Machinery for Glass Tempering
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:

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

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
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Glass Quality

The effects of AEROFLAT tempering technology

Glass quality is a customer requirement that is becoming more and more important. Familiar quality topics involving tempered glass like roller waves, roller pick-ups, white haze, glass distortion, and anisotropy, just to name a few, represent a challenge in the glass production industry, and they require regular cold cleaning cycles, experienced operators, time, and reduced batch configuration, which leads to increased operating costs.

The unique and innovative air cushion technology of the AEROFLAT tempering furnace not only automatically eliminates the previously mentioned roller wave, roller pick-up, and white haze quality aspects, but also reduces the additional and regularly occurring effort resulting from cold cleaning cycles, which cause production stop or additional costs, to a minimum.

This enables complex projects to be completed with outstanding quality, without additional effort, and therefore extremely cost effectively.

Nigeria project: AEROFLAT View of coating with 34% reflection

display possible quality that can be achieved during standard production, independent of the knowledge of the operator.

The extremely simple operation of the AEROFLAT tempering system and the independence from the knowledge of an operator not only enables development of a modern and flexible production process, which reduces costs, but also provides opportunities to companies without tempering experience to implement a technology of this kind in their value creation chain to manufacture high-quality products.

Outstanding glass evenness is becoming more and more difficult due to the large selection of new and more complex coatings. In particular, the low emissivity (low-e) coatings with low emissivity (e=0.01), which are expected to experience increasing demand in the coming years, will lead to a more complex and time-intensive process in case of conventional tempering technology.

The AEROFLAT air cushion technology, on the other hand, is able to heat up low-e glass stably to produce extraordinary glass quality approximately 50% faster than conventional tempering technology, which corresponds with the heating time of float glass and makes a clear contribution to a company’s profitability.

Glass: 1,700 x 5,000 mm, 10 mm glass thickness, double silver low-e tempered glass with very high evenness - quality like a mirror
even operator: Management
Anisotropy has been at the centre of our attention in recent years in particular, since it can have a large influence on the quality of a glass product. Anisotropy is the result of stress distribution in the glass that causes birefringence. Depending on the perspective and the daylight situation, birefringence is more or less visible as anisotropy.

Anisotropy mainly depends on how homogeneously or inhomogeneously glass is tempered. For example, float glass does not exhibit any anisotropy, but rather 100% isotropy. This phenomenon is becoming more and more important not only for architectural glazing, but also for showcases and glass doors that are built into bathrooms and wine cabinets, etc. which are illuminated.

Conventional tempering technology vs AEROFLAT air cushion technology

The analysis displayed above was measured using the StrainScanner® by Arcon and Ilis. This unique system measures both the residual stress and its alignment. A qualified statement about possible anisotropic effects can only be made with information about both parameters.

In the area of anisotropy, LiSEC AEROFLAT technology is a quantum leap. The air cushion system makes homogeneous tempering of the glass possible, which reduces anisotropy without any additional options, without additional processing, and without any operator and tempering experience.
High-quality products deserve the best treatment. This is why we only allow trustworthy heads – and air – to get in touch with glass. With the patented AEROFLAT air-cushion system, the surfaces of the glass panes are not touched during the tempering process. The result of the innovative technology: top quality flat glass – economic and future-proof.
AEROFLAT - Batch Furnace (4 - 10 mm)

Revolutionary Technology Providing High Quality and Flexibility at an Affordable Price

The AEROFLAT 17-101 can produce glass panes up to a height of 1,700 mm. This machine concept is ideal as an entry level model or as a second line to increase flexibility and quality and reduce costs. The AEROFLAT 17-101 is very popular with companies offering a broad product portfolio, because the high flexibility and quality makes it easy to switch quickly between different glass thicknesses and product types.

Application:
- Interior, windows and facades, high product diversity
- Secondary strategy for high quality and flexibility

Technical Data

<table>
<thead>
<tr>
<th></th>
<th>AEROFLAT 17-101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>4 - 10 mm</td>
</tr>
<tr>
<td>Furnace length</td>
<td>24 m</td>
</tr>
<tr>
<td>Loading capacity</td>
<td>5 x 1.7 m</td>
</tr>
<tr>
<td>Minimum size</td>
<td>0.5 x 0.18 m</td>
</tr>
<tr>
<td>Maximal size tempered</td>
<td>5 x 1.7 m</td>
</tr>
<tr>
<td>Output 4 mm tempered</td>
<td>23 Batch / h</td>
</tr>
<tr>
<td>Output 8 mm tempered</td>
<td>11 Batch / h</td>
</tr>
</tbody>
</table>

* Applies to float, clear, structured and coated glass
* Output at approx. 65% load
FT = Fully tempered glass, HS = Heat strengthened glass

Highlights

- Full convection, ideal for all coated glass
- Cleanness of the furnace is perfectly suited for all surface-treaded glass sheets
- Patented air cushion system suitable for double-sided coatings
- Minimal optical distortions, no roller waves
- High flexibility and quality at affordable price
- AEROFLAT batch furnace includes tilting table

Profitability & Software

- No roller cleaning
- No waiting time for glass changes
- Easy integration into fully automatic production sequences
- High flexibility, no daily planning required, allows fast, flexible reactions
- Easy to use
- No tempering know-how necessary

L (mm) B (mm) H (mm) Connected load (kVA)

<table>
<thead>
<tr>
<th></th>
<th>L (mm)</th>
<th>B (mm)</th>
<th>H (mm)</th>
<th>Connected load (kVA)</th>
</tr>
</thead>
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<tr>
<td>AEROFLAT 17-101</td>
<td>24,000</td>
<td>13,000</td>
<td>5,500</td>
<td>1,175</td>
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</tbody>
</table>

Revolutionary Technology Providing High Quality and Flexibility at an Affordable Price

The AEROFLAT 17-101 can produce glass panes up to a height of 1,700 mm. This machine concept is ideal as an entry level model or as a second line to increase flexibility and quality and reduce costs. The AEROFLAT 17-101 is very popular with companies offering a broad product portfolio, because the high flexibility and quality makes it easy to switch quickly between different glass thicknesses and product types.
AEROFLAT - Batch Furnace (2 - 4 mm)
Thin-Glass Technology for 2 mm fully tempered glass

The LiSEC AEROFLAT air cushion system combined with technological advancements opens up completely new possibilities and allows the production of the first 2 mm thin fully tempered glass in unbeatable quality. This technological quantum leap extends the glass applications to new products as well as high-end industrial use.

Application:
- TV glass
- interior glass
- technical glass
- special applications

Highlights
- Full convection, ideal for all coated glass
- Cleanliness of the furnace is perfectly suited for all surface-treaded glass sheets
- Patented air cushion system suitable for double-sided coatings
- Minimal optical distortions, no roller waves
- AEROFLAT batch furnace includes tilting table

Profitability & Software
- No roller cleaning
- No waiting time for glass changes
- Easy integration into fully automatic production sequences
- High flexibility, no daily planning required; allows fast, flexible reactions
- Easy to use
- No tempering know-how necessary

Technical Data

<table>
<thead>
<tr>
<th></th>
<th>AEROFLAT 12-111 FT2</th>
<th>AEROFLAT 17-111 FT2</th>
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<tbody>
<tr>
<td>Fully tempered glass thickness</td>
<td>2 - 4 mm</td>
<td>2 - 4 mm</td>
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<tr>
<td>Heat strengthened glass thickness</td>
<td>2 - 4 mm</td>
<td>2 - 4 mm</td>
</tr>
<tr>
<td>Loading capacity</td>
<td>5 x 1.2 m</td>
<td>5 x 1.7 m</td>
</tr>
<tr>
<td>Minimum size</td>
<td>0.5 x 0.10 m</td>
<td>0.5 x 0.18 m</td>
</tr>
<tr>
<td>Maximal size tempered</td>
<td>2 x 1 m</td>
<td>2 x 1 m</td>
</tr>
<tr>
<td>Output 2 mm heat strengthened tempered*</td>
<td>30 Batch / h</td>
<td>30 Batch / h</td>
</tr>
<tr>
<td>Output 4 mm tempered*</td>
<td>25 Batch / h</td>
<td>25 Batch / h</td>
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</tbody>
</table>

* Applies to float, clear, structured and coated glass
* Output at approx. 50% load

<table>
<thead>
<tr>
<th>L (mm)</th>
<th>B (mm)</th>
<th>H (mm)</th>
<th>Connected load (kVA)</th>
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<tbody>
<tr>
<td>AEROFLAT 12-111 FT2</td>
<td>25,500</td>
<td>13,000</td>
<td>5,500</td>
</tr>
<tr>
<td>AEROFLAT 17-111 FT2</td>
<td>25,500</td>
<td>13,000</td>
<td>5,500</td>
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AEROFLAT - Batch Furnace (2 - 8 mm)
Thin glass technology for the largest 2 and 3 mm heat strengthened glass

Tempering of highest quality extra-thin glass, such as 2 mm heat strengthened, has not been possible with the traditional technology. The AEROFLAT toughening system not only allows processing the largest 2 mm heat strengthened but also high quality 8 mm glass.

Application:
- interior
- window construction
- automotive and technical glass

### Technical Data

<table>
<thead>
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<th>AEROFLAT 12-111</th>
<th>AEROFLAT 17-111</th>
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<tr>
<td>Fully tempered glass thickness</td>
<td>3 - 6 mm</td>
<td>3 - 8 mm</td>
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<tr>
<td>Heat strengthened glass thickness</td>
<td>2 - 6 mm</td>
<td>2 - 8 mm</td>
</tr>
<tr>
<td>Loading capacity</td>
<td>5 x 1.2 m</td>
<td>5 x 1.7 m</td>
</tr>
<tr>
<td>Minimum size</td>
<td>0.5 x 0.18 m</td>
<td>0.5 x 0.18 m</td>
</tr>
<tr>
<td>Maximal size tempered</td>
<td>3.5 x 1.2 m</td>
<td>3.5 x 1.7 m</td>
</tr>
<tr>
<td>Output 2 mm heat strengthened tempered*</td>
<td>40 Batch / h</td>
<td>40 Batch / h</td>
</tr>
<tr>
<td>Output 4 mm tempered*</td>
<td>25 Batch / h</td>
<td>25 Batch / h</td>
</tr>
</tbody>
</table>

* Applies to float, clear, structured and coated glass  
* Output at approx. 65% load

### Highlights
- Full convection, ideal for all coated glass
- Cleaness of the furnace is perfectly suited for all surface-treaded glass sheets
- Patented air cushion system suitable for double-sided coatings
- Minimal optical distortions, no roller waves
- AEROFLAT batch furnace includes tilting table

### Profitability & Software
- No roller cleaning
- No waiting time for glass changes
- Easy integration into fully automatic production sequences
- High flexibility, no daily planning required, allows fast, flexible reactions
- No tempering know-how necessary

### Dimensions

<table>
<thead>
<tr>
<th></th>
<th>L (mm)</th>
<th>B (mm)</th>
<th>H (mm)</th>
<th>Connected load (kVA)</th>
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<tr>
<td>AEROFLAT 12-111</td>
<td>25,500</td>
<td>13,000</td>
<td>5,500</td>
<td>1,200</td>
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<td>AEROFLAT 17-111</td>
<td>25,500</td>
<td>13,000</td>
<td>5,500</td>
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AEROFLAT - Continuous Furnace (1.6 - 6 mm)

**Technical Data**

<table>
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<th>AEROFLAT 12-614 FT 2</th>
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<th>AEROFLAT 12-916 FT 2</th>
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<td>Fülltempered glass thickness</td>
<td>3 - 6 mm</td>
<td>2 - 4 mm</td>
<td>2 - 4 mm</td>
<td>2 - 4 mm</td>
<td>2 - 4 mm</td>
</tr>
<tr>
<td>Heat strengthened glass thickness</td>
<td>1.6 mm</td>
<td>1.6 mm</td>
<td>1.6 mm</td>
<td>1.6 mm</td>
<td>1.6 mm</td>
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<tr>
<td>Batch height</td>
<td>1.2 m</td>
<td>1.2 m</td>
<td>1.2 m</td>
<td>1.2 m</td>
<td>1.2 m</td>
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<tr>
<td>Minimum size</td>
<td>0.5 x 0.5 m</td>
<td>0.5 x 0.5 m</td>
<td>0.5 x 0.5 m</td>
<td>0.5 x 0.5 m</td>
<td>0.5 x 0.5 m</td>
</tr>
<tr>
<td>Maximal size</td>
<td>2.2 x 1.2 m</td>
<td>2.2 x 1.2 m</td>
<td>2.2 x 1.2 m</td>
<td>2.2 x 1.2 m</td>
<td>2.2 x 1.2 m</td>
</tr>
<tr>
<td>Output 2 mm tempered</td>
<td>765 sqm/h*</td>
<td>765 sqm/h*</td>
<td>890 sqm/h*</td>
<td>1,000 sqm/h*</td>
<td>1,000 sqm/h*</td>
</tr>
<tr>
<td>Output 4 mm tempered</td>
<td>520 sqm/h*</td>
<td>612 sqm/h*</td>
<td>770 sqm/h*</td>
<td>880 sqm/h*</td>
<td>880 sqm/h*</td>
</tr>
</tbody>
</table>

* Applies to float, clear, structured and coated glass

**Profitability & Software**

- No roller cleaning
- No waiting time for glass changes
- Easy integration into fully automatic production sequences
- High flexibility, no daily planning required; allows fast, flexible reactions
- No tempering know-how necessary.

**Highlights**

- Full convection, ideal for all coated glass
- Cleaness of the furnace is perfectly suited for all surface-treaded glass sheets
- Patented air cushion system suitable for double-sided coatings
- Minimal optical distortions, no roller waves
- Flexible system through modular design

**Application:**

- Solar glasses
- Serial production white goods
**TZB**

Transport Zone 15° for AEROFLAT Continuous Furnace

The sheets are transported at 15 degrees inclination, individually, with adjustable cycle times.

**Highlights**

- Modular design

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**Technical Data**

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<tr>
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<th>TZB-30/17</th>
<th>TZB-40/12</th>
<th>TZB-40/17</th>
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<tr>
<td>Glass thickness</td>
<td>1.6 - 8 mm</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Minimum size</td>
<td>500 x 300 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximal size</td>
<td>3,000 x 1,200 mm</td>
<td>3,000 x 1,700 mm</td>
<td>4,800 x 1,200 mm</td>
<td>4,800 x 1,700 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>720 mm</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Transport speed</td>
<td>3 - 50 m/min</td>
<td></td>
<td></td>
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<tr>
<td>Glass transport inclination</td>
<td>15°</td>
<td></td>
<td></td>
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<tr>
<td>Max. load</td>
<td>20 kg/qm</td>
<td></td>
<td></td>
<td></td>
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**TZB Freefall**

Freefall Outlet for AEROFLAT Tempering Furnace

The glass sheets are transported out of the cooling zone at a 15 degree angle. As soon as the back edge has passed the sensor, the edge support pivots downwards and the glass sheets falls (freefall) unto the horizontal transport table.

**Highlights**

- Uniform and continuous transport logistics

---

**Technical Data**

<table>
<thead>
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<th>TZB-30/12 Freefall</th>
<th>TZB-30/17 Freefall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness</td>
<td>2 - 8 mm / 2 - 3 mm only up to 1,000 mm height</td>
<td></td>
</tr>
<tr>
<td>Minimum size</td>
<td>500 x 300 mm</td>
<td>500 x 300 mm</td>
</tr>
<tr>
<td>Maximal size</td>
<td>2,400 x 1,200 mm</td>
<td>2,400 x 1,700 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>720 mm</td>
<td>720 mm</td>
</tr>
<tr>
<td>Transport speed</td>
<td>3 - 20 m/min</td>
<td>3 - 20 m/min</td>
</tr>
<tr>
<td>Glass transport inclination</td>
<td>15°</td>
<td>15°</td>
</tr>
<tr>
<td>Max. load</td>
<td>20 kg/qm</td>
<td>20 kg/qm</td>
</tr>
</tbody>
</table>
TZB-T
Continuous Inclination Change Transport Field for AEROFLAT Continuous Furnace

With the LiSEC transport field, the inclination of the glass pane can be adjusted from 15° to 0° without changing the transport speed. This way, the tempered glass sheets can be transferred to the following, horizontal machines for further processing.

Highlights
- Saving time through inclination adjustment during transport
- Automatic furnace loading without cycle time loss
- Half the space requirement of a tilting table

Technical Data

<table>
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<td>Maximal size</td>
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<tr>
<td>Transport height</td>
</tr>
<tr>
<td>Transport speed</td>
</tr>
<tr>
<td>Glass transport inclination</td>
</tr>
<tr>
<td>Max. load</td>
</tr>
</tbody>
</table>

TZI
AEROFLAT Roller Transport Field for Scanner Integration

The roller transport field is located at the outfeed of the tempering furnace, ready for the integration of a scanner. The gap in the center supports easy mounting.

Highlights
- Ready for easy integration of a scanner

Optional
- perfectscan (page 32)

Technical Data

<table>
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<td>Maximal size</td>
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<tr>
<td>Transport height</td>
</tr>
<tr>
<td>Transport speed</td>
</tr>
<tr>
<td>Glass transport inclination</td>
</tr>
<tr>
<td>Max. load</td>
</tr>
</tbody>
</table>
TZLK
AEROFLAT Air Cushion Tilting Table for Batch Tempering Furnace

The tilting table offers a special air cushion system that creates a self-regulating pressure distribution for thin glasses. The crank kinematic ensures a steady tilt from 84° to 15°.

Highlights
- Self-regulating pressure distribution specifically for thin glass
- Tilting movement from 84° to 15°
- Tilting table included with the AEROFLAT batch furnace

Technical Data

<table>
<thead>
<tr>
<th>TZL50/12</th>
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<tbody>
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<td>2 - 8 mm</td>
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<tr>
<td>Minimum size</td>
<td>500 x 300 mm</td>
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<tr>
<td>Maximum size</td>
<td>5,000 x 1,200 mm</td>
</tr>
<tr>
<td>Maximum size</td>
<td>5,000 x 1,700 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>720 mm</td>
</tr>
<tr>
<td>Transport speed</td>
<td>3 - 50 m/min</td>
</tr>
<tr>
<td>Glass transport inclination</td>
<td>84° / 15°</td>
</tr>
<tr>
<td>Max. load</td>
<td>30 kg/sqm</td>
</tr>
</tbody>
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User Example AEROFLAT: SMARTFLOWER
The capacity of a smartflower is about 3,400 – 6,200 kWh per year depending on the region; thus one station generates the entire average power consumption of a household in central Europe.
QUALITY MEASUREMENT EQUIPMENT
GBP
Glass bending test

System for testing glass to provide static certification. Due to the higher flexibility of thermally pre-tempered thin glass, the EN ISO 1288-3 testing process with parabolic glass bending and stress maximum only in the centre of the glass sheet is not representative.
For this reason, an alternative testing concept was developed by LiSEC, which creates constant distribution of stress across the surface of the glass via twisting at the glass edges and chord reduction.

Highlights
- Easy application
- Bending tensile strength < 3 mm glass thickness measurable
- Testing report

Optional
- Camera system for documentation, logging, data storage, and detection of breakage cracking

Technical Data

<table>
<thead>
<tr>
<th>GBP</th>
<th>1-4</th>
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<tbody>
<tr>
<td>Glass thickness</td>
<td>1 - 4 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>360 x 1,100 mm</td>
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</table>

Testing equipment
Testing equipment set for measuring warping and breakage pattern

PM - V
- Equipment for testing warping
  - 300 mm straight edge for measuring local warping
  - 100 mm straight edge for measuring local warping
  - Feeder gauge, 20 blades, 100 mm long for measuring local warping
  - 2500 aluminium measuring stick for measuring general warping

PM - B
- Equipment for testing breakage pattern
  - Impact centre punch/spring centre punch
  - Stencil 50 x 50 mm for breakage test
  - Frame for breakage test
  - 1100 x 360 mm (wood)
perfectscan makes it possible to check each single glass sheet and insulating glass element for visual defects. This system allows you to prove the added value of your products, guarantee a higher product quality and significantly reduce customer complaints.

**Highlights**

- New release with optimized user interface
- New archiving solution with individual export options
- Optimised scan results via 16bit technology
- New, wizard guided, setting of quality criteria and filters
- Combined with lineserver, order data are connected with scan results
- Flexible application in all areas of your production
- Can be retrofitted on existing machine
- Quality scanner with Georgian bar recognition
- Quality and process improvements through error analyses e.g. for cutting optimisation

**Functions**

- No reflections and no blind spots thanks to telecentric light through scan technology without camera
- Stable recognition of coating defects because of infrared technology
- Screen printing controlling
- Glass type detection
- IG unit build-up recognition
- Dimension recognition (target/actual comparison) at the line
- Detection of overall bending (in combination with glass type sensor)
- Data archiving
- Compact design compared to usual camera based systems
- One contact person for plant and scanner

**Technical Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass height</td>
<td>200 - 3,400 mm</td>
</tr>
<tr>
<td>Maximum length</td>
<td>6,000 mm (Abweichungen auf Anfrage)</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>2 - 100 mm</td>
</tr>
<tr>
<td>Transport speed</td>
<td>48 m/min at 200 dpi (no interpolation)</td>
</tr>
<tr>
<td>Scan technology</td>
<td>16 bit Scanmodule (LIS - Lightning Imaging Sensor)</td>
</tr>
<tr>
<td>Light transmission</td>
<td>15 - 99 %</td>
</tr>
</tbody>
</table>

**Individual setting options**

Based on parameter and filter settings, perfectscan shows only relevant defects for quality assessment. The parameter settings and filter criteria can be adjusted by the operator at any time.

**Flexible application in all areas of your production**

Whether it is an insulating glass line, a tempering furnace or a laminated glass line, perfectscan can be used in any context and mounted within a very short time. The intelligent construction of the system allows you to ensure quality and efficiency quickly and easily in almost all areas of your production.
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.
production Overview at a Glance

Based on the capacity planning and the ready messages from the production, the production monitor provides an interactive overview of the production status. The planned daily production volume as well as all ready messages are listed. This information creates a dynamic job list for every machine which is continuously updated with each message. The operator is always aware of the upcoming tasks. For a quick overview, the ready messages can be grouped and the viewing period restricted.

QMS
Quality Management Software

The LiSEC quality management system qms is an administrative solution for data required by the Construction Products Regulation, such as product build-up and Declaration of Performance. qms integrates itself into order and prod. qms also supports the quality improvement process during the glass processing in your company and allows the traceability of the used materials.

qms enables the central management of your offline tests, which are necessary for consistent quality checks, required for the CE-Certification.

Functions
- Interactive overview of the production status
- Display of breakages/remakes
- Display of the open load of the plant
- Individual adjustment of the displayed plant
- Listing of ready messages
- Time view of ready messages
- User information
- Machine information

Highlights
- Fully configurable
- Work list display at each station
- Target/actual comparison of the volume per plant
- Paperless production list in real-time
- Dynamic adaption at plan modifications

Functions
- Creation and administration of the Declaration of Performance
- Management of offline tests
- Material tracking and quality report
- Storage of the Declaration of Performance (10 years)

Highlights
- Simple tracking of used materials
- System supported tests to check the material quality
- qms integration into order for creating the Declaration of Performance
- Interface with Sommer Informatik for automatic calculation of DoP [Declaration of Performance] data

Example integration of the Inline Quality Scanner

Overview of machine load
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, every time 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.
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.
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

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 Haunstetten 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.