SCHELLING

Schelling area storage system vs

Efficiency which starts long before the cutting to size.

schelling.com

SCHELLING AREA STORAGE SYSTEM: HIGH SAW EFFICIENCY, SHORT THROUGH-PUT TIMES

A practical development which ensures a further leap in productivity in the industrial cutting of panels to size: The Schelling area storage system makes an important contribution toward increasing production capacities by up to 100 %, saving valuable time and expensive storage space at the same time.

The secret of this innovation lies in the fully engineered and automated organisation of the storage system. An area of 4 to 20 m in width and up to 120 m (larger on request) in length can be used in its entirety. With stacks up to 2000 mm high (higher on request). Feeding into/out of the stack, relocating and loading is carried out by trolley which reacts quickly, precisely and saves space via travelling beam and bridge above the stack of boards. Total height of the plant: Only 3680 mm.

Storing can be carried out with adaptive strategies. According to the order combinations – individual jobs, large batch sizes, constantly changing, etc. – the stacks of board can be handled according to type, dynamically or as mixed stacks.

Since machine and storage system come from a single source – from Schelling – perfect interplay goes without saying. This includes simple operation and high reliability of software and technology. In short, an investment which not only pays off, but also secures new profits in a short time.

WELL THOUGHT OUT TO THE LAST DETAIL, COMPACT AND HIGHLY PRODUCTIVE

The technical concept of the area storage system is a travelling beam carrying a mobile bridge on which a trolley moves with a suction traverse. The bridge takes over the transport in the x-axis (over the length of the storage system), the trolley in the y-axis (width of the storage system), the scissor-type lifting system attached to it in the z-axis (height of the storage system). Impressive load speeds of 150 m/min in the x-direction, 150 m/min in the y-direction and 60 m/min in the z-direction are achieved.

Trolley with scissor-type lifting system

The trolley has a scissor-type lifting mechanism which precisely manoeuvres the suction traverse with the board onto the stack. The scissors are duplicated and thus especially stable. The double scissor versions combined with adjustable suction traverse mean a wide variety of board dimensions can be loaded. The direct drive and the high-performance impellers are responsible for the smooth running of the trolley.
The rotating scissor-type lifting mechanism allows to store boards even underneath of the travelling beams. Resulting in a high storage area utilization. Enormous by small constricted board storages!
The new designed scissor-type lifting mechanism allows to rotate the board + 90° and – 90°. The non-restricted board orientation offers maximum flexibility and requires occasional less space.

Patent applied for it.

Schelling area storage: high saw efficiency, short cycle times

Durable travelling beam, dynamic bridge

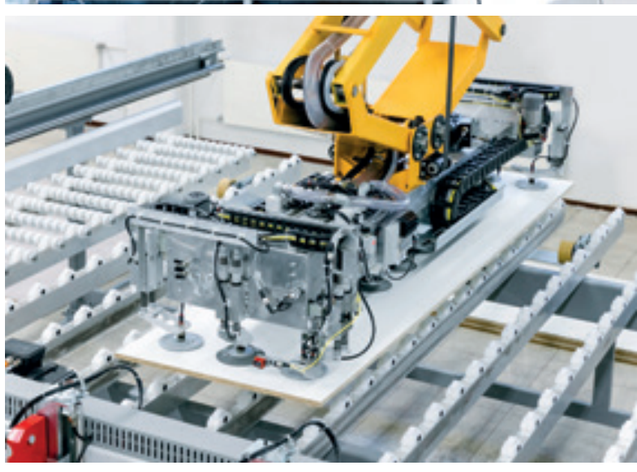
The highly durable travelling beam allows storage lengths up to 120 m (even more if required). The smooth running of the bridge is explained by the compact construction of the mechanics and electronics, as well as the low-noise high-performance impellers. The weight-optimized two-beam construction is characterised by a low construction height of only 3680 mm and great rigidity. The direct drives ensure high driving dynamics, and thus rapid travel movements.

Suction traverse: Fixed or variable length

The suction traverse is suspended from the scissortype lifting mechanism of the trolley. Thanks to a central swivel head and optimized dimensions, it enables a minimum shaft dimension of 2000 x 600 mm for short or narrow parts. Optionally, the traverse can be selected for a defined length or with continuous length adjustment. The latter allows dimensions from 2000 to 4200 mm and, optionally, also from 2650 to 5650.

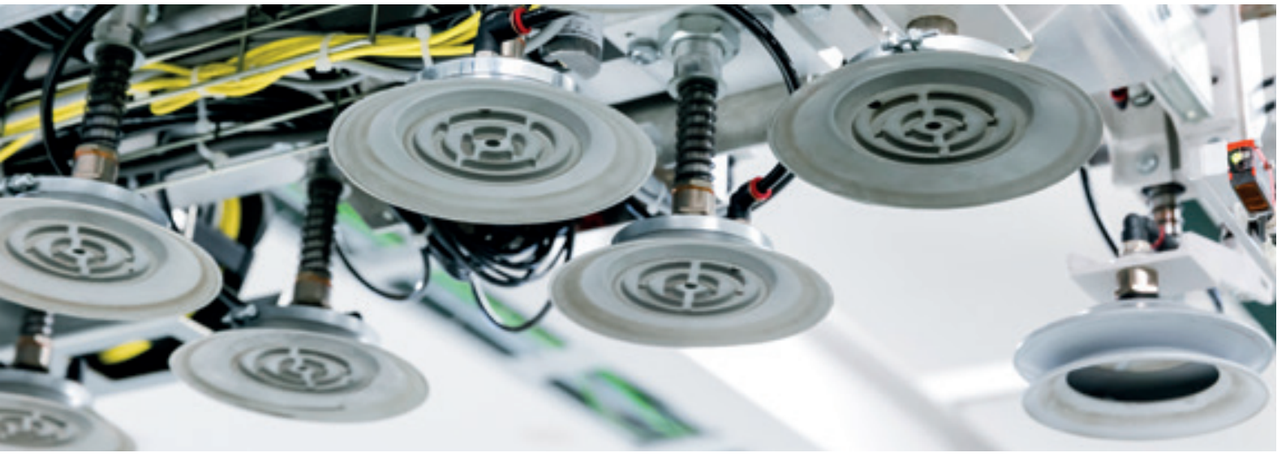
Suction traverse: Fixed or variable width

Even the width of the suction traverse can be selected as fixed or variable. The continuously variable width adjustment is offered from 1000 to 2100 mm and, optionally, also from 600 to 2100 mm or from 1250 to 2600 mm. The suction traverse can be adjusted to the respective material size with the length or width adjustment of. This means a wide range of different board sizes can be stored optimally and in a space saving way.



SUCTION TRAVERSE FOR ALL EVENTS

The suction traverse with 18 suction units, four of which are corner suction units, powerfully suctions the boards. Up to six suction groups can be optionally selected for smaller board dimensions. Remainders up to a size of 1250 x 330 mm can be safely handled. The corner suction units are designed as bellows suction pads and lift the corners for the separation of the boards.



Powerful vacuum pump for secure holding of the workpiece

The vacuum pump for the suction traverse with a performance of 40 m³/h ensures a perfect grip of different board materials. More vacuum power is available for porous materials. A control with frequency converter for vacuum reduction is also possible: In the case of slightly porous boards, the vacuum power is reduced for separation by lifting and only started up afterwards.

Board- and angle measurement

This option measures the board dimension and the angular position with each relocation cycle and corrects the position of the board, if necessary. The turning unit can compensate angular deviations up to 5 degree. So the boards are stacked exactly and the available storage space is utilized optimally. The board stacks can be built with the small distance of 100 mm to each other.

Perfect handling of thin materials

Optionally, the corner suction units for thin materials can be separately controlled and equipped with downholders. Clean separation of the thin boards is ensured.

Turning device: Ideal use of space

The optional turning device enables the boards to be stacked either +/- 90 ° lengthwise or crosswise. The area storage system can be perfectly organised and filled. In addition, the saw is always ideally loaded.

High process safety

The trolley includes a weight measurement process which determines the weight of the boards and compares it with the master data of the board, thus preventing two boards from being picked up at once (from a board weight of 6 kg). This prevents incorrect deliveries; the stock level remains correct.

RAPID INTERPLAY OF CONTROL, SAW, STORAGE SYSTEM AND OPERATOR

The operating concept is simple and efficient: The saw and storage system can work independently of one another – even if one of the two plants is switched off. The system areas are separated by a protective grid.

Intelligent notification system

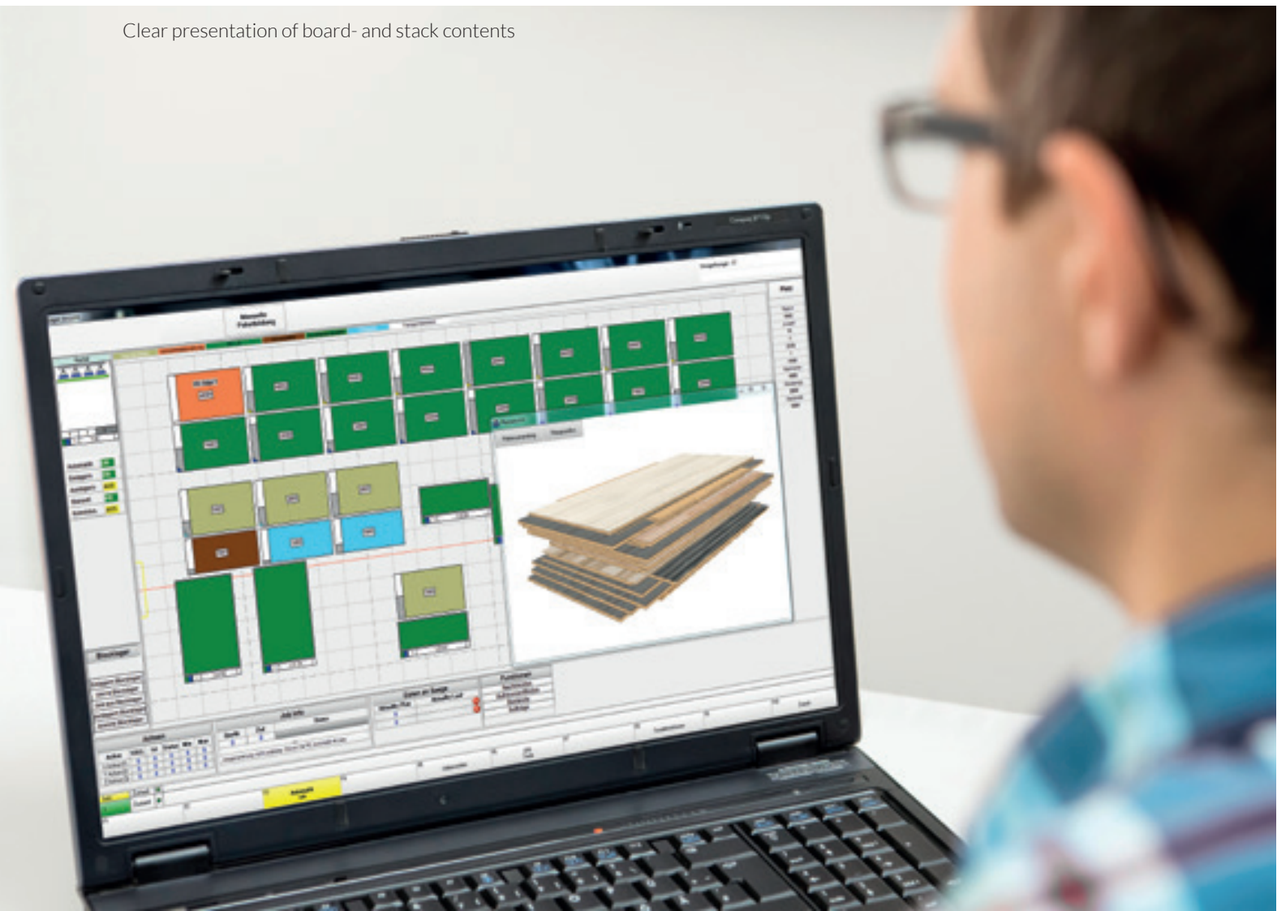
- Automatic generation of emails for any production stop that occurs (e.g. precommissioning during the night)
- Time-adjustable notification
- Priority control of the individual interruptions
- Up to five receivers can be defined

Storagemanager Advanced software

The Schelling area storage system Storagemanager software is clearly arranged, easy to use and carries out many steps itself. The graphical user interface with intuitive operator guidance is very convenient to use. An SQL-database forms the basis of the program that enables standardised and definable statements and evaluations. Relocation orders can be created comfortably per "Drag and Drop". Stack infeed, outfeed of the stack and relocation are controlled according to priority: The trolley always operates the saw and stack outfeed place first, only then carrying out the relocation and order picking. All data is fully automatically compared directly with the HPO cut-to-size optimization from Schelling, without any additional interface. This significantly harmonises the operating sequences and ensures high throughput both in the work preparation as well as in the production.

Storagemanager Professional software

If two saws should be loaded by the storage system, this program variant is used. It offers all the functions of the "Storagemanager Advanced" plus a number of additional specific features: It manages the outfeed to a second saw, operates up to four stack infeed places and two order picking places and allows the connection of up to two hand-held or radio scanners. The storage system, saws and orders can be monitored and controlled remotely using terminals in the board storage system, at the first and second saw and in the office.



Clear presentation of board- and stack contents

Advanced functionalities for efficient operation

- 3D-Visualisation
- Clear graphical user interface
- Simple and intuitive operation
- Data management takes place in SQL-database
- Standard and self-defined SQL-statements for evaluations
  - Overview of stocks
  - Individual statistical evaluations
- User administration
  - Individual password assignment
  - 0 to 9 levels of release authorisations
- ABC analysis for optimized storage strategies
- Quick-connect function
- Material master data definition – cyclical, automatic import of the master data as a CSV file
- Fully automatic data exchange (inventory) for the HPO optimization
- HPO multi-user systems
  - Real-time query of a material
  - Reservation of residual materials in the storage system
  - No double allocation of residual materials
- Multiple function of the stack infeed place
  - As a stack infeed place
  - As a material transfer place
  - As an order picking place
  - As a direct mounting place
- Monitoring of the minimum stock based on the board type
- Stock removal over time
  - If a set time is exceeded (material-dependent) boards can be fed out

All movement data is always in view BDE – production data reporting

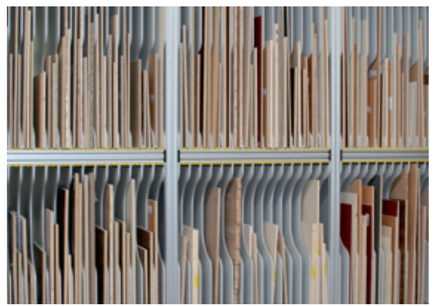
- Display of all storage movements
  - Relocations / Outfeedings / Infeedings
  - Prepicking / Picking
  - Export function to Excel or as a printout
- Graphical representation of the data
- Selection according to
  - Day / week / month / quarter or year
  - Material

Intelligent prepicking logic

- Depositing logic / prepicking logic
  - All order prepicking processes is carried out with foresight
  - Required positions are not obstructed
  - Required boards are not parked on positions that are not required
  - Clearing mode = if the order is cancelled. The parked boards can be cleared up again.

STORAGE STRATEGIES FOR RAPID HANDLING AND HIGH USE OF SPACE

The control of the Schelling area storage system allows tailored storage strategies. Besides the stack infeed and outfeed places, tailored protection board places, order prepicking and picking places can also be simply and quickly determined.
If the requirements change, they can be quickly and simply reassigned in the control. An individual strategy can be assigned to every storage place.



Universal safety concept
The Schelling area storage system has a direction detection system and adjusts the speeds of movement to safety requirements. Also, safe positioning and dynamic board measurement allow optimum use of the available space. Short and long boards can be deposited near the edge area. This means maximum use of space and short cycle times with highest personnel and plant safety.

Always tidy – management and storage of large and small remainders
Remainders of material can be managed in two ways: Large remainders can be returned to the storage system via the saw, a remainder return or via the stack infeed place. The HPO cut-to-size optimization can immediately plan the remainders again with priority. Smaller remainders are perfectly managed by the Schelling XBoB remainder program (option). Smaller remainders are labelled and sorted at a clearly defined manual storage space automatically. The system calls up the remainder planned via the optimization as soon as it can be processed.

Control panel
The area storage system has an ergonomic, very clearly arranged control panel with a generous 22 inch screen. All information is clearly displayed, a simple control is provided. The control panel of the saw is equipped with additional keys for the operation of the area storage system.

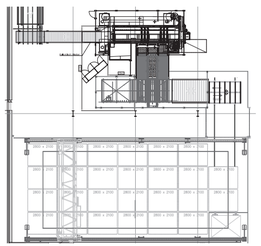
Stacks according to type: static and dynamic
For boards that are constantly required, it is recommended to store them "according to type" – best placed in close proximity to the saw. This allows direct access to the material, without lengthy restacking and results in high cycle times and rapid loading of the saw.

The "according to type / dynamic" strategy makes sense for boards temporarily in frequent use: Here a storage space is only used by one finished part until these boards have been used up. Quick access is assured. Greatly fluctuating amounts of often used material require less storage space.

Mixed stacks
Mixed stack storage makes sense for all other cases: The places are constantly used as storage places for predefined materials to the maximum possible height as a mixed stack. A number of zones can be defined as mixed stack zones. This means a large number of different boards can be stacked on fewer places. The storage places can be used in an extremely flexible way.

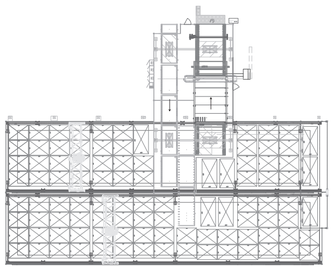
Manual block storage administration
Outside of the area storage system, the block storage (option) is a freely definable area which is managed in the control of the storage system. Any number of places can be occupied. This is especially suited for frequently used materials which are fed directly to the saw and also for very rare materials.

Schelling area and consignment storage system with connection to a CNC machine.

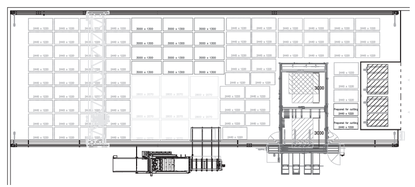


Customized planning
Each Schelling area storage system is planned on a customer-specific basis, i.e. storage lengths up to 120 m (greater lengths on request) and storage widths up to 20 m are adjusted to the customers individual situation. Saw-storage combinations, linking to various machine concepts or the connection of multiple stocks allow a maximum utilization of the available space together with a high production output.

Two linked area storage systems with a Schelling lot-size 1 cut-to-size plant.



Saw-storage combination with connection to a nesting machine.



TECHNICAL DATA

Component size	
Length	2000 – 4200 mm
	2650 – 5650 mm
Width	1000 – 2100 (max. 2600) mm
Component size remainders	
Lenght	600 – 2100 mm
	1250 – 2600 mm
Width	515 – 2100 mm
Dimensions	
Basic beam with carriage length	up to 120 m
	(larger on request)
Travel speed	
Span of bridge	4 – 20 m
Travel speed in x	150 m / min
Travel speed in y	150 m / min
Travel speed in z	60 m / min
Stack height	
Stack height	2000 mm (higher on request)
Distance stack in board storage	100 mm
Component weight	max. 350 kg

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