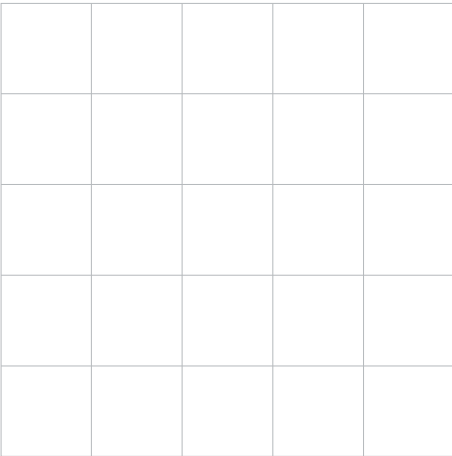
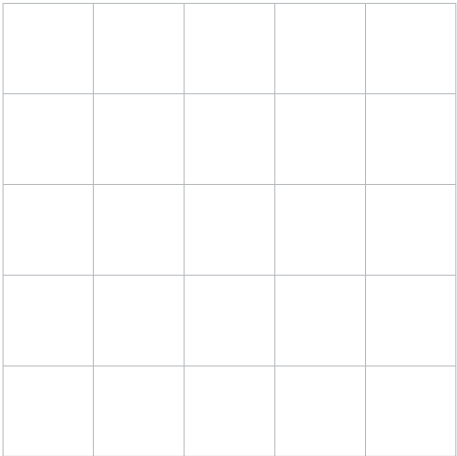
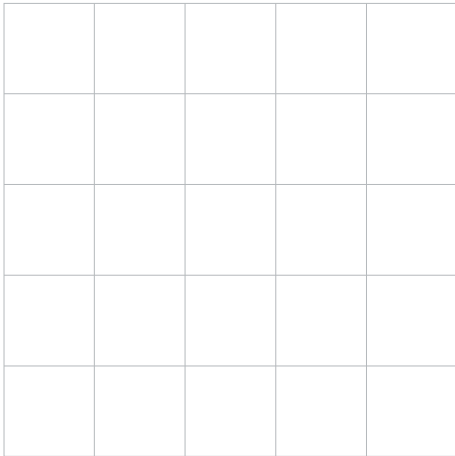
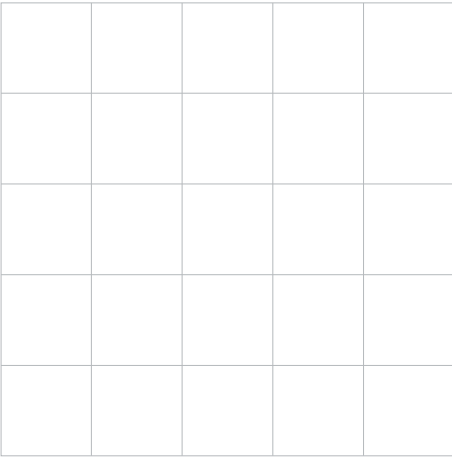
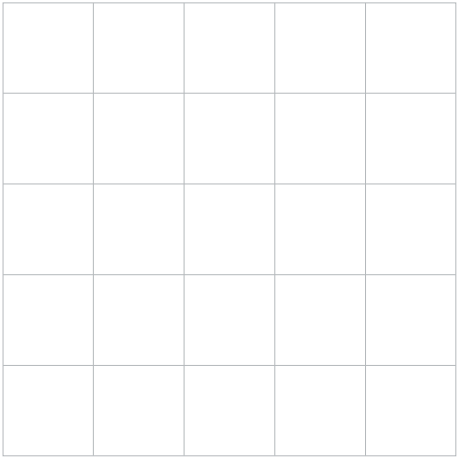
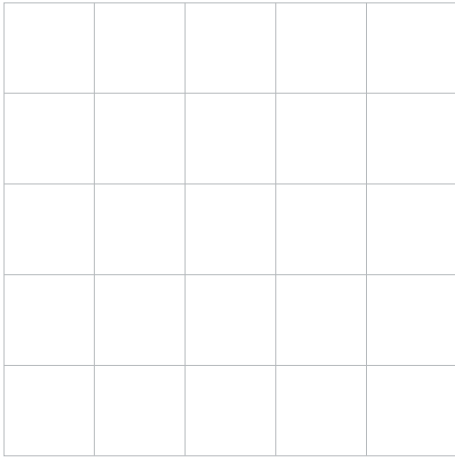
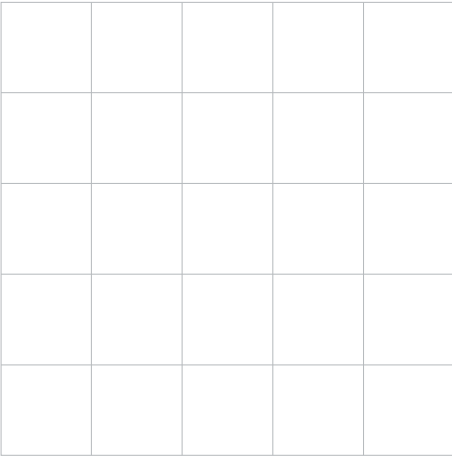
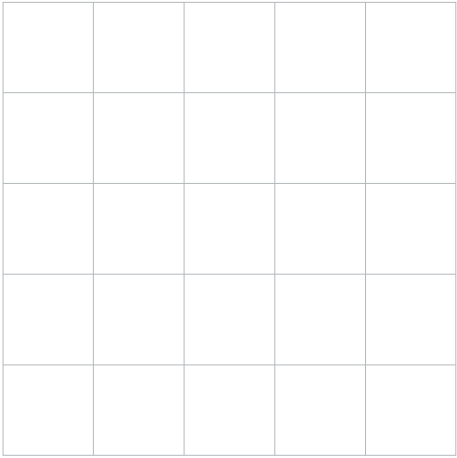
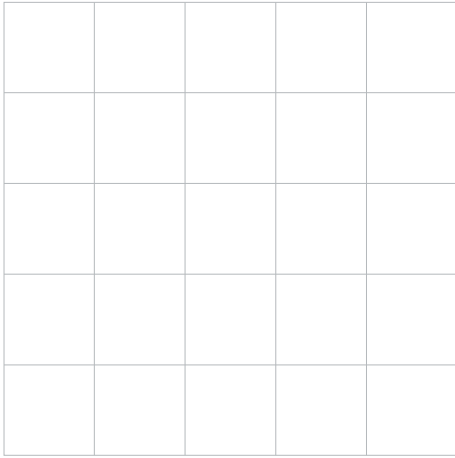
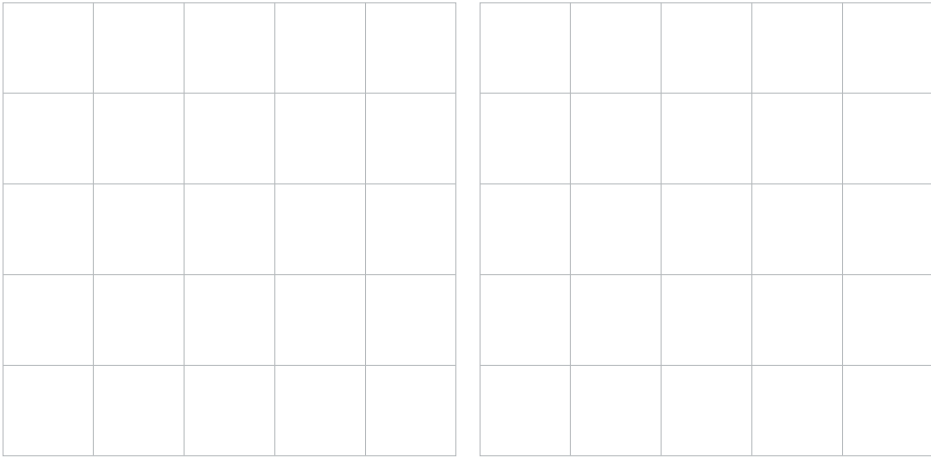


# PARTNER FOR

# PERFECT GLASS

Machines and systems  
for glass processing



PERFECT GLASS IS WHAT DRIVES US AND HAS BEEN  
OUR MOTIVATION FOR MORE THAN 60 YEARS.

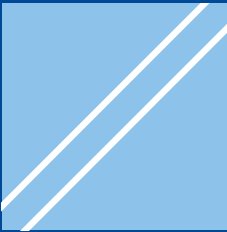
**ON YOUR SIDE**  
We support our customers  
worldwide with innovative  
solutions and services as  
partners on an equal level.



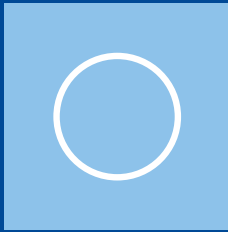
BENTELER develops and  
commercializes innovative  
solutions for Architectural,  
Automotive and Technical  
Glass.



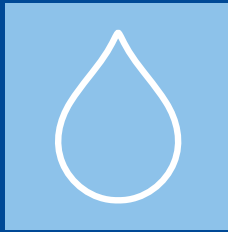
GRINDING



DRILLING



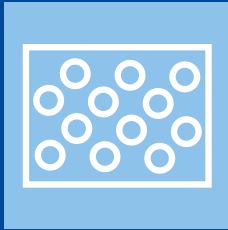
WASHING



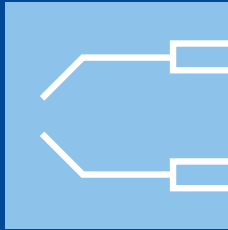
LAMINATING



PRINTING



HANDLING



## QUALITY

We have a high performance claim.  
For ourselves, for our machines and  
for our services. Our experience and  
conscientiousness form the basis for  
the highest quality.

## FLEXIBILITY

We focus on your specific requirements  
to ensure that we supply you with  
machines that are exactly what you  
need. Your requirements set the  
standard from which we develop  
our solutions.

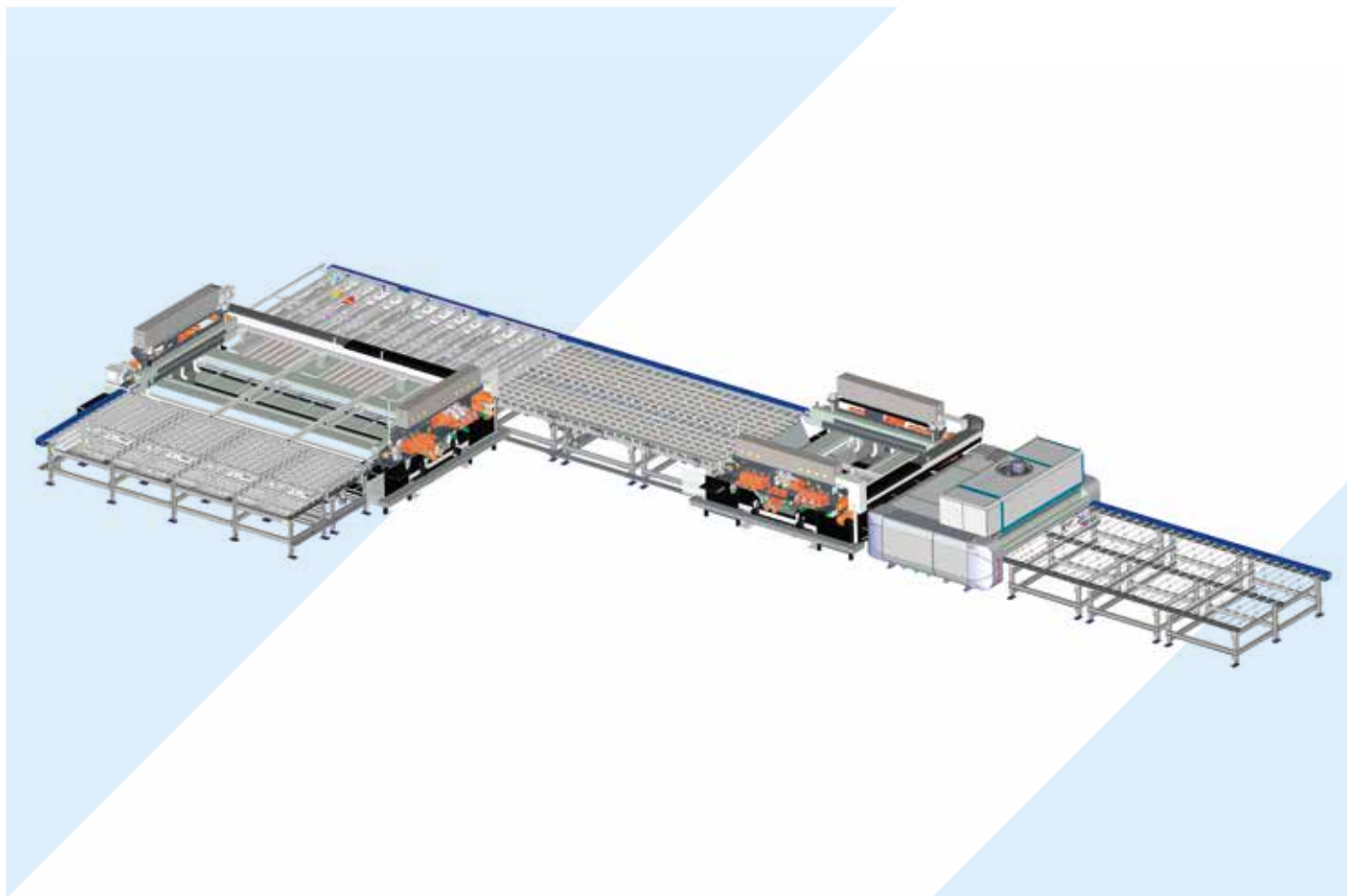
## EFFICIENCY

We are right behind you in your  
pursuit of technical progress and  
optimal processes. Our machines  
and services will allow you to  
increase productivity rates and  
achieve sustainable cost reductions.

"After successfully implementing the laminated glass range, we  
didn't even think about looking for a different supplier for the  
new double-sided grinding machine. BENTELER proved to be a  
reliable and flexible partner for the second project, too."

**Matthieu van den Ingh, CURA Glass**





## tecGrinder

### SHORT SET-UP TIMES, HIGH LEVEL PROCESSING SAFETY

The BENTELER cup-wheel grinding machines can be set up quickly due to fast width and glass thickness adjustment features. We provide the best solution with flexibility, processing safety and consistent high-quality for straight-cut seamed edges. Processing times during production can be significantly reduced by linking a BENTELER grinding machine with a BENTELER washing machine.



### TECHNICAL DATA

**Glass size:** max. 3,300 × 20,000 mm  
**Glass thickness:** 3 – 21 mm  
**Width adjustment speed:** 30 m/min  
**Operating speed:** max. 15 m/min



### ADVANTAGES

#### Extreme precision

- ▶ Up to 14 stations per side for grinding and polishing the edge and seam
- ▶ Automatic side and angle alignment
- ▶ Stable machine frame and durable components

#### Flexibility

- ▶ Automatic adjustment of glass thickness
- ▶ Fast and precise width adjustment with a fully automatic brace

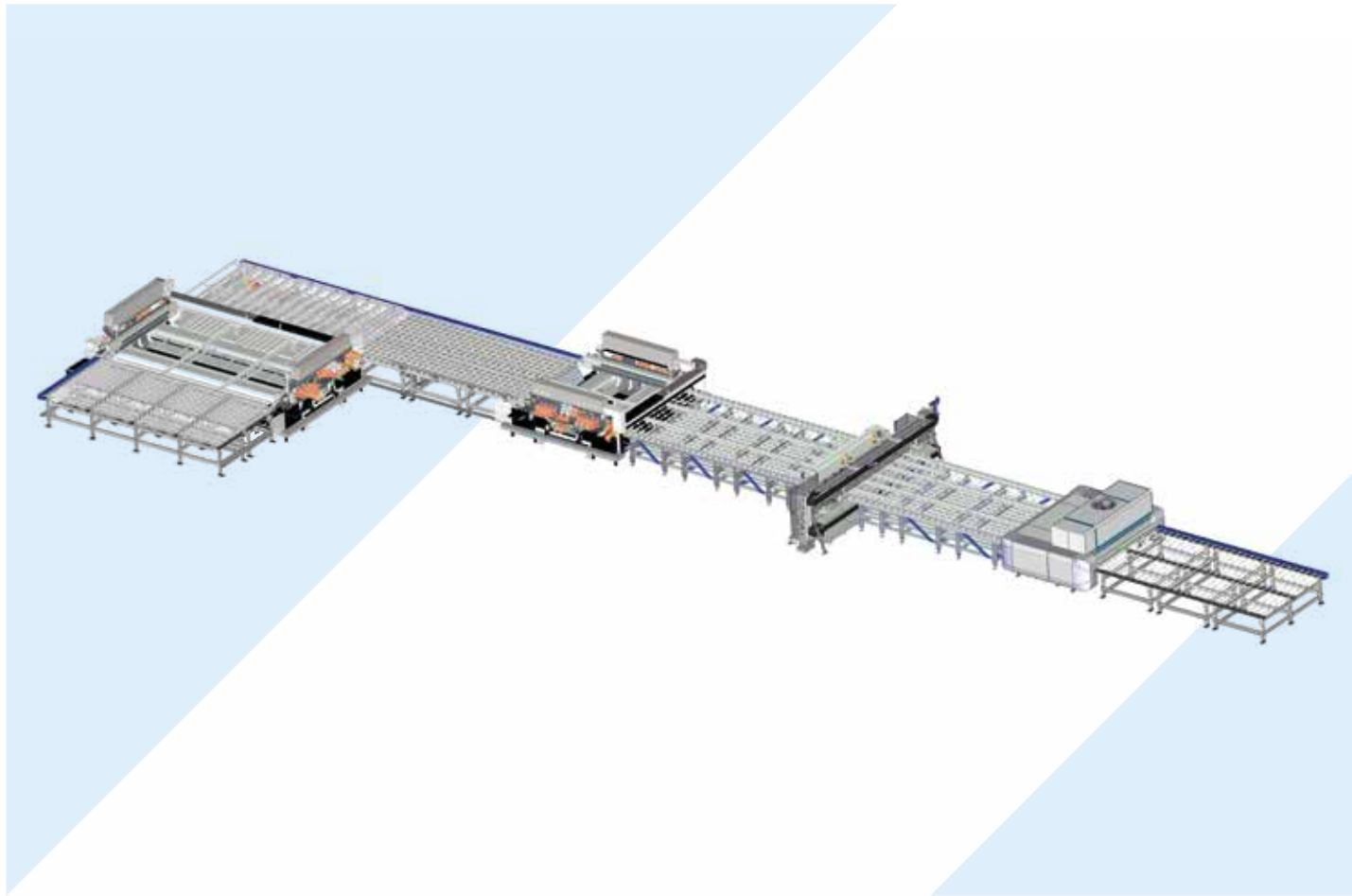
#### Processing safety

- ▶ Completely encapsulated high-performance grinding and polishing spindle
- ▶ The latest machine control
- ▶ Easy operation and menu navigation
- ▶ Operating costs evaluation using an integrated operational data recording system

#### Output

- ▶ High operating speed
- ▶ Linking corners with acceleration lines





## MACHINING LINE WITH DRILLING SYSTEM

SHORT PROCESSING TIMES, TIME-OPTIMISED PROCEDURES

BENTELER is one of the largest providers of complex machining lines all available from one source. This includes linking grinding, drilling and washing machines to comprise a complete machining range in order to avoid handling during production and to reduce glass processing times.



### ADVANTAGES

- ▶ Complete lines from just one source
- ▶ Optimised process sequences
- ▶ Uncomplicated interfaces between the machines
- ▶ Higher level production control for the entire system
- ▶ The use of the same components in the linked machines allows for a straightforward spare parts inventory and low maintenance costs

### TECHNICAL DATA

**Glass size:** max. 3,300 × 20,000 mm

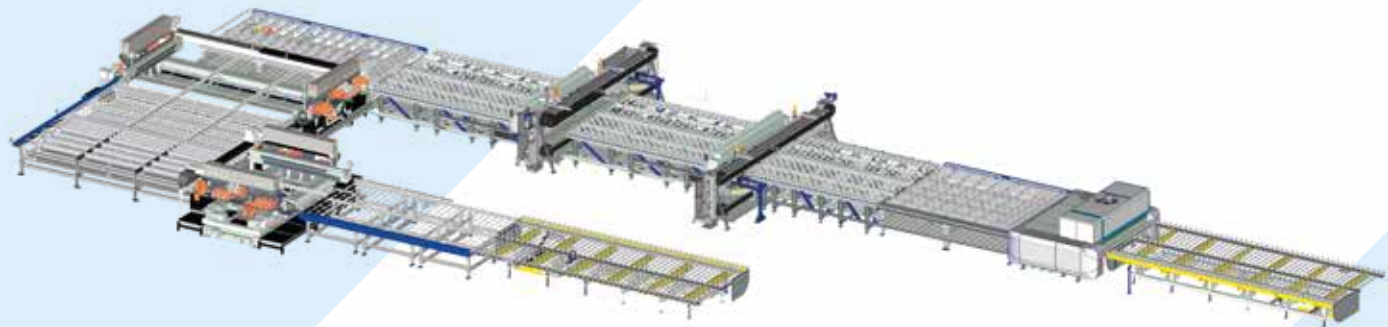
**Glass thickness:** 3 – 21 mm

**Width adjustment speed:** 30 m/min

**Operating speed:** max. 10 m/min







# MACHINING LINE WITH DOUBLE DRILLING SYSTEM

## HIGH OUTPUT, OPTIMISED PROCESSES

The best line performance with the greatest flexibility can be achieved by combining a grinding line with two drilling machines that work independently of each other.

Automatically arranging the products on the two drilling machines allows you to make optimal use of the unused capabilities in the grinding process, among other things.

DRILLING



WASHING



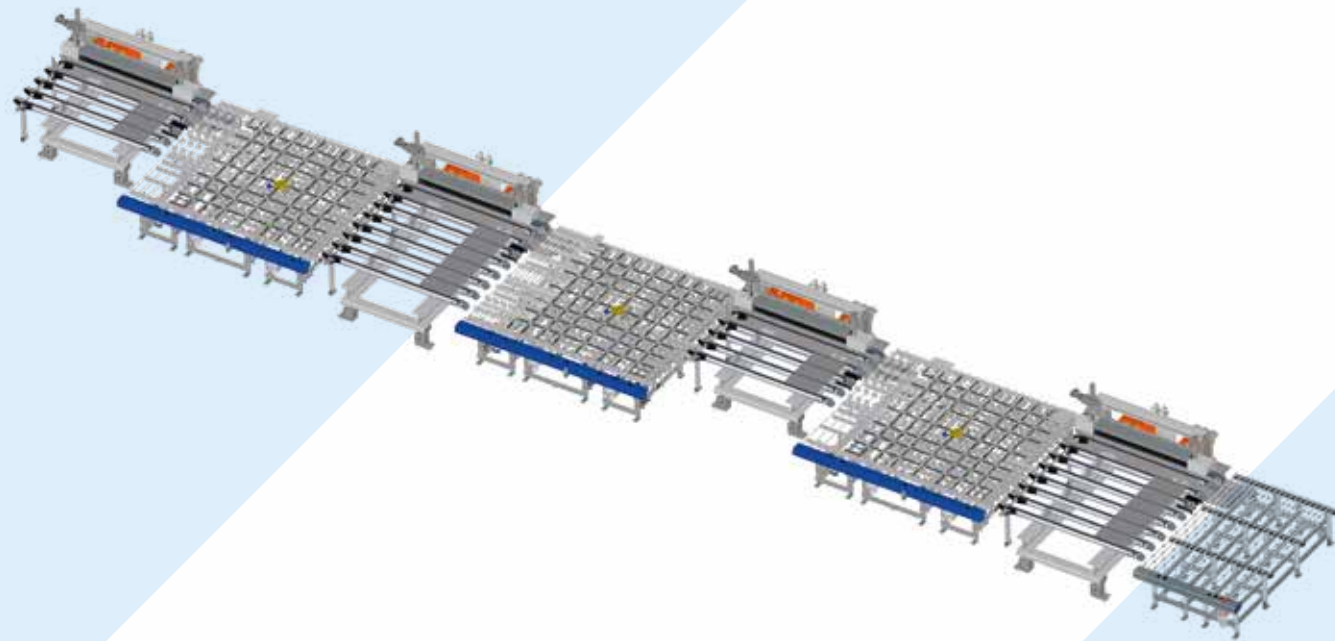
## TECHNICAL DATA

**Glass size:** max. 3,300 × 20,000 mm  
**Glass thickness:** 3 – 21 mm  
**Width adjustment speed:** 30 m/min  
**Operating speed:** max. 10 m/min

## ADVANTAGES

- ▶ Common shower doors on the market can be made in < 99 secs.
- ▶ Tool changer with 10, 20 or 40 tool pairs
- ▶ High-precision milling spindle
- ▶ Water jet cutting unit





## ONE-SIDE GRINDING LINE

NO SET-UP TIME, SHORT PROCESSING TIMES

With the One-Side Grinding Machine, BENTELER offers you a machine that you can use to work on glass of all different widths and shapes one after the other. And all this without set-up times, wasted journeys or adjustment times when changing the format.



### TECHNICAL DATA

**Glass size:** max. 2,000 × 3,500 mm  
**Glass thickness:** 3 – 12 mm  
**Operating speed:** max. 10 m/min



### ADVANTAGES

#### Extreme precision

- ▶ Automated from loading to unloading
- ▶ Automatically aligned for dimensional and edge precision
- ▶ Consistently high-quality edging as with a double-sided grinding machine

#### Flexibility

- ▶ Up to 11 individual tool stations plus rounded corners possible
- ▶ Producing a broad range of different types in succession
- ▶ Can also work on glass that doesn't have 90° corners
- ▶ Grind, seam and polish in one process

#### Extremely economical

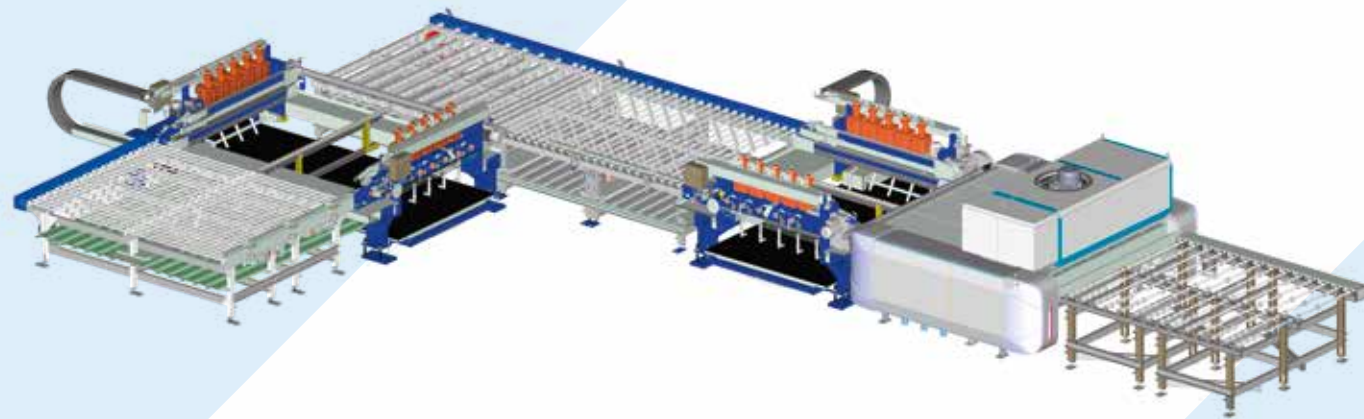
- ▶ No set-up times, avoids wasted journeys and adjustment time
- ▶ Completely encapsulated high-performance grinding spindle with a long service life
- ▶ Work on all 4 corners in one cycle

#### Easy to use

- ▶ Easy operation due to automatic operations
- ▶ Straightforward maintenance due to easy accessibility to the machine







## PENCIL-EDGE GRINDING MACHINE

LOW VIBRATION, DIMENSIONAL ACCURACY

The BENTELER standard Pencil-Edge Grinding Machine impresses with its safe processing that produces precise and fast results. The extremely robust design allows the system to run 24/7 and proves itself to be particularly economical. An additional vacuum frame transport system for coated panes is also available.



### TECHNICAL DATA

**Glass size:** max. 3,000 × 3,000 mm  
**Glass thickness:** 1.3 – 8 mm  
**Operating speed:** max. 20 m/min  
**Width adjustment speed:** 30 m/min

**EQUALLY  
PRODUCTIVE  
AND PRECISE:**

Even with high quantities,  
you achieve a consistently  
high degree of dimensional  
accuracy during processing.

### ADVANTAGES

#### Extreme precision

- ▶ Good grinding results even with rough glass tolerances
- ▶ Low-vibration glass processing due to a machine frame and components that are designed to be particularly stable
- ▶ Dimensional accuracy of the ground panes due to precise and fast width adjustment with a fully automatic brace

#### Flexibility

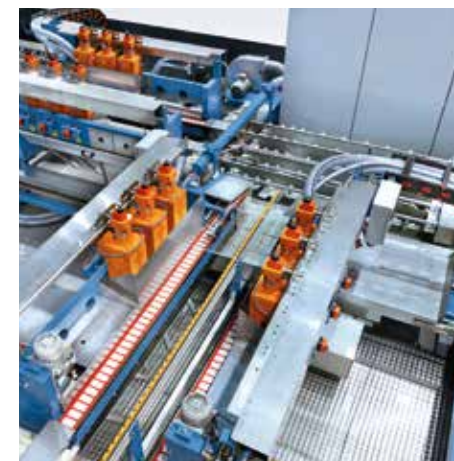
- ▶ Up to 5 grinding/polishing spindles per side
- ▶ Flexible design with a wide application area
- ▶ Optional automatic adjustment of glass thickness

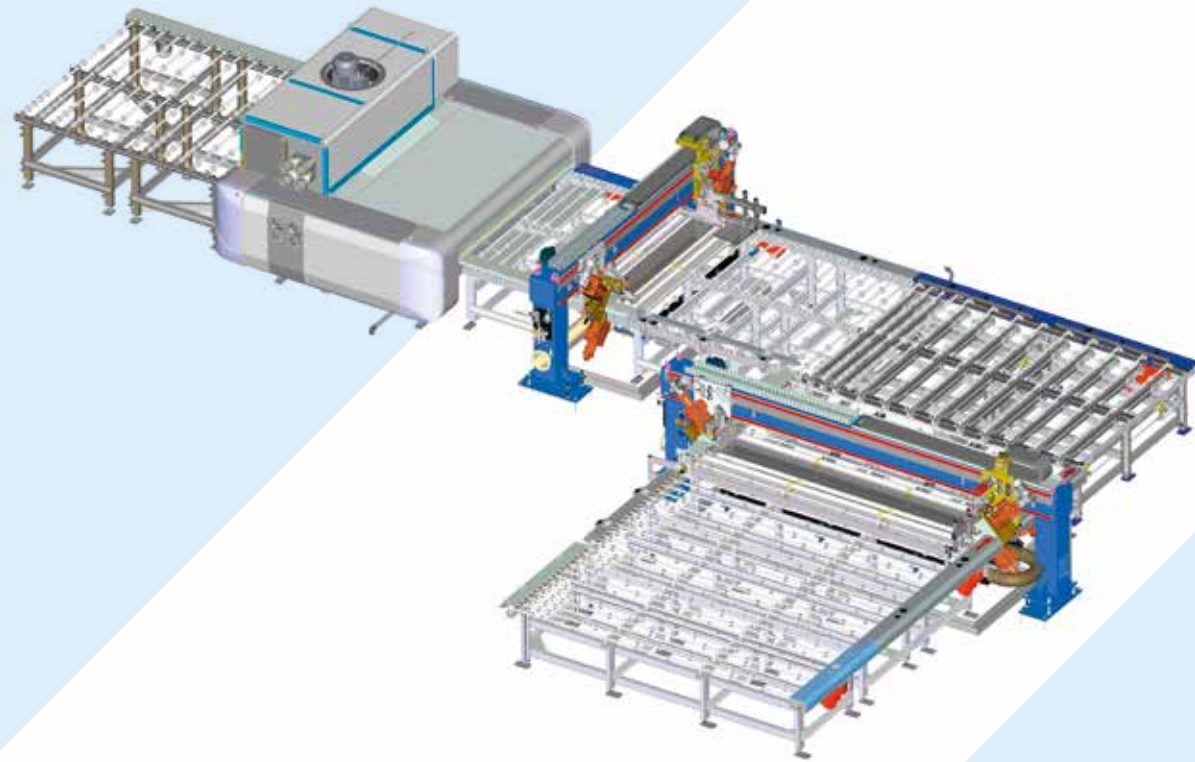
#### Processing safety

- ▶ Completely encapsulated high-precision grinding spindles for durability in damp and abrasive environments

#### Easy to use

- ▶ Automatic side and angle alignment to avoid burners and unground glass surfaces
- ▶ A synchronous motor for the transport and pressure frames per spindle holder to meticulously transport glass and change the frames quickly
- ▶ Easy access with tools





## SEAMING LINE

### SHORT CYCLE TIMES, HIGH-PRECISION SEAMING

Our seaming units really stand out with their ability to achieve the fastest cycle times with minimal wear to the parts. Our machine design unites maximum durability of the grinding tools, maximum throughput and high-precision seaming. This is particularly relevant for tempered glass manufacturing.

GRINDING



WASHING



## TECHNICAL DATA

**Glass size:** max. 2,500 × 4,500 mm  
**Glass thickness:** 2 – 12 mm  
**Width adjustment speed:** 60 m/min  
**Operating speed:** max. 24 m/min



## ADVANTAGES

### Extreme precision

- ▶ Grinding spindles with linear adjustable rotor for placing seams
- ▶ Even and precise edges

### Flexibility

- ▶ Compact design
- ▶ Short set-up times
- ▶ Option to connect a water filter system

### Processing safety

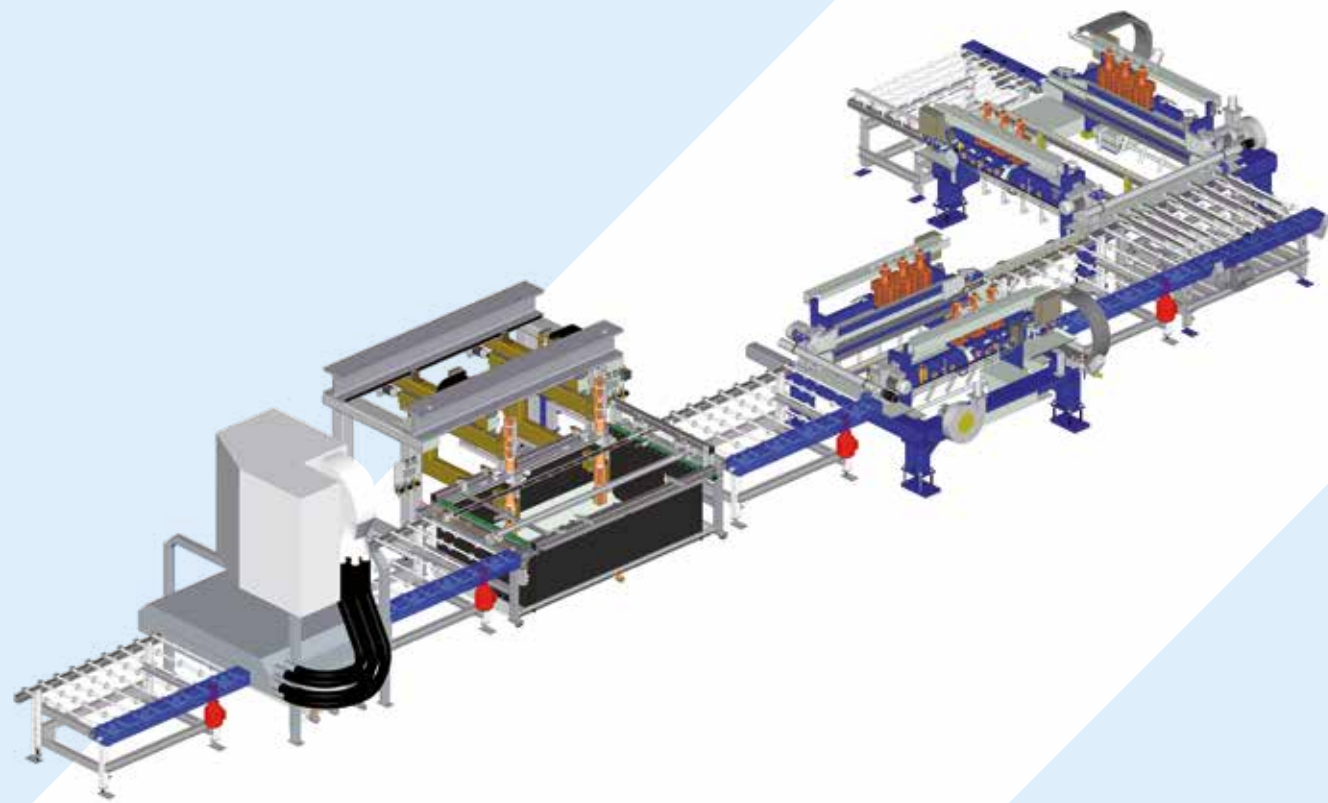
- ▶ High durability due to seaming with cup wheels
- ▶ Effective suction fans
- ▶ The wet area is completely encapsulated
- ▶ Glass is almost dry after seaming due to cooling water suction

### Easy to use

- ▶ Fast and precise width adjustment 60 m/min
- ▶ Set seams simply and precisely







## MACHINING LINE FOR FURNITURE GLASS AND WHITE GOODS

VARYING NUMBER OF SPINDLES, HIGH MACHINING QUALITY

A highly efficient machining line can be achieved by combining the Pencil-Edge Grinding Line or the CNC Processing Centre with the Multi-Spindle Drill and Washing Machine. Whether it's with shuttle transport or with roller and belt transport: the range can be easily adjusted to meet each customer's needs. The number of drilling spindles in the multi-spindle bore machine can be designed in such a way that the cycle times do not increase.

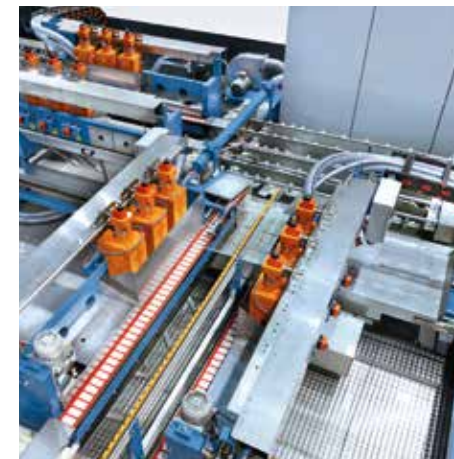
GRINDING



DRILLING



WASHING



### ADVANTAGES

- ▶ Complete lines from just one source
- ▶ Varying number of spindles for the grinding line and drilling machine
- ▶ The Multi-Spindle Drill Machine with cut-out processing can also be fitted with water jet cutting units
- ▶ Maximum durability and high-quality machining
- ▶ Washing Machines are also available with an ultrasonic cleaning feature for optimal cleaning results for glass

### TECHNICAL DATA

**Glass size:** max. 900(1,800)–3,300 mm

**Glass thickness:** 3–12 mm

**Grinding speed:** max. 20 m/min







## CNC PROCESSING CENTRE

MAXIMUM FLEXIBILITY, STRAIGHTFORWARD GLASS HANDLING

With the CNC Processing Centre, BENTELER offers new possibilities for the production of special glass in the area of glass processing. Processing in this cycle considerably simplifies the otherwise difficult handling of large sized pieces as well as simplifying the cumbersome and time-consuming set-up. The machine is versatile due to the various working widths.



### TECHNICAL DATA

**Glass size:** max. 3,300 × 20,000 mm  
**Grinding and milling rotational speed:** 12,000 rpm  
**Milling speed:** max. 2 m/min  
**Processing speed:** max. 20 m/min  
**Drill diameter:** 4 – 70 mm

### ADVANTAGES

#### Extreme precision

- ▶ Laser measurement technology guarantees precise positioning
- ▶ Automatic tool sharpening ensures consistently good edging quality
- ▶ Optimal drilling results due to simultaneous drilling from above and below

#### Flexibility

- ▶ No limitations related to the positioning of the drilling holes
- ▶ BENTELER Interface Management retrieves the CNC program's operational data directly from production planning

#### Processing safety

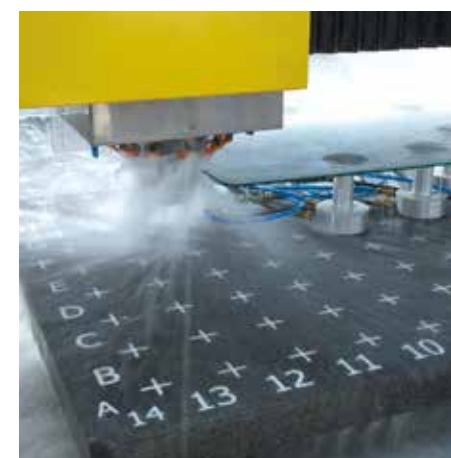
- ▶ Complete processing of the highest quality for sheet glass: grinding, polishing, milling and drilling on one machine saves time and ensures the quality of the product
- ▶ Durability and minimal service costs due to easy access and the use of high-quality machine components

#### Easy to use

- ▶ Simplified glass handling thanks to the machines constantly running
- ▶ Secure hold on glass due to suction cup area

#### Versions

- ▶ 3 axes
- ▶ 5 axes







## tecDriller

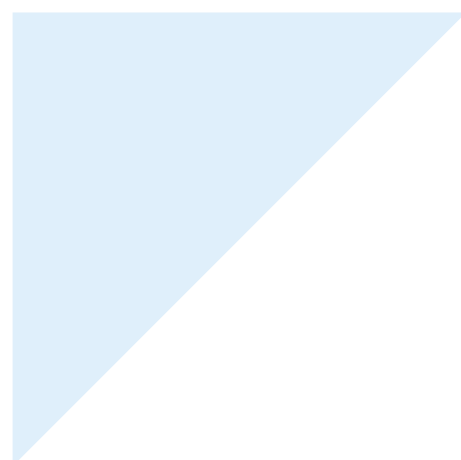
### EASY OPERATION, EXTREMELY SAFE PROCESSING

The BENTELER Portal Drilling Machine is ideal for any kind of hole pattern and typical milling works either for single-piece production or for batch production. Other characteristics of the machine include its extremely safe processing as well its easy operation.

GRINDING



DRILLING



### TECHNICAL DATA

**Glass size:** max. 3,300 × 20,000 mm

**Glass thickness:** 3 – 21 mm

**Speed of positioning:** 60 m/min

**Milling/seaming speed:** 600 mm/min



### ADVANTAGES

#### Extreme precision

- ▶ CNC-controlled drilling coordination setting
- ▶ Automatic measuring and calibrating system

#### Flexibility

- ▶ Two independent drilling spindle units
- ▶ High-performance milling spindle with 10,000 rpm
- ▶ Tool changer for 10, 20, 40 tool pairs

#### Processing safety

- ▶ Completely encapsulated drilling spindle
- ▶ Separate milling spindle unit
- ▶ Modern CNC controlling
- ▶ Excellent integration into machining lines

#### Easy to use

- ▶ Easy input of the drilling and milling coordinates
- ▶ Automatic drill and countersink program
- ▶ Program input for ongoing production
- ▶ Integration into customer-specific software







## WATER JET CUTTING

SHORT CYCLE TIMES, HIGH PRECISION

With this option, inner and outer cuts can be done in a short cycle time and with high precision. The additional milling/seaming spindle can improve the edge quality and be used to seam the cut-outs.

GRINDING



DRILLING



### ADVANTAGES

- ▶ Variable cutting contours, not limited by tools
- ▶ Compared to conventional milling machines: process factor 2.0
- ▶ Automatic glass waste disposal of standard cut-outs
- ▶ Also suitable for laminated glass processing
- ▶ Water curtain to protect surrounding machine components
- ▶ Abrasive sand is extracted in a controlled manner
- ▶ Energy from the beam is absorbed
- ▶ Targeted water flow in separate tanks
- ▶ High-quality edging
- ▶ Seaming spindle for seaming/finishing

### TECHNICAL DATA

**Glass size:** max. 3,300 × 20,000 mm

**Glass size:** max. 250 × 450 mm

**Operating speed:** max. 15 m/min



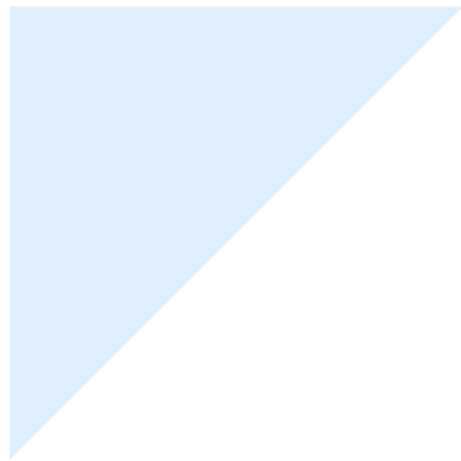




# MULTISPINDLE DRILLING MACHINE

HIGH REPEATABILITY, MINIMAL SET-UP TIME

The BENTELER Multispindle Drilling Machine is a fast and reliable solution for safe processing of your drilling needs. The drilling system can be fitted with up to seven spindle pairs. As an option, the system can be equipped with CNC-controlled axes. These guarantee high repeatability with minimal set-up time offering an economical and versatile solution. All drilling machines can be linked with other machines using a shuttle system.



## TECHNICAL DATA

**Glass size:** max. 1,300 × 2,300 mm  
**Repeatability of the drilling line:** +/- 0.02 mm  
**Speed of positioning:** 40 m/min  
**Number of spindle pairs per machine:** 1-7

## ADVANTAGES

### Extreme precision

- ▶ The machine frame and components have a particularly stable design for low-vibration drilling with high precision and repeatability

### Flexibility

- ▶ Simple integration of additional drilling spindles in the machine frame

### Processing safety

- ▶ Automatic sharpening of tools
- ▶ Patented BENTELER drilling spindle with loaded compressed air to seal for durability in damp and abrasive environments
- ▶ Optional high-speed water suction system for drills without process water on the glass surface and to protect the delicate glass surface

### Easy to use

- ▶ Optional CNC-controlled process in X, Y, and Z directions with an automatic measuring and calibrating system to precisely position the drill in a fully automatic manner
- ▶ Automatic tool change with minimal increase in the cycle time

### Variations with

- ▶ Drilling table that can be loaded manually
- ▶ Transfer drilling table







## SCREEN PRINTING MACHINE

EXTENSIVE AUTOMATION, EXTREMELY PRECISE

The BENTELER Screen Printing Machine is designed for use 24/7. The system ensures high availability and large output due to its high level of automation. The screen printing system can be integrated into the machining line without any interface. It can also be used as a stand-alone solution. The BENTELER screen printing techniques ensure high quality, productivity as well as precision.



### TECHNICAL DATA

**Glass size:** max. 1,600 × 2,600 mm  
**Glass thickness:** max. 0.5 mm  
**Screen size:** max. 2,150 × 3,350 mm  
**Cycle time:** 9 secs.  
**Repeatability:** +/- 0.1 mm

### HIGH EFFICIENCY

Smooth integration, a wide range of automation functions as well as high failure safety in the three-shift operation pay off.



### ADVANTAGES

#### Maximum ease of use

- ▶ Extendable screen frame
- ▶ Positioning remains the same

#### Minimal set-up time

- ▶ Alignment aided by a laser system
- ▶ Formulation memory for up to 500 models
- ▶ Only one person required for changeover

#### Extreme precision

- ▶ More accurately positioned and reproducible glass transport
- ▶ Screen positioning correction possible by fine-tuning the screen
- ▶ Precision: +/- 1 mm







## tecWasher compact

COMPACT DESIGN, EASY TO USE

The BENTELER tecWasher compact is a high-quality, inexpensive washing machine for small glass sizes.



### TECHNICAL DATA

**Working width:** 600 × 1,600 mm  
**Glass thickness:** 1.5 – 21 mm  
**Glass dimension:** min. 50 × 80 mm  
**Operating speed:** 3 – 13 m/min



### ADVANTAGES

#### The best washing and drying quality

- ▶ Spray zones from above and below
- ▶ Two or three washing sets with tube brushes
- ▶ Tank with pump and heating for each washing set
- ▶ Anti-drip drying due to two pairs of drying nozzles

#### Flexibility

- ▶ Motorised adjustment of glass thickness
- ▶ Transport speed can be regulated continuously
- ▶ Very low minimal glass dimension

#### Low dimensions

- ▶ Extremely compact design
- ▶ Fan arrangement above the machine

#### Low operating costs

- ▶ Water-saving cascade system
- ▶ Maintenance-free and durable components

#### Easy to use

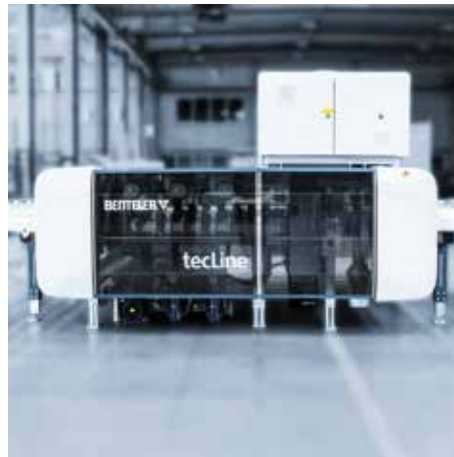
- ▶ Tank can be pulled out
- ▶ All tank connections have quick-release couplings
- ▶ All components can be accessed easily
- ▶ Filter can be changed quickly



# tecWasher

## MODULAR DESIGN, LOW OPERATING COSTS

The tecWasher series is a standardised, modular design for all glass formats. An inexpensive alternative to customised washing machines.



## TECHNICAL DATA

**Working width:** 2,000 × 3,300 mm  
**Glass thickness:** 1.5 – 21 mm  
**Operating speed:** 3 – 13 m/min  
**Glass length:** min. 280/350 mm  
**Glass width:** min. 175 mm

## ADVANTAGES

### The best washing and drying quality

- ▶ Spray zones from above and below
- ▶ Two or three washing sets with tube brushes
- ▶ Tank with pump and heating for each washing set
- ▶ Anti-drip drying due to two pairs of drying nozzles

### Flexibility

- ▶ Motorised adjustment of glass thickness
- ▶ Transport speed can be regulated continuously
- ▶ Small glass dimension possible

### Low dimensions

- ▶ Compact and modular design
- ▶ Ventilator and switch cabinet directly integrated into the machine

### Low operating costs

- ▶ Compressed air unnecessary
- ▶ Water-saving cascade system
- ▶ Maintenance-free components
- ▶ Energy-saving design

### Easy to use

- ▶ Each tank can be pulled out
- ▶ All tank connections have quick-release couplings
- ▶ All components can be accessed easily
- ▶ Filter can be changed quickly







## WASHING MACHINE TYPE 45

LOW-MAINTENANCE CONSTRUCTION, INNOVATIVE DRYING PROCESS

With the combination of standardised modules, we can provide solutions for all your washing tasks for glass coating and processing. If you combine efficient polishing, cleaning and rinsing systems, you will get a consistently high-quality cleaning result.



**EACH OF OUR HIGH-QUALITY  
SYSTEMS IS PRECISELY  
TAILORED TO YOUR PROCESSING  
REQUIREMENTS.**



### TECHNICAL DATA

**Working width:** 800 × 3,600 mm  
**Glass thickness:** 0.7 – 21 mm  
**Operating speed:** 3 – 25 m/min  
**Glass length:** min. 280/350 mm  
**Glass width:** min. 175 mm



### ADVANTAGES

#### The best washing and drying quality

- ▶ Spray zones from above and below with up to 10 bar
- ▶ Customised number of washing sets
- ▶ Tank with pump and heating for each washing set
- ▶ Oscillating polishing and brush plate stations remove dirt and oxide coatings
- ▶ Effective separation of polishing and cleaning zones
- ▶ Innovative drying process with high-performance filters

#### Flexibility

- ▶ Adjustment to the line control
- ▶ Automatic glass thickness measuring systems
- ▶ Modular system

#### Low operating costs

- ▶ Low-maintenance construction
- ▶ Standardised components used
- ▶ Intelligent adapted water flow

#### Easy to use

- ▶ Each tank can be pulled out
- ▶ All tank connections have quick-release couplings
- ▶ All components can be accessed easily

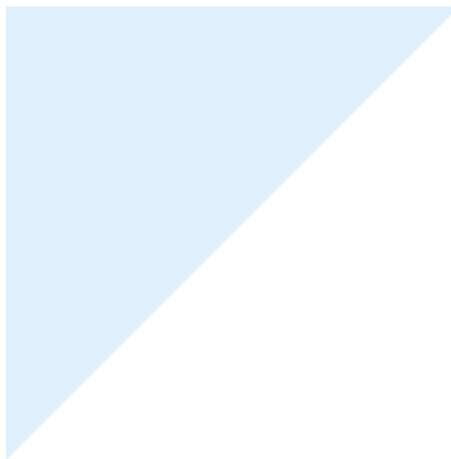




## HANDLING SYSTEMS

MAXIMUM FLEXIBILITY, FAST AVAILABILITY

With the BENTELER Gantry Stacker, horizontal or vertical glass panes can automatically be stacked and unstacked. Even very large sizes can be transported easily. The carriers have an extremely robust, rigid and torsion-resistant base frame. The result is extremely precise positioning as well as a process free of vibrations even at high speeds and with heavy glass. When used together with our revolving table, glass can be fed almost without any interruptions even while changing the frame. Loading and unloading of horizontal or vertical glass panes can also be performed by robots. This is particularly relevant when complex movement procedures are necessary. We typically use 6-axis industrial robots from various manufacturers.



## ADVANTAGES

### Quality

- ▶ 6-axis robots for fast and recurring tasks
- ▶ Gantry stacker for fast and repeatable handling of glass

### Flexibility

- ▶ Solutions for all areas of application
- ▶ Travelling gantry stackers

### Efficiency

- ▶ Low cycle times
- ▶ Non-stop, consistent work processes

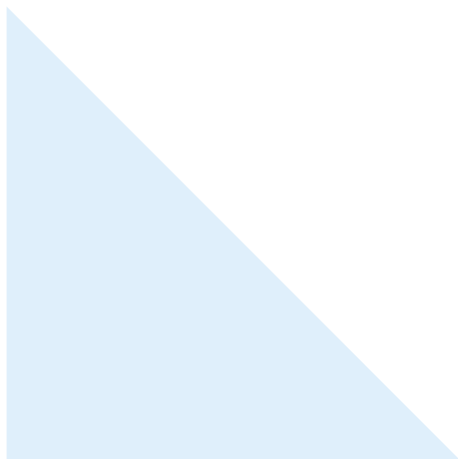






## LAMINATED GLASS LINES

BENTELER provides the right solutions for every requirement regarding laminated glass. From a manual to fully automatic line for all common laminating film (PVB, EVA, SentryGlass® (by DuPont)). Due to the many years of experience and continued development of our laminated glass range, we can now offer you a state-of-the-art range that is energy-efficient with a proven quality.



### ADVANTAGES

#### tecLami Line

- Standardised line with expansion options

#### Fixed-size systems

- Solutions customised to our customers' needs

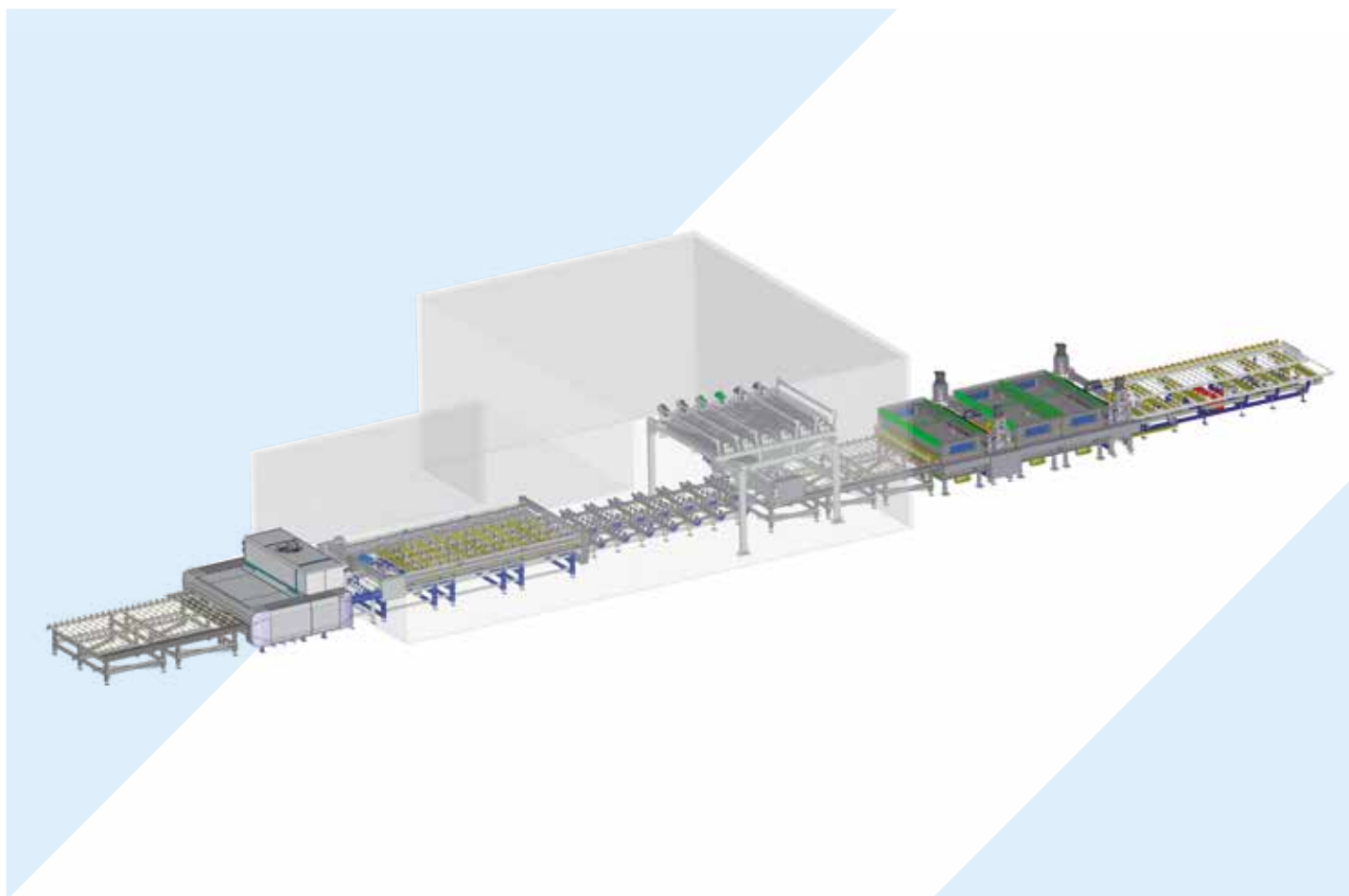
#### Automatic fixed-size systems

- Optimised for automatic and versatile semi-automatic production with high output

#### Jumbo Laminating Line

- Customised for fully automated laminated glass production for standardised DLF and PLF sizes





## tecLami Line

### STANDARDISED SYSTEM, EFFICIENT PRODUCTION

The tecLami Line is a standardised line that is equipped with a high-quality washing machine and the same oven technology as our Custom Size Laminating Line or our Jumbo Laminating Line. The oven uses very little energy and is suited to the production of all known laminated glass products. This range contains all the important components for the lamination process. However, it can be set up at any time.



### TECHNICAL DATA

**Glass size:** max. 2,800 × 6,000 mm  
**Glass thickness:** 3 – 19 mm  
**Laminate size:** max. 60 mm  
**Cycle time:** min. 90 secs.  
**Film storage:** 4 – 8 rolls

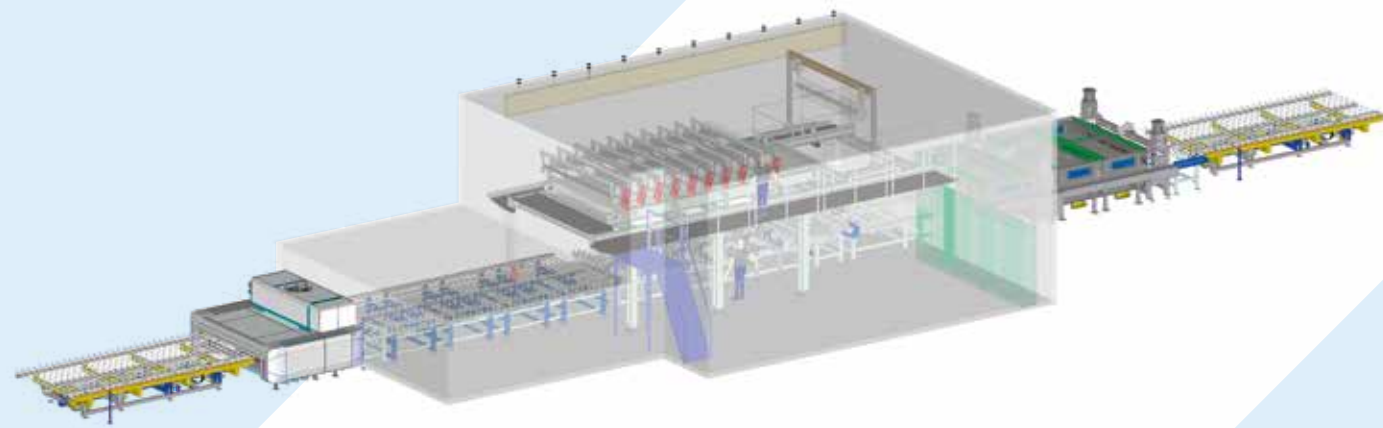


### ADVANTAGES

- Extreme precision**
  - ▶ Rigorous glass cleaning
- Flexibility**
  - ▶ For numerous films
- Processing safety**
  - ▶ With the reliable BENTELER formulation control
- Easy to use**
  - ▶ Easy menu navigation







# AUTOMATIC FIXED-SIZE SYSTEMS\*

HIGH OUTPUT, FLEXIBLE PRODUCTION

The Automatic Fixed-Size System has the highest possible output of laminating products for PVB, EVA or SentryGlass® (by DuPont). BENTELER offers the line with various programs, such as automatic PVB placement and trimming or manual placement with automatic trimming. For this reason, you always have the possibility to use the best program for fast and cost-effective production.



## TECHNICAL DATA

**Glass size:** max. 3,300 × 20,000 mm  
**Glass thickness:** 3 – 19 mm  
**Laminating thickness:** max. 100 mm  
**Cycle time:** 60 – 90 secs.  
**Film storage:** 10 or 20 rolls

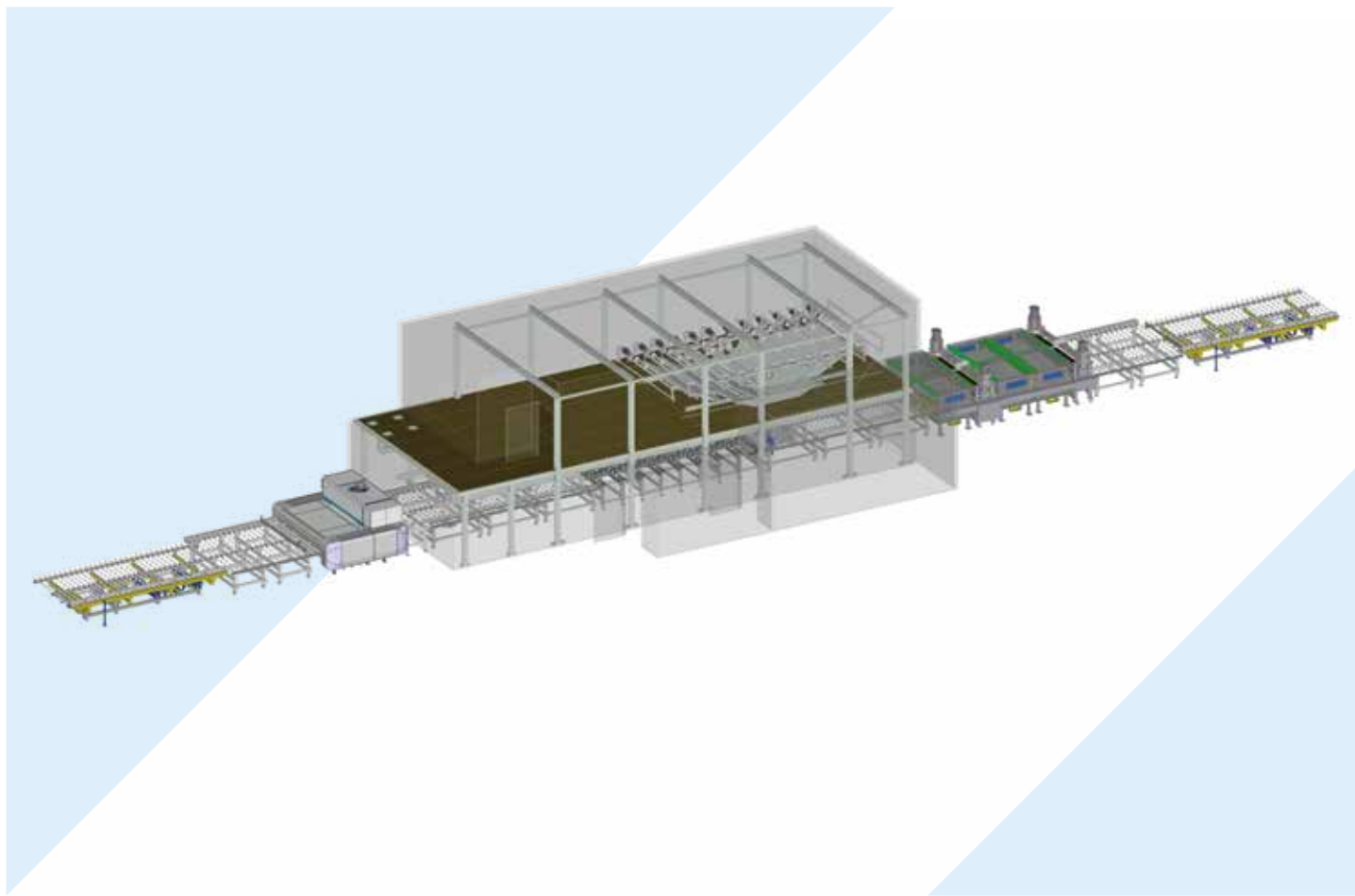


## ADVANTAGES

- Extreme precision**
  - ▶ Precise glass positioning
  - ▶ Automatic PVB placement and trimming
- Flexibility**
  - ▶ Manual processing and semi and fully automatic processing
- Processing safety**
  - ▶ Proven pre-laminating oven technology
- Easy to use**
  - ▶ User-friendly due to a Siemens touch panel



\* only for interlaying film



# FIXED-SIZE SYSTEMS

HIGH OUTPUT, FLEXIBLE PRODUCTION

The Fixed-Size System can be adjusted according to the customer's needs, e.g. with the functions of automated film placement and trimming. The PVB film storage is installed in the first tier with the possibility to work on cooled and interlaying PVB film. The film storage can be built for up to 24 rolls with a separate steel construction. This steel construction is also used as a space for merging and storing.



## TECHNICAL DATA

**Glass size:** max. 3,300 × 9,000 mm  
**Glass thickness:** 3 – 19 mm  
**Laminating size:** max. 100 mm  
**Cycle time:** 60 – 90 secs.  
**Film storage:** 8 – 24 rolls

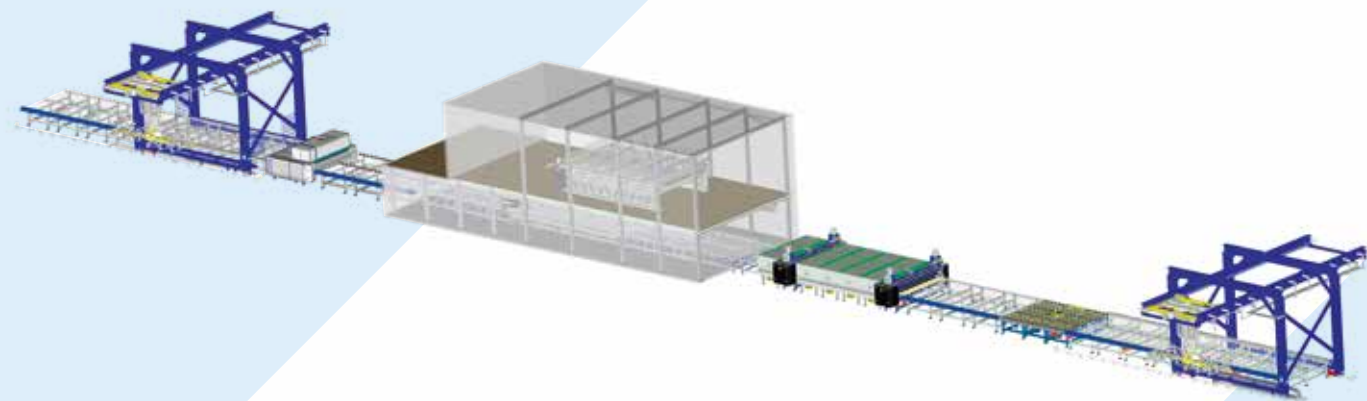


Turnkey solution with autoclave possible upon request

## ADVANTAGES

- High precision**
  - ▶ Automated glass merging
- Flexibility**
  - ▶ Through the use of numerous films
- Processing safety**
  - ▶ In the press and during the pre-laminating process
- Easy to use**
  - ▶ With automated PVB handling and rear edge cutting unit





## JUMBO LAMINATING LINE

### SHORT CYCLE TIME, AUTOMATED PRODUCTION

The Jumbo Laminating Line is designed for fully automatic operations. The line promises optimal results with a cycle time of 45 seconds. All production stages are automated, from loading the coated glass to the unloading and fitting spacers. We can also offer you solutions for an air-conditioned cleaning room, film storage, autoclaves and glass racks.

LAMINATING



WASHING



### TECHNICAL DATA

**Glass size:** max. 3,300 – 6,000 mm  
**Glass thickness:** 12 mm  
**Laminating thickness:** max. 30 mm  
**Cycle time:** min. 45 secs.  
**Film storage:** 4 – 6 jumbo rolls



### ADVANTAGES

#### High precision

- ▶ Automatic PVB placement and trimming

#### Flexibility

- ▶ For jumbo and divided jumbo formats

#### Processing safety

- ▶ With placing the PVB film, also with several rolls of film

#### Easy to use

- ▶ Glass handling after to the autoclave process
- ▶ Autoclave loading and unloading systems



# OUR SERVICE

## PLANNING, DEVELOPMENT AND MAINTENANCE

BENTELER will accompany you with a fast and flexible service through each stage of your project: We will plan your new system, which will leave our premises as a turnkey solution ready for you to use. We take responsibility for the development stages to allow for a smooth commissioning process. We are there for you over the entire life cycle of your system, i. e. we will be there for you right from the initial use of your system and we will always ensure the availability of all spare parts.



# BENTELER GROUP

## 140-YEAR SUCCESS STORY



## OUR SPECIALISTS ARE AVAILABLE FOR YOU WORLDWIDE.



### About BENTELER

BENTELER is a leading global company that develops, produces and sells products, systems and services for the automotive, energy and engineering sectors. We are a family-owned firm now in the fourth generation. Our 30,000 employees at 153 locations in 40 countries are passionate about excellence in manufacturing and distribution – in close proximity and collaboration with our customers. Sales in 2016 amounted to 7,423 Million Euros. The three Business Divisions BENTELER Automotive, BENTELER Steel/Tube and BENTELER Distribution are organized under the strategic management holding company BENTELER International AG in Salzburg, Austria. With our technological expertise and strong focus on successful implementation, we develop solutions that make the difference – for customers, employees and society. And we make them happen.

**BENTELER. The family of driven professionals. Since 1876.**  
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Intelligent designs  
and machines for:

Architectural Glass  
Automotive Glass  
Technical Glass

## About BENTELER Glass Processing Equipment

BENTELER Glass Processing Equipment develops and implements glass processing in the fields of architecture, automotive as well as technical glasses. With more than 3,000 successfully delivered machines in more than 50 countries, we support our customers with innovative solutions and as partner on eye level.

BENTELER Maschinenbau GmbH  
Frachtstraße 10 – 16  
33602 Bielefeld  
Germany

Telephone: +49 521 542-0  
Fax: +49 521 542-229

[glass-processing@benteler.com](mailto:glass-processing@benteler.com)  
[www.benteler-glass.com](http://www.benteler-glass.com)