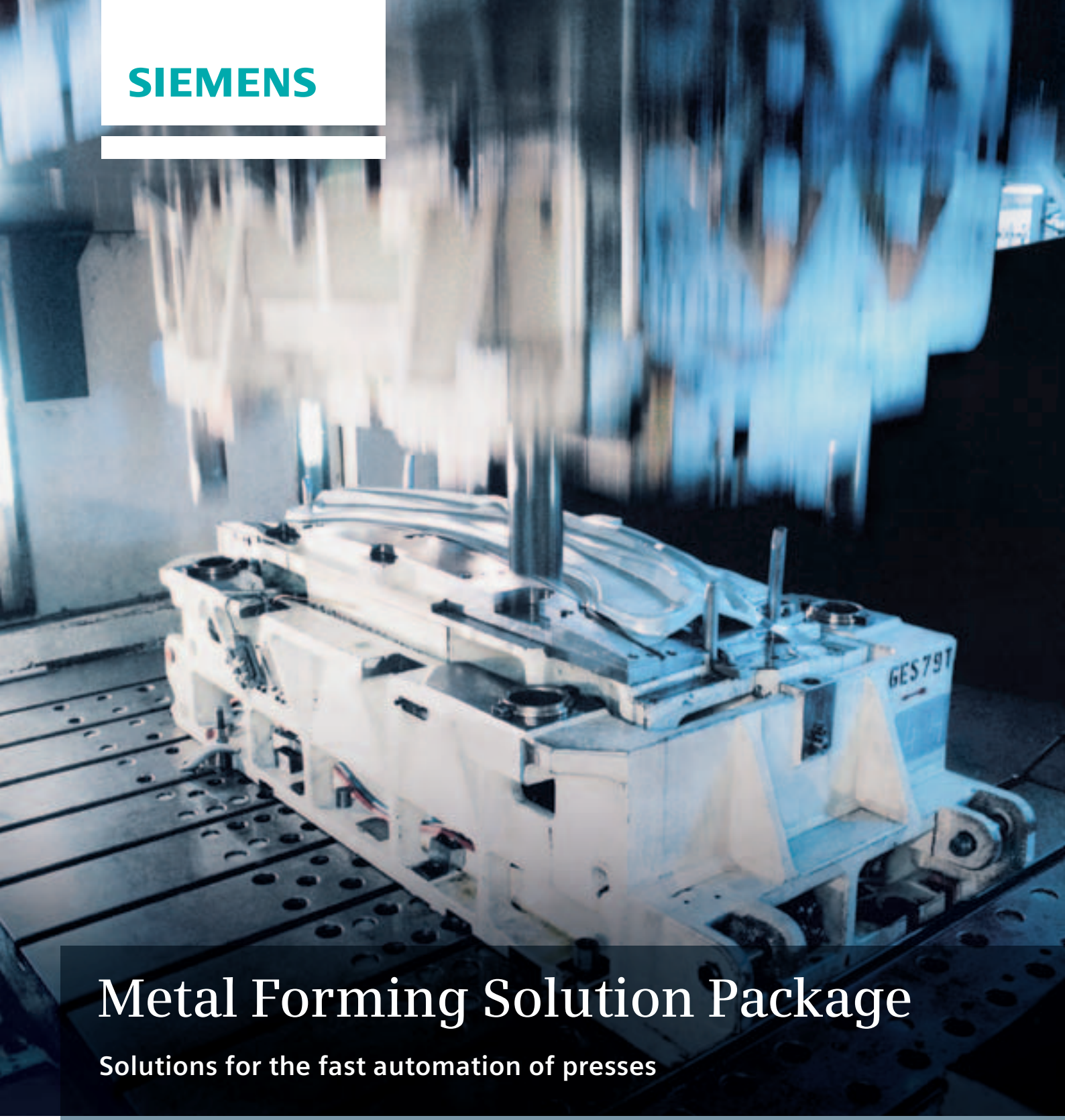
SIEMENS



Metal Forming Solution Package

Solutions for the fast automation of presses

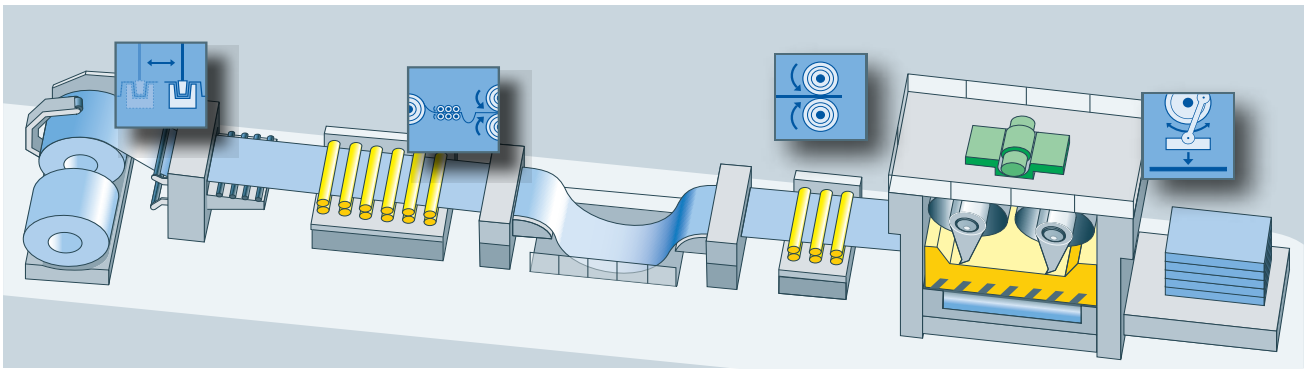
siemens.com/metalforming

Answers for industry.

Metal Forming Solution Package

When implementing mechanical and hydraulic presses and handling equipment, for instance in the automotive industry, a predominantly modular design ensures the highest degree of flexibility and shortest engineering and installation times for customized systems. The Metal Forming Solution Package provides all of the functions required to automate press systems, therefore supporting press manufacturers when quickly implementing their specific press concepts.

Standard components, such as SINAMICS drives and the SIMOTION motion control system, are employed to ensure the demanded flexibility. From a comprehensive range of preconfigured software modules, the user selects the optimum ones, configures them individually with just a few operations and integrates them into the machine-specific software. The well-proven SIMOTION diagnostic tools minimize the time



SIMOTION
SimoBlank
Blanking line

Design efficient systems, cut for cut – from the coiler through the leveler and feed up to the cutting press – in the shortest time. The compact design of the blanking line means that the individual machine units are closely coupled with one another, therefore resulting in a new approach when it comes to the automation structure. The SIMOTION SimoBlank technology application includes the uncoiler, leveler, loop storage pit and roll feed as core functions.

Advantages of SimoBlank

- Shorter engineering and commissioning times by combining various core functions in one software application
- Simple adaptation to the particular press system using a customized combination of basic and supplementary functions
- Maximum availability using a standard signaling and diagnostics concept

SIMOTION
SimoRoll
Roll feed control

With the roll feed, expensive mechanical components are being increasingly replaced by a flexible transport automation system. This not only increases the flexibility, but also the productivity of the press system. The SIMOTION-based SimoRoll solution sets itself apart by using vibration-free components, which in turn can avoid production downtimes.

Advantages of SimoRoll

- Production downtimes are avoided using precise and fast motion control
- Leading axis coupling/cam
- Feed length is corrected online
- Flexible feed programs
- High degree of transparency using comprehensive diagnostic tools
- Freely definable feed angle
- Slip monitoring

SIMOTION
SimoPressServo
Servo press control

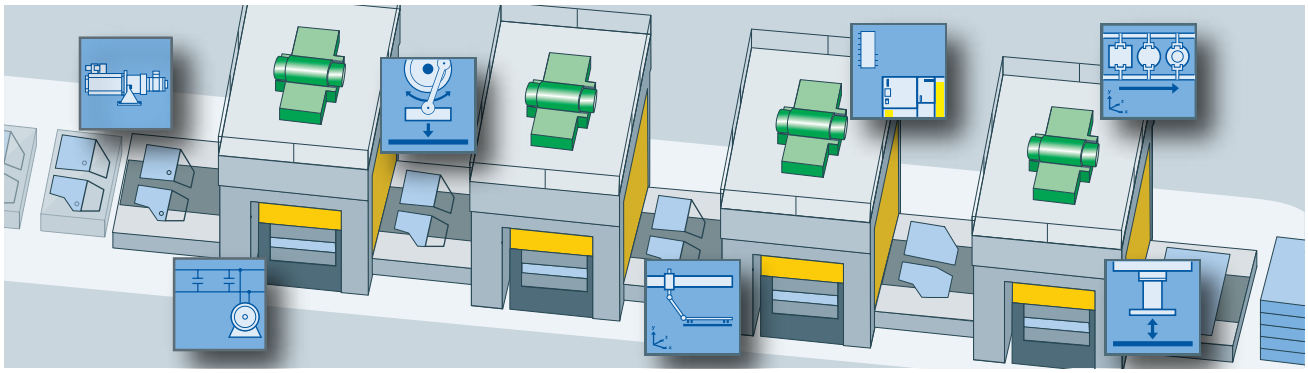
SimoPressServo, the new tool to automate excentric servo presses, reduces unit costs in production and increases productivity. The SINAMICS drive platform and direct drives ensure a higher efficiency. Converters capable of energy recovery and an intelligent energy management reduce energy usage.

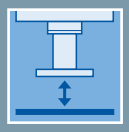
Advantages of SimoPressServo

- A higher stroke rate with the same or reduced drawing speed by automatically calculating the energy-optimized motion for the press ram
- The ram kinematics are simply generated by entering the operating range, drawing speed, stroke rate and downtime at the lower dead center
- Handwheel operation for tryout mode
- Pendulum stroke

from the initial concept up to the completed automation solution. Only when all of the modules have been proven to be stable and reliable, including their integration into the operating system, are they integrated into the machine software in a modular fashion. The Metal Forming Solution Package is independent of the hardware platforms, therefore addressing the requirements of press manufacturers.

SIMOTION can be used on PLCs, on IPCs and even on intelligent drive modules. Any modules used to monitor and control presses and press peripherals can be combined at the standard SIMOTION automation platform and the Metal Forming Solution Package to quickly create complex, customized automation solutions. However, the machine software remains open so that it can be expanded in a modular fashion.



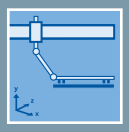


SIMOTION SimoHyd
Automation of hydraulic presses

Hydraulic presses are used in various applications to produce complex parts and components. Challenges include protecting the die, documenting the parameters as well as achieving the ideal pressure when pressing. The modular SIMOTION platform is ideally suited for use in complex, hydraulic presses.

Advantages of SimoHyd

- Standardized automation to integrate all control functions into one system
- Synchronous control of hydraulic and electric axes with a high dynamic performance
- Exact press pressure in the individual axes
- High process quality as a result of the flying changeover from closed-loop position control to pressure control (and vice versa)
- Control parameters in the process can be changed

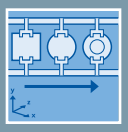


SIMOTION SimoFeed
Feeder automation

Feeders are responsible for transporting parts as well as loading and unloading the press line. Loading and unloading times must be kept short in order to increase press throughput. This is realized by monitoring the loading and unloading process. SimoFeed not only increases the cost efficiency, but also the flexibility of press lines.

Advantages of SimoFeed

- Scalable standard components are used
- Cost optimization through optimum adaptation to the power and number of axes
- Data management to achieve a cost effective production process
- Changing pickup and set down positions
- User interface to connect customized transformations
- Leading value coupling



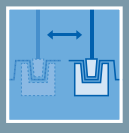
SIMOTION SimoTrans
Automation of transfer systems

Electronic transfer systems are used to transport large workpieces. Using a gripper with two or three directions of motion, the parts are transported from one station to the next. SimoTrans fulfills all of the requirements placed on machine and workpiece friendly motion control for electronic transfer.

Advantages of SimoTrans

- Motion control with high dynamic performance to reduce the stress and load on components
- Shorter die change times
- Motion is simply parameterized
- The motion control system is coupled to the press leading value
- Traversing data is subject to a plausibility check

Additional modules for user-friendly press automation



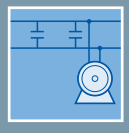
PLS
Press Line Simulation

Simulation software

Press Line Simulation (PLS) is simulation software that is used to simulate a complete press line. The simulation supports the design process. It allows users to make continuous monitoring calculations, so that the die only goes into production once all of the internal faults have been resolved. The total setup time when compared to the situation without simulation can be slashed by more than 50 %.

Servo pump

The servo pump with a high dynamic performance is the ideal solution to optimize hydraulic systems. A suitable combination, comprising as a minimum a hydraulic pump and a SIMOTICS synchronous motor, guarantees that energy costs can be slashed by up to 70 %. The payback time is extremely short.



Energy management

The energy management system is an innovative feature, which, for machines with cyclic load-profile, allows energy to be maintained in the system. This in turn means that the infeed power to the complete system can be optimized and/or minimized.
In practice, in an ideal situation, for a system with energy management, the power fed into the machine only has to supply the process power and the losses. Energy differences as a result of different speeds, resulting from the machine motion profile, are stored in the system and not transferred to the line side.
Siemens offers this technology with capacitive (capacitor bank) or kinetic (flywheel) energy storage device
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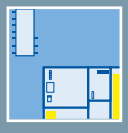

SIMATIC S7-F

Function blocks for press safety

Significant cost reductions are possible when engineering the hardware and generating the software by using SIMATIC Safety Integrated. Safety is absolutely mandatory, especially in press applications. Safety S7 provides users with specifically developed safety modules for all press types. The safety program can be individually programmed, based on these safety modules.

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