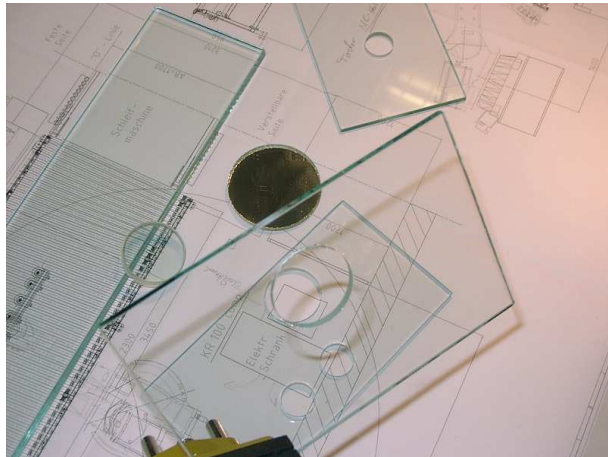




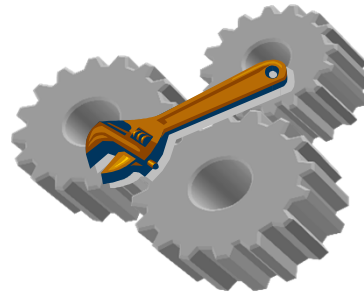
Integration of customised robot systems for the processing of sheet glass



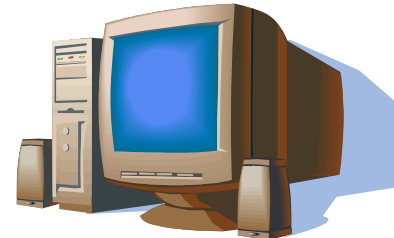
The „Knittel-Formula“



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Standard robots
by KUKA

Modules designed
for special demand

Individual
software

= Your customised solution

Our Know-How ...

- Longtime experience in the processing of glass as well as in building of glass machines
- Patented solutions with standard components
→ fast and secure rationalisation
- Extended possibilities through the combination of robots and newly developed tools
- Flexible and customised concepts for your company

Your potential for rationalisation

- Reduction of production costs
- Increase of automation level
- Improvement of the ability to deliver
- Higher flexibility
- Short time of amortisation



Examples of implementation:

- Bevelling
- Combining two vertical grinding machines with integrated online-measuring of the workpiece
- Single-side drilling directly with the robot



Bevelling of flat glass (rectangular)

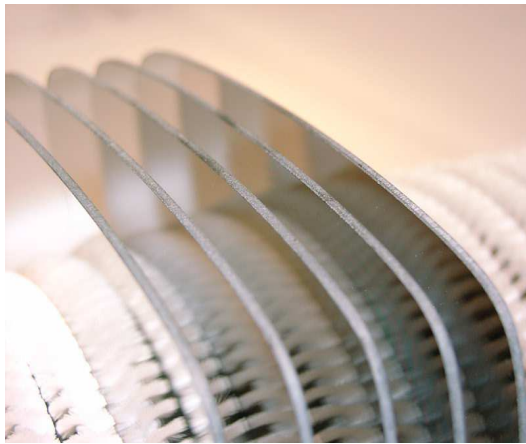


Bevelling with
cut corners



Bevelling without
cut corners

... also for model edges



Square edges with
beveling on top
and bottom



Beveling on top and
bottom only

Combining two vertical grinding machines with integrated online-measuring of the workpiece



Combining two vertical grinding machines with integrated online-measuring of the workpiece

Advantages of this solution

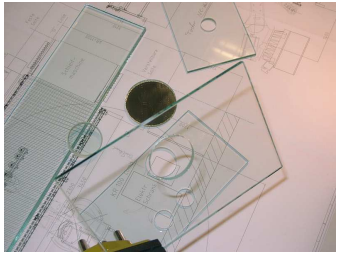
- Because of the online-measuring no setting necessary
- The workpieces are being placed with defined space between them
- Additionally to the transmitting, the glass can be turned alternatively by 90° or 180°

Measurement of the glas:
2400 x 1200 mm max.
156 x 156 mm min.
3 -10 mm thickness

Single-side drilling with the robot



Unique, patented solution with a large variety of peripheral assortment
Drilling table, integrated cooling system, automatic measuring of the workpiece



Suitable for all popular thickness of glass
Drilling diameter up to 100 mm without problem



The combination, drilling aggregate and handling system make the manufacturing cell extremely economic

Available modules

- Measuring of the workpiece
- Station for the adjusting of the coordinates
- Synchronisation-devices
- Extensive sensor technology
- Gripping systems
- Tooling changer
- Monitoring of the process
- Fixations of frames and pallets
- Safety devices



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