Machinery for Loading, Glass Cutting & Logistics
Reliable processes, good quality, solid profit: LiSEC solutions provide flat glass processors around the world with security and drive in a challenging environment.

For the last 50 years, we have been working hard to enable you to sustainably boost the efficiency, the system availability and the quality output of your flat glass production process. Thanks to forward-looking thinking, continuously striving to find the best solution and a great deal of personal commitment from our employees, we have grown from a one-man company to a technology leader.

Our advanced solutions generate a great cost-to-benefit ratio throughout the entire lifecycle of your machines and systems.

Customers around the world can benefit from this: be they experienced manufacturers or newcomers to the industry, from family businesses to industrial glass processors. Three main factors are essential for long-term success:

1. Turn Key Solutions
Everything from a single source including software. Customers benefit from the only company in the flat glass machine industry that can comprehensively plan and develop large projects - also thanks to the widest product range in the industry.

2. Excellent Service
Investment security and the highest availability and productivity enable the large, global LiSEC service network. A contact person familiar with the local language and customs is available close to you.

3. Performance through software integration
Integration of the production management software and the machinery control (digitalization/Industry 4.0) allows top operation and optimization of all integrated machines or whole glass factories.

The benefits:
- Over 50 years of partnership, pioneering spirit and stability
- Investment security due to the size of our company
- Leading technology with a high resale value
- Great cost-to-benefit ratio throughout the entire system lifecycle

Facts and figures:
- 1961 founding year
- 1 strong brand
- 1,300 employees
- 25 sites
- 230 million Euros turnover (2017)
- 95 % export rate
- 7 % of turnover for R&D
- more than 330 patents
# Machinery for Loading, Glass Cutting & Logistics

## Table of Contents

### Breaking Systems
- **Break-out systems overview** p. 52
- **ARS** Break-out device for front trim cuts and off-cuts p. 54
- **TBX** Automatic static breakout station p. 55
- **TBR** Automatic sub-plate break-out device with integrated trim cut and off-cut removal p. 56
- **TDV** Horizontal sub-plate rotating device, 90° p. 57

### Logistics Systems
- **Logistics systems overview** p. 58

### Mobile Sorting
- **MSB** Mobile sorting buffer for automatic and manual loading of glass sheets p. 62
- **MLD** Manual loading and unloading station for mobile sorting buffers p. 64
- **MSB-T** Automatic loading system for mobile sorting buffers p. 65
- **ALD** Automatic loading station for mobile sorting buffers p. 66

### Stationary Sorting
- **ASM** Automatic sorting magazine p. 70
- **SHL-VH** Automatic glass transport shuttle with tilt function p. 72
- **SHL** Glass Transport Shuttle p. 74

### Software
- **prod** Production Planning Software for the Flat Glass Industry p. 78
- **opt** Software for Glass Cutting Optimisation p. 80
- **dynopt** Dynamic Cutting Optimisation p. 82
- **oad** Intelligent Cutting Solution to Avoid Defects p. 83
- **label** Label Management Solution p. 84
- **ident** Information and Ready Messaging Terminal at the Production p. 85
- **assetcheck** Machine Status Monitoring Software p. 86
- **autofab** Solution for Automatic Sorting Systems p. 90
- **mon** Break-out display for glass cutting table p. 92

### Service
- **Services** We offer you worldwide service and the fastest possible supply of spare parts. p. 96

### Competence Center
- **LiSEC Glass Forum** Competence Center for research, production and training in the field of flat glass processing p. 98
We adapt the LiSEC lines to your production requirements. Combine innovative systems from the glass processing, glass cutting, tempering and logistics areas into a complete line system. Our employees are happy to advise you in order to configure tailor-made line solutions with you. In order to use the full efficiency of your production, cross-line software solutions are available.
Combined float / LSG cutting system
High-performance system for cutting float and laminated glass automatically

A tried and tested LiSEC float glass cutting system combined with the latest laminated glass cutting technology in one system achieves even higher output.

Edge deletion, cutting float glass and fully automatic sub-plate breaking ensure that the float part can be processed quickly. Thanks to innovations in the cutting/separation technology and in sheet handling, the wastage costs are reduced drastically while at the same time maximising the cutting quality.

Thanks to an optimised distribution of the individual process steps when processing laminated glass, this compact system achieves 30% more output than previous system types on the same production surface area. The overhanging film can be removed from up to three sides of the jumbo sheet using a fully automatic blade. Automatic in-feed is then performed via a conveyor belt at up to 60 m/min. Limit stops ensure a defined zero position for the jumbo sheet. Edge deletion for coated sheets is performed homogeneously and without residues using an optional grinding wheel. A zero cut is standard in all of our systems, a trim cut is not required if the glass quality is sufficient and this reduces wastage costs. If required, labels are applied automatically in order to guarantee reproducibility of the individual sheets and to reduce manual work steps.

The jumbo sheet is automatically fed out via the conveyor belt and aligned to the laminated glass cutting bridge on the positioning limit stops. The positioning station aligns the cuts exactly using the optimisation data. The precision cutting heads cut the top and bottom glass simultaneously with adjusted cutting parameters. The system permanently monitors the cutting pressure, speed, the cutting wheel, wear and other parameters to ensure the highest edge quality and informs the operator of interventions as required.

Furthermore, the clamping function enables special shapes to be cut fully automatically. The system cuts angled cuts, arches and even circles precisely and without offset.

### Technical Data

<table>
<thead>
<tr>
<th></th>
<th>VSL-A37/33</th>
<th>VSL-A46/33</th>
<th>VSL-A60/33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum glass thickness (LSG)</td>
<td>2 x 2 mm + 0.36 mm</td>
<td>2 x 10 mm + 2.28 mm (6 layers), optional 2 x 12 mm + 4.56 mm (12 layers)</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Maximum glass thickness (LSG)</td>
<td>2 - 19 mm</td>
<td>350 x 250 mm</td>
<td>350 x 180 mm</td>
</tr>
<tr>
<td>Glass thickness (float)</td>
<td>2 - 19 mm</td>
<td>350 x 250 mm</td>
<td>350 x 180 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 250 mm automatic transport</td>
<td>350 x 180 mm manual</td>
<td></td>
</tr>
<tr>
<td>Minimum trim cut</td>
<td>50 mm, optional 20 mm</td>
<td>400 mm</td>
<td></td>
</tr>
<tr>
<td>Maximum processing length</td>
<td>3,200 mm</td>
<td>4,600 mm</td>
<td>6,000 mm</td>
</tr>
</tbody>
</table>

### Options & Software

- Trim cut on all four sides of the jumbo sheet, 20 mm minimum
- Automatic sub-plate rotation
- Design with dual cutting head on the laminated glass cutting bridge for automatic tool change
- Automatic residual glass disposal, up to 300 mm remaining width
- Edge deletion using grinding wheel on laminated glass cutting bridge
- Automatic special shape cutting for laminated glass
- Automatic float glass X sub-plate breaking with Y float glass breaking aid
- Tilt arms to unload large glass sheets easily

### Highlights

- Low wastage costs thanks to 50 mm trim cutting (optional 20 mm) on all four sides of the jumbo sheet
- Fully automatic cutting of X, Y and Z sub-plates thanks to automatic rotation; reduces staff costs
- 30% more output thanks to innovative clamping bar technology with low energy mode
- Automatic off cut disposal of up to 100 mm in the container for broken glass
- Segmented infrared film heating for fast heating and reduced energy consumption
- Daily production of float and laminated glass processing on one system possible
- Innovative operating concept with comprehensive machine intelligence
- Permanent work surface monitor with laser scanner for the highest system safety

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**dynopt**

**assetcheck**

**ident**

**label**

**modulenote**

**hand**

**prod**

**autofab**

**ident**

**modulenote**

**hand**

**prod**

**autofab**
Laminated glass cutting machine (VZ-N)

High-speed cutting center in compact design for your success

Precision cutting centre for laminated safety glass in split-sized glass sheets and extra-large sizes with a low space requirement. Cutting takes place using the reliable LiSEC thermal-mechanical cutting process with a cutting blade for the PVB film and automatic suction beams from the bottom of the glass. Measuring devices record the glass edges automatically during positioning. The fully automatic servo glass conveyor positions the glass sub-plates over the air cushions that are adjusted to the glass thickness. It is possible to process sub-plates in tandem operation (two sheets in one operation).

Short transport distances and unified control of individual system components ensure fast cycle times and 80 m² per hour or more cutting performance. It is also possible to process LSG special shapes, straight special shape cuts are possible by default thanks to laser-supported positioning.

### Technical Data

- **Glass thickness min. (laminated glass)**: 2 x 2 mm + 0.38 mm
- **Glass thickness max. (laminated glass)**: 2 x 12 mm + 4.56 mm (12 layers)
- **Glass thickness (float glass)**: 3 - 19 mm
- **Minimum size**: 350 x 250 mm automatic transport
- **Minimum trim cut**: 20 mm
- **Maximum size tandem**: 2 x 2,100 x 3,300 mm / 1 x 4,600 x 3,300 mm (VB-45N in Y direction)
- **Maximum size tandem**: 2 x 2,900 x 3,300 mm / 1 x 6,200 x 3,300 mm (VB-60N in Y direction)

### Highlights

- Minimum space requirement and maximum output
- Cutting performance of up to 80 m² per hour
- System availability of up to 95% in multi-shift operation
- Automatic cutting pressure control on all bridges
- Especially for coated glass sheets
- Up to 12 layers of PVB films
- Cutting tolerance +/- 0.4 mm
- Suitable for cutting float glass

### Options & Software

- Simultaneous cutting of up to two subsheets
- Contact-pretensioning and separation of laminated glass
- Fully automatic cutting of laminated glass up to finished product

#### Simultaneous cutting of up to two subsheets

The use of two independently-controlled positioning sections allows up to two sheets to be cut simultaneously with only one axial movement on the second laminated glass cutting bridge. This enables sections to be run through using the bridge, which is available up to 6 m, or to cut several subsheets to size at one time. Space, resources and energy are all effectively used.

#### Contact-pretensioning and separation of laminated glass

Thanks to the use of a vacuum sucker bar underneath the glass, the clamping and cutting processes are carried out fully automatically from the glass underside. Automatic cutting pressure and blade control units ensure maximum process stability.

#### Fully automatic cutting of laminated glass up to finished product

Three laminated glass cutting bridges with positioning equipment, which operate fully independently of each other, ensure fully automatic cutting including initial edge cut up to the finished product. Uniform quality is guaranteed thanks to the automation of essential processes during the cutting procedure, and the unwanted breakage rate is reduced to a minimum. Rejects were yesterday.
Float Glass Breaking Systems
Fully Automatic Breaking of Trim Cuts and X- and Y-Cuts

The LiSEC breakout station has an automatic break-out device for trim cutting on the front and rear on one and the same device. Sub-plates with a glass thickness of up to 19 mm are broken up in the X, Y and Z direction automatically as required. The system can also be equipped with automatic trim cut equipment for the side trim cuts.

A well thought out system arrangement reduces the number of boxes for glass pieces. The optional automatic sheet disposal system maximises system availability.

Highlights
- Flexible all-in-one solution for automatic breaking of y-cuts and trim cuts
- Space-saving machine concept
- Easy to maintain
- Requires a smaller number of containers for broken glass pieces

Technical Data

<table>
<thead>
<tr>
<th></th>
<th>ARS-26</th>
<th>ARS-33</th>
<th>ARS-36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 12 mm</td>
<td>2 - 12 mm, optional 2 - 19 mm</td>
<td>2 - 12 mm</td>
</tr>
<tr>
<td>Max. processing width</td>
<td>2,600 mm</td>
<td>3,100 mm</td>
<td>3,600 mm</td>
</tr>
<tr>
<td>Min. processing length</td>
<td>350 mm</td>
<td>350 mm</td>
<td>350 mm</td>
</tr>
</tbody>
</table>

Software
- dynopt
- assetcheck
- ident
- label

Highlights
- Unlimited automation to customer requirements
  Any automation level can be envisaged thanks to the use of a crushing unit for the removal of front and rear border cuts in addition to crushing units with 3-point technology for X, Y and Z breakage. Turning units for straight breakage lines or 90° removal stations in connection with automatic edge breakage units are available.

- Individually extendable unit variations
  The modular construction guarantees a wide range of extension facilities. Semiautomatic crushers can be converted to any level of increased automation as required.

- Low number of fragment containers
  The number of fragment containers is reduced thanks to the well-thought-out unit constellation. This increases throughput by reducing maintenance and standstill times. The unit can also be fitted with an automatic fragment disposal system.
Ensure a smooth production with the LiSEC stand-alone machines. We do not only support you in the field of insulating glass production, with the LiSEC insulating glass machines, but also with machines for glass cutting or glass processing, sorting and logistics systems as well as tempering furnaces.
Glass loading overview

Glass loading is the first step for successful glass processing. It must be designed in accordance with the requirements of the downstream systems and adjusted to the requirements of the product mix. Our loading systems can meet all customer requirements from high throughput and high variability to easily supplying standalone cutting systems.

<table>
<thead>
<tr>
<th></th>
<th>base LOAD</th>
<th>MD</th>
<th>ATH</th>
<th>SIDE LOADER (SLR)</th>
<th>RACK SHUTTLE SYSTEM (RSS)</th>
<th>PKL / SBL</th>
<th>FlyOver (PKL / SBL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness up to 19 mm</td>
<td>19 mm</td>
<td>25 mm</td>
<td>25 mm</td>
<td>25 mm</td>
<td>25 mm</td>
<td>25 mm</td>
<td>25 mm</td>
</tr>
<tr>
<td>Minimum sheet height</td>
<td>2,600 mm</td>
<td>1,600 mm</td>
<td>1,600 mm</td>
<td>2,400 mm</td>
<td>1,600 mm</td>
<td>2,110 mm</td>
<td></td>
</tr>
<tr>
<td>Crane system</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Remnant plate store (RPS)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Automatic cardboard strip removal</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>Automatic cover sheet rearrangement</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>Uninterrupted reload</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

✓ Standard, ○ Optional, - Not Available

* limited availability
Comparison Storage Systems

- Available space: ~770m²
- Example floor plans

<table>
<thead>
<tr>
<th></th>
<th>Standard crane storage system (PKL / SBL / LBK)</th>
<th>Compact crane storage system (PKL / SBL / LBR)</th>
<th>Side Loader (SLR / LBR)</th>
<th>Rack Shuttle System (RSS / RSL)</th>
<th>Hybrid storage system (RSS / SLR or RSS / PKL / SBL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of storage positions</td>
<td>58</td>
<td>129</td>
<td>42</td>
<td>87</td>
<td>100</td>
</tr>
<tr>
<td>Storage capacity max.</td>
<td>852 t</td>
<td>1,580 t</td>
<td>575 t</td>
<td>1,044</td>
<td>1,200 t</td>
</tr>
<tr>
<td>Fast access to the entire storage/warehouse</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fast repeated access to 2 - 3 types of glass</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Shelving of residual sheet into the warehouse</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Shelving of residual sheet into the warehouse</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Max. number of cutting lines *</td>
<td>2 - 3</td>
<td>2 - 3</td>
<td>2 - 3, Scalable with extra shuttle</td>
<td>2 - 3, Scalable with extra shuttle</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Uninterrupted reloading</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Automatic loader takeoff</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

* depending on the mix float/laminating and/or cycle time requirements
** possible to a limited extent; defined loading and safety area according to the customer’s requirement
*** FlyOver possible

1. Standard crane storage system (PKL / SBL / LBK)
   Crane storage system with standard storage racks. Possible design as gantry, semi-gantry or bridge crane.
2. Compact crane storage system (PKL / SBL / LBR)
   Crane storage system with compact shelf storage location. Possible design as gantry, semi-gantry or bridge crane.
3. Side Loader (SLR / LBR)
   Ground-based side loader which takes out individual panes/sheets from the LBR.
4. Rack Shuttle System (RSS / RSL)
   Ground-based package storage system which places entire racks including glass package in front of the used ATH-Ms.
5. Hybrid storage system (RSS / SLR or RSS / PKL / SBL)
   Floor-based package rack storage location that provides complete racks including the glass package for the side loader or gantry crane located behind.
base LOAD | MD
Movable Single-/ Double-Sided Glass Loading Machine

This double-sided glass loading machine unloads glass sheets from storage racks positioned on either side of the machine, and automatically tilts them horizontally for the next step towards the cutting process. Both the tilt mechanism and the frame with its vacuum suction cups are hydraulically operated. This machine is capable of handling two or more storage racks.

Options
- Fully automatic loading of cutting lines
- Double-sided loading
- Capable of handling large and split stock sizes

Highlights
- Fully automatic loading of cutting lines
- Double-sided loading
- Capable of handling large and split stock sizes

Technical Data

<table>
<thead>
<tr>
<th>LOAD</th>
<th>MD 37/26</th>
<th>LOAD</th>
<th>MD 60/33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td></td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 x 2,600 mm</td>
<td>6,000 x 3,300 mm</td>
<td></td>
</tr>
<tr>
<td>Transport height</td>
<td>920 mm (+/- 20 mm)</td>
<td>920 mm (+/- 20 mm)</td>
<td></td>
</tr>
</tbody>
</table>

ATH
Movable or Stationary Single- / Double-Sided Glass Loading Machine

Glass sheets are automatically unloaded from storage racks positioned to one side of the machine, and tilted to the horizontal position for the cutting process. Both the tilt mechanism and the frame with vacuum suction cups are operated with an oil hydraulic system. The loading machine is also available in a mobile version with electronically controlled drive system, which is capable of unloading glass sheets from up to five different sections.

Options
- Fast version with dual hydraulic system
- Double-Sided
- Movable design

Highlights
- Fully automatic loading of cutting lines
- Loading from one side
- Handling of large and split stock sizes

Technical Data

<table>
<thead>
<tr>
<th>ATH-37/26 (D)</th>
<th>ATH-37/33 (D)</th>
<th>ATH-60/30 (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>1,600 x 1,600 mm</td>
<td>1,600 x 1,600 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 x 2,600 mm</td>
<td>3,700 x 3,300 mm</td>
</tr>
<tr>
<td>Travel path (glass rack sections)</td>
<td>1 - 8</td>
<td>1 - 8</td>
</tr>
</tbody>
</table>
Side Loader (SLR)
Fully automatic, mobile Glass Loading Station including linear brackets

System for the taking out/off of large format glass sheets from automatically movable shelf rack storage systems (LBR). The subsequent tilting of the sheets for the transport to the cutting table is also performed fully automatically. A ground-based warehouse/storage system with side loader dispenses with the commonly used crane girder and may therefore be used in any type of hall.

<table>
<thead>
<tr>
<th>Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Saving of space due to the compact construction</td>
</tr>
<tr>
<td>• Can be configured customer-specifically for a flexible production</td>
</tr>
<tr>
<td>• Variably extendable</td>
</tr>
</tbody>
</table>

Options & Software
- Double-sided design
- Connection to remnant plate storage system
- Glass thickness 2 - 25 mm
- Automatic cardboard strip removal

Technical Data

<table>
<thead>
<tr>
<th>Glass thickness</th>
<th>SLR-37/26</th>
<th>SLR-52/33</th>
<th>SLR-60/33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum size</td>
<td>2,600 mm</td>
<td>2,600 mm</td>
<td>2,600 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 mm</td>
<td>3,700 mm</td>
<td>3,700 mm</td>
</tr>
</tbody>
</table>

Rack Shuttle System (RSS)
Glass Package High-Bay Racking with Shuttle Transport

System for the taking out of large format glass packages from automatically movable glass package high-bay racking systems. The transport shuttle automatically transports the requested glass package from the warehouse to the cutting plant. A separate offtake station (ATH) feeds respectively loads the cutting (to size). A specifically arranged reloading station ensures an uninterrupted reloading of the glass storage. Thus, maximum output is achieved with minimum idle times. This plant is designed for glass-processing companies with only few types of glass but a high throughput.

<table>
<thead>
<tr>
<th>Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Uninterrupted reloading of the glass storage</td>
</tr>
<tr>
<td>• Saving of space due to the compact construction</td>
</tr>
<tr>
<td>• Can be configured customer-specifically for a flexible production</td>
</tr>
</tbody>
</table>

Options & Software
- Connection to remnant plate storage system
- Glass thickness 2 - 25 mm

Technical Data

<table>
<thead>
<tr>
<th>Glass thickness</th>
<th>RSS-37/26</th>
<th>RSS-60/33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum size</td>
<td>2,600 mm</td>
<td>2,600 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 mm</td>
<td>3,700 mm</td>
</tr>
</tbody>
</table>
PKL / SBL

Mobile overhead crane with rotating suction frame for automatic pick-up of large-sized glass sheets

Gantry system with electronically controlled floor drive units; runs on flat guide rails or directly on concrete floors. The automatic drive synchronization is controlled by optical sensors and ensures exact positioning of the loading system relative to the receiving station. The robust bridge drive system ensures exact positioning of the double suction frame and is available in rotating or tilting versions.

Process-controlled operation from pickup of large-sized sheets through to transfer to the turning table. A special high-speed version is also available with multiple drives and precision guides for the floor and gantry movement along with optimized handling and travel procedures.

Options & Software

- 180 degrees rotatable design of suction frame
- Glass thickness up to 25 mm
- Glass loading from inside-loader
- Connection to remnant plate storage system

Highlights

- Supports up to 60 loading positions
- Double-sided tilting and rotating suction frames are available
- Optimized travel routines for the shortest possible cycle times
- Available in half and full gantry versions

Technical Data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm, optional 2 - 25 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum size</td>
<td>1,600 x 1,800 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 x 2,600 mm</td>
<td>3,700 x 3,300 mm</td>
<td>6,000 x 3,300 mm</td>
</tr>
</tbody>
</table>
FlyOver (PKL / SBH)

Revolutionary Loading System with Intelligent Glass Positioning

The newly developed FlyOver overhead loading system is smarter and faster than loading systems were ever before. It is provided with a redesigned suction cup frame and can move diagonally above the storage racks when empty. Once a coated sheet has been unloaded, the suction cup bridge can immediately move towards the next storage rack and the loader can be tilted down instantly. This process allows minimum cycle times, as the suction cup bridge does not have to move out from in between the racks after each cycle.

Intelligent Optimisation Systems

LiSEC optimisation systems avoid remnant plates whenever possible. If they cannot be avoided, though, the intelligent system puts the remnant plates first for coming orders. Any collisions in the process are therefore eliminated. If necessary, for example when storing glass that has just been delivered, remnant plates can be repositioned automatically.

This advanced system is based on long-term experience with manual systems and the proven ATF loading system by LiSEC. It is the best optimisation system currently available for your glass storage and overhead loading system.

Options & Software

- Version for split stock sizes
- Combined with RPI option, cutting system at the feed side of the cutting table, for maximum gain in time. Any remnant sheets produced during cutting are fed out again immediately, tilted up with the SBH and returned to the glass store
- Automatic cardboard strip removal
- Connection to remnant plate storage system

Technical Data

<table>
<thead>
<tr>
<th>FlyOver (PKL / SBH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
</tr>
<tr>
<td>2 - 19 mm, optional 2 - 25 mm</td>
</tr>
<tr>
<td>Minimum size</td>
</tr>
<tr>
<td>1,500 x 3,300 mm</td>
</tr>
<tr>
<td>Maximum size</td>
</tr>
<tr>
<td>6,000 x 3,300 mm</td>
</tr>
</tbody>
</table>
**LBR**

Mobile slot rack system

Automatic mobile slot rack system for efficient use of the existing storage space. Thanks to the mobile compartments, the minimum clearance between the racks can be kept smaller. The required rack is extended in advance and the jumbo sheets removed automatically by our loading system.

**Highlights**
- Efficient space use thanks to mobile slot racks
- Many storage locations in a small space

**Options & Software**
- Double load

**Technical Data**

<table>
<thead>
<tr>
<th></th>
<th>LBR-37/26</th>
<th>LBR-52/33</th>
<th>LBR-60/33</th>
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</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 25 mm</td>
<td>2 - 25 mm</td>
<td>2 - 25 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>1,880 x 1,600 mm</td>
<td>2,800 x 2,400 mm</td>
<td>2,800 x 2,400 mm</td>
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<tr>
<td>Maximum size</td>
<td>3,700 x 2,600 mm</td>
<td>5,200 x 3,300 mm</td>
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</tr>
<tr>
<td>Number of slots</td>
<td>10 - 50</td>
<td>10 - 50</td>
<td>10 - 50</td>
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<tr>
<td>Storage area</td>
<td>140 - 600 mm</td>
<td>140 - 600 mm</td>
<td>140 - 600 mm</td>
</tr>
</tbody>
</table>

---

**RPS**

Compartmental storage for glass remnants from optimized glass cutting

Our compartment modules for vertical storage of glass remnants from optimized cutting procedures are to be positioned as close as possible to the cutting table’s loading station. Best glass from the cutting table is transported back to the tiltable loading and unloading table as determined by the production control software before being slid into their vertical storage positions.

The linear transportation of the glass sheets to the individual compartment slots is carried out by a traveling and self-positioning roller carrier. As the storage module is laid out for extra-large sizes, this system also functions as a buffer storage for uncut sheets in the event of temporary interruptions to the loading of glass storage racks.

**Highlights**
- One remnant plate storage system for multiple cutting systems
- Several remnant plates per rack possible
- Compact, space-saving design
- Vertical construction enables easy cleaning
- Can be adapted to the relevant production requirements

**Options & Software**
- Glass thicknesses up to 25 mm

**Technical Data**

<table>
<thead>
<tr>
<th></th>
<th>RPS-45/33-30</th>
<th>RPS-60/33-20</th>
<th>RPS-60/33-30</th>
<th>RPS-60/33-35</th>
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</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>1,500 x 1,600 mm</td>
<td>6,000 x 3,300 mm</td>
<td>6,000 x 3,300 mm</td>
<td>6,000 x 3,300 mm</td>
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<tr>
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<td>6,000 x 3,300 mm</td>
<td>6,000 x 3,300 mm</td>
<td>6,000 x 3,300 mm</td>
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<tr>
<td>Compartments</td>
<td>30</td>
<td>20</td>
<td>30</td>
<td>35</td>
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</table>
## Flat glass cutting overview

<table>
<thead>
<tr>
<th>Feature</th>
<th>base CUT</th>
<th>FitCut</th>
<th>GFB</th>
<th>ESL-RS</th>
<th>SprintCut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum glass thickness</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Cutting speed X/Y axis</td>
<td>140 m/min</td>
<td>80 m/min</td>
<td>120 m/min</td>
<td>120 m/min</td>
<td>220 m/min</td>
</tr>
<tr>
<td>Acceleration X/Y axis</td>
<td>4 m/s²</td>
<td>2 m/s²</td>
<td>6 m/s²</td>
<td>6 m/s²</td>
<td>10 m/s²</td>
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<tr>
<td>Cutting tolerance</td>
<td>+/- 0.2 mm</td>
<td>+/- 0.4 mm</td>
<td>+/- 0.2 mm</td>
<td>+/- 0.15 mm</td>
<td>+/- 0.1 mm</td>
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<tr>
<td>Printing and applying labels</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Lucid strip brushes</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Edge deletion</td>
<td>Grinding pin</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
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<tr>
<td>Linear drives</td>
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<td>-</td>
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<tr>
<td>Split size version available</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Glass cutting without trim cut</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Film grinding (TPF)</td>
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<td>✓</td>
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<tr>
<td>Cutting wheel changer</td>
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<td>-</td>
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<tr>
<td>Tilting version</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

✓ Standard, ○ Optional, - Not Available
basis CUT
Automatic Float Glass Cutting Machine

The compact basis CUT glass cutting machine is ideally suited for cutting straight lines and shapes out of flat glass. Its construction ensures maximum precision and minimal cutting tolerances, as well as the machine's highest level of durability. Loading is performed manually by means of free-fall in the basic machine model. After loading, the glass can be manually positioned against the reference marks. After which, the operator initiates cutting and the machine automatically detects the glass sheet's position in x and y direction to ensure precise glass cutting. Each stock sheet is manually positioned.

**Highlights**
- Compact and modern design
- Plug & Cut easy to transport/easy to install
- Template scanning
- Includes manual data input, DXF read and Quickopt
- Tiltable for easy glass loading
- Automatic edge deletion

**Options & Software**
- Transportation belts
- Air cushion loading table
- Automatic loader
- Breakout table

**Technical Data**

<table>
<thead>
<tr>
<th>Feature</th>
<th>base CUT 37/26</th>
<th>base CUT 61/33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 x 2,600 mm</td>
<td>6,100 x 3,300 mm</td>
</tr>
<tr>
<td>Cutting speed x/y axis</td>
<td>140 m/min</td>
<td>120 m/min</td>
</tr>
<tr>
<td>Acceleration x/y axis</td>
<td>4 m/s² X/Y-Achse</td>
<td>2 m/s² X-Y-Achse, 6 m/s² Y-Achse</td>
</tr>
<tr>
<td>Cutting tolerance</td>
<td>+/- 0.2 mm</td>
<td>+/- 0.2 mm</td>
</tr>
<tr>
<td>Free-Fall</td>
<td>2 - 12 mm</td>
<td>2 - 12 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>920 mm (+/- 20mm)</td>
<td>920 mm (+/- 20mm)</td>
</tr>
<tr>
<td>Cutting pressure regulation</td>
<td>automatic</td>
<td>automatic</td>
</tr>
<tr>
<td>Edge deletion</td>
<td>Grinding pin</td>
<td>Grinding wheel</td>
</tr>
</tbody>
</table>

FitCut
Compact System for Cutting Straight Lines and Shapes

The ‘all-rounder’ FitCut is ideally suited for cutting straight lines and shapes on flat glass. With its torsion- and vibration-free drive and guide unit, the machine meets all modern requirements while offering maximum precision and minimum cutting tolerances.

Positioning of glass sheets on the FitCut is very simple: First the glass is manually positioned against the side stop. Then its exact position is determined by measuring the front glass edge. Finally, the side stops lower into the table top and the cutting process starts.

The system's core is the rack and pinion driven cutting bridge, which carries a multi-axis central cutter. The bridge is synchronously driven by one servo motor on each side, which ensures minimum cutting tolerances and longevity of the machine. Furthermore, the FitCut is provided with a travel path optimization function, which optimizes the movements of the axes and increases the cycle time.

**Highlights**
- ‘All-rounder’ for straight cuts and shapes
- Minimum cutting tolerances and maximum precision
- Torsion- and vibration-free drive and guide unit for an increased life time of the machine

**Options & Software**
- Edge deletion on Low-E glass
- Free-fall positioning
- Touch screen
- Quick-Opt
- Integrated breaker bars
- Unloading aids (support fingers)
- Auto-scanning system
- Tilt function

**Technical Data**

<table>
<thead>
<tr>
<th>Feature</th>
<th>FitCut-37/33K</th>
<th>FitCut-60/33K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 x 2,600 mm</td>
<td>6,100 x 3,300 mm</td>
</tr>
<tr>
<td>Cutting speed X/Y axis</td>
<td>80 m/min</td>
<td>80 m/min</td>
</tr>
<tr>
<td>Acceleration x/y axis</td>
<td>2 m/s² X-Y-Achse</td>
<td>2 m/s² X-Y-Achse</td>
</tr>
<tr>
<td>Cutting tolerance</td>
<td>+/- 0.4 mm</td>
<td>+/- 0.4 mm</td>
</tr>
<tr>
<td>Free-Fall</td>
<td>2 - 12 mm</td>
<td>2 - 12 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>920 mm (+/- 20mm)</td>
<td>920 mm (+/- 20mm)</td>
</tr>
<tr>
<td>Cutting pressure regulation</td>
<td>automatic</td>
<td>automatic</td>
</tr>
<tr>
<td>Edge deletion</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
</tr>
</tbody>
</table>
The fully automatic cutting table GFB was specifically developed for the processing of float and patterned glass. This machine provides lowest cutting tolerances and simultaneously a long life and high reliability.

With the GFB you are perfectly prepared for state-of-the-art cutting requirements. The cutting table is equipped with an infinitely adjustable air cushion part and a skid- and wear-resistant conveyor belt. The infeed transport and the aligning of raw glass is performed manually or automatically by the belt transport. When laminated glass is processed, the lamination is removed by means of a grinding wheel in the first process step. The cutting process will then start automatically.

The automatic cutting oil feed is performed centrally via the hollow shaft of the cutting wheel holder. The program controls the maximum speeds as well as the accelerations depending on the shape of the cut in order to ensure an optimum cutting quality. The quality of the cut is significantly improved by using an automatic cutting pressure control. An optimization of the travel distance ensures most efficient cycle times. The data transfer for straight cuts and shape cuts is done centrally via the network or an USB interface.

The GFB may exactly be tailored to your requirements by means of additional, optionally available functions.

### Technical Data

<table>
<thead>
<tr>
<th>GFB-37/26</th>
<th>GFB-37/33</th>
<th>GFB-61/33</th>
<th>GFB-61/36</th>
<th>GFB-73/33</th>
<th>GFB-90/33</th>
<th>GFB-120/33</th>
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</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 x 2,600 mm</td>
<td>3,700 x 2,600 mm</td>
<td>6,100 x 3,300 mm</td>
<td>6,100 x 3,300 mm</td>
<td>7,500 x 3,600 mm</td>
<td>9,000 x 3,900 mm</td>
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<td>Cutting speed X/Y axis</td>
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<td>120 m/min</td>
<td>120 m/min</td>
<td>120 m/min</td>
<td>120 m/min</td>
<td>120 m/min</td>
</tr>
<tr>
<td>Acceleration X/Y axis</td>
<td>4 m/s² X-Achse, 6 m/s² Y-Achse</td>
<td>4 m/s² X-Achse, 6 m/s² Y-Achse</td>
<td>4 m/s² X-Achse, 6 m/s² Y-Achse</td>
<td>4 m/s² X-Achse, 6 m/s² Y-Achse</td>
<td>4 m/s² X-Achse, 6 m/s² Y-Achse</td>
<td>4 m/s² X-Achse, 6 m/s² Y-Achse</td>
</tr>
<tr>
<td>Cutting tolerance</td>
<td>+/- 0.2 mm</td>
<td>+/- 0.2 mm</td>
<td>+/- 0.2 mm</td>
<td>+/- 0.2 mm</td>
<td>+/- 0.2 mm</td>
<td>+/- 0.2 mm</td>
</tr>
<tr>
<td>Free-Fall</td>
<td>2 - 12 mm</td>
<td>2 - 12 mm</td>
<td>2 - 12 mm</td>
<td>2 - 12 mm</td>
<td>2 - 12 mm</td>
<td>2 - 12 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>920 mm ( +/-20mm)</td>
<td>920 mm ( +/-20mm)</td>
<td>920 mm ( +/-20mm)</td>
<td>920 mm ( +/-20mm)</td>
<td>920 mm ( +/-20mm)</td>
<td>920 mm ( +/-20mm)</td>
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<tr>
<td>Cutting pressure regulation</td>
<td>automatic</td>
<td>automatic</td>
<td>automatic</td>
<td>automatic</td>
<td>automatic</td>
<td>automatic</td>
</tr>
<tr>
<td>Edge deletion</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
<td>Grinding wheel</td>
</tr>
</tbody>
</table>

### Highlights
- Optimum quality of the cut and minimum tolerances
- Automatic edge deletion of Low-E glass
- High reliability & long service life of the cutting table
- Extensibility to a combined float / laminated glass cutting line
- Energy-efficient plant due to the use of class IE3 drive units
- Edge deletion of low-E glasses of up to 26 mm

### Options & Software
- Edge deletion of low-E glasses (grinding wheel width 20 mm to 26 mm)
- Auto-scanning (scanning of free-form shapes)
- 2 oil supply units
- Fully automatic tool changer for cutting wheel (five positions)
- Dynamic stripping brush at the bottom or at the top and at the bottom
- Version with enhanced suction for edge deletion (Guardian Climaguard HT)
- Integrated device for cutting off remnant formats (RP-1)
ESL-RS
The fastest flat glass cutting table for low energy glass sheets in the world

Fully automatic cutting table for float glass and special glass types using the cutting wheel technology. The table is also equipped with a grinding unit, which removes soft coatings from glass sheets. Straight edges can be simultaneously cut and ground, which guarantees low cycle times while offering maximum quality. Standard shapes and also digitalized special shapes can be cut with ease.

The CNC program automatically adjusts the maximum axis speed and acceleration to the type of cut. A cutting path optimization minimizes the movement of the axis and ensures the shortest possible cutting and grinding times. In addition, the modular machine concept of LiSEC allows almost unlimited possibilities for future extensions: integration into a sorting system, integration of a laminated glass cutting table, or connection to an automatic glass loading system. Discover new possibilities – we will be pleased to advise you!

Technical Data

<table>
<thead>
<tr>
<th></th>
<th>ESL-37/26RS</th>
<th>ESL-37/33RS</th>
<th>ESL-60/33RS</th>
<th>ESL-60/36RS</th>
<th>ESL-75/33RS</th>
<th>ESL-90/33RS</th>
<th>ESL-120/33RS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td></td>
<td>3,700 x</td>
<td>6,000 x</td>
<td>7,500 x</td>
<td>9,000 x</td>
<td>12,000 x</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,700 x</td>
<td>6,000 x</td>
<td>6,000 x</td>
<td>7,500 x</td>
<td>9,000 x</td>
<td>12,000 x</td>
<td></td>
</tr>
<tr>
<td>Cutting speed X/Y axis</td>
<td>120 m/min</td>
<td></td>
<td>2,600 mm</td>
<td>3,300 mm</td>
<td>3,300 mm</td>
<td>3,300 mm</td>
<td></td>
</tr>
<tr>
<td>Acceleration X/Y axis</td>
<td>4 m/s² X-Achse, 6 m/s² Y-Achse</td>
<td></td>
<td>3,300 mm</td>
<td>3,300 mm</td>
<td>3,300 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting tolerance</td>
<td>+/- 0,15 mm</td>
<td></td>
<td>3,600 mm</td>
<td>3,300 mm</td>
<td>3,300 mm</td>
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</tr>
<tr>
<td>Free-Fall</td>
<td>2 - 12 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Transport height</td>
<td>920 mm (+/-20mm)</td>
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<td></td>
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<tr>
<td>Cutting pressure regulation</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Edge deletion</td>
<td>Grinding wheel</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Highlights
- Simultaneous cutting and grinding of straight lines
- Extremely short cycle times
- Optimal cutting quality with minimum tolerances
- Vibration-free bridge movement
- 360° grinding in one cycle
- Fixed cleaning brush on the bottom
- 2 oil supply units

Options & Software
- Automatic return system
- 3rd oil supply unit
- Fully automatic tool changer for cutting wheels
- Dynamic cleaning brush on the top and bottom
- Dynamic cleaning brush only on the bottom
- Integrated device for cutting off residual glass (RP-I)
SprintCut
High Performance Machine for Automatic Cutting of Flat Glass

The flat glass cutting machine of the SprintCut series combines state-of-the-art drive technology with decades of LiSEC know-how in the automatic processing of flat glass. The linear drive technology assures the highest cutting speed and outstanding dynamics. Maximum acceleration is approx. 16 m/s² and maximum speed is approx. 310 m/min. With only a few moving parts, the SprintCut convinces with maximum availability while maintaining low maintenance as well as low spare part costs.

The high-performance line is further characterized by an integrated measuring system and thus ensures an impressive precision of +/- 0.10 mm. The automatic cutting pressure and new grinding pressure control make operation even easier, especially for companies with a high variety of glass types and coatings. In addition, automatically set pressures are reported to the control system and therefore dynamic countermeasures can be taken in case of changes. Cutting oil and cutting wheel monitors show the consumption and preventively indicate a change. Stock plates are automatically sent in via the belt transport and all-automatic alignment is carried out by glass positioning aids. Cutting without zero cut is a standard feature with us.

Optionally the machine can be equipped with an integrated break-out device for remnant plates. As a result, the remnant plate is already generated prior to the actual cutting process and can be stored in parallel in the remnant plate store. The break-out device for remnant plates reduces the cycle time considerably.

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SprintCut-61/33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>6,100 x 3,300 mm</td>
</tr>
<tr>
<td>Maximum speed max. (empty drive)</td>
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</tr>
<tr>
<td>Cutting speed X/Y axis</td>
<td>220 m/min</td>
</tr>
<tr>
<td>Acceleration X/Y axis</td>
<td>10 m/s² X/Y-axis</td>
</tr>
<tr>
<td>Cutting tolerance</td>
<td>+/- 0.1 mm</td>
</tr>
<tr>
<td>Free-Fall</td>
<td>2 - 12 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>920 mm (+/- 20mm)</td>
</tr>
<tr>
<td>Cutting pressure regulation</td>
<td>automatic</td>
</tr>
<tr>
<td>Edge deletion</td>
<td>Grinding wheel</td>
</tr>
</tbody>
</table>

Options & Software

- 2 oil supply units
- Edge deletion of sheets for stepped units, TPF & Easy-Pro-Glass
- Automatic remnant plate break-out device to reduce cycle time
- Dynamic cleaning brush on the top and bottom
- Dynamic cleaning brush only on the bottom
- Integrated device for cutting off remnant formats (RP-I)

Highlights

- Fastest cutting machine for flat glass on the market thanks to state-of-the-art linear drive technology
- Automatic monitoring of cutting pressure and grinding pressure
- Display of cutting wheel wear and cutting oil consumption
- Low-noise in operation and low-maintenance
- Intuitive operation
- High-precision
**Advantages SprintCut**

1. **Fastest cutting machine for flat glass on the market thanks to state-of-the-art linear drive technology**
   High cutting speeds for best cutting performance are achieved using state-of-the-art drive technology. Cutting time is reduced to a minimum due to high dynamics and a cutting accuracy of +/- 0.10 mm is ensured by the integrated measuring system.

2. **Automatic monitoring of cutting pressure and grinding pressure**
   With the automatic grinding pressure monitoring, we achieve 50% higher stripping rates, increase process reliability and reduce operator errors. Especially for processing coated sheets and special glass, the right settings for pressure, speed and feed are the most important factors to produce highest quality.

3. **Display of cutter wheel changer and cutting oil consumption**
   Cutting is improved tremendously by always using the right cutting wheel for the respective application. The system automatically indicates upcoming cutting wheel changes. The integrated cutting wheel overview allows you to always keep track of cutting wheel consumption. Thanks to the automatic cutting oil monitoring and switching between thin and thick oil, unexpected downtimes are reduced to a minimum.
# Laminated glass cutting overview

<table>
<thead>
<tr>
<th>Feature</th>
<th>base LamiCut</th>
<th>VB</th>
<th>VB-N</th>
<th>VSL-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum glass thickness</td>
<td>2 x 8 mm</td>
<td>2 x 12 mm</td>
<td>2 x 12 mm</td>
<td>2 x 12 mm</td>
</tr>
<tr>
<td>Maximum cutting length</td>
<td>5,700 mm</td>
<td>6,000 mm</td>
<td>6,000 mm</td>
<td>6,000 mm</td>
</tr>
<tr>
<td>Minimum automatic trim cuts (Cutting, breaking &amp; separating; depending on the glass type)</td>
<td>150 mm</td>
<td>150 mm</td>
<td>20 mm</td>
<td>20 mm</td>
</tr>
<tr>
<td>Minimum semi-automatic trim cuts (Cutting; depending on the glass type)</td>
<td>20 mm</td>
<td>20 mm</td>
<td>20 mm</td>
<td>20 mm</td>
</tr>
<tr>
<td>Automatic feeding</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✔</td>
</tr>
<tr>
<td>Automatic sub-plate turning</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cutting wheel changes without interruptions</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Edge deletion</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- Standard,  ○ Optional, - Not Available
**base LAMICUT**  
Laminated Glass Cutting Machine

The base LAMICUT - our compact laminated glass cutting machine is available in four configurations (SOLO, FreeFall, TILT, CombiCut). The main component of each configuration consists of a laminated glass cutting bridge and a positioning section with retractable glass positioning stops and tilting arms. Following manual positioning of the stock sheet, the air cushions are automatically deactivated and the fully automatic cutting process begins. Afterwards, the air cushions are activated again and the finished glass sheet may be removed manually or using the tilting arms. Part of the standard package of this compact laminated glass cutting machine is a laser-positioning device for shape cutting.

### Technical Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>base LAMICUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 x 2 - 2 x 8 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>VSG 150 x 200 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>VSG 3,700 x 2,600 mm</td>
</tr>
<tr>
<td>Glass transport height</td>
<td>920 mm (+/- 20 mm)</td>
</tr>
<tr>
<td>Cutting tolerance</td>
<td>+/- 0.4 mm</td>
</tr>
<tr>
<td>Layer thickness</td>
<td>0.38 - 4.56 mm (12-fold)</td>
</tr>
</tbody>
</table>

### Highlights
- Float glass cutting with included low-E edge deletion module - patented
- Free-fall loading
- Tiltable air-cushion table
- Manual shape cutting
- Tilting arms extractable
- Small pack size, easy installation
- 10 movable glass positioning stops, retractable reference stops for easy handling
- Includes various software packages

### Software

**VB-33**
- Glass breaking device float glass up to 12 mm
- Automatic Schneiddruckregelung

**VB-45**
- Glass breaking device float glass up to 19 mm

**VB-60**
- Glass breaking device float glass up to 19 mm
- Automatische Schneiddruckregelung

**AL-A25**
- Tilting brackets
- Side unloading rollers
- Side heating rod

### Space-saving machine in compact design with automatically adjusting stop bar for cutting laminated glass sheets. Stretching and separation of the PVB foil are carried out by suction cups operating from below. This technology guarantees that coatings are well protected against damage during cutting. For the cutting process, the laminated glass sheet is manually positioned against the self-adjusting stop bar.

### Options & Software

**VB**
- Glass breaking device float glass up to 12 mm
- Automatic Schneiddruckregelung

**AL-N**
- Tilting brackets
- Side unloading rollers
- Side heating rod

### Highlights
- Ideal as an extension for existing cutting systems to increase capacity
- Laser-supported positioning for straight cuts
- Protection of coatings
- Up to 12 PVB layers
- Machine configurations for split stock or jumbo sizes

The base LAMICUT - our compact laminated glass cutting machine is available in four configurations (SOLO, FreeFall, TILT, CombiCut). The main component of each configuration consists of a laminated glass cutting bridge and a positioning section with retractable glass positioning stops and tilting arms. Following manual positioning of the stock sheet, the air cushions are automatically deactivated and the fully automatic cutting process begins. Afterwards, the air cushions are activated again and the finished glass sheet may be removed manually or using the tilting arms. Part of the standard package of this compact laminated glass cutting machine is a laser-positioning device for shape cutting.

### Technical Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>VB-33</th>
<th>VB-45</th>
<th>VB-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness min.</td>
<td>2 x 2 mm</td>
<td>2 x 8 mm, optional 2 x 10 mm / 2 x 12 mm</td>
<td></td>
</tr>
<tr>
<td>Glass thickness max.</td>
<td>150 x 200 mm</td>
<td>3,400 mm</td>
<td>4,600 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td></td>
<td>4,600 mm</td>
<td>6,200 mm</td>
</tr>
<tr>
<td>Cutting length max.</td>
<td>0.38 - 2.28 mm, optional 4.56 mm (12-fold)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foil thickness (1 to 6 layers)</td>
<td>AL-A25</td>
<td>AL-A46</td>
<td></td>
</tr>
<tr>
<td>Min. adjusting measure</td>
<td>150 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. adjusting measure</td>
<td>2,500 mm</td>
<td>4,600 mm</td>
<td></td>
</tr>
</tbody>
</table>
Laminated glass cutting (VB-N)
Automatic Cutting Table for Laminated Glass

Precision cutting machine for laminated glass, which can be combined with an upstream positioning bridge designed to automatically feed glass sheets. Stretching and separation of the PVB foil are carried out by suction cups operating from below. This technology guarantees that coatings are well protected against damage during cutting. Thanks to its movable design, the cutting bridge with clamping system can automatically separate trim cuts with a width from 20 to 150 mm (both on the front and rear sides of laminated glass sheets). The trim cuts are automatically removed and disposed of in a container.

The combination of a high-precision cutting technology and an optimized electronic control system, as well as the use of a mechanical foil separation system offer unrivaled precision and edge quality of the glass and PVB layers, even of thick glass units and using special foils. Glass positioning for straight cuts is supported by a laser.

**Technical Data**

<table>
<thead>
<tr>
<th></th>
<th>VB-33N</th>
<th>VB-45N</th>
<th>VB-60N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness min.</td>
<td>2 x 2 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass thickness max.</td>
<td>2 x 12 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum size</td>
<td>150 x 200 mm</td>
<td>4,600 mm</td>
<td>6,200 mm</td>
</tr>
<tr>
<td>Cutting length max.</td>
<td>3,400 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trim cut min. (dependent on glass type)</td>
<td>20 - 150 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foil thickness</td>
<td>0.38 - 4.56 mm (12-fold)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Break distance min. float glass</td>
<td>250 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Options & Software**

- Fully automatic cutting to special shapes
- Automatic separation of trim cuts with a width from 20 to 150 mm on the front and rear sides
- PVB foil thickness: up to 12 layers
- Also suitable for cutting float and cast glass

Combined cutting (GFB / VB)
Cutting table for laminated glass and float sheets

Compact CNC-controlled machine for cutting laminated glass sheets as well as making straight and irregular cuts in float and cast glass. The compact design and positioning of the two machine sections ensures the machine taking up a minimum of space. Vacuum clamps working underneath the glass ensure that clamping and cutting of laminated sheet takes place without interference from above. This technology guarantees that coatings are fully protected during cutting.

An additional grinding unit, which is mounted on the cutting head, is used to achieve perfect edge trimming of laminated VSG glass before the sheet is cut to size. The VSG is automatically positioned for cutting as is float glass sheet for optional automatic traverse cutting in the VB section. Laser-supported positioning for all irregular Z or straight cutting jobs is a standard feature.

**Technical Data**

<table>
<thead>
<tr>
<th></th>
<th>VB-33</th>
<th>VB-45</th>
<th>VB-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness min.</td>
<td>2 x 2 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass thickness max.</td>
<td>2 x 12 mm</td>
<td>optional 2 x 10 mm / 2 x 12 mm</td>
<td></td>
</tr>
<tr>
<td>Minimum size</td>
<td>150 x 200 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting length max.</td>
<td>3,400 mm</td>
<td>4,600 mm</td>
<td>6,200 mm</td>
</tr>
<tr>
<td>Foil thickness</td>
<td>0.38 - 4.56 mm (12-fold)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Options & Software**

- Automatic label printing and application
- Fully automatic tool-changer for cutting wheels (float)
- Tilt arms
- Automatic special shape cutting (manual breaking and film cutting)
Laminated glass cutting (VSL-A)

High-performance machine for cutting laminated glass automatically

The laminated glass cutting machine of the VSL-A series combines state-of-the-art laminated glass cutting technology with decades of LiSEC know-how in automatic laminated glass processing.

Thanks to innovations in the cutting/separation technology and in sheet handling, we reduce the wastage costs for laminated glass while at the same time maximising the cutting quality drastically. All this with a degree of automation that has never been seen before. For our customers, this means significantly lower costs than with a comparable machine and around 30% more output. You can use the VSL-A to cut laminated glass cheaply, quickly and reliably with an extremely low breakage rate!

Automatic edge deletion directly on the laminated glass bridge and fully automatic X/Y/Z laminated glass cutting ensure high productivity. Thanks to the automatic sub-plate turning system, the operation requirements are reduced to a minimum and provide constant quality.

The newly developed clamping bar technology with low energy mode also provides the best results even if the glass quality fluctuates and enables significantly lower cycle times when processing laminated glass. The machine guarantees the highest cut quality thanks to a warm cutting procedure with permanent gap measurement. The film is then cut using a blade.

Both small glass processing companies and large companies benefit from this machine. You can now produce a perfect glass edge easier, quicker and more economically than ever before. That is because this machine adapts to your requirements, supports you automatically and can be extended infinitely to your exact requirements.

Intuitive and easy operation with numerous software functions prevents operating errors and provides support during running operation. Was the right jumbo sheet loaded for glass cutting? Is the optimum cutting wheel being used? Is maintenance due soon? The LiSEC machine checks all of these points automatically, giving you more time for other things.

**Highlights**

- Low wastage costs thanks to 50 mm trim cutting (optional 20 mm) on all four sides of the jumbo sheet
- Fully automatic cutting of X, Y and Z sub-plates thanks to automatic rotation; reduces staff costs
- 30% more output thanks to innovative clamping bar technology with low energy mode
- Automatic off-cut disposal of up to 100 mm in the container for broken glass
- Segmented infrared film heating for fast heating and reduced energy consumption
- Innovative operating concept with comprehensive machine intelligence
- Permanent work surface monitor with laser scanner for the highest system safety

**Options & Software**

- Trim cut on all four sides of the jumbo sheet, 20 mm minimum
- Automatic sub-plate rotation
- Design with dual cutting head on the laminated glass cutting bridge for automatic tool change
- Automatic residual glass disposal, up to 300 mm remaining width
- Edge deletion using grinding wheel on laminated glass cutting bridge
- Automatic special shape cutting for laminated glass
- Automatic float glass X sub-plate breaking with Y float glass breaking aid
- Tilt arms to unload large glass sheets easily

---

**Technical Data**

<table>
<thead>
<tr>
<th></th>
<th>VSL-A37/33</th>
<th>VSL-A46/33</th>
<th>VSL-A60/33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum glass thickness</td>
<td>2 x 2 mm</td>
<td>2 x 10 mm, optional 2 x 12 mm</td>
<td></td>
</tr>
<tr>
<td>Maximum glass thickness</td>
<td>2 x 10 mm, optional 2 x 12 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum size</td>
<td>250 x 250 mm automatic transport</td>
<td>300 x 180 mm manual</td>
<td></td>
</tr>
<tr>
<td>Minimum trim cuts (depending on the glass type)</td>
<td>50 mm, optional 20 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum cutting length</td>
<td>3,700 mm</td>
<td>4,600 mm</td>
<td>6,000 mm</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td>1 - 19 mm</td>
<td>1 - 19 mm</td>
</tr>
<tr>
<td>Cutting tolerance</td>
<td>+/- 0.4 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foil thickness</td>
<td>0.38 - 4.56 mm (12-fold)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Break-out systems overview

Using a break-out device to remove the front and rear trim cut and break-out devices with 3-point technology for X, Y and Z breaking can allow any automation variant to be strived for. Rotating devices for straight breaking lines or 90° discharge stations in conjunction with automatic edge braking devices are available.

<table>
<thead>
<tr>
<th></th>
<th>ARS</th>
<th>TBX</th>
<th>TBR</th>
<th>BBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum glass thickness</td>
<td>12 mm</td>
<td>19 mm</td>
<td>19 mm</td>
<td>12 mm</td>
</tr>
<tr>
<td>Breaking</td>
<td>Automatic front / rear trim cut</td>
<td>Sub-plate break automatic</td>
<td>Automatic sub-plate break and trim cut</td>
<td>Trim cut automatic</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 350 mm</td>
<td>350 x 350 mm</td>
<td>350 x 350 mm</td>
<td>350 x 350 mm</td>
</tr>
<tr>
<td>Automatic shard disposal</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

♦ Standard, ○ Optional, - Not Available
ARS
Break-out device for front trim cuts and off-cuts

ARS breaks and removes front and rear trim cuts of already cut glass sheets across the entire width of the subplates. The intelligent breaking device used ensures that trim cuts are neatly broken apart. Pieces of broken glass are automatically disposed of into a container situated below the machine.

Even thin glass sheets can be easily processed and transported. Extendible support rollers prevent any of the cuts being broken apart unintentionally.

Technical Data

<table>
<thead>
<tr>
<th>ARS-26</th>
<th>ARS-33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 12 mm</td>
</tr>
<tr>
<td>Maximum sub-plate width</td>
<td>1,600 mm 3,300 mm</td>
</tr>
<tr>
<td>Front trim cut</td>
<td>15 - 60 mm</td>
</tr>
<tr>
<td>Rear trim cut (Multiple breaks possible)</td>
<td>15 - 250 mm</td>
</tr>
</tbody>
</table>

TBX
Automatic static breakout station

Once the front and rear trim cuts have been removed, the glass sheet is transported to the TBX on a belt transport unit. The pneumatically operated TBX breaking bar then breaks all x-cuts apart. Individual subplates are the result. A pneumatic counter piece applies the counter pressure required to ensure neatly broken glass sheets.

Technical Data

<table>
<thead>
<tr>
<th>TBX-26/12</th>
<th>TBX-33/12</th>
<th>TBX 33/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 12 mm</td>
<td>2 - 19 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 350 mm</td>
<td></td>
</tr>
<tr>
<td>Maximum sub-plate width</td>
<td>2,600 mm 3,300 mm</td>
<td></td>
</tr>
</tbody>
</table>
TBR
Automatic sub-plate break-out device with integrated trim cut and off-cut removal

TBR can break apart both trim cuts and y-cuts. The subplates turned by the TDV are broken apart, and front and, if necessary, rear trim cuts are removed. Pieces of broken glass are also automatically disposed of into a container situated below the machine.

TDV
Horizontal sub-plate rotating device, 90°

We have developed the TDV-33 to avoid a 90° outlet before breaking Y cuts. The transport section of this space-saving machine is equipped with a roller drive and an integrated lifting and turning plate. This lifts the glass sheet off, turns it 90° and then lowers it again. Following this, the sub-plates are conveyed to the TBR sub-plate break-out device using the downstream conveyor belt unit. TBR then breaks the Y cuts. Optionally, two narrow sub-plates can be simultaneously turned and transferred to the downstream breaker bar via split drives. This optional equipment allows an enormous increase in capacity.

<table>
<thead>
<tr>
<th>Technical Data</th>
<th>TBR-33</th>
<th>TBR-45</th>
<th>TBR-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-plate break glass thickness</td>
<td>2 - 19 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trim cut glass thickness</td>
<td>2 - 12 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum sub-plate width</td>
<td>3,100 mm</td>
<td>4,500 mm</td>
<td>6,000 mm</td>
</tr>
<tr>
<td>Front trim cut</td>
<td>15 - 60 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear trim cut</td>
<td>15 - 250 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical Data</th>
<th>TDV-33</th>
<th>TDV-45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 19 mm</td>
<td></td>
</tr>
<tr>
<td>Minimum size</td>
<td></td>
<td>350 x 350 mm</td>
</tr>
<tr>
<td>Maximum sub-plate length</td>
<td>3,100 mm</td>
<td></td>
</tr>
<tr>
<td>Maximum sub-plate width</td>
<td>3,100 mm</td>
<td>3,300 mm</td>
</tr>
</tbody>
</table>
LiSEC logistics systems are adapted to the customer’s individual requirements from both a technical and automation point of view and can grow with the customer (growing sorting system) - from a simple manual system to a complex, fully automatic solution.

A fully automatic logistics solution has a positive effect on the output quality, for example because the number of glass sheet scratches is reduced. An optimised sorting system enables exact information about the current location of the sheet to be provided.

<table>
<thead>
<tr>
<th>Logistics systems overview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobile sorting</strong></td>
</tr>
<tr>
<td>MSB</td>
</tr>
<tr>
<td>Mobile sorting</td>
</tr>
<tr>
<td>Stationary sorting</td>
</tr>
<tr>
<td>Automatic</td>
</tr>
<tr>
<td>Manual</td>
</tr>
<tr>
<td>Vertical</td>
</tr>
<tr>
<td>Horizontal</td>
</tr>
<tr>
<td>Glass thickness</td>
</tr>
<tr>
<td>Special shapes according to the LiSEC catalogue</td>
</tr>
<tr>
<td>Coated glass sheets lites</td>
</tr>
<tr>
<td>Angling</td>
</tr>
<tr>
<td>Chaotic loading</td>
</tr>
<tr>
<td>Sequential loading</td>
</tr>
<tr>
<td>Single load</td>
</tr>
<tr>
<td>Double load</td>
</tr>
<tr>
<td>Multiple load</td>
</tr>
</tbody>
</table>

✓ Available, - Not Available
Mobile Sorting

Patented rotatable frame
MSB

Mobile sorting buffer for automatic and manual loading of glass sheets

The mobile sorting buffer (MSB) is an integral part of in-house logistics solutions and can be used in a highly flexible manner. Depending on the selected design, the buffer is in a class of its own when it comes to loading and unloading glass sheets manually or automatically.

In automatic operation, the glass sheets are fed in on roller carriers arranged below the MSB and then put on the glass support bars integrated in the mobile sorting buffer as soon as the roller carrier lowers. In this way, temporary storage even of very large sheets is possible without operator intervention.

There is also the option of replacing the glass support bars with glass transport rollers, which enables manual loading and unloading.

Highlights
- Logistics solution patented by LiSEC
- Flexible and ergonomic transport
- No contact with the glass plates
- Autofab / AFOverview software solutions
- Can be applied individually throughout the entire production process

Options
- 44 slots (glass thickness: 2.3 - 12 mm)

Can be applied individually throughout the entire production process

Depending on the selected design mode, the sorting buffer MSB can be loaded and unloaded automatically or manually. The following variants are available: Automatic loading station (ALD), automatic loading with shuttle (MSB-T), manual loading using a station (MLD) and manual loading by hand.

Logistics solution patented by LiSEC

The patented rotatable frames of the MSB ensure that the loading process can be performed safely from either side.

Glass coatings remain untouched during transport

Highly sensitive system for coated sheets: Thanks to the 3° angle nothing comes into contact with the glass sheets and the coatings remain undamaged.

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2.3 - 17 mm</td>
</tr>
<tr>
<td>Number of slots</td>
<td>34 (2.3 - 17 mm) / optional 44 (2.3 - 12 mm)</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 180 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,000 x 2,200 mm</td>
</tr>
<tr>
<td>Maximum load</td>
<td>2,000 kg</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>3°</td>
</tr>
</tbody>
</table>

Manual loading

The mobile sorting buffer can also be loaded in a purely manual fashion. In this case we recommend using an “infeed roller”.

MLD - Manual loading station

The manual LiSEC loading and unloading station (MLD) can be integrated directly within a production line or used as a stand-alone machine.

MSB - Mobile loading system

Single glass loading and a chaotic system are both possible with the MSB-T. Temporary storage even of very large sheets is possible without operator intervention.

ALD / TSC - Automatic loading station

Using the automatic loading and unloading station (ALD), the glass sheets are transferred sequentially by way of a roller carrier situated beneath the MSB.
MLD

Manual loading and unloading station for mobile sorting buffers

The LiSEC MLD is a manual loading and unloading station for mobile sorting buffers (MSB-A) that may be integrated directly within a production line or used as a stand-alone machine.

The loading/unloading station comprises a moveable roller wall that is guided on a rail on one side. If this roller wall is placed in front of a sorting buffer slot manually, glass sheets may be removed from the buffer or inserted into the buffer manually. If the glass sheets are placed onto the loading station from the sorting buffer then they can be transferred to an insulating glass line or onto a stationary roller wall manually. They may then be used for other processing steps from the stationary roller wall.

This system is particularly well-suited for quick and elective sorting of glass sheets.

Technical Data

<table>
<thead>
<tr>
<th></th>
<th>MLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2.3 - 17 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 180 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,000 x 2,200 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>520 mm</td>
</tr>
<tr>
<td>Maximum load</td>
<td>150 kg</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>3 - 6°</td>
</tr>
</tbody>
</table>

Optionen

- Additional MSB harp rack position

Highlights

- Chaotic loading with upstream machinery (RKT, RTV) or manual positioning
- Integrated inclined change-over function from 3° to 6°
- Expandable to up to six MSB positions
- Easy, intuitive operation

MSB-T

Automatic loading system for mobile sorting buffers

During the loading process, the glass sheets are fed in automatically by way of a roller carrier situated underneath. As soon as the roller carrier is lowered, the glass sheet is placed on the integrated glass transport rollers. When it comes to the automatic unloading process, this sequence is performed in reverse - the roller carrier lifts the glass sheets off the glass transport rollers and transfers them out of the MSB. Single glass loading and a chaotic system are both possible with the MSB-T. Temporary storage even of very large sheets is possible without operator intervention.

Highlights

- Fully automatic loading and unloading in conjunction with the shuttle
- The glass quality is retained thanks to the fully automatic process
- Re-sorting is possible in order to be able to fill the insulating glass line without interruptions
- Optimised cycle time

Technical Data

<table>
<thead>
<tr>
<th></th>
<th>MSB-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2.3 - 17 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 180 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,000 x 2,200 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>520 mm</td>
</tr>
</tbody>
</table>
ALD
Automatic loading station for mobile sorting buffers

Using the automatic loading and unloading station (ALD), the glass sheets are transferred sequentially by way of a roller carrier situated beneath the MSB. A back wall supports the glass sheet and double-loading is possible.

### Technical Data

<table>
<thead>
<tr>
<th>ALD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2.3 - 17 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 180 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>3,000 x 2,200 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>520 mm</td>
</tr>
<tr>
<td>Maximum load</td>
<td>2,000 kg</td>
</tr>
</tbody>
</table>

### Highlights
- Fully automatic mobile sorting buffer (MSB) loading and unloading
- The glass quality is retained thanks to the fully automatic process
- Optimised cycle time

### Software
Stationary Sorting

Modular composition of the sorting magazine according to customer requirements
ASM

Automatic sorting magazine

Glass sheets can be pre-sorted and stored intermittently in the automatic sorting magazine. Loading and unloading is performed via a separately controlled transport beam in conjunction with a glass transport shuttle. The transport roller bar moves on guide rails located below the magazine unit, positions itself exactly under the active storage slot, tilts the drive rollers towards the transport level and starts to transport the sheet.

Sorting in the storage magazine is performed by production process software (optionally available from LiSEC) by optimising the following criteria:

- Number of free buffer slots
- Shortest transport paths
- Need-based request from production line

Highlights

- Fully automatic sorting magazine
- Modular composition of the sorting magazine according to customer requirements
- Operating/feeding production lines
- Direct transfer of a glass sheet from a cutting system (only in conjunction with our LiSEC shuttle sorting system - SHL).

Software

Technical Data

<table>
<thead>
<tr>
<th></th>
<th>ASM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2,3 - 25 mm</td>
</tr>
<tr>
<td>Glass height</td>
<td>2 m / 2.7 m / 3.3 m</td>
</tr>
<tr>
<td>Glass length</td>
<td>4,500 / 5,000 / 6,000 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 180 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>6,000 x 3,300 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>520 mm</td>
</tr>
<tr>
<td>Maximum load</td>
<td>156 kg/2m</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>2°</td>
</tr>
</tbody>
</table>
The tilting shuttle can transport glass sheets both horizontally and vertically between processing stations. The tiltable glass shuttle can cover the standard tilts of 2 - 6° and the full range up to 90° (horizontal). It uses the same rail system as the standard shuttle and can therefore accelerate highly dynamically at a speed of up to 300m/min and 3 m/s². The LiSEC tilting shuttle combines the functions of a tilting table with those of a shuttle. Horizontal and vertical glass transport lines each with different transport heights and tilts can be operated with one shuttle.

**Highlights**

- This flexible tilting shuttle enables customer requirements to be met despite limited available space.
- One tilting table per line can be saved with the tilting shuttle.
- Progressively adjustable horizontal and vertical glass transport height.
- Glass transport function with simultaneous possibility for turning over or tilting up glass sheets.
- Optimised cycle time – glass sheets are transported to the end of the shuttle transport carriage while moving and are adjusted to the required angle of the downstream station (2 – 90 degrees).
- Standardised LiSEC rail system – can be expanded without difficulty.

### Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SHL-VH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass height</td>
<td>2.5 m / 2.7 m</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>2.3 - 19 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 180 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>4,500 x 2,700 mm</td>
</tr>
<tr>
<td>Transport height vertical</td>
<td>520 mm</td>
</tr>
<tr>
<td>Transport height horizontal</td>
<td>865 - 970 mm</td>
</tr>
<tr>
<td>Travel speed</td>
<td>up to 300 m/min</td>
</tr>
<tr>
<td>Shuttle acceleration</td>
<td>up to 3 m/s²</td>
</tr>
<tr>
<td>Vertical transport speed</td>
<td>1 - 36 m/min</td>
</tr>
<tr>
<td>Maximum load</td>
<td>150 kg/3m</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>2 - 90°</td>
</tr>
</tbody>
</table>

**Software**

autofab

72 73
The glass transport shuttle type SHL will be used for loading and unloading of IG-lines, glass processing machinery or buffer systems like the Lisec ASM. The glass is transported on to the shuttle vertical and automatically determining the number of lites loaded onto the shuttle.

The combination of high-performance roller guides and helically toothed racks minimizes driving resistance and maximizes stability, allowing an acceleration of up to $3 \text{ m/s}^2$ and transport speeds of up to $5 \text{ m/s} (300 \text{ m/min})$. Additionally, the back wall of the transport is strongly inclined. As a result, the transport of the sheets in the shuttle can proceed contact-free, further improving the cycle time.

### Highlights
- **Best suitable for coated glass**
  Due to the declanation the coated surface will never be touched during movement
- **Shortest cycle time**
  Thanks to a bigger declanation glass can be transported within the shuttle while moving the shuttle
- **Increased Life Time**
  A central lubrication system avoids downtime and guarantees long lasting components

### Technische Daten

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass height</td>
<td>1.6 m / 2 m / 2.5 m / 2.7 m / 3 m / 3.3 m</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>2.3 - 19 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>350 x 180 mm</td>
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</tr>
<tr>
<td>Transport height</td>
<td>520 mm</td>
</tr>
<tr>
<td>Transport speed</td>
<td>up to 300 m/min</td>
</tr>
<tr>
<td>Acceleration Shuttle</td>
<td>up to $3 \text{ m/s}^2$</td>
</tr>
<tr>
<td>Transport speed vertical</td>
<td>3 - 36 m/min</td>
</tr>
<tr>
<td>Maximum load</td>
<td>150 kg/m²</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>2 - 8°</td>
</tr>
</tbody>
</table>
SOFTWARE

With our broad product portfolio we offer our customers a modular set-up, from single-user to complex group solutions with central administration and decentralized sales and production branches. Our whole team supports the development and service of our products, with the goal of generating the greatest benefit for our customers.
**prod**

**Production Planning Software for the Flat Glass Industry**

prod organises your production processes from the jumbo plate stock to the laminating process, the insulating glass production or any other kind of production process to the packaging of your products. The prod basic package already covers all main production planning functions relevant for the flat glass industry: production planning, scheduling, glass cutting optimisation, sequencing and remake management.

**Extensions and additional products:**

- Production planning and control system
- Material- and Maschinenoptimierung
- Dynamic optimisation
- Rack optimisation
- Label printing (grafical generator)
- Capacity planning
- Flexible reporting and analyses
- Delivery- / route planning
- Order management
- Process overview via asset check
- Integrated quality management
- Production status
- Control of LISEC and foreign machines

**Interfaces:**

Bottero, Hegla, Intermac, Bavelloni, Bystronic, etc.

**Highlights**

- Overview of the running production
- Machine load and bottleneck warning
- Packing optimisation
- Stock location management
- Avoiding manual sorting
- Flexible reporting
- Simultaneous optimisation of multiple variants
- Remake management and integration

**Functions**

- Production planning and control system
- Material- und Maschinenoptimierung
- Dynamic optimisation
- Rack optimisation
- Label printing (grafical generator)
- Capacity planning
- Flexible reporting and analyses
- Delivery- / route planning
- Order management
- Process overview via asset check
- Integrated quality management
- Production status
- Control of LISEC and foreign machines

**Overview of the Running Production**

The sales department benefits from the capacity planning due to real-time information about achievable delivery dates. This is possible thanks to a comprehensive overview of the production process, even in areas where numerous production stages and material routes would make it complicated. Orders are planned with precision regarding schedule and machine-specific requirements.

**Machine Load and Bottleneck Warning**

prod reports the production progress to the plant management and the sales department in real time. The information tool provides an up-to-date status of the machine utilisation and individual orders. An invaluable advantage for a precisely planned utilisation of the production capacity or short-notice re-scheduling.

**Packing Optimisation**

prod makes it possible to produce glass sheets in optimised packaging sequence and directly onto the delivery racks. This makes time-consuming searching, commissioning and re-packing redundant. The results are reduced order cycle times, reduced costs in the shipping department and fewer glass damages during transport.
Our optimisation solution goes far beyond the functional scope of a glass cutting optimisation. We support easy input of complex insulated glass structures including coatings and steps. Processes and grinding additions can be applied with a few clicks. In addition, a single click starts the automatic optimisation of all materials from multiple orders, which are processed in parallel. The necessary production data is generated directly and provided to the operator.

Extensions and additional products:

**Highlights**
- New, intuitive LiSEC order editor and stock plate editor
- Flexible optimisation selection and storage systems
- Latest optimisation algorithms for cutting optimisation
- Compatible with different cutting table types

**Functions**
- Order import and editor
- Parallel optimisation
- Stock plate editor
- Production lists, cutting plans, labels
- Pre-defined reports
- Control of LiSEC and non-LiSEC machines

**Interfaces:**
Bottero, Hegla, Intermac, Bavelloni, Bystronic, etc.

New, Intuitive LiSEC Order Editor and Stock Plate Editor
The graphical preview enables quick and easy input of insulated glass units with coated glass and steps, already in the correct position. If supported by the cutting system, the steps can be de-coated automatically.

Newest Algorithms for Cutting Optimisation
Opt integrates the newest LiSEC algorithms for cutting optimisation to determine the best glass cutting results even faster. This function has enormous potential to save money and material.

Compatibility with diverse interfaces
DXF, CAD, CNC, and other interfaces are standard with Opt. Geometry data is received, processed, optimised via interfaces and exported as CNC code. Opt directly controls cutting and frame bending systems from various manufacturers.
## dynopt

**Dynamic Cutting Optimisation**

The ideal situation for minimal glass cutting effort would be a continuous ribbon of glass, without any remnant glass sheets. dynopt tries to create this ideal situation by merging following optimisations and automatically integrating remakes. Through the smooth integration of glass sheets from the following optimisation resp. remakes, remnant glass sheets are avoided and filled up. This permanent optimisation respects not only remnant glass sheets but also avoids eventually before developed optimisation gaps.

### Functions
- Avoiding remnant glass sheets
- Automated integration of remakes
- Prioritised treatment of remakes
- Changing of cutting plan possible till stock plate directly before cutting table
- Permanent optimisation
- Avoiding of possible optimisation gaps
- Automatic inclusion of fill-up glass sheets

### Highlights
- Average glass wastage reduction: 1-2 %
- Best possible optimisation result
- Time saved in the cutting process: 5-10 %
- Avoidance of glass breakages
- User-friendly interface
- Integration of remakes into existing optimisations

---

## oad

**Intelligent Cutting Solution to Avoid Defects**

oad allows you to re-optimise respectively newly arrange the stock plate before cutting in the background to bypass defects within the raw glass. This optimisation puts the priority on shifting the glass sheets on the stock plate until the defect is contained in a waste area, trim cut, or at least the smallest glass sheets of the stock plate. The result is immediately transferred to the cutting line.

### Functions
- Receive external error coordinates from LiSEC scanner or glassworks

### Highlights
- Increasing the result from defective raw glass
- Possibility to use lower quality glass

---

Graphical display of dynopt function

Comparison of a stock plate display without and with oad

Error on stock plate
**label**

**Label Management Solution**

Increasing production speed on the machines and changing customer-specific requirements create a need for a fast and flexible solution. With label LiSEC offers not only a quick and easy way to create and adapt labels but also an easy-to-use label management and control.

**Functions**
- Usage of barcode, images, data fields and texts on the label
- Standard labels for easy adaption available
- Creation of your own labels
- Simple printout control
- Usage of filters at printout control
- Display of shapes on the label with real data
- Pdf-creation
- Generation of own barcode numbers

**Highlights**
- Easy label creation
- Automatic selection of assigned label layouts thanks to versatile filter possibilities (e.g. customer, product, ...)
- Central intelligent label generation for printing and application on the line

---

**ident**

**Information and Ready Messaging Terminal at the Production**

The main function of ident is to inform the user within the production about relevant details resp. to register remakes and ready messages and transfer the information to the ERP system. The program also supplies work step specific information (e.g. shape position) and generates control codes for machines from third party suppliers.

**Functions**
- Display of production drawings
- Entry of rack number and stock location
- Entry of remakes
- Online connection to processing machines
- Synchronising to other ident
- Material management
- Label printout (switching production / customer label)
- Status display

**Highlights**
- Paperless production list
- Ready messages to release capacities and actualization of the status e.g. for an order
- Remake messages for fast post-production
- Detail display for shapes and processings for error prevention
- Higher flexibility through real time adaptation at production planning

---

Design and preview of a label
assetcheck is an indispensable component of the LiSEC product range. Machine status data are collected in real time directly by the machine’s control system and stored in a central place for displaying and analysing. If required, this information can be provided to the production manager, the quality manager, the board or everyone else, who needs them, everytime and everywhere on mobile devices (e.g. smartphones).

Through continuous determination of your performance data and the outcome awareness, you can promptly influence your production and therefore raise your machine availability and output.

**Highlights**
- Proactive planning of maintenance for reducing downtimes
- Point out and analyse downtimes
- Individually configurable
- Machine data available everywhere and real-time as alarms, cycle time, status, recipes, tool information, consumption data, production figures

**Functions**
- Display of actual machine status
- Generate your own views
- Display of past machine status
- View and analyse of alarm data, exit messages, downtime data, maintenance data
- Generate your own reports
- Pre-defined hit lists
- Reporting / charts / graphics
- Pre-defined reports as cycle time calculation per machine

**Individually configurable**
It is very simple to define different views with varying degrees of detail to meet the requirements of different users. It is possible to zoom in from a global overview down to detailed process parameters.

**Analysis function**
The collected data and messages can be analyzed using pre-defined hit lists as well as freely configurable reports. The creation of reports is supported by the integrated reporter module.

**Current machine status display**
The main indicator necessary for a quick overview of all machines is the machine status. At a glance, it is possible to see whether the machine is in automatic mode or if an error has been reported.
Live production data available on your smartphone
autofab is the heart of the automatic sorting and/or buffering solution. This solution allows online control of a completely automated glass production process. The system automatically connects to all machines, controls, regulates and supervises the production processes, and reports the current status of e.g. the sorting systems, etc. With the system it is even possible to separate cutting from production sequence. This way, glass waste is minimised and is guaranteed an optimum production sequence on an insulating glass line, a furnace, etc.

**Highlights**
- Individual production sequences per machine
- The operator is informed about the current status
- Traceability over the whole production sequence
- Optimum utilisation of machines, buffers etc.
- Support of different sorting systems

**Functions**
- Optimised sorting based on the working steps
- Automated handling of shapes
- Control of external software and interface of the industry
- Single glass sheets and batches can be unloaded combined
- Batch overview with further details
- Direct embedding of furnace and non LISC machines
- Communication with scanner
- Connection to manual and automatic harp car system
- Control of laser applications

**Toughening Bed Load**
Sheets are automatically optimised into a toughening bed, taking the furnace criteria into consideration. The furnace is automatically supplied with the sheets and the recipe data. After the tempering process the scanner and ripple data are automatically evaluated. Depending on the next processing step (delivery/IG), the individual sheets are automatically transported from the toughening bed to the correct position. Diverse tempering furnaces and scanning systems can be integrated.

**Loading Display**
The loading display supports the operator loads the sheets onto the transport into the sorting system. The loading display shows all relevant information to load the sheets in the sorting system specified sequence, with the correct base edge and glass side.

**Traceability Over the Whole Production Sequence**
The fully automated glass production records every glass sheet. Each production step can be retraced.

**Optimum Space Utilisation**
The function „Chaotic Sorting“ allows an optimum use of the harp cars. With fully automatic control the production becomes more efficient and economical.
mon supports hand by displaying the cutting plans directly at the cutting machine. Widely visible monitors facilitate simultaneous work, unnecessary printouts are avoided. Storage position information like storage position number, resting edge and further information are clearly displayed in a paperless way.

**Functions**
- Cutting plan display
- Display in several modes
- Shape display
- Communication with breaking station
- Communication with foreign software
- Remake message generation

**Highlights**
- Paperless producible
- Cutting plan display for standard cutting tables
- Laminated glass cutting tables
- Furnace bed load
- Loading display
- Label printing

**Break-out display for glass cutting table**
Machines and systems for flat glass processing are in use for many years, sometimes even for decades. Ongoing maintenance and optimisation are essential to keep performance, efficiency and availability at a consistently high level and to ensure high-quality glass products.
From machine installations to modernization of existing systems, we offer a wide range of services, and stay on your side as a competent and reliable partner throughout the entire life cycle of your systems. Whether you need a customized training program, detailed machine inspections, online support, spare parts or upgrades – the LiSEC service team will take care of it for you.

We offer you worldwide service and the fastest possible supply of spare parts.

Facts & figures:
- 160 service engineers worldwide
- 28 branch offices/representatives
- Service for around 390 different machine types
- Approx. 4,700 customer locations in over 100 countries worldwide
- The largest global service network in the glass industry
- One-of-a-kind in the industry: Competence through operators’ know-how

Service Products
- Online Support
- Hotline
- Service / Maintenance
- Training
- Long Life
- Spare parts
- Installation
- Repairs

Hotline
LiSEC attributes great importance to customer efficiency from the very beginning.

The company is now taking it to a new level of quality.
Monday - Thursday 07:00 a.m. - 04:30 p.m. (CET)
Friday 07:00 a.m. - 12:00 a.m. (CET)
Phone: +43-7477 405-5701
E-Mail: aftersales@lisec.com

Online Support
Preventive check-ups and maintenance ensure high plant availability, keep production output at the desired level and prevent unexpected plant downtimes.

Sunday 10:00 p.m. - Friday 09:00 p.m. (CET)
Phone: +43-7477 405-5701
E-Mail: aftersales@lisec.com

Emergency contact for urgent issues outside our working hours:
Saturday 6:00 a.m. - 10:00 p.m. (CET)
Sunday 6:00 a.m. - 10:00 p.m. (CET)
Phone: +43-7477 405-5701
LiSEC Glass Forum

Competence Center for research, production and training in the field of flat glass processing

Facts and figures:

- Opened October 2015
- Latest LiSEC technologies
- 70 employees
- Investment: 7 million € since 2015
- 15 million Euros turnover
- Approx. 100 customer visits per year
- Glass storage with 96 rack positions
- 3 insulating glass lines
- 3 cutting lines for float, laminated and special glass
- Two AEROFLAT tempering furnaces
- Automatic sorting/shuttle logistics
- Planned ahead maintenance schedule
- Automatic production planning and machine addressing

The new LiSEC Competence Center for research, production and training in the field of flat glass processing was opened in Hausmening at the end of 2015. It aligns completely with the LiSEC claim „Best in Glass Processing“. The Competence Center „Glass Forum“ makes LiSEC the only machine manufacturer on the market who profitably processes flat glass. This operator know-how allows LiSEC to share and therefore fully understand their customers’ problems and challenges.

The „Glass Forum“, a LiSEC investment of approximately seven million Euros, accommodates the latest LiSEC technologies for each step of glass processing – from cutting and edge processing to a sophisticated sheet logistics system to the production of insulating glass units and laminated safety glass including tempering. In the Glass Forum, flat glass is processed under real life production conditions. The state-of-the-art plants and software applications are also used for research, testing and training.