

FORMING THE FUTURE



## SYSTEMS FOR MANUFACTURING HEAT EXCHANGER PLATES

# INTEGRATED SYSTEM SOLUTIONS. AUTOMATIC PRODUCTION OF HEAT EXCHANGER PLATES.



Fully automated production line for heat exchanger plates.

### SCHULER MEETS THE REQUIREMENTS OF THE HEAT EXCHANGER INDUSTRY.

- High quality, ensured by close embossing depth tolerances  $\leq 0.1$  mm, obtained with an innovative multi-cylinder system.
- Constant and consistent production, ensured with a uniform embossing pressure distribution.

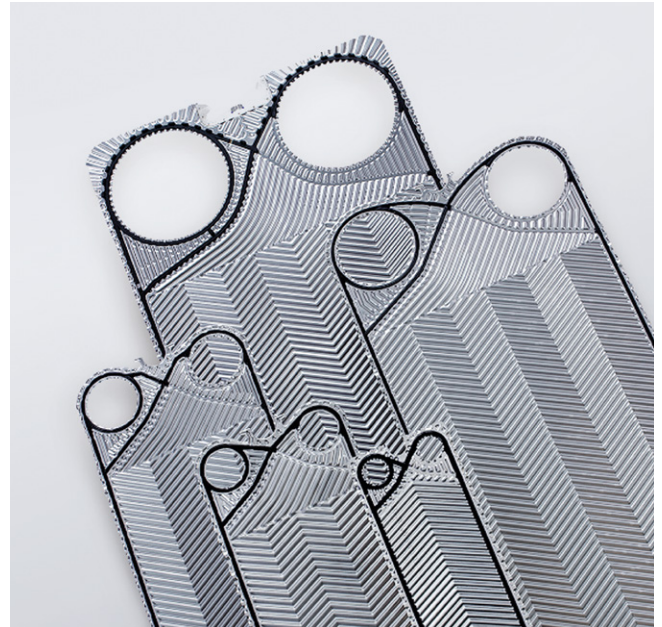
### BENEFITS OF MULTI-CYLINDER TECHNOLOGY.

Forming heat exchanger plates in varying sizes and with close embossing depth tolerances imposes a high requirement on press technology. Schuler has developed a convincing solution: Hydraulic embossing presses using a short-stroke multi-cylinder system.

The system permits automatic adjustment of press force distribution for optimal adaption to different plate geometries.

A decision that starts to pay off from the very first day of production with:

- Top plate quality
- Repeatability
- Flexibility
- Production reliability
- Economic efficiency



Heat exchanger plates in varying sizes.

### AUTOMATED PRODUCTION LINE FOR HEAT EXCHANGER PLATES

Coil feed line · Leveling machine · Cropping shear · Blank outfeed station · Centering station · Lifting bar transfer system for part transport · Loading/unloading feeder · Hydraulic embossing press · Blanking press · Foil reeling units · Die change system

### DIGITAL SUITE – DIGITALIZATION IN THE PRESS SHOP

With its Digital Suite, Schuler offers you new opportunities to boost the productivity of your press shop. From the networking of your systems and die protection to component tracking and production monitoring.

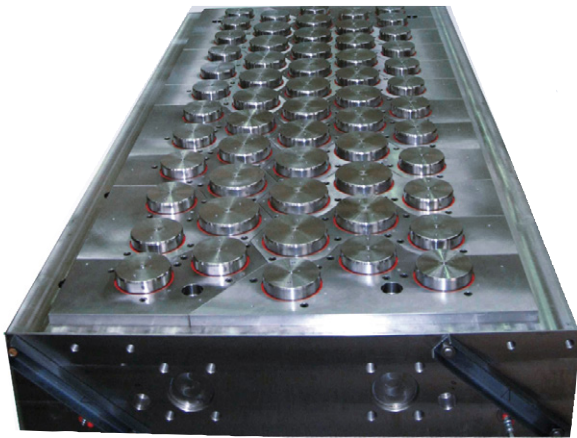
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# EMBOSSING PRESSES WITH MULTI-CYLINDER TECHNOLOGY. FOR HEAT EXCHANGER PLATES IN VARYING SIZES.



Schuler multi-cylinder plate underneath of table plate.

## CUSTOMER BENEFITS FROM SCHULER MULTI-CYLINDER TECHNOLOGY:

- Consistent and uniform tolerance  $\leq 0,1$  mm for any embossing depth due to minimized deviation of deflection between slide and table plate – also for large heat exchanger plates.
- Automatic selection of individual pressure circuits depending on plate geometry. This permits flexible production of different plate sizes on one single embossing press.
- Optimum press force distribution by automatic distribution of pressures within the multi-cylinder plate and an additional die-specific pressure override function.
- Cambering and shimming of dies no longer required
- Easy maintenance: the majority of hydraulics is easily accessible in the press pit. Easy replacement of cylinder seals.

## MODEL OVERVIEW SCHULER EMBOSSING PRESSES WITH MULTI-CYLINDER TECHNOLOGY

Model	SH-10000	SH-15000	SH-20000	SH-25000
Capacity [kN/US tons]	100,000/11,000	150,000/16,500	200,000/22,000	250,000/27,500
Bed width [mm/in]	Bed depth [mm/in]			
1,400/55	2,000/79			
1,600/63	2,500/98			
1,800/71		3,600/142	3,600/142	
2,300/91				3,800/150

Other press forces and sizes available upon request.

# EMBOSSING PRESSES WITH LONG-STROKE TECHNOLOGY. LINES FOR MID-RANGE PRESS FORCES.



6,000 t embossing press.

## SCHULER SOLUTIONS FOR MID-RANGE PRESS FORCES.

Challenges in the medium press force range 20,000 – 80,000 kN require intelligent solutions. Schuler delivers with deflection-optimized embossing presses with traditional long-stroke technology.

The sophisticated design makes it possible to avoid cambering or shimming of dies.

## MODEL OVERVIEW SCHULER EMBOSSING PRESSES WITH LONG STROKE TECHNOLOGY

Model	SH-2000	SH-4000	SH-6000	SH-8000
Capacity [kN/US tons]	20,000/2,200	40,000/4,400	60,000/6,600	80,000/8,800
Bed depth [mm/in]		Bed width [mm/in]		
1,400/55	1,500/59	2,000/79	2,000/79	
1,600/63	2,500/98	2,500/98	2,500/98	2,500/98
1,800/71				2,500/98

Other press forces and sizes available upon request.

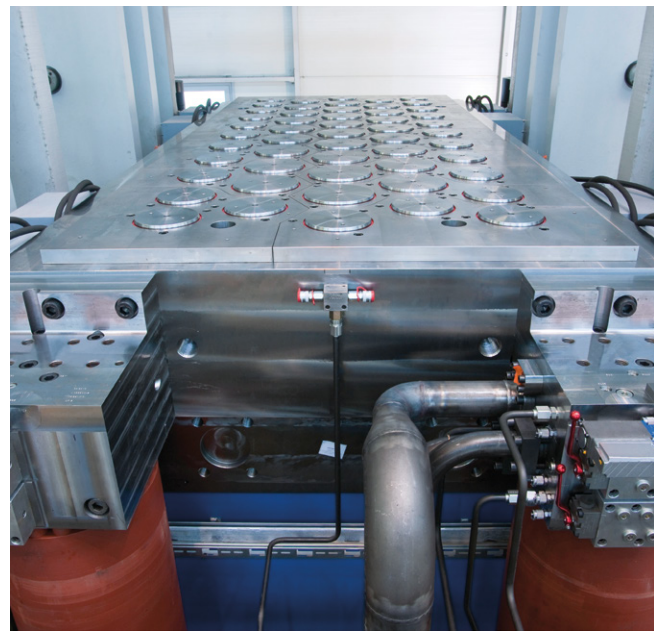
# SCHULER QUALITY IN THE WORLD OF HEAT EXCHANGERS. MULTI-CYLINDER TECHNOLOGY APPLICATIONS.

**The application.** Plate heat exchangers contain dozens of stacked plates, produced from a wide range of materials such as stainless steel or titanium. They are housed in a frame and provide highly efficient heat transfer surfaces for the liquids flowing through.

**The requirements.** In order to achieve optimal heat transfer and avoid tolerance problems within the plate stack, the embossing depth and the shape of the embossing pattern need to be in tight tolerances over the complete surface of any heat exchanger plate. To achieve these tight tolerances, production-related requirements for uniform press force distribution are particularly high in the field of heat exchanger production.

**The solution.** Especially for embossing large heat exchanger plates, Schuler developed a tailor-made hydraulic press concept with short-stroke multi-cylinder technology. This ensures a precise and uniform embossing depth with absolute height tolerance of  $\leq 0.1$  mm and a repeatable optimal plate quality for any plate at any time. The system uses many small pistons in a multi-cylinder plate (compared to one or two large cylinders), which offers numerous advantages. The most important: Uniform force distribution which ensures optimal forming of heat exchanger plates with tight tolerances.

The individual pistons are grouped in different hydraulic circuits. Depending on the programmed plate dimension and the required press force, individual cylinder circuits are automatically selected and individually pressurized. This ensures a controlled uniform distribution of press force during the forming process. Additionally a manual override function allows die-specific corrections.



Schuler multi-cylinder plate underneath of table plate.

The multi-cylinder technology concept ensures that uniformly distributed press force reaches every single square inch of the selected plate dimension. A uniform embossing depth and shape of the flow ducts is achieved at an optimal and constant quality.

#### **Solid investment:**

- Top plate quality
- Reproducible accuracy
- No shimming or cambering of dies
- Reliable production from day one
- Proven technology
- High output rate especially at high press forces
- Safe investment for long partnership with Schuler

# COMPLETE LINES FOR AUTOMATIC PRODUCTION OF HEAT EXCHANGER PLATES. BENEFIT FROM 30 YEARS OF EXPERIENCE.

As a system supplier of efficient production lines, Schuler offers the complete product spectrum for automatic production of heat exchanger plates. Schuler supplies solutions for highly complex requirements, covering all areas from development to commissioning of automated lines.

We offer a wide range of optional add-on components to realize your complete system. We take care of the entire engineering process and offer comprehensive project management.

Benefit from our experience with automated embossing lines. Professional project management by experienced project managers for all line components guarantees efficient communication and 100 percent reliability.



Fully automated production line for heat exchanger plates.

## SCHULER SERVICE – STATE-OF-THE-ART SERVICE FOR MORE PERFORMANCE

Schuler Service offers a tailored portfolio of services covering the entire life cycle of your equipment. Over 800 service employees worldwide provide expert support 24/7 in close cooperation with you – our partners. Our main priority is always to ensure the maximum productivity and safety of your production equipment in order to secure your company's continued success.



[www.schulergroup.com/  
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**ABOUT THE SCHULER GROUP – [WWW.SCHULERGROUP.COM](http://WWW.SCHULERGROUP.COM)**

Schuler offers customized cutting-edge technology in all areas of forming – from the networked press to press shop planning. In addition to presses, our products include automation, dies, process know-how and service for the entire metalworking industry. Schuler’s Digital Suite brings together solutions for networking forming technology and is continuously being developed to further improve line productivity and availability. Our customers include automotive manufacturers and suppliers, as well as companies in the forging, household appliance and electrical industries. Presses from the Schuler Group mint coins for more than 180 countries. Founded in 1839 at our headquarters in Göppingen, Germany, Schuler has approx. 5,000 employees at production sites in Europe, China and the Americas, as well as service companies in more than 40 countries. The company is part of the international technology group ANDRITZ.

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