FORMING THE FUTURE

HOT STAMPING WITH PCH FLEX – FAST, FLEXIBLE, COST-EFFECTIVE

SCHULER
Member of the ANDRITZ GROUP
HOT STAMPING WITH
PCH FLEX – FAST, FLEXIBLE, COST-EFFECTIVE

4 SYSTEM FOR SUCCESS.
Your partner for the entire process chain.

5 HOT STAMPING MANUFACTURING SYSTEMS.
Reliable production of high-strength components.

6 EXPERIENCE INNOVATION LIVE.
The Schuler Hot Stamping TechCenter Göppingen.

8 FLEXIBLE, ROBUST AND EXTREMELY EFFICIENT.
Schuler hot stamping machines with PCH flex.

10 SERIAL SUCCESS.
High-performance dies for your press.

12 BOTH ECONOMICAL AND ECOLOGICAL.
Innovative energy-saving solutions for hot stamping.

14 THE ALTERNATIVE FOR THE FUTURE MARKET
OF LIGHTWEIGHT CONSTRUCTION.
Hardline Pro.

15 RAISE YOUR EFFICIENCY TO NEW LEVELS.
Automation solutions for hot stamping.

16 SETTING NEW STANDARDS IN BLANKING.
The new laser blanking line with DynamicFlow technology.

18 SCHULER SERVICE.
Optimum service for quality performance.
As the global market leader in hot stamping, Schuler has unique expertise along the entire process chain – from the blank to the finished component. With our experience and knowledge in process technology, press construction, dies, automation and lasers, we can assist you in all areas.

The successful launch of volume production begins by optimizing component geometry for the respective process. In a joint simultaneous engineering process, we help you develop processcompliant hot stamping components. We also supply the dies for these parts – tailored exactly to your needs.

Our roots are in plant construction. We can build presses and feeders for you which are ideally designed for your specific process. From the coil to the stacked finished part: we take care of the entire upstream and downstream process – up to and including the complete hot stamping line.

We will provide your employees with everything they need to know about the hot stamping process – including important process know-how in the form of courses or on-the-job training. Naturally, we will also assist you during the start-up phase and the beginning of volume production – e.g. with process optimizing.

Benefit from our experience: turn our know-how into your expertise!

As the global market leader in hot stamping, Schuler has unique expertise along the entire process chain – from the blank to the finished component. With our experience and knowledge in process technology, press construction, dies, automation and lasers, we can assist you in all areas.

The successful launch of volume production begins by optimizing component geometry for the respective process. In a joint simultaneous engineering process, we help you develop processcompliant hot stamping components. We also supply the dies for these parts – tailored exactly to your needs.

Our roots are in plant construction. We can build presses and feeders for you which are ideally designed for your specific process. From the coil to the stacked finished part: we take care of the entire upstream and downstream process – up to and including the complete hot stamping line.

We will provide your employees with everything they need to know about the hot stamping process – including important process know-how in the form of courses or on-the-job training. Naturally, we will also assist you during the start-up phase and the beginning of volume production – e.g. with process optimizing.

Benefit from our experience: turn our know-how into your expertise!

As the global market leader in hot stamping, Schuler has unique expertise along the entire process chain – from the blank to the finished component. With our experience and knowledge in process technology, press construction, dies, automation and lasers, we can assist you in all areas.

The successful launch of volume production begins by optimizing component geometry for the respective process. In a joint simultaneous engineering process, we help you develop processcompliant hot stamping components. We also supply the dies for these parts – tailored exactly to your needs.

Our roots are in plant construction. We can build presses and feeders for you which are ideally designed for your specific process. From the coil to the stacked finished part: we take care of the entire upstream and downstream process – up to and including the complete hot stamping line.

We will provide your employees with everything they need to know about the hot stamping process – including important process know-how in the form of courses or on-the-job training. Naturally, we will also assist you during the start-up phase and the beginning of volume production – e.g. with process optimizing.

Benefit from our experience: turn our know-how into your expertise!

As the global market leader in hot stamping, Schuler has unique expertise along the entire process chain – from the blank to the finished component. With our experience and knowledge in process technology, press construction, dies, automation and lasers, we can assist you in all areas.

The successful launch of volume production begins by optimizing component geometry for the respective process. In a joint simultaneous engineering process, we help you develop processcompliant hot stamping components. We also supply the dies for these parts – tailored exactly to your needs.

Our roots are in plant construction. We can build presses and feeders for you which are ideally designed for your specific process. From the coil to the stacked finished part: we take care of the entire upstream and downstream process – up to and including the complete hot stamping line.

We will provide your employees with everything they need to know about the hot stamping process – including important process know-how in the form of courses or on-the-job training. Naturally, we will also assist you during the start-up phase and the beginning of volume production – e.g. with process optimizing.

Benefit from our experience: turn our know-how into your expertise!
HOT STAMPING MANUFACTURING SYSTEMS.
RELIABLE PRODUCTION OF HIGH-STRENGTH COMPONENTS.

The future of hot stamping. Lighter, more functional and more economic: with PCH (Pressure Controlled Hardening) technology, Schuler has developed a revolutionary solution for hot stamping. The process permits economical high volume production of press hardened components and opens up new possibilities.

The benefits of the process. Forming and cooling during the process is precisely managed in pressure-controlled hardening. The result is significantly shorter cycle times and increased output rates as cooling times are much shorter.

This is achieved with noticeably better quality. Conventional processes experience hot spots, whereas PCH technology hardens the component more evenly and enables it to achieve the required strength values. As a result, PCH delivers proven reliability: offering your customers consistent and demonstrable quality across the board.

Particularly flexible. Even complex component geometries, as well as patchwork and tailor rolled blanks (TRB), can be easily produced using PCH technology.
EXPERIENCE INNOVATION LIVE.
THE SCHULER HOT STAMPING TECHCENTER GÖPPINGEN.

The Hot Stamping TechCenter Göppingen gives you the opportunity to experience cutting-edge technology and the latest developments at first hand – also for your own projects.

TechCenter with automated hot stamping line. Great ideas are best supported by collaboration and a proactive environment. We have therefore pooled Schuler’s entire process and machine expertise in hot stamping at our Hot Stamping TechCenter. The applications we optimize here for volume production in the automotive industry help shorten cycle times and reduce part costs.

Optimizing output with four-out production.

Visit us in Göppingen! We look forward to showing you Schuler’s latest machine technology and innovative process solutions. The focus is not only on forming technology, but also on upstream and downstream processes – providing you with expert support along the entire value chain. Take advantage of our experience in raising efficiency and optimizing output to give yourself a key competitive edge.

Technological support across all processes. At the Hot Stamping TechCenter Göppingen we can give you expert and first-hand advice on all processes. It is here that our dedicated specialists from all areas of the company strive to continuously improve the process for applications in the automotive industry.
For you, this means: constant optimization of your processes, effective reduction in cycle times and thus lower costs per component. Furthermore, our specialists ensure that flexibility and component quality are continuously increased – thus providing forward-thinking system solutions for you. And if you want to test and validate your own developments on a high-volume production line, then as a Schuler customer you can try out your innovations at our TechCenter.

Tryout and prototyping. Process optimization already begins at the part development stage. The proximity of our die construction division enables us to conduct near-series tryout runs of your production dies at the Hot Stamping TechCenter. This significantly reduces die set-up times at your own facility. It also enables us to guarantee safe and stable processes for you. Should you require initial prototypes or pilot-series parts, we can produce them for you at our TechCenter.

The best teacher: Schuler. Training is the basis for reliable, high-output manufacturing: we can also provide training for your employees at our Hot Stamping TechCenter. In a dialogue with our experienced process experts, your staff will receive hands-on training directly at the machine. Tips and tricks on how to optimize processes round off the training program. They form the basis for reliable processes and high productivity on your own production line.

Back-up strategy for special situations. Whenever your own capacities are insufficient to deal with peak loads, you can quickly transfer part of your production to our Hot Stamping TechCenter.

The advantages:
- Extensive process and machine expertise
- Continuous development of plant and process technology
- Die tryout and production of prototype parts
- Training on the hot stamping line
- Back-up possibility for Schuler customers

YOUR DIRECT CONTACT TO THE HOT STAMPING TECHCENTER GÖPPINGEN

Tel: +49 7254 988-220 | Fax: +49 7254 988-339 | E-mail: hstc-goeppingen@schulergroup.com
FLEXIBLE, ROBUST AND EXTREMELY EFFICIENT.
SCHULER HOT STAMPING MACHINES
WITH PCH FLEX.

Schuler’s hot stamping machines and press line concepts for all applications guarantee superior quality, reliability and cutting-edge PCH flex technology for your business success.

Heart of the hot stamping process. Together with the die, the hot stamping machine is at the heart of any line – and thus essential for its smooth operation and high part quality. Our engineers have optimized the press/die system – taking into account the reciprocal effects – and created some innovative solutions. This has resulted in a press series with various options, packaged as press line concepts, which can be flexibly adapted to differing customer needs.

Features of a reliable hot stamping machine. The welded press frame is annealed to reduce stresses and designed for sustained rigidity. This guarantees minimal deformation and an extremely long press service life. The hydraulic drive can be specified for various performance levels and offers attractive energy-saving solutions from Schuler’s EHF program [Efficient Hydraulic Forming]. The choice of components is based on decades of experience. Over this time, the best solutions for the corresponding applications have successfully established themselves.
Schuler is a byword for quality. From separately filtered hydraulic functions for the dies, to slide tilt monitoring with deactivation, or extremely powerful hydraulic drives: quality down to the smallest detail goes without saying for Schuler. The entire hot stamping process presents numerous challenges for newcomers in particular, but also for established operators. It is important that all basic press functions work quickly with minimum disruption and maximum accuracy even under the toughest conditions: from the fast and robust moving bolsters for die changes, to covered gib rails, to the monitoring of die cooling.

The ingenious next step for enhanced productivity: PCH flex. Schuler’s fundamental objective is always to raise the productivity of its machines and thus sharpen your competitive edge. The common method of raising machine productivity is multiple part production – i.e. two, three, four or more parts are produced in one die. The problem is: in conventional hot stamping processes this leads to longer cycle times, varying component tolerances and increased or varying die wear.

In order to master this challenge, we analyzed all requirements of a fast yet flexible hot stamping process. The result is as ingenious as it is simple: an hydraulic cushion and suitable die. This improved PCH flex technology finally allows top-quality multiple part production – while maintaining the same high output level (up to 60 parts/min!) and reproducible part quality.

THE ADVANTAGES

- Top-quality multiple part production thanks to PCH flex – with high output levels and reproducible part quality
- Optimum force distribution within the die, on the component, and within the multiple dies
- No slide tilting
- Press bed, slide and die deflections compensated
- Shorter die set-up times, no subsequent spotting or shimming of multiple dies required
- Manual or automatic coupling of die functions cooling

- No additional maintenance needs and no complicated operation – thanks to the ingeniously simple functionality of the new PCH flex cushion
- With only minor modification, dies can be easily used on older conventional presses
- Conventional and existing dies can even be used on the new press with PCH flex
- Changing dies is also fast and reliable with PCH flex – via moving bolsters either right-left or optionally also in T- and L-track
SERIAL SUCCESS.
HIGH-PERFORMANCE DIES FOR YOUR PRESS.

Innovative dies from Schuler ensure rapid cooling of components and thus high productivity.

Whether as part of a turnkey system or for an existing line, Schuler supplies the perfect production die for your application.

Together with an effective cooling system, the optimum contact between active die parts and the sheet metal is a decisive factor for the part quality and output of the hot stamping process. Carefully planned engineering, precise manufacturing and experienced tryout personnel are therefore vital: all key arguments for sourcing dies from Schuler.

Top-quality multiple part production. The conventional hot stamping process is stretched to its limits when it comes to multiple part production. Changing sheet metal tolerances and varying die wear result in increased cooling times and reduced output levels.

Multiple part production is no problem, however, with Schuler’s PCH technology. As the dies and die functions are separated from each other, there is consistently high contact pressure on all parts. The result: extremely short cooling and cycle times, excellent part quality and high system availability.
Unrestricted compatibility. Our newly developed PCH dies can also be used without any difficulty on conventional lines – with correspondingly prolonged cooling times. This back-up possibility makes it easier for you to change to our pioneering PCH technology.

The advantages:
- High availability
- Excellent part quality
- Short cooling and cycle times

Just ask us! Schuler can also quickly and efficiently supply prototype parts in production quality. With our automated tryout cell, we are able to produce each component with identical process parameters. If required, our measurement technology can also record important machine and part parameters.
Significant savings in all operating phases of hydraulic hot stamping machines with Schuler EHF (Efficient Hydraulic Forming).

**THE ENERGY-SAVING REVOLUTION FOR ALL HYDRAULIC PRESSES.**

EHF is a newly developed technology which offers energy savings and optimization in all operating phases tailored to your individual needs. The effect is comprehensive: it happens automatically without intervention by the operator, it occurs in all processes, it works in any operating mode – and in all performance categories!

EHF is a modular system and can also be retrofitted to existing lines. This is how you can efficiently decrease your energy bill – and achieve up to 60% energy savings every year.

**CONVENTIONAL DRIVE TECHNOLOGY FOR HOT STAMPING MACHINES.**

In the past, hydraulic accumulator drives were used in order to achieve the required high closing speeds. This made it possible to achieve the necessary working speed – but with the cost of high energy consumption. This technology was then replaced by direct drives with hydraulic pumps and dynamic force control, with the disadvantage of a high connected load.

**THE MAJOR DRIVE FOR LESS ENERGY CONSUMPTION.** The newly developed and patented Schuler HED (High Efficiency Drive) now combines the advantages of both systems.
By using a kinetic energy accumulator, the dynamic Schuler HED not only perfectly meets all the requirements of the hot stamping process but at the same time is also extremely energy efficient. The kinetic working accumulator is charged during the cooling and idle time: in this way, the connected load of the press is reduced by almost one half – while also delivering increased performance.

**EHF Standby.** EHF Standby is an alternative to the HED: as soon as no energy is required in the forming process, the main drives switch off automatically. A patented startup system we developed is used for this purpose, making it possible to use even the shortest pauses without losing time.

**Auxiliary drives with speed control.** The intelligent, speed-controlled drive now supplies the auxiliary functions with energy precisely when they need it – thus minimizing no-load losses.

**Modular hydraulics for optimized efficiency.** Efficiency is optimized by structural units with optimized flow in a modular construction method.

**Energy recuperation.** With the aid of this technology, the potential energy of the slide in high-speed lowering and the energy stored in the compressed oil is reused during depressurization.

**The advantages:**
- 20 – 60% energy savings
- Short payback time, low maintenance costs
- Optimum maintenance capability
- Energy saving and optimization in all operating phases
- Automatic, no operator intervention
- Can be retrofitted and applied on a modular basis
Schuler is the only manufacturer in the world to offer technologies and automated press systems for all manufacturing processes in lightweight body production. As the global market leader in forming technology, we therefore continue to offer a hot stamping solution in our portfolio that is not based on PCH technology. The Hardline Pro series is a universal solution for the automotive market.

It contains all the proven features of a Schuler system:

- High level of availability
- Energy efficiency by the HED
- Flexibility with additional die functions
- High quality and durability

In all cases, you will increase your market competitiveness by investing in a hot stamping system from Schuler.

Technical features:

- Hydraulic press: 1,200 t
- 2 moving bolsters (3.00 m × 2.25 m)
- Automation: robot or feeder
- 25 m roller hearth oven
- Cycle time: 15–30 s
RAISE YOUR EFFICIENCY TO NEW LEVELS.
AUTOMATION SOLUTIONS FOR HOT STAMPING.

Customized solutions. Schuler develops press shop-proven components for hot stamping lines:
- Destacking systems
- Marking stations
- Centering systems
- Robot or feeder-based press loading
- Finished part stacking
- Automation systems for laser
- Schuler Linecontrol (expandable, e.g. with orientation control, temperature monitoring before and after the press)

The advantages:
- Many years of experience in hot stamping
- Standardized components
- One-stop shopping

Flexibility meets speed. The 3-axis twin-feeder developed by Schuler reduces time-on-air to a minimum. At the same time, it allows various modes such as transfer or feeder operation – giving you maximum flexibility.

Marking without output loss. Schuler’s new marking station was specially designed for processing high-strength materials. It combines short cycle times with extremely low noise emissions.
SETTING NEW STANDARDS IN BLANKING.
THE NEW LASER BLANKING LINE WITH DYNAMICFLOW TECHNOLOGY.

Flexible laser blanking technology combined with continuous coil feeding: Schuler’s DynamicFlow Technology redefines the speed of laser blanking.

Blanking lines with laser cell for maximum flexibility and short set-up times. For the first time ever, Schuler has succeeded in combining continuous coil feeding with cutting-edge laser technology. For you, that means maximum flexibility in blank nesting on the coil as well as in designing and optimizing blanks. And with comparatively high output rates. The result: low part costs.

Not only is it possible to produce varying blank designs simultaneously but also to modify the blank contours while production is running. This makes it ideal for the production of blanks for the subsequent hot stamping process. By altering the blank’s geometry – which can be done quickly via an offline CAD/CAM programming station – the contours of hot stamped parts can be gradually optimized with little effort, even during volume production. In many cases this leads to a reduction – or even avoidance – of cost-intensive 3D laser trimming.
Laser blanking lines are generally well suited to production processes with frequent product changes, as no dies are used in laser cutting. Die change and die set-up times no longer need to be considered during manufacturing. Likewise, there are no investment costs for dies, die maintenance and die storage. The result: low costs with maximum flexibility.

Exemplary efficiency. The new laser blanking lines with DynamicFlow Technology boast an extremely high degree of energy efficiency and – thanks to their compact design – can also be used in restricted spaces and low-height production halls. No foundation work is therefore needed. The lines can process various materials and ensure top product quality even for surface-sensitive outer panels.

THE ADVANTAGES

Flexibility:
- No restriction of blank design and optimization
- Simultaneous production of varying blanks
- Processing of different materials, such as aluminum and high-strength steels
- Fast product change

Quality:
- High repeat accuracy
- Top-quality edges
- Processing of surface-sensitive materials

Material use:
- Reduced scrap due to optimized blank nesting
- No more separating strips between blanks
- Use of economic coil widths

Economic efficiency:
- High output rates
- No investment costs for dies
- No die storage and die maintenance
- Energy-efficient production process
- Space-spacing design without costly foundation work
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 900 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.

With over 175 years of experience and expertise, we can guarantee the best possible support for the operation of your machines – and not only those supplied by Schuler, but by all other manufacturers. Whatever the situation, Schuler Service has the right solution for your specific needs.

OUR SERVICES FOR YOU.

Technical Customer Support:
- Machine inspections
- Safety inspections
- Preventive maintenance
- Repair
- Repair welding
- Production support

Components and Accessories:
- Spare parts and spare part packages
- Maintenance kits
- Repair parts
- Replacement parts

Project Business:
- Modernization
- Retrofits
- Refurbishment
- Machine relocations

Special Services:
- Service contracts
- Hotline and remote service
- Training
- Tailored customer training
- Optimizing plant & processes
- Consulting

Used Machinery:
- Purchase and sale
- Evaluation

SCHULER SERVICE ONLINE

Want to know more about our full range of services? Simply scan the QR code with the camera of your smartphone or tablet.
www.schulergroup.com/service_en