment)
Wall length:	Max. 8,4 m. Min. 1,8 m. (Minimum length may need assistance from the operator when switching between stations)
Wall thickness:	Max. 450 mm. Min. 63 mm.
Top and bottom plate:	Thickness: 35 - 45 mm. Height: 63 - 250 mm. Max. length: 8.4 m. Min. length: 1.8 m.
Studs:	Thickness: 35 – 45 mm. Height: 63 – 250 mm. Length: 2030 – 3230 mm.
Board material:	Weight, < 65kg.
Sub elements:	Max. 3230x3000mm
Max. weight, wall elements:	Max. 1000 kg at framing station. Max. 2000 kg.

For more information, see the respective position below. It is assumed that wall elements do not have building materials that protrude below the bottom plate. This is not compatible with upraisers and receivers. No protrusions from the framework such as hinges and windowpanes through the line. Material at least 5 mm inside the framework.

P1. Framing station



Framing station FM3000 for the manufacturing prefabricated wall frameworks. The machine requires CAD / CAM connection. Visualization of the element on the HMI screen makes it easy to follow the construction process.

Function description:

- Select the framework via the HMI screen by selecting its file.
- Rolls for feeding top and bottom plate.
- Place top and bottom plate and fix them with pneumatic cylinders after approval from the operator.
- Place a stud in the nail position against the bolt stops and confirm on the HMI. Alternatively, the studs are fed automatically into the station (option).
- Pneumatic vertical fixation of the studs.
- Fixing of studs against stud stops.
- Automatic nailing of frameworks.
- The patented grippers feed the frame to the next nail position.
- Place sub-elements in the framework station.
- The production process is repeated until the wall element is ready and then fed out to the next station in the production line.

Technical description	
Transport speed	0.5 m/s
PLC och control system	Beckhoff
HMI	1 industrial touch screen 19 "
Operator safety	Safety mat where the operator stands and works, Safety net on the long and short side
Connections	Elec.: ~100A Air: ~1100NL/min @ 8bar (1" connection)
Min/Max height studs	63-250mm
Min/Max thickness studs	35-45mm
Min/Max height bottom plate	63-250mm
Min/Max thickness bottom plate	35-45mm
Min/Max height top plate	63-250mm
Min/Max thickness top plate	35-45mm
Min/Max width sub-elements	0-3000mm
Width, wall elements	2100 - 3300 mm
Fixed side	Left
Adjusted for 2 nailing tools	MAX SN883-100CH/34 Adapted for Automatic production. 2 PCS - included.



*** NOTE! Tools (nailing tool) are included.**

Art.no.	Description	Qty.	Price SEK
FM3000-084	Framing station, 8.4m	1	
Sum			

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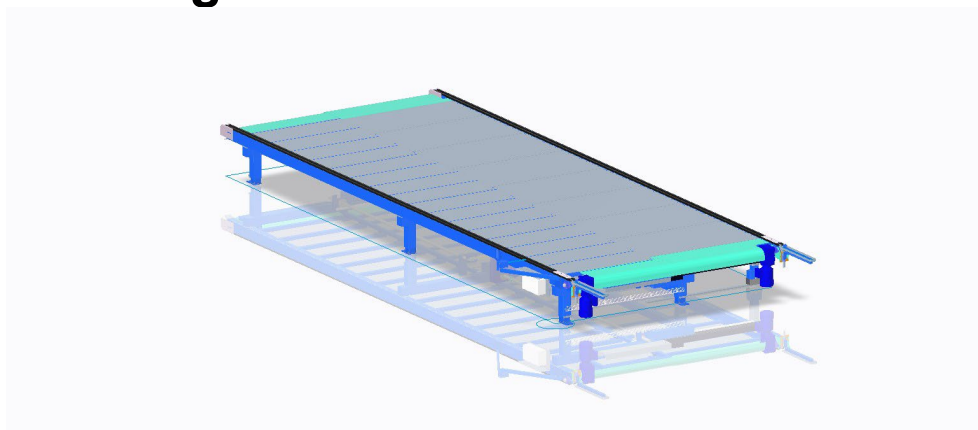
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P2. Working table



Working table to safely transport and process the wall element. Chain conveyors transports the wall element into the station. Motorized width adjustment in two positions is automatically adjusted for adaptation of incoming wall elements.

Function description:

- The width can be adjusted in two positions, and this is done automatically according to the specification in the CDT file.
- The wall element is automatically transported into the station on chain conveyors towards the end stop.
- Manual operations can now be started in the station.

Technical description	
Length, wall element	8.4 m
Height, wall element	2250 - 3300 mm
Level of automation	3000
Fixed side	Left
Max. weight, wall element	2000kg
Max. transport speed	0.5 m/s
Chain variant	2 pieces – 1 fixed and 1 movable in two positions
Safety	Light beams

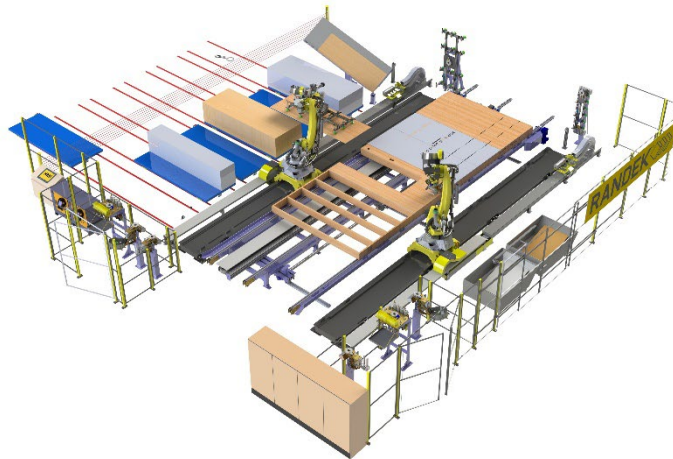
Automation 3000

The machine is CAD / CAM controlled and automatically adapts to CDT file. Control panel with knob for operation and by-pass function for automatic input.

Art.no.	Description	Qty.	Price SEK
WT3000-084	Working Table 8.4m	1	
Sum			

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P3. ZeroLabor robot cell (ZL2)



Randek's ZeroLabor robot system is a fully automatic system for handling and processing building elements. The system is flexible and can be configured according to the buyer's needs. The system is easily integrated into new production lines and existing production lines but can also be used as a stand-alone unit. The system can handle various forms of building elements such as walls, floors and ceilings.

Functional description:

- Information and CAD data for the element to be transported into the cell is sent from the previous station. Alternatively, select the correct file associated with the current element via the HMI screen.
- Data in the file provides information about the laying pattern for sheets, coordinates, position and number of holes for windows, doors and box holes, etc. The loading of information happens automatically and in turn automatically generates the instructions for the robots in the cell.
- The element is run into the cell and fixed and aligned.
- Robot no. 1 places the discs from the zero point on the element according to CAD data.
- When all the sheets are placed on the element, robot no. 1 leaves the vacuum tool and instead picks up a tool to help with the fastening of the sheets.
- Both robots complete the fastening process.



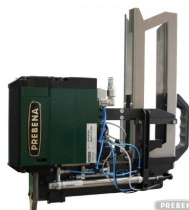
Both robots have a set of tools with associated tool racks. When the tools' magazines start to run out, the system notifies the operators that they are ready to refill. It is possible to load a magazine in the tool rack from a safe position while the robots are working, which enables high availability.

- When the fastening of the boards is completed, robot no. 1 leaves his tool and prepares to mill out holes for doors, windows, electrical boxes etc.
- Robot no. 2 switches to a specially adapted tool for recycling material and removes larger pieces of sheet material that robot no. 1 mills out.
- Robot no. 2 leaves the remaining material in the intended place and can also sort different materials if desired.
- For additional sheet layers, the process is repeated.

The surface of the framework on which the sheets are laid must be flat and without protruding objects.

Technical description	
Robots	2 pcs. 6-axis industrial robots placed on rails for movements along the element
Rotating movement	High-speed spindle
Tool changer	Tool stand for selected tools
Sheet handling tool	1 pc.
Recycling tool	1 pc.
Tool holder for stapling tools	2 pcs.
Number of material spots	4 pcs. on rail for safe loading
Safety enclosure	Gates with security lock and LOTO
Requirements, concrete installation surface	Max. flatness deviation on installation surface: 5mm
Requirements, concrete quality of installation surface	C20/25 Enligt DIN EN 206:12 001/DIN 1045-2:2008. Thickness, >180mm
Requirements, elec.	80A
Pneumatic consumption	~1100NL/min@8bar (1" connection)
Extraction connection	4800m ³ /h @-1,95KPa
Requirement, roof height	Min. 4500mm
*For interconnection with external / central system.	

***NOTE! Tools (stapling tool) are included.**



2 PCS - Prebena MODUL 11L46 clamping tool for clamp.
L35-L64,
W 10,70mm
Thickness 1,39x1,58mm



Art.no.	Description	Qty.	Price SEK
ZL-084	ZeroLabor Robot system for 8.4m wall elements	1	
ZLSTH	Tool holder for stapling tool	2	
ZLSO	Safe ejection of wall elements	1	
Sum			

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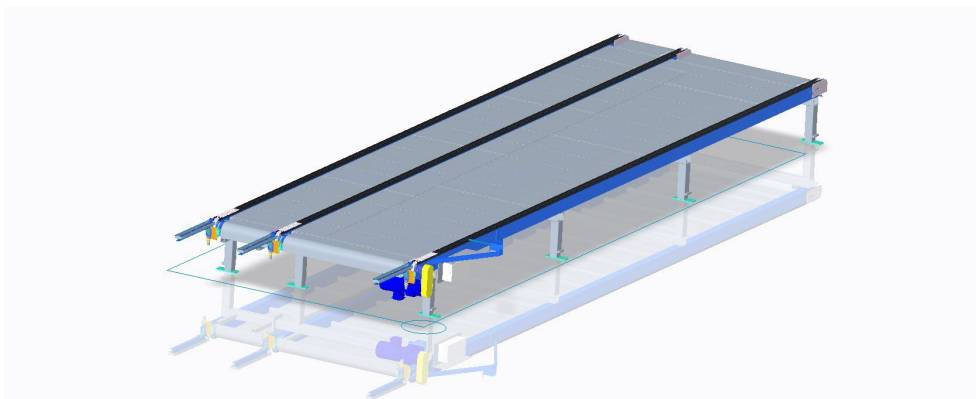
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P4. Buffer table



Transport and buffer table for building elements in horizontal position. Equipped with flat chain tracks and frequency-controlled operation for efficient and gentle transport. Integrates into the robot cell.

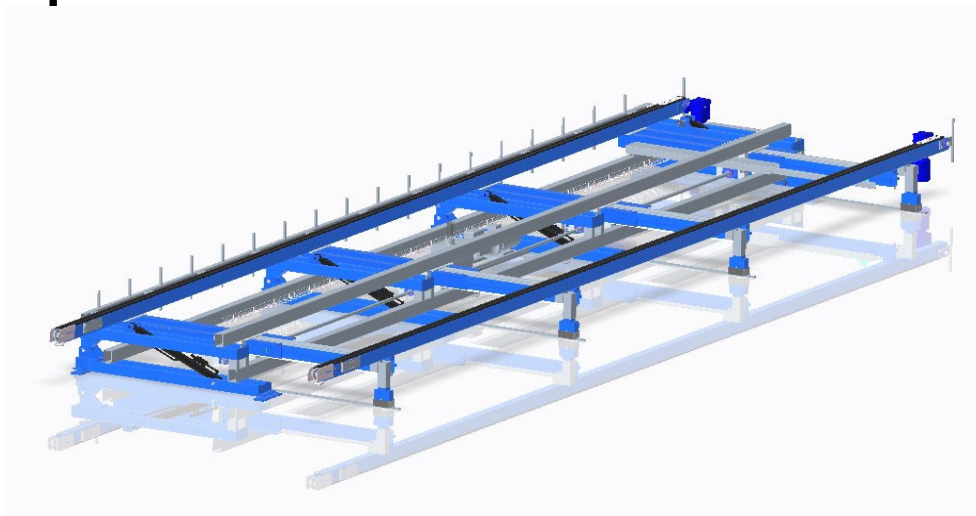
Technical description	
Length, wall element	3.6 m
Height, wall element	2100 - 3300 mm
Level of automation	3001
Chain type	3 pcs. in fixed positions
Fixed side	Left
Max. transport speed	0.5 m/s

Level of automation 3001
Integrated into robot cell.

Art.no.	Description	Qty.	Price SEK
BT3001-036	Buffer Table 3.6 m	1	
Sum			

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P5. Upraiser table



Randek's upraiser table is an efficient and flexible machine for turning or raising the wall elements. Equipped with flat-chain conveyors for efficient and gentle transport. Upraising function with hydraulic cylinders for safe and accurate raising of the wall element.

Function description:

- The building element is transported into the station from the previous station.
- The element is raised via the push of a button with the associated receiver in position.
- The element is turned to the associated receiver table and can be lowered to its original position to receive the next element.

Technical description	
Length, wall element	8.4 m
Height, wall element	2250 - 3300 mm
Level of automation	3000
Fixed side	Left
Upraising angle (°)	96°
Max. weight element	2000kg
Max. transport speed	0.5 m/s
Chain type	2 pcs. in fixed positions
Safety	Pressure mat at the input side

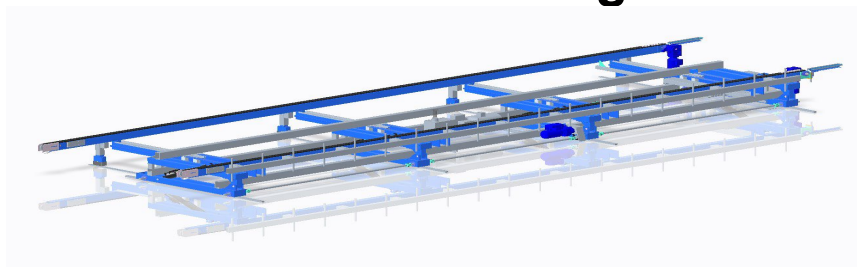
Automation 3000

Control panel with knob for operation and by-pass function for automatic transport of building elements. Raise and lower function via push of a button with hold function.

Art.no.	Description	Qty.	Price SEK
TTU3000-084	Turning Table 3000-084	1	
Sum			

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P6. Receiver table / Working table



Randek's working and receiver table is an efficient and flexible machine when turning and working on the building element. Turning function with hydraulic cylinders for safe and precise handling of the building element. The motorized width adjustment is adjusted to accommodate incoming wall elements. Movable sideways to meet the associated upraising table.

Function description:

- The receiver is driven sideways towards the associated upraiser table.
- The width adjustment is adjusted to the element.
- The table is raised to receive the building element from the associated upraiser table.
- The element is lowered, and the station is returned to its original position.
- Manual work can be performed.
- The building element is transported on to the next station on flat chain conveyors.

Technical description	
Length, wall element	8.4 m
Height, wall element	2250 - 3300 mm
Level of automation	2000
Fixed side	Left
Upraising angle (°)	84°
Max. weight wall element	2000kg
Max. transport speed	0.5 m/s
Chain type	2 pcs. 1 in fixed position and 1 movable.
Movable (m)	~10 m
Max. transport speed, station	0.3 m/s

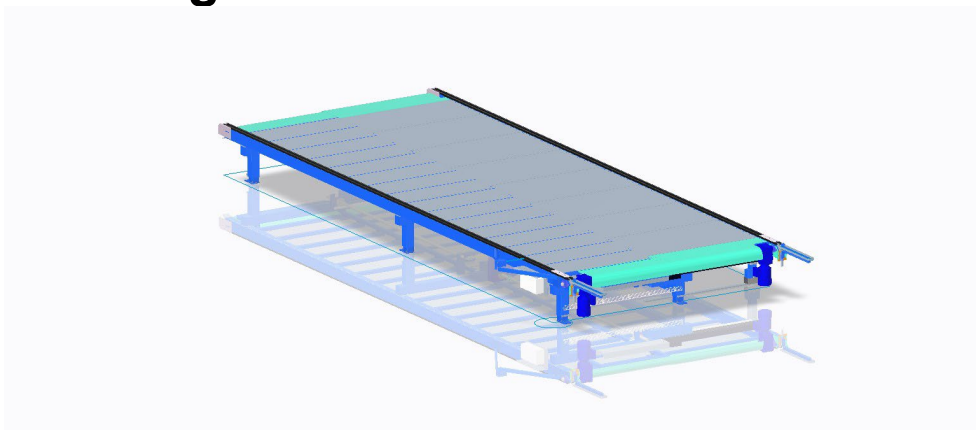
Automation 2000

Raise and lower function, width adjustment, movement of station and transport of building elements via push of a button with holding function.

Art.no.	Description	Qty.	Price SEK
WTR-MS	Working Turning Table Movable Sideways (m)	10	
WTR-084	Working Turning Table	1	
Sum			

All prices are presented excl. VAT. Packaging costs may apply.

P7. Working table



Working table to safely transport and process the wall element. Chain conveyors transport the wall element. The motorized width adjustment is adjusted to accommodate incoming wall elements.

Function description:

- The wall element is transported into the station on chain conveyors towards the end stop.
- Manual operations can now begin in the station.

Technical description	
Length, wall element	8.4 m
Height, wall element	2250 - 3300 mm
Level of automation	2000
Fixed side	Left
Max. weight element	2000kg
Max. transport speed	0.5 m/s
Chain type	2 pcs. 1 in fixed position and 1 movable.

Automation 2000

Adjustment of width and transport of building elements via push of a button with holding function.

Art.no.	Description	Qty.	Price SEK
WT2000-084	Working Table 8.4m	1	
Sum			

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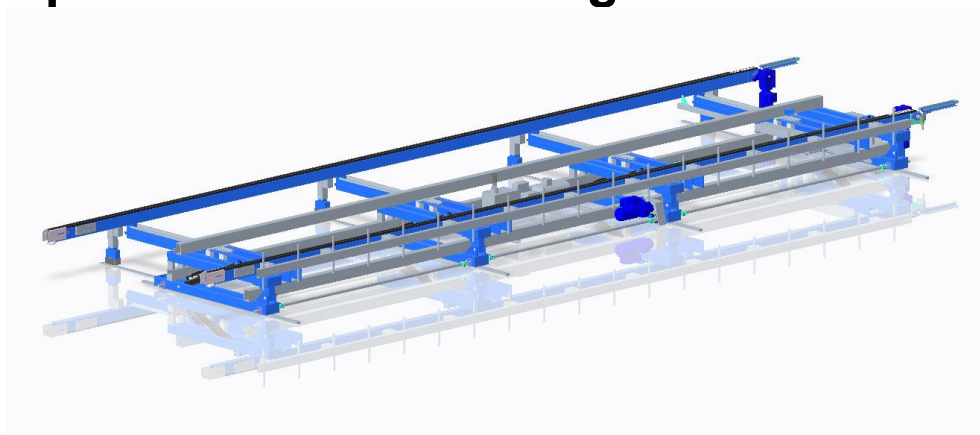
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P8. Upraiser table / Working table



Randek's work and upraiser table is an efficient and flexible tool for upraising and machining the building elements. Equipped with flat-chain conveyors for efficient and gentle transport. The motorized width adjustment is adjusted to accommodate incoming wall elements. Upraising function with hydraulic cylinders for safe and precise handling of the building element. Movable sideways to raise up before discharge of finished element.

Foldable pins on the fixed side of the station. The pins can be folded down to be able to place the building element on trolleys before ejection off the table. When the building element has been lowered onto carriages, the pins can be folded away to enable further transport of the element in standing positions.

Function description:

- The wall element is transported into the station on chain conveyors towards the end stop.
- Manual work can be performed.
- The station is moved sideways to the upper position for upraising.
- Pins are mounted on the top of the wall for transporting standing walls. Finished walls are raised up to 90° and placed on skates that run on floor rails. TT-SBR secures the position of the vertical wall. The element is manually removed from the station in a vertical position.

Technical description	
Length, wall element	8.4 m
Height, wall element	2100 - 3300 mm
Level of automation	2000
Fixed side	Left
Upraising angle (°)	90°
Max. weight, element	2000kg
Max. transport speed	0.5 m/s
Chain variant	2 pcs. 1 in fixed position and 1 movable.
Moveable (m)	~7 m

Max. transport speed, station	0.3 m/s
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Automation 2000

Raising and lowering function, width adjustment, movable station, transport of building elements and other functions via push of a button with holding function.

Art.no.	Description	Qty.	Price SEK
WTU-MS	Working Turning Table Movable Sideways (m)	7	
TT-SBR	Turning Table Stop Beam Top	1	
TT-FP-084	Turning Table Foldable pins	1	
TR01VP	Transport Wagon	2	
WTU2000MS	Working Table Upraiser	1	
Sum			

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P9. Working table

Fixed working table to safely transport and process the wall element. Chain conveyors transport in the wall element. The station can be raised and lowered in two positions: transport and working mode.

Function description:

- The station is raised to the transport position and the wall element is transported into the station on chain conveyors towards the end stop.
- The station is lowered to working position and manual operations can now be started in the station.
- The station is raised to transport position and the wall element is transported to the next station.

Technical description	
Length, wall element	8.4 m
Height, wall element	2250 - 3300
Level of automation	2000
Fixed side	Left
Max. weight, element	2000kg
Max. transport speed	0.5 m/s
Chain type	2 pcs. in fixed position.

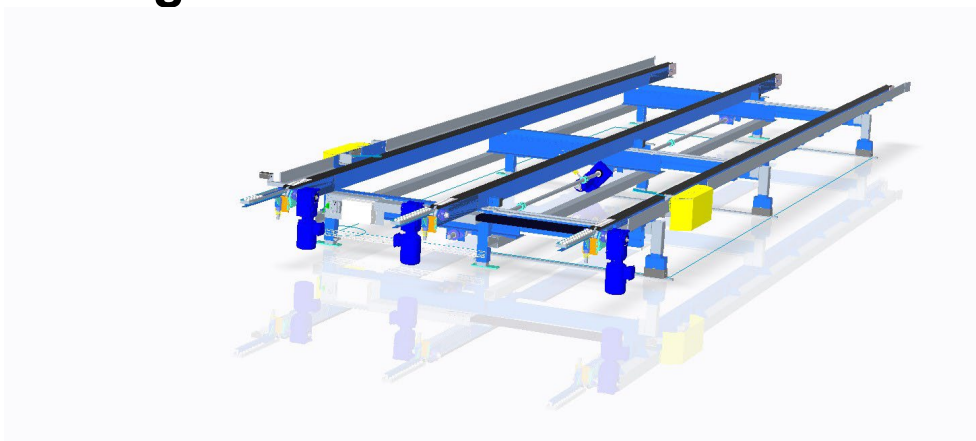
Automation 2000

Adjustment of height and transport of building elements via push of a button with holding function.

Art.no.	Description	Qty.	Price SEK
WT3000-084	Working Table 8.4m	1	
RS1000-100	Roller on stand	2	
RS1000-160	Roller on stand	2	
Sum			

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P10. Nailing table



Randek's Nailing Table is adapted to be used together with a multifunction bridge when fastening and processing sheets. High quality is guaranteed with the clamping function. Equipped with motorized width adjustment and flat chain drives for transport and support during nailing.

Technical description	
Length, wall element	8.4 m
Height, wall element	2100 - 3300 mm
Level of automation	3001
Retractor function	Yes
Fixed edge	Left
Chain type	3 pcs. where 1 is movable.
Max. transport speed	0.5 m/s
Max. weight element	2000kg

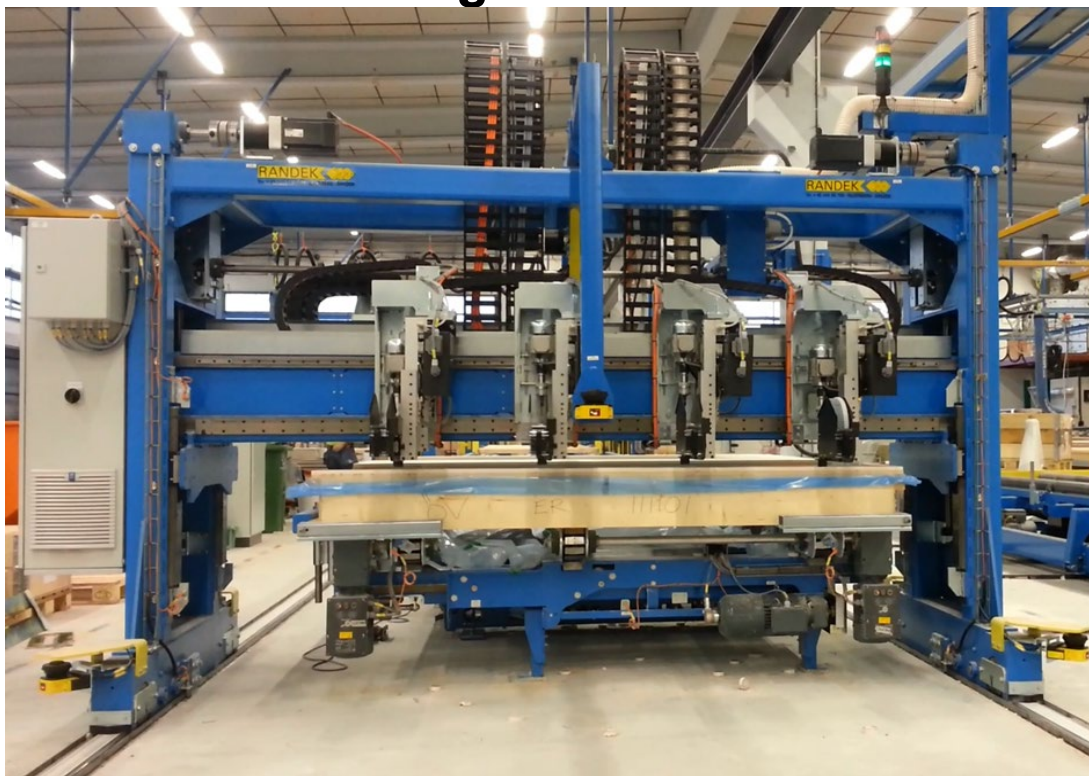
Automation 3001

Input of building elements via holding-device maneuver. Automatic width adjustment and pull-out. CDT file is selected before input.

Art.no.	Description	Qty.	Price SEK
NT3001SQ-084	Nailing Table 8.4m	1	
Sum			

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P11. Multifunction bridge



Randek's multifunction bridge, NB3000, is designed to automatically fasten and process sheet material on a framework. Equipped with up to four tool carts for fastening tools, which provides great flexibility for different tool configurations. The portal can also be provided with several different options for additional functions.

Function description:

The building element is transported in and fixed in the fixture under the bridge. A separate fixture is always used with the portal. Information about which work and how the work is to be performed by the portal is described in the CDT file selected in the HMI. The portal goes over the element to process it with the various tools it is equipped with. When the work is done, the portal returns to its starting position and the element can be transported further.

Technical description	
Number of tool wagons	4
Side 1 adapter for tool configuration	Pushing tool Pushing tool Stapling tool Stapling tool
Tool configuration, side 2	-
Travel length adapted for element length	8.4m
Rail spacing	5 100 mm
Safety function	Safety area scanners

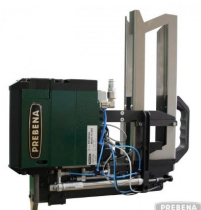
Requirements, concrete installation surface	Max. flatness deviation on installation surface: 5mm
Requirements, concrete quality of installation surface	C20/25 according to DIN EN 206:12001/DIN 1045-2:2008

NOTE! Tools (Stapling and pushing tools) are included.

2 PCS - of ITW Toolmatic CT850 6550 IN40-75 tools for nail pushing.



2 PCS - Prebena MODUL 11-L46 clamping tool for clamp.
L35-L64,
W 10,70mm
Thickness 1,39x1,58mm



Art.no.	Description	Qty.	Price SEK
NB3000-084	Multifunction bridge	1	
NB3-TW	Multifunction-bridge tool wagon	4	
Sum			

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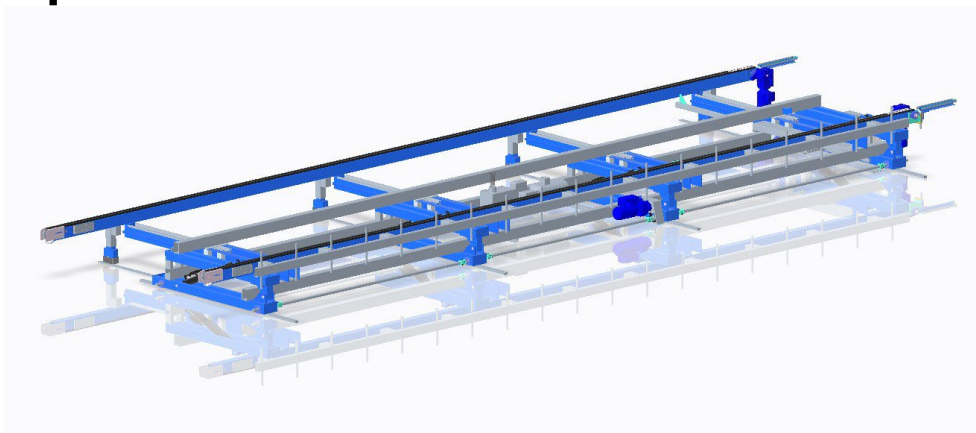
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P12. Upraiser table



Randek's upraiser table is an efficient and flexible tool when upraising the building elements. Equipped with flat-chain conveyors for efficient and gentle transport. Upraising function with hydraulic cylinders for safe and precise handling of the building element. Movable sideways.

Foldable pins on the fixed side of the station to be able to lower the building element on wagons to enable further transport of the element in standing positions.

Work steps:

YV, IV – Finished wall.

Function description:

- The station is moved sideways to the lower position to meet the previous station.
- The element is transported over from the previous station on flat-chain conveyors.
- The station is moved sideways to the start position and manual work can be performed.
- Pins are mounted on the top of the wall for transporting standing walls. The element is raised up to 90 ° and placed on trolleys that run on floor rails. TT-SBR secures the position of the vertical wall. The element is manually removed from the station in a vertical position.

Technical description	
Length, wall element	8.4 m
Height, wall element	2100 - 3300 mm
Level of automation	2000
Fixed side	Left
Upraising angle (°)	90°
Max. weight element	2000kg
Max. transport speed	0.5 m/s
Chain type	2 pcs. in fixed position
Movable (m)	~8 m

Automation 2000

Raising and lowering function, moving station, transporting building elements and other functions via push of a button with holding function.

Art.no.	Description	Qty.	Price SEK
TT-MS	Turning Table Movable Sideways (m)	8	
TTU-2000	Turning Table	1	
TT-SBR	Turning Table Stop Beam Top	1	
TT-FP-084	Turning Table Foldable pins	1	
TR01VP	Transport wagon	2	
Sum			

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P13. IIoT platform

Randek's go-to platform for Industrial IoT connecting people and machines via cloud services with the end purpose to create new customer values, data-driven decisions and optimizing business models.

The platform and its connected hardware offer possibilities to gather data and user-friendly tools to analyse, monitor and create reports. It enables data analysis from a supplier point of view to optimize the machine availability for the user.



Basic installation includes:

- Data collection from each machine generating data in the machine line.
- Possibilities to analyse separate work shifts and data associated with them.
- Breakdown of data to each individual building element in a project.
- Data collection for alarms and an overview of the 10 most common ones over a set time.
- Data collection of waiting time for each machine up- and downstream.
- Measurement of current cycle time and a comparison to historic cycle time.

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- Data collection of:
 - Output (linear meters) per hour, shift, week.
 - Number of fasteners used.
 - Number of boards used.
- One data package is included, covering 100 data tags per second.

Art. No.	Description	Qty.
IloT-Inst RDK	Hardware, installation on new line at Randek, and set-up	1
IloT-Sub W	12 months access, Wall line	1

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Pos. / Art.nr	Machine/ Description	Price summary
Pos. 1	Framing station	
Pos. 2	Working table	
Pos. 3	ZeroLabor robot cell	
Pos. 4	Buffer table	
Pos. 5	Upraiser table	
Pos. 6	Receiver table / Working table	
Pos. 7	Working table	
Pos. 8	Upraiser table / Working table	
Pos. 9	Working table	
Pos. 10	Nailing table	
Pos. 11	Multifunction bridge	
Pos. 12	Upraiser table	
Pos. 13	IIoT Platform (software)	
Machine price		
Installation		
Shipping		
Price summary		
All prices are presented with VAT excluded. Additional packing costs will be added.		

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