Machinery for Flat Glass Processing

LiSEC

best in glass processing

Facts and figures:

- 1961 founding year
- 1 strong brand
- 1,300 employees
- 25 sites
- 230 million Euros turnover (2018)
- 95 % export rate
- 7 % of turnover for R&D
- more than 330 patents

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

Machinery for Flat Glass Processing

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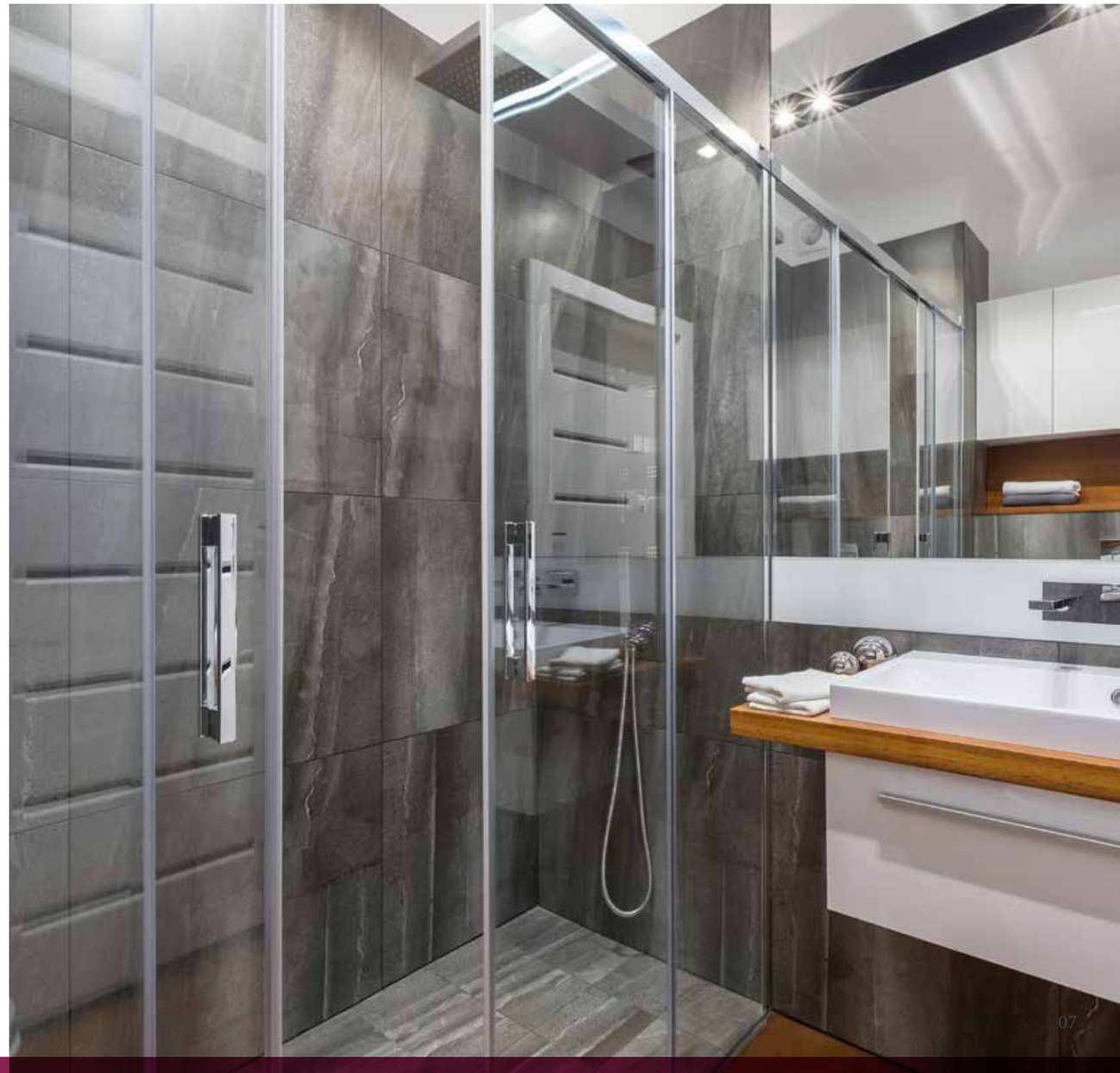
Service

Competence Center



LINES

We match the LiSEC lines individually to suit your production requirements. You can combine innovative systems from the areas of glass processing, glass cutting, tempering and logistics to form a complete line system. Our employees are always pleased to advise you, and to work with you to configure line solutions designed to suit your precise needs. In order to use the full efficiency of your production, cross-line software solutions are available.

SplitFin

The new vertical processing concept: Modular and fully integrated at the same time

SplitFin aims to optimise your entire production operation, using the specific advantages and highlights of the various standalone machines. In contrast to all-in-one centres, and to stand-alone solutions, you can use this LiSEC processing line for high output levels on the entire line at once, and if requested, simply operate and use the standalone machines.

Of course, you could simply start with one machine, then extend your line at a later date to include other systems.

Highlights

- Compared to combination machines, this line is significantly more effective and faster, with all components and parts of the system being in operation at all times.
- Compared to individual devices, you use a continuous material flow with the additional option of a vertical overtaking lane (VLO = vertical lift over).

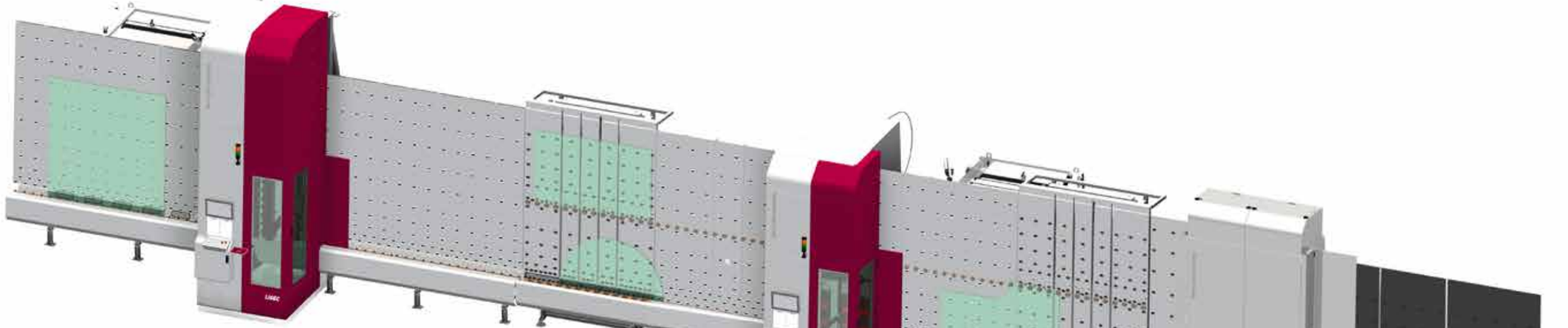
Software

cadcam autofab processclind

LiSEC SplitFin components:

The core components of the SplitFin line are the following standalone machines:

- EPS vertical fully automatic edge grinding machine, optionally with one or two grinding heads and, upon request, with automatic tool changing.
- Integrated component but located in a second machining turret: the MRX-B drilling and milling centre with integrated tool-changer and patented LiSEC water jetting technology.
- These processing devices are complemented by a TCL or a VHW glass washing machine. On request, they can be retrofitted with a selection of vertical semi-automatic or fully-automatic shuttle and sorting systems.
- And don't forget the integration, consistency, and compatibility of the software. Naturally, the system may be integrated with external ERP systems or supplied with drawing data. You can expect current visualisation and evaluation systems with all of the modern operating systems.



EPS Edge Grinder

VLO

MRX-B Drilling and Milling Centre

TCL or VHW Washing Machine

Technical Data	
Glass thickness	4 - 20 mm
Maximum glass height	2,000 mm / 2,700 mm
Maximum glass length	2,500 mm / 3,300 mm / 4,000 mm / 5,000 mm
Minimum size	600 x 180 mm
VLO (second vertical transport lane)	Yes / No
Water jet	Yes / No
Washing machine	TCL / VHW

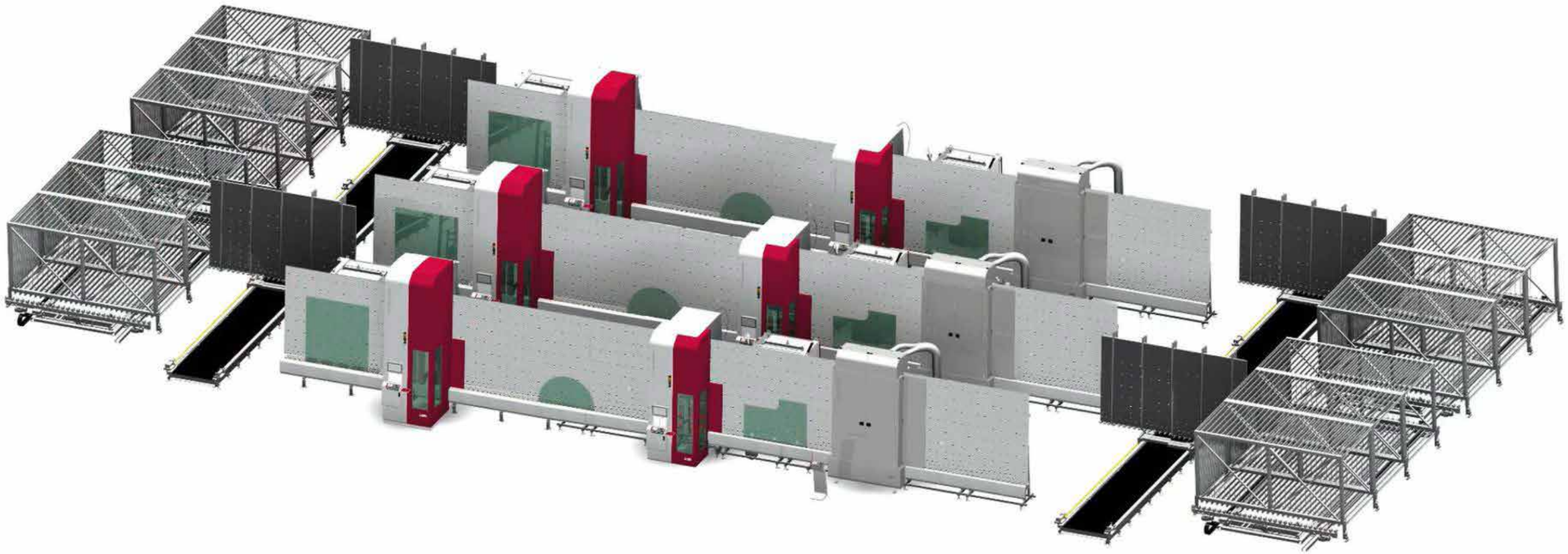
SplitFin

SplitFin in combination with individual logistics solutions

LiSEC supports you with tailor-made solutions to achieve a high output and reduce the number of operating personnel. The performance of the individual machines has just as much impact as the possibility to combine those processing machines with semi or fully automatic shuttle and sorting systems. Customized logistics solutions reduce the effort for glass manipulation and manual sorting, and consequently the number of necessary operating personnel. It is of course possible to implement these solutions gradually, depending on the customer‘s requirements.

Highlights

- Individually configurable and usable according to customer requirements
- Individual machines and transport sections can be extended or added at any time
- Fast cycle times through splitting the necessary processing steps
- Easy production planning and continuous material flow on the line



STAND-ALONE MACHINES

With LiSEC standalone machines, you can achieve seamless production. We not only support you in the insulation glass production business with our LiSEC insulation glass machines. We can also equip you with machines for glass cutting or glass processing as well as with logistics systems and tempering furnaces.

Overview of the processing options

The processing of edges is an important issue for every glass manufacturer. The many and varied requirements on edge quality and the manufacture of internal, edge and border cutaways necessitate the use of a diverse range of processes and production machines.

	KSR/KSV	KBU	KBF	EPS	MRX-B
Edge processing					
Seamed edge (KGS)	✓	-	-	-	-
Rough edge (KMG)	-	✓	✓	✓	-
Bevelled edge (KGN)	-	✓	✓	✓	-
Polished edge (KPO)	-	✓	✓	✓	-
Internal processing					
Bores	-	-	✓	-	✓
Deep-countersinking	-	-	✓	-	✓
Milling	-	-	✓	-	✓
Grinding	-	-	✓	-	✓
Polishing	-	-	✓	-	✓
Water jet	-	-	-	-	○
Machine construction					
Special shapes	✓	✓	✓	✓	✓
Fully automatic	✓	✓	✓	✓	✓
Automatic tool changing	-	✓	✓	○	✓
2nd Spindle	-	-	-	○	✓
Water cushion	-	✓	✓	✓	-

✓ Standard, ○ Optional, - Not Available

KSR & KSV

Compact Vertical Glass Edge Seaming Machine for Rectangles and Shapes

Vertical compact grinding machine for the seaming of glass sheets on all four sides in a fully automatic cycle. The glass edges are ground by wet-diamond belts which simultaneously process the front and rear side of a glass edge. The grinding head moves on a vertical guide unit and can also rotate 360 degrees, allowing it to reach all four sides of a glass sheet. This grinding process achieves a perfect and gentle seaming of glass edges with the shortest cycle times and minimizes the quantity of required abrasive tools.

The grinding belts automatically adjust to the resprective sheet size and thickness. The grinding width is adjustable from 0.5 mm to 2 mm. The compact dimension of the machine results from only one grinding head processing all sides of a rectangular or shaped glass sheet. Optional equipment for flat grinding (roughening) the glass edges as well as for grinding (shaping) the corners of the glass sheed are available.

Combining the KSR with the compact grinding machine KSV to seam the horizontal bottom edge of the glass sheet can reduce the cycle time by up to 35%. The combined KSR & KSV is perfectly suited for applications in the insulating glass industry.

Highlights

- Compact dimension - only one grinding head
- Perfect seaming in extremely short cycle times
- 35% shorter cycle times with combined KSR and KSV
- Complete machine body made of stainless steel
- Can easily be connected to vertical washing machines and production lines
- Best choice for high quality tempered glass

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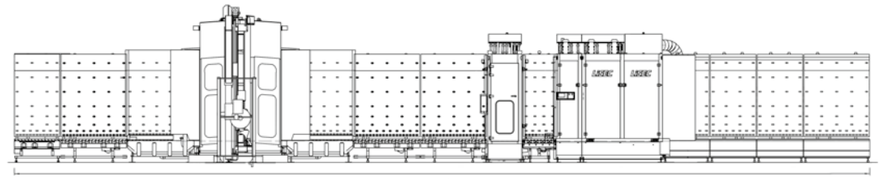
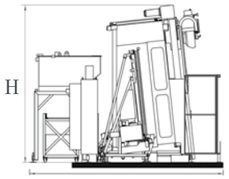
Options

- Shapes according to LiSEC shape catalogue
- Corner seaming and front-sided flat arrising of rectangules and shapes
- Combination of KSR with KSV





Technical Data

	KSR-21	KSR-25	KSR-27	KSR-30	KSR-33
Glass height	2.1 m	2.5 m	2.7 m	3 m	3.3 m
Glass thickness	2.3 - 19 mm (pass-through transport up to 30 mm)				
Minimal size	350 x 180 mm				
Maximal size	up to 6,000 mm, longer versions available upon request				
Transport height	520 mm				
Seaming speed max.	30 m/min at 2.3 - 9.2 mm				
Speed flat arrising max.	30 m/min at 2.3 - 3.7 mm 20 m/min at 3.7 - 5.6 mm				
Maximum Load	150 kg/lm, 250 kg/lm at pass-through transport				

	L (mm)	B (mm)	H (mm)	Power consumption (kW)	Operating air pressure (bar)	Air consumption (l/min)	Operating water pressure (bar)	Water consumption (l/min) *
KSR-21	7,350	4,640	3,810	19.3	6	600	3	0.6
KSR-25	7,350	4,640	4,206	19.3	6	600	3	0.6
KSR-27	7,350	4,640	4,405	19.3	6	600	3	0.6
KSR-30	7,350	4,640	4,703	19.3	6	600	3	0.6
KSR-33	7,350	4,640	5,005	19.3	6	600	3	0.6

* Water consumption if used with a water treatment system

EPS

Vertical fully automatic grinding and polishing machine with fast double heads

We developed the LiSEC EPS specifically for the flexible and rapid manufacture of ground and polished edges. This processing machine delivers convincingly fast cycle times. These are achieved by consistent optimisation of operating sequences. To satisfy particularly fast cycle time requirements, there is the option of installing a second grinding spindle. Through the use of circumferential discs, a great variety of shapes - including rectangles - can be processed as standard. It is possible to manufacture a polished edge without any tool changes, since all the tools required are located on a single tool holder. Integrating an automatic tool changer is an easy way to achieve flexible production operations.

EPS is easy to link up to internal processing machines, or to washing machines. This well thought-out design makes the system readily accessible for maintenance and servicing work. Tool management is state-of-the-art and includes re-profiling and alignment checks of the machine as well as automatic correction of polishing wheel wear. We place particular emphasis on this machine being easy and modern to operate.

Highlights

- Short cycle times
- Special shapes and radii are possible as standard
- Simple interlinking
- Optimised maintenance and servicing

Options & Software

- Second grinding spindle for shorter cycle times
- Automatic tool changer
- Special and slot processing

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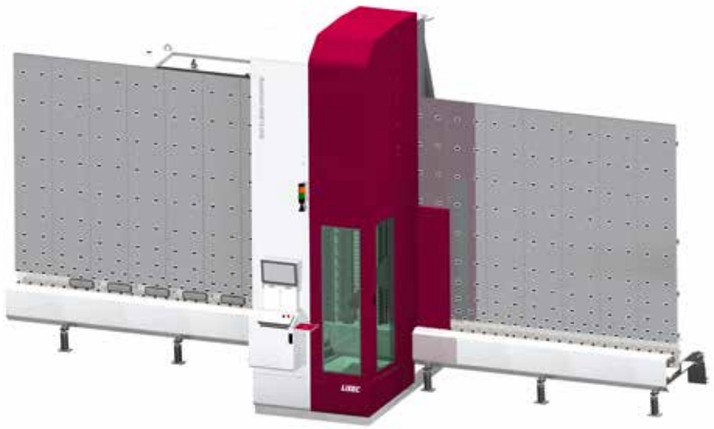

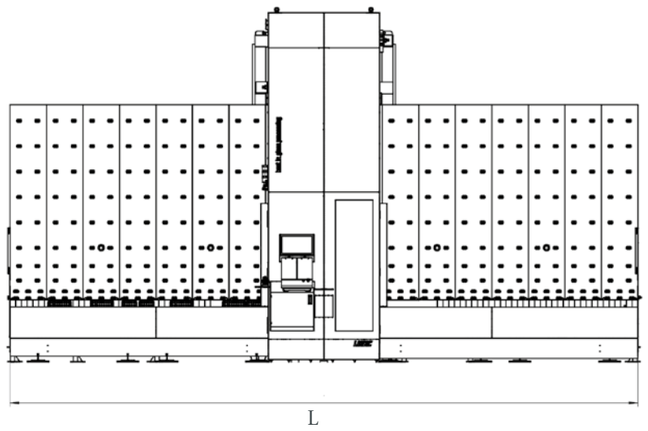

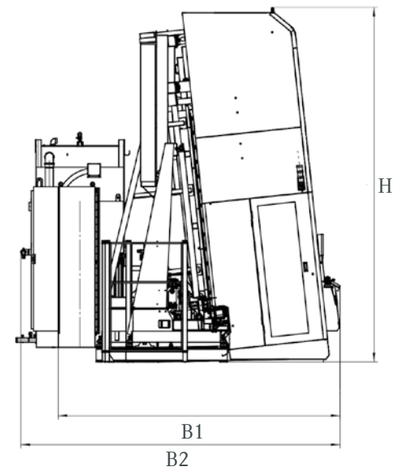

Technical Data

	EPS-A25/20	EPS-A33/20	EPS-A33/27	EPS-A40/20	EPS-A40/27	EPS-A50/27
Maximum glass length	2,500 mm	3,300 mm	3,300 mm	4,000 mm	4,000 mm	5,000 mm
Maximum glass height	2,000 mm	2,000 mm	2,700 mm	2,000 mm	2,700 mm	2,700 mm
Minimum glass dimensions	500 x 180 mm					
Glass thickness	3 – 20 mm					
Number of grinding spindles	One spindle, with option of a second spindle					
Optional tool changer	15-slot, linear	15-slot, linear	20-slot, linear	15-slot, linear	20-slot, linear	20-slot, linear
Transport height	720 mm / optional 520 mm					
Tilt angle for glass transport	6°					
Tools	Diameter: 100 mm / holder: HSK-50					

	L (mm)	B1 - EPS (mm)	B2 - EPS & WRA-B1500 (mm)	H (mm)	Power consumption (kW)	Operating air pressure (bar)	Operating water pressure (bar)
EPS-A25/20	7,000	4,000	4,500	4,200	35	6	3
EPS-A33/20	8,600	4,000	4,500	4,200	35	6	3
EPS-A33/27	8,600	4,000	4,500	4,900	35	6	3
EPS-A40/20	10,000	4,000	4,500	4,200	35	6	3
EPS-A40/27	10,000	4,000	4,500	4,900	35	6	3
EPS-A50/27	12,000	4,000	4,500	4,900	35	6	3

KBU

Vertical Edge Processing Center for the Outer Edges of Glass Sheets

LiSEC's fully automatic edge processing center KBU has been developed to convert CNC grinding of glass into one continuous process, making the arduous production process previously applied for many CNC products a thing of the past. The KBU achieves an outstanding grinding and polishing quality which is virtually independent of the glass size, type or thickness processed. Whether it is used in the construction field or interior design, for functional glass or solar glass, the vertical edge processing center is a highly versatile system which meets all modern demands.

Superior quality

The KBU is equipped with a patented spindle guide, guaranteeing a consistent polishing quality and perfectly parallel seams, even on glass sheets with a length exceeding 10 meters. Furthermore, thanks to the new technology used, the KBU is perfectly suited for processing coated glass sheets, since the face of the glass is never touched throughout the entire grinding process.

Over 50 percent increase in processing speed

The system's vertical design and the automatic tool changer render tool set-up and positioning times nearly irrelevant. In addition, the vertical construction involves significant advantages in glass handling. Thanks to the continuous process, the KBU can achieve shortest cycle times.

Highlights

- Spindle guide system with water cushion
- Flawless processing of coated glass
- Superior polish quality among vertical processing machines
- Flexible product change
- Shape processing supported
- Completely automated

Options & Software

- Special and slot processing

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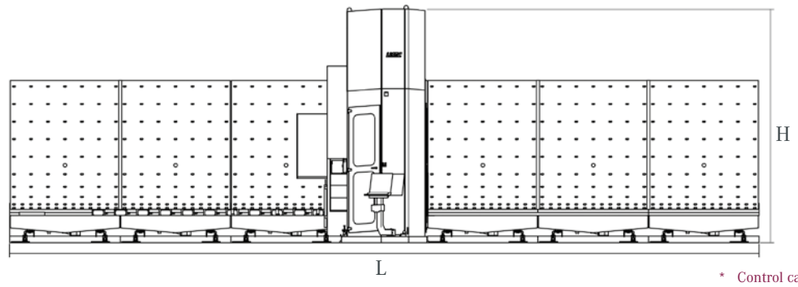

Technical Data

	KBU-35/27	KBU-50/27	KBU-60/33
Glass height	2.7 m	2.7 m	3.3 m
Glass thickness	2-23 mm		
Minimum size	570 x 180 mm		
Maximum size	3,500 x 2,700 mm	5,000 x 2,700 mm	6,000 x 3,300 mm
Transport height	520 mm		
Inclination for glass transport	6°		
Automatic tool changer	20-fold		
Tool diameter	150 mm		
Spindle speed	0 - 14,000 U/min		
Maximum load	200 kg/lm		

	L (mm)	B1 (mm)	B2 (mm)	H (mm)	Power consumption (kW)	Operating air pressure (bar)	Air consumption (l/min)
KBU-35/27	12,510	4,760	3,160	4,695	43	6	800
KBU-50/27	14,910	4,760	3,160	4,695	43	6	800
KBU-60/33	16,911	4,760	3,160	5,390	43	6	800

KBF

Vertical Edge Processing Center with Integrated Single-Sided Drilling and Milling Function

LiSEC‘s fully automatic KBF edge processing center has been designed to convert CNC processing of flat glass into a continuous process. This puts an end to a tiresome production process for many CNC products. Almost regardless of the glass size, type and thickness, the system ensures outstanding grinding and polishing quality. Furthermore, the integrated drilling and milling function enables processing of milled cut-outs and drilled and countersunk holes in just a single working cycle. A highly precise CNC unit achieves precision tolerances and a maximum level of quality, and the 40-fold tool changer enables very short set-up times. Whether used in the structural glazing or interior design fields, for functional or solar glass, the vertical edge processing center is extremely versatile and meets the highest quality standards.

Versatile system

The edge processing center is capable of grinding and polishing nearly all glass types and shapes with a thickness from 2 to 23 mm. The processing of large-sized and very heavy glass sheets in one cycle is a standard function of the KBF.

It can process glass edges of premium quality and is also suitable for FA- and PE-grinding. Graphical menu navigation via the touch screen guarantees intuitive and speedy operation.

Highlights

- Spindle guide system with water cushion
- Inner and outer processing in one go guarantees highest precision
- Milling and drilling of shapes
- Production of large cut-outs using break-out laces

Options & Software

- Special and slot processing
- Drillings from 2 mm glass thickness

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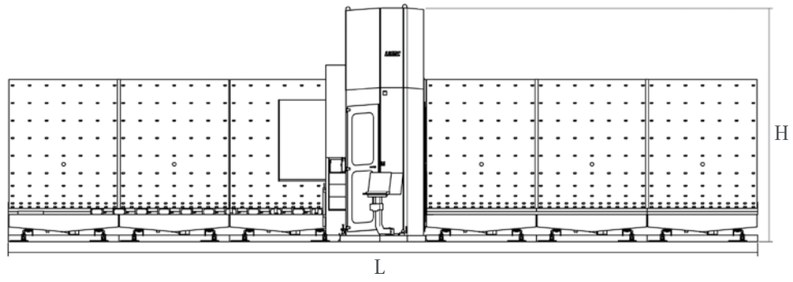

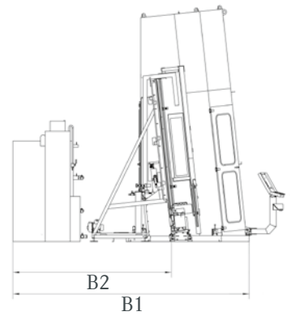

Technical Data

	KBF-35/27	KBF-50/27	KBF-60/33
Glass height	2.7 m	2.7 m	3.3 m
Glass thickness	2 - 23 mm (schleifen und polieren)		
Minimum size	570 x 180 mm		
Maximum size	9,000 x 3,300 mm		
Transport height	520 mm		
Inclination for glass transport	6°		
Automatic tool changer	40-fold		
Max. tool diameter	150 mm		
Spindle speed	0 - 14,000 U/min		
Maximum load	200 kg/lm		

	L (mm)	B1 (mm)	B2 (mm)	H (mm)	Power consumption (kW)	Operating air pressure (bar)	Air consumption (l/min)
KBF-35/27	12,510	4,760	3,160	4,695	43	6	800
KBF-50/27	14,910	4,760	3,160	4,695	43	6	800
KBF-60/33	16,911	4,760	3,160	5,390	43	6	800

MRX-B

Vertical CNC milling and drilling centre with water jet technology

The MRX fully automatic milling and drilling machine delivers convincingly good performance and is easy to operate. Bore and counterbore holes are as efficient to manufacture as complex corners, edges and internal cutaways.

The MRX-B series convinces with its optional water jet cutter, which makes the manufacture of cutaways a great deal easier. The vacuum belt system for securing glass facilitates flexible and continuous production. The drilling and milling centre operates in a fully automatic manner and assists data links to external systems. Graphic input of the processing program and automatic selection of all parameters in the drilling and milling processes make operation simple and error-free.

Machine configurations for every requirement

The MRX-B can be configured to suit individual customer requirements. The Linear-8 tool changers make operation as easy as it possibly can be, while the Roto-10 changer increases the process speed. The highest level of process speed is achieved with a combination of the Roto-10 magazine and the water jet cutting head. Modular expansion of the machine length, the choice of two machine heights and a free choice of running direction provide great scope for individual customer configurations.

Highlights

- Milling, drilling and cutting in a single operation
- Integrated water jet
- Extremely fast cycle times
- Two types of tool changers available
- Flexible change of products
- Simple operation without CAD knowledge

Options

- Linear-8 or Roto-10 magazine
- VLO operation (VLO = vertical lift over)
- Drawing program
- Milling centre with integrated water jet

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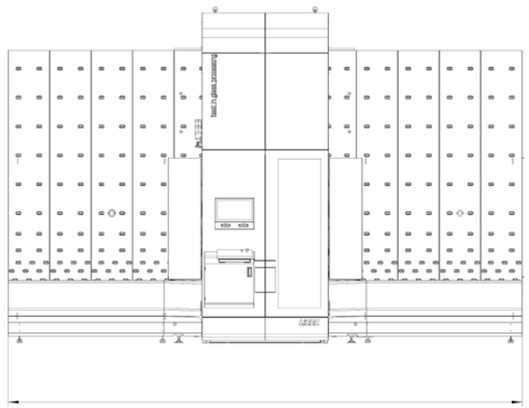
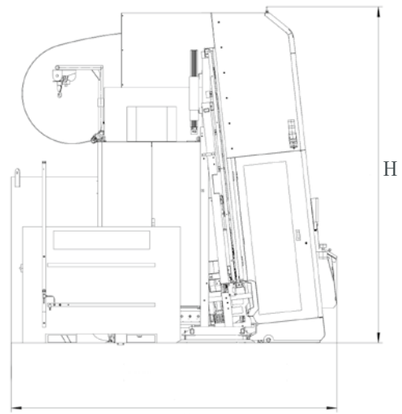




Technical Data

	MRX-B20	MRX-B27	MRX-B20WJ	MRX-B27WJ
Glass height	2,000 mm	2,700 mm	2,000 mm	2,700 mm
Max. processing height of tools	2,000 mm	2,450 mm	2,000 mm	2,450 mm
Integrated water jet	No	No	Yes	Yes
Max. processing height of water jet	-	-	1,600 mm	2,000 mm
Tool magazine	Linear-8 or Roto-10	Linear-8 or Roto-10	Roto-10	Roto-10
Minimum size	600 x 160 mm (drilling / cutting), 650 x 160 mm (milling / grinding)			
Glass thickness	4 - 20 mm			
Maximum glass length	Depending on transport line			
Transport height	720 mm			
Angle of inclination	6°			
Maximum load	100 kg /lm			
Spindle power (rating)	2 x 5.5 kW			
Spindle speed	0 – 12,000 rpm			

	L (mm)	B (mm)	H (mm)	Power consumption (kW)	Operating air pressure (bar)	Operating water pressure (bar)
MRX-B20	6.200	2.980	3.600	32	6	3
MRX-B27	6.200	2.980	4.050	32	6	3
MRX-B20WJ	6.200	3.930	3.600	70	6	3
MRX-B27WJ	6.200	3.930	4.050	70	6	3

* Water consumption if used with a water treatment system

MRX-B

Cycle times and scope of processing

The MRX-B is the ideal solution for all drilling, counter-sinking, milling and cutting processes. All machine configurations facilitate flexible, fast and high-quality processing. The use of a water jet together with the Roto-10 magazine at both processing spindles optimises cycle times when different tools on a single glass sheet are used.

Shower Door

- Dimensions: 800 x 1,800 mm
- 2 Mickey Mouse edge cutouts
- 1 handle drilling

Cycle time for the entire processing:

- Water jet < 90 seconds KGNW
- Grinding < 150 seconds KGN

Swing Door

- Dimensions: 1,000 x 2,000 mm
- 2 pieces PT fittings
- 2 handle drilling

Cycle time for the entire processing:

- 90 seconds KGNW

Single-action Door

- Dimensions: 800 x 2,000 mm
- 6 drillings, all countersink drilling

Cycle time for the entire processing: 360 seconds

State-of-the-art machine technology

The new MRX-B meets all the requirements of modern machine technology to ensure a long machine life and highest precision. Due to the small distance between the drilling tool and the water jet nozzle, surface cutouts no longer require „puncturing“. The smallest available drill pierces the glass and the water jet cutter continues directly from the drill hole. The water jet - and the abrasive sand - is always caught by the jet destroyer. This significantly reduces the pollution within the machine. In addition, all relevant movements are of course servo drive controlled. Solid ball screws for the lifting and drilling axes allow very high precision and the fully automatic central lubrication of all essential machine components ensure the uninterrupted operation of the machine. A network connection and remote maintenance possibility via remote access is of course included in the standard at LiSEC.

1 Fast and flexible processing

- Ideal combination of water jet and diamond tools
- Roto-10 tool magazine mounted directly on the spindle for predictive tool changing
- Drilling, (deep) countersinking, milling and grinding finished in one single cycle
- Batch size 1 facilitates problem-free processing of right angles and shapes

2 Fast glass handling

- Dynamic vacuum system, without tooling time and also for special shapes
- Different glass sizes, shapes and thicknesses without changes
- Loading of next sheet during the processing operation
- Problem-free combination with upstream or downstream modules (e.g. washing machine)

3 Fast and simple operation

- Graphical input of all processing operations and automatic selection of all machining parameters
- Autonomous setting of all auxiliary holes and puncture operations
- Program generation at the machine via network or USB

WRA-B1500

Water Treatment System

The WRA-B1500 water treatment system, which supplies your equipment with perfectly clean and reusable water, is the water saving solution for all kinds of processing machines. Optionally the water treatment system can be equipped with a 1200-liter reservoir, which supplies CNC machines with water through pumps and piping systems.

The best possible way of separating dirt particles from water is to add flocculant and mix it with the dirty water, and to use a lamella package. The sludge that deposits is automatically drained to the big bag underneath. An integrated lift pump simultaneously pumps excess water back to the system. This sophisticated concept reduces the amount of waste water to a minimum. Full big bags can be easily removed and disposed using the integrated heavy-lift trolley.

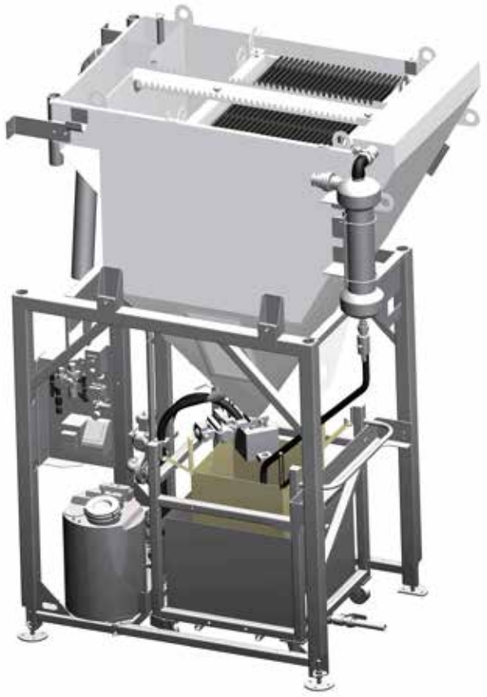
The WRA‘s modular design allows you to remain flexible. The system requires little space and has a low construction height. The corrosion-resistant, compact and solid stainless steel construction makes it a future-proof investment in the efficiency of your production.

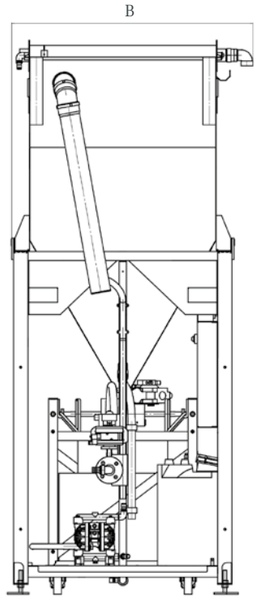
Highlights

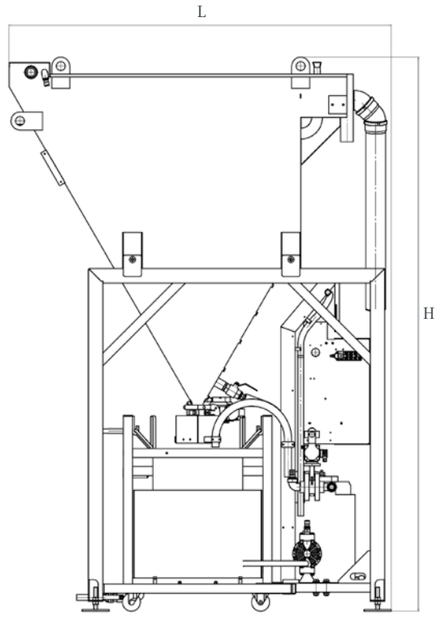
- Saves water
  The sophisticated system supplies the maximum amount of reusable water
- Increases production, reduces maintenance
  The time consuming cleaning of tanks and machines is kept to a minimum
- Plug & play
  No need for individual control of the WRA thanks to the control system of the connected CNC machine

Options

- 1200-liter tank
  A 1200-liter reservoir for cleaned water can be offered, if required.
- Connection to third-party machines
  The WRA also offers optimized water treatment for machines from other suppliers







Technical Data

	WRA-B1500
Capacity	1.5 m^3
Weight	610 kg

	L (mm)	B (mm)	H (mm)	Power consumption (kW)	Operating air pressure (bar)	Air consumption (m^3/d)	Cleaning capacity max. (l/min)
WRA-B1500	2,121	1,339	3,076	0.02	6	12	250

Overview washing maschines

Line pass-through values

	VHW-F	TCL
Tilt angle	6°	6°
Transport height	520 mm / 720 mm / 770 mm / special	520 mm / 720 mm
Maximum length	variable	variable
Maximum height	2 m / 2.5 m / 2.9 m / 3.3 m	2 m / 2.7 m
Minimum size	250 x 180 mm (2 m / 2.5 m) / 350 x 180 mm	300 x 150 mm
Glass thickness	2 - 21 mm / 2 - 60 mm	4 - 20 mm
Max. through-transport width	60 mm	20 mm
Maximum load	250 kg/m	150 kg/m
Transport speed	3 - 8 m/min / 3 - 12 m/min / 3-15 m/min	1 - 6 m/min
Special shapes per LiSEC shape catalogue	yes	yes
Data connection	LMS / Line Management	no
Glass transport system	Rollers	Rollers

Machine-specific data

	VHW-F	TCL
Pre-washing station	yes / no	yes / no
Variable brush speed	yes	no no
Pairs of brushes	2 / 3 / 4	2
Zone setting	automatic	without

TCL

Optimised for integration in LiSEC lines

TCL is the perfect choice if you wish to incorporate a washing machine from the topCLEAR range in a LiSEC processing line. TCL is ideally suited for use on LiSEC lines, in terms of transport height and angle of inclination as well as of machine design. TCL impresses with its extremely robust design and its very good washing result, especially in the grinding area. The standard version can wash glass thicknesses of up to 20 mm.

Highlights

- Perfect integration in LiSEC lines
- Rollers with non-slip coupling as standard
- Reinforced machine base made of stainless steel
- Doors at front and back / Makrolon viewing guard
- One water pump per pair of brushes
- Sensor for water level and shut-down
- High-pressure stainless steel centrifugal pumps

Options

- AutoStart system for power saving
- Pre-wash zone with high-pressure pump and filter
- Soft brushes at front for Low-E glass sheets

Technical Data

	TCL-A20	TCL-A27
Max. processing height	2,000 mm	2,700 mm
Construction	Open at the top	Closed at the top
Glass thickness	4 - 20 mm	
Minimum size	320 x 50 mm	
Angle of inclination	6°	
Transport height	520 mm (+/- 20 mm) / 720 mm (+/- 20 mm)	
Transport speed	1-5 m/min	1-6 m /min
Number of brushes	4 brushes	

VHW-F

Automatic washing and drying plant for flat glass

Our newly developed washing and drying plant offers our customers the possibility to start with a washing machine for basic requirements and to gradually (even over years) adjust and upgrade this machine to meet their growing needs. But not only its flexible upgradability, also the extreme revision of the functional and technical facilities of this plant offer significant benefits.

Highlights

- No scratching of glass sheets or coating (infinitely adjustable brushes)
- Faster and more efficient drying process
- More compact construction
- Saving up to 50% energy with hot water generator

Options

- Shapes according to the LiSEC shape catalog
- Speed control for rolling brushes front/rear
- Automatic coating detection
- 1000l tank and sand filter
- Additional pair of brushes for the main washing zone
- Additional heating element for the integrated heating tank
- Brushes with denser bristles
- Water temperature and conductance monitoring

Technical Data

	VHW-E
Glass height	2 m / 2.5 m / 2.9 m / 3.3 m
Glass thickness	2 - 21 mm / 2 - 60 mm
Minimum size	250 x 180 mm (2 m / 2.5 m) / 350 x 180 mm
Heating unit for the washer	Integrated hot water generation
Number of brushes	4 brushes (VHW-F/4), 6 brushes (VHW-F/V6), 8 brushes (VHW-F/V8)
Transport speed	3 - 8 m/min (4 brushes), 3 - 12 m/min (6 brushes), 3 - 15 m/min (8 brushes)
Maximum load	250 kg/lm

perfectscan

Precision scanner for processed flat glass

The processing of flat glass constitutes a challenge for the operator, the system and also for ongoing quality control. It is not only the external dimensions that must fit perfectly. Above all, the position and quality of cutaways and bores must comply perfectly with specifications.

PerfectScan detects automatically whether it is dealing with single glass or laminated glass, and on the basis of these or other freely selectable criteria, it can check the quality automatically.

With the PerfectScan inspection, you can guarantee products of a better quality, and can substantially reduce complaint levels.

Highlights

- New release with improved user interface
- New archive solution with individual export options
- New, wizard-guided setting of quality criteria and filters
- In combination with LineServer and/or automatic interface, order data can be compared against scan results
- Automatic detection of types of glass
- Dynamic sensitivity setting
- Optimised scan results with 16-bit technology at 400 dpi
- Extremely compact design, can be integrated directly into SplitFin

Functions

- No reflections thanks to telecentric light with camera-free scan technology
- Immediate nominal-actual comparison with adjustable tolerance values
- Data archiving with export options
- Online interface available to ERP systems

Technical Data	
Glass height	200 - 3.400 mm
Maximum length	6,000 mm
Glass thickness	2 - 100 mm
Transport speed	48 m/min at 200 dpi (no interpolation)
Scan technology	16 bit Scanmodule (LIS – Lightning Imaging Sensor)
Light transmission	15 – 99 %

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.

Out whole team supports the development and service of our products, with the goal of generating the greatest benefit for our customers.

cadcam

CAD solution for flat glass processing

Its full integration into the order processing and production planning solutions makes cadcam the best construction program for the glass processing sector. Specifically developed functions support the construction of all imaginable product variants.

cadcam can also be integrated as a stand-alone construction program within your existing software landscape.

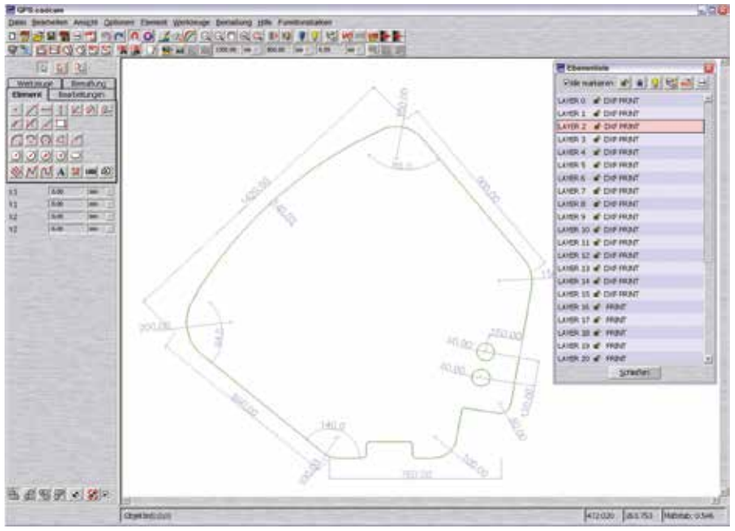
Highlights

- Simple placement of complex cutouts/ fittings from the catalogue
- Optimisation and smoothing of contours are crucial for continuous cutting
- Low training effort due to intuitive and user-friendly graphical interface
- Integration depth up to the processing machine (CNC code converter)
- Extension of your shape catalogue with own drawings

Summa Graphics CalComp

Functions

- Full range of functions of a CAD/CAM system
- LiSEC shape catalogue
- Variable graphics
- Supporting digitizing tables
- Automatic calculation of grinding additions
- Automatic calculation of decoating contour for edges and cutouts
- Administration of cutouts/fittings
- Supported formats: .DXF & LiSEC formats (.ZEI & .GPS)



Sample view of data display, offline test, and declaration of performance

scancam

Digitalisation of templates

LiSEC offers an easy to use system for creating a contour from a digital photo of the template. The contour can then be processed further with a CAD software. scancam automatically corrects photos taken with a digital camera for perspective distortions and generates a DXF file which can be imported by cutting and processing machines.

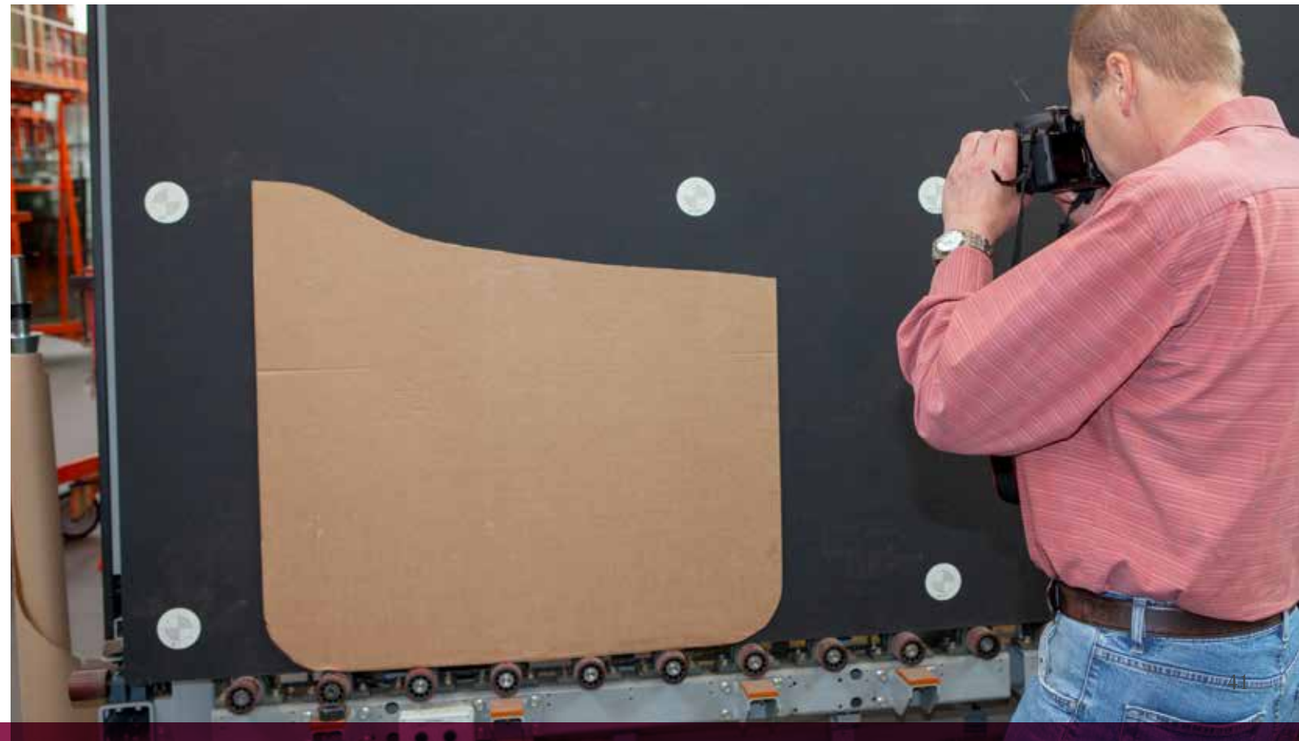
scancam can also be integrated as a stand-alone version within your existing software landscape, as the generated DXF-format is compatible with all common CAD programs.

Highlights

- Portable – Contours can be created at the construction site
- Easy to use – Intuitive graphical user interface
- Compatible – Data output in DXF format
- Automatic contour detection on a black background

Functions

- Automatic detection of reference points
- Correction of perspective distortions
- Continuous zoom for accurate contour detection
- Numerous software tools like „Close Corner“ to process the contour further



Line Management

Control and Monitoring of Processing Line

The LiSEC software solutions Line Management provide the interface between the production planning and the processing line. The combined system at the line automatically receives the data from production planning in the predefined sequence and generates the required production data for each machine.

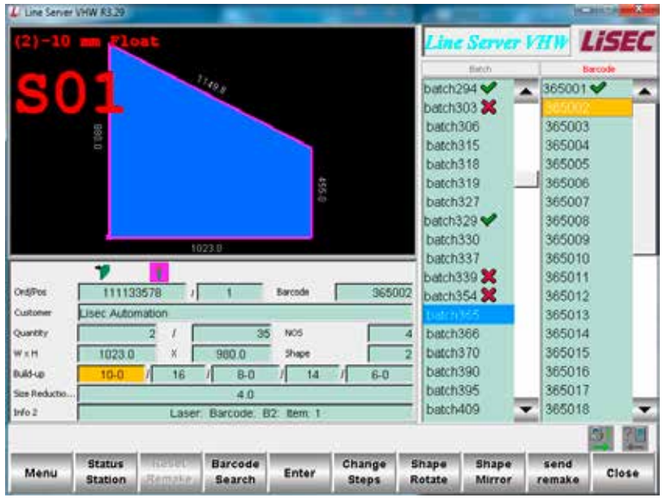
Highlights

- Facilitates automatic production of free shapes (DXF)
- Informing all affected stations if a glass sheet breaks
- Production control and monitoring supported by line overview
- Quality assurance through integration of LiSEC quality scanner

Functions

- Import of production batches
- Input editor for manual entry of single productions
- Supplying CNC-data for the single plant parts
- Feedback of ready messages and remakes

prod



IG cockpit loading display

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.

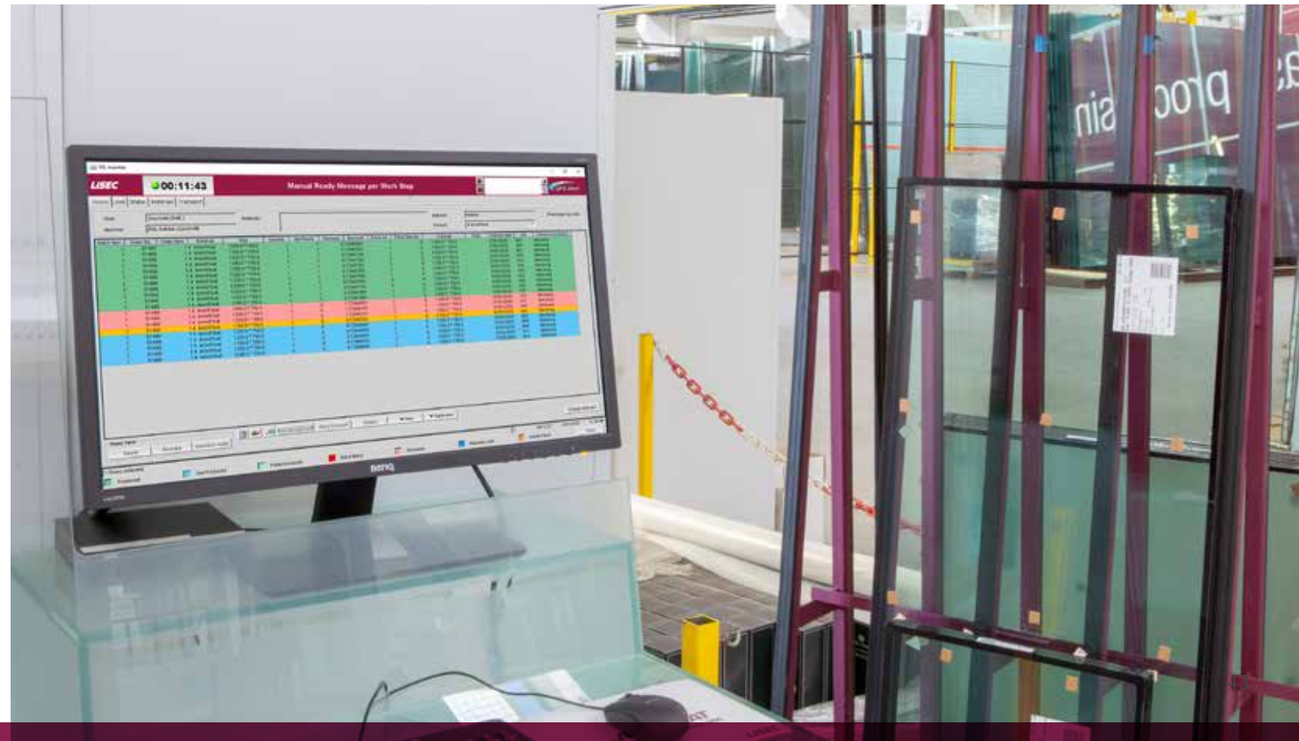
Highlights

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

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

prod



assetcheck

Machine Status Monitoring Software

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 manger, 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.

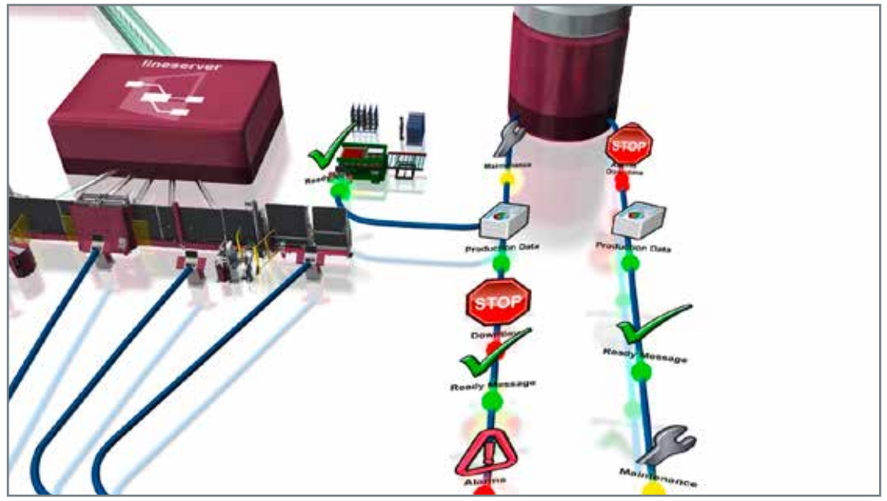
Highlights

- 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

prod



Transparent Production: Data flow from machines to the server

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.

SERVICE

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.

Services

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

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.

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

Online Support

Telephone support with direct data connection to your LiSEC machinery for the immediate and targeted diagnosis and correction of faults and errors.

Maschinery

Sunday 10:00 p.m. – Friday 09:00 p.m. (CET)

Phone: +43-7477 405-5701
E-Mail: tbe.service@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

Software

Monday 07:45 a.m. – Friday 09:00 p.m. (CET)

Phone: +43-7477 405-5702
E-Mail: support@lisec.com

Emergency contact for urgent issues outside our working hours:

Phone: +43-7477 405-5702

Hotline

LiSEC attributes great importance to customer efficiency from the very beginning. Preventive check-ups and maintenance ensure high plant availability, keep production output at the desired level and prevent unexpected plant downtimes.

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: tbe.service@lisec.com

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: 9 million € since 2015
- 15 million Euros turnover
- Approx. 100 customer visits per year
- Glass storage with 96 rack positions
- 2 insulating glass lines
- 3 cutting lines for float, laminated and special glass
- 1 glass processing line „SplitFin“
- 1 laminated glass line
- 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 nine 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.

LISEC Austria GmbH
Peter Lisec Straße 1
A-3353 Seitenstetten
Austria

+43-7477 405-0 Tel
+43-7477 405-40 Fax
sales@lisec.com Mail
www.lisec.com Web

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