

**SCHRÖDER**  
GROUP



UNIVERSAL FOLDING MACHINE  
**MAK 4 Evolution**

# MAK 4 Evolution

The MAK 4 Evolution and the MAK 4 Evolution UD are our solutions for complex tasks involving industrial sheet metal forming – powerful, precise, and extremely efficient.



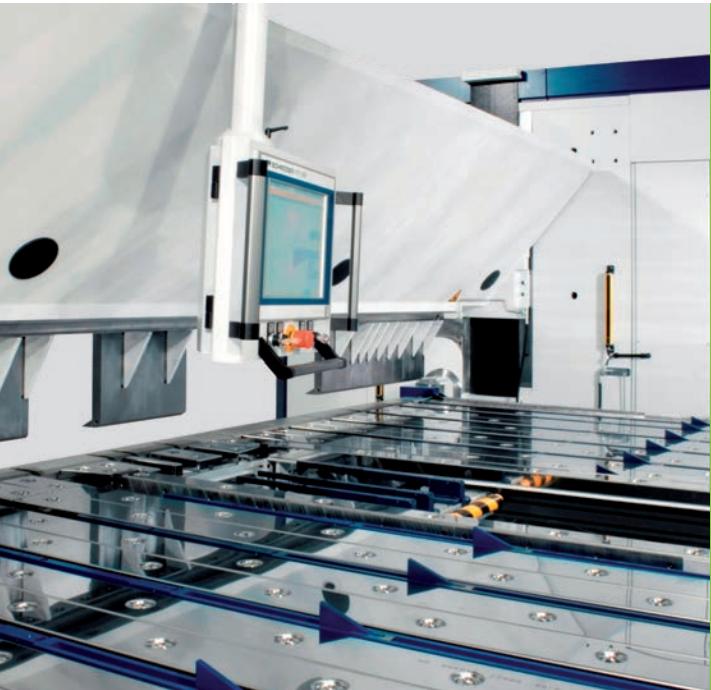
The new Evolution series combines the Schröder group of companies' many years of experience in the area of folding with pioneering innovations: precise linear drive, graphical programming, and an automatic tool changer.

The type MAK 4 Evolution UD enables you to work more productively thanks to „up-and-down“ technology. All of this opens up new opportunities to your company for processing sheet metal – for faster, more flexible production and reduced costs per unit.

The MAK 4 Evolution enables you to transform your customer's increasing demands in quality, flexibility, and speed into competitive advantages for your company. No matter whether complex sheet metal forming needs to be particularly precise, short-notice individual orders need to be managed reliably, or pieces of sheet metal need to be processed quickly and efficiently for standard products, the MAK 4 Evolution makes it all possible.

**MAK 4 Evolution UD: Up-and-down technology reduces processing times**

Minimize handling costs at the machine and trust Schröder's proven "up-and-down" technology. More processing steps in shorter times.



Efficiency in detail: flexible back stop and operating panel

MAK 4 Evolution*	3,200 x 6.0	4,000 x 5.0	5,000 x 4.0
Working lengths	3,240 mm	4,040 mm	5,040 mm
Sheet thickness 400 N/mm <sup>2</sup>	6.0 mm	5.0 mm	4.0 mm
Length	6,420 mm	7,220 mm	8,220 mm
Width	2,652 mm	2,652 mm	2,652 mm
Width with U shape 1,700 mm	3,350 mm	3,350 mm	3,350 mm
Width with U shape	(5,150 mm)	(6,000 mm)	(6,810 mm)
Machine height	2,748 mm	2,748 mm	2,748 mm
Basic machine weight	17,054 kg	18,278 kg	20,885 kg
<b>Clamping beam</b>			
Geometry	60° (180°)	60° (180°)	60° (180°)
Stroke	850 mm	850 mm	850 mm
Drive power	2 x 9.45 kW	2 x 9.45 kW	2 x 9.45 kW
Speed	100 mm/s	100 mm/s	100 mm/s
Clamping force	120 to	120 to	120 to
<b>Folding beam</b>			
Drive power	2 x 9.4 kW	2 x 9.4 kW	2 x 9.4 kW
Speed	150°/s	150°/s	90°/s
Folding beam adjustment	100 mm (180 mm)	100 mm (180 mm)	100 mm (180 mm)
Folding centre adjustment	100 mm	100 mm	100 mm

\* Differing specifications for the MAK 4 Evolution UD are featured in brackets.

### Worry-free equipping: automatic tool changer

Error-free and extremely fast: Just one click on the controls, and the fully automatic tool changer converts the clamping and folding beams for the next order in just a few seconds. This option effectively allows you to reduce preparation times for small series, minimize equipping errors, and increase output at the same time.

### Visual aids help programming: graphical programming and controls

When process experience and extensive technical knowledge are arranged using modern IT, good software is the result. Schröder's POS 3000 3D graphical controls enable you to program complex,

multi-step sheet metal forms comfortably and reliably. The graphic simulation allows you to check every step, which means the end of trial and error and results in the highest quality, right from the first bend.

### Your individual solution: Speed Optimizer and more...

Industrial sheet metal folding perfection – the MAK 4 Evolution features numerous extra options and interesting details like especially rigid frames and main modules, extended opening heights (850 mm clamping beam), strong drives, speed optimizer, float-free planetary drive motors, options for back and front stops, or a safety PLC with light barriers to make the work areas safer.



Every rotating unit of the tool changer features three gripping arms.



The right tool is the key to success: If required, we can add customer-specific developments to the wide range of tools we offer.

## Equip quickly and safely

We have the remedy for long tool changing and machine downtimes:  
our fully automatic tool changer

The MAK 4 Evolution may be equipped with a fully automatic tool changer. In just a few seconds, the clamping beam (and optionally the folding beam) can be equipped with tools. Two rotating units operated via highly precise linear drives remove the tools from the magazine using three gripper arms each and then position them in the tool clamp or disassemble the current tools.

All information about products, upcoming orders, and the required tools are received by the tool changer via Schröder's POS 3000 control software.

The MAK 4 Evolution's fully automatic tool changer addresses the central challenges of your production processes:

- **Shorten equipping times**

Minimize downtimes, shorten processing times, increase output and efficiency.

- **Avoid errors**

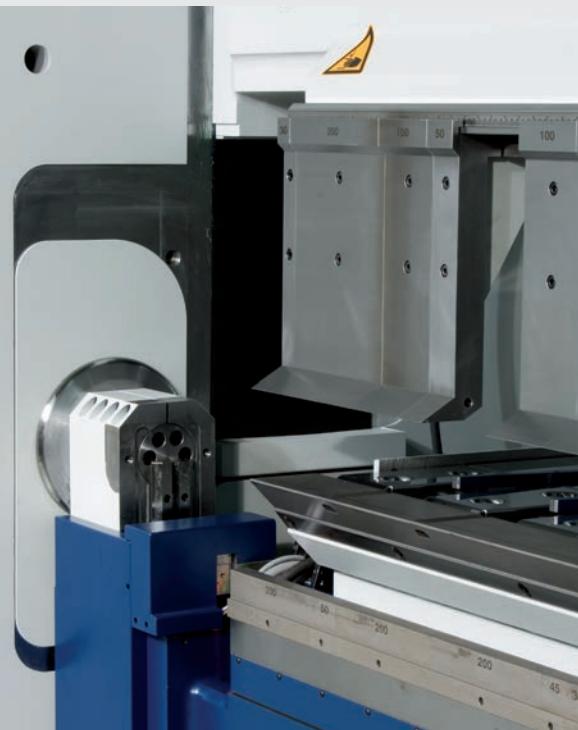
The wrong tool is a frequent cause of errors in sheet metal forming. Errors can be avoided with automatic tool equipping. Quality increases, waste and costs are reduced.

- **Produce more flexibly and cost-effectively**

The production lot sizes are decreasing – with automatic tool changing, even small lot sizes and single pieces are no longer to be feared as lost efficiency and a source of errors. Your company can make cheaper offers and generate additional orders.



Variable tools for any requirement



Drives, tools, stops... Quality is present right down to the details.

## The right tools and accessories for any requirement

The MAK 4 Evolution was conceptualized by our engineers as a flexible platform that you are able to expand into your individual solution using tools, options, and accessories.

The extensive equipment includes POS 3000 3D graphical controls, folding centre and motorized folding beam adjustment, positioning back stops arranged between U shape and sectors, left and right lateral angle gauges, removable support sheets, hydraulic tool clamping, pneumatic pop-up stop fingers, manual central crowning device, and a protection via light curtain controlled by safety-PLC for work safety. A big help with handling: the clever front stop function via retractable stop finger elements in the folding beam.

The tools and options open up even more possibilities to you

### ▪ Special accessories

- Motorized crowning device, central adjustment
- Z-axis drive Speed Optimizer (up to 120 mm/s axis speed)
- Tool cart for blades, rails and segmented tools

### ▪ Stop

- 2 pneumatic pop up square arms assembled at inner side of U-back stop
- Front stop feature for folding beam

### ▪ Clamping beam tools

- Sharp noose blade (20/30°)
- Goat's foot blade (120/180/300 mm, segmented incl. corner parts)

### ▪ Bottom beam tools

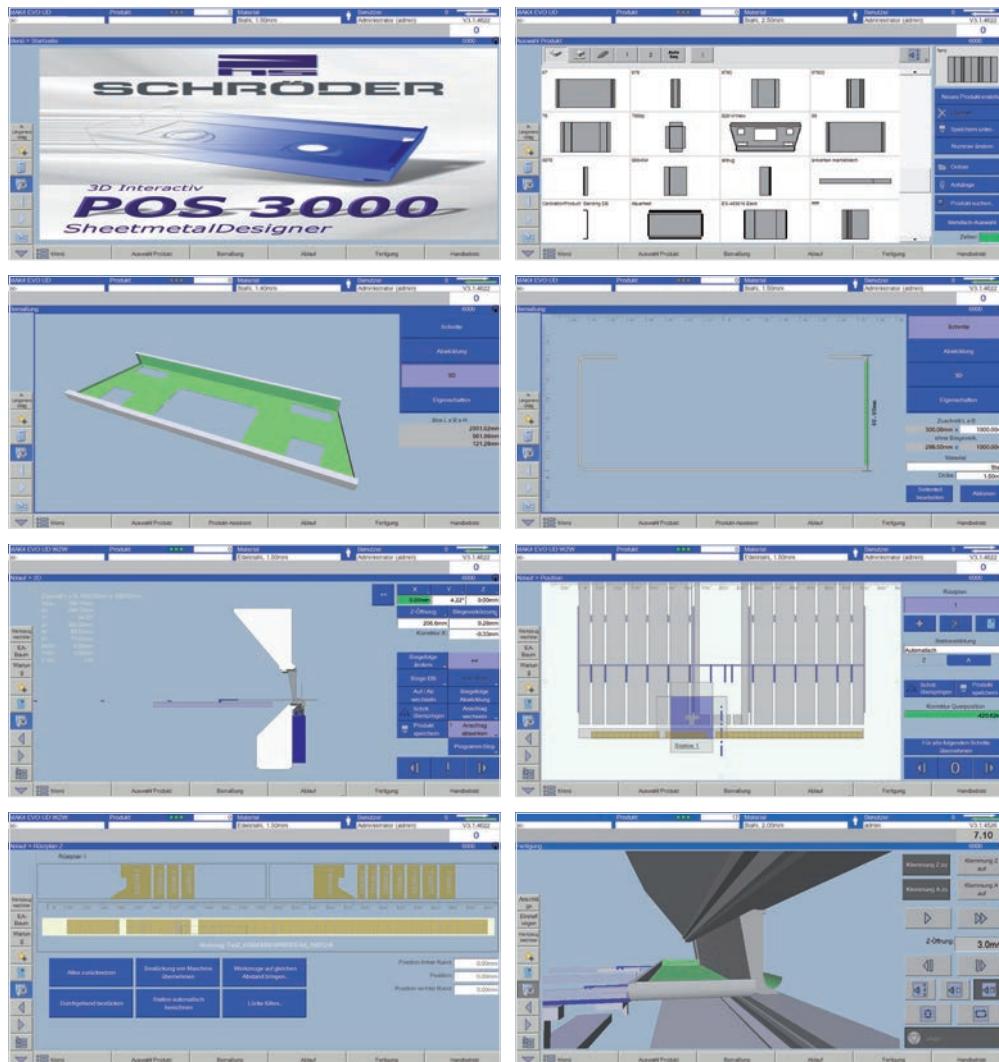
- One piece bottom beam blade
- Segmented bottom beam blade

### ▪ Folding beam tools

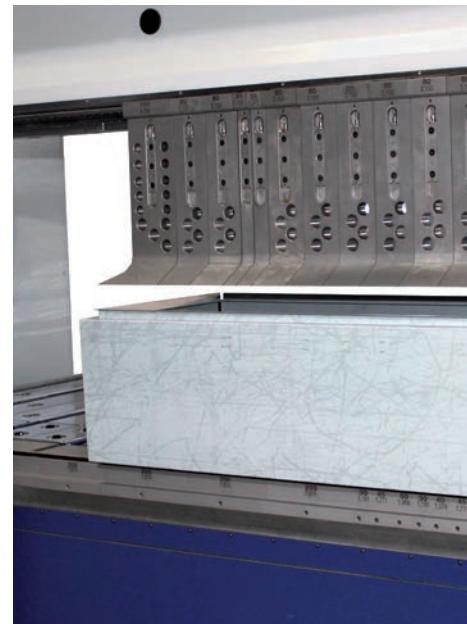
- Folding blade 30/40 mm, divided or segmented
- Folding blade 10/15/20 mm, segmented or in one piece
- Folding blade 20 mm, 30° segmented

# Programming top performance

Visualize quality: POS 3000 3D graphical controls with simulation



POS 3000 3D graphical controls: see the results with your own eyes, from the first steps up until the simulation



Numerous possibilities: "up-and-down" technology and large opening heights create new possibilities.

Only the correct software makes hardware into a flexible, easy to operate solution. With their POS 3000 3D graphical controls, sheet metal folding specialist Schröder has developed one of the most powerful controls on the market, and because both the hard and software come from a single provider, the MAK 4 Evolution and POS 3000 3D graphical controls are a perfect match.



Clever: Front stop feature via retracting fingers in the clamping beam tool



## Highlights

- 3D graphical controls including a schematic depiction of the machine, tool, and work pieces
- Intuitive, visual touchscreen programming
- 3D bending simulator for visual program inspection
- Tool equipping programming and controls for automatic tool changer
- Cycle time calculator
- High-speed data transmission to frequency inverters (Ethernet Power Link)
- PC version, CAM connection, ERP/PPS interfaces, and DXF converter available
- Remote maintenance via Schröder's software service

Special feature: Program graphically with the POS 3000. The machine, tool, and work piece are all clearly displayed. Since ultimately, we know that: operating staff and preparation employees have a better eye for products and not for IT programming lines. That's why your employees bend visually beforehand on the screen and check the result in the 3D bending simulator, which means they can be sure that the sheet metal will be processed perfectly from the first bend. Bending programs that have already been created can be called up again quickly, checked visually, and corrected according to material requirements.

Do you want to learn more about the POS 3000 3D graphical controls? Please read our software brochure, or better yet: Allow us to show you live how the POS 3000 can help optimize your production.



# Schröder Group

The Schröder Group consists of Hans Schröder Maschinenbau GmbH, which is located in Wessobrunn, Germany, and SCHRÖDER-FASTI Technologie GmbH, which is located in Wermelskirchen, Germany.

Founded in 1949, Hans Schröder Maschinenbau GmbH unifies traditional and modern approaches in machine building: Successfully managed as a quality and customer-oriented, family-owned company, Hans Schröder Maschinenbau is specialized in the development of modern machine concepts for bending and cutting sheet metal.

The successful integration of the Fasti Company in 2006 and its worldwide presence make the Schröder Group one of today's leading providers of machines for bending, cutting, beading, flanging, and circular bending all types of sheet metal. The company's precision machines range from proven solutions for craftsmen to innovative, high-performance machines for automatic industrial production processes. Overall, the Schröder Group currently employs more than 240 people at various locations at home and abroad.

All information provided as a guide only  
and subject to change at all times.  
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