

FLEXIBILITY AND PRECISION

ANDRITZ Kaiser FlexLine

Punching and Deepdrawing Presses; Servopresses from 630 to 8.000kN

ANDRITZ

Punching and forming

The name ANDRITZ Kaiser stands for highest-quality punching and forming technology. Decades of experience and the technical execution guarantee extraordinary precision and reliability.

ANDRITZ Kaiser delivers tailor-made solutions for every application - from presses alone to complete production lines with conveyor systems, automation, tool and parts handling. Based on our standard machines, this modular construction method provides universal application possibilities with extensive standardisation of the main assemblies. Our experienced Engineering Team develops, designs and plans the systems according to our customers' individual requirements. The main areas of application are the automotive industry, fittings fabrication, rotorstator production and electronic and household articles. Across all continents, punching and forming machines from ANDRITZ Kaiser produce reliable highquality products made from steel, copper or aluminium strip material.

The company was founded by Otto Kaiser in 1945 in Pforzheim. Subsequently, six decades of continual expansion of the production range and the manufacturing capacities have followed. New market segments and geographical markets were opened up for ANDRITZ Kaiser through the takeover by ANDRITZ AG in 2004. As a company belonging to the ANDRITZ Metals Business Unit, ANDRITZ Kaiser has continued its long success story and has reinforced its position as the technical market leader for punching and forming machines.
Today the name ANDRITZ Kaiser stands for a symbiosis of flexibility and creativity within a medium-sized company along with the advantages of corporate affiliation.



Conventional ANDRITZ automatic stamping press with coil handling line and quality control system for stamped parts.

At a glance

Quality and precision

For over 70 years, ANDRTIZ Kaiser has defined state-of-the-art technology for punching and forming machines. More than 8000 presses, of which approx. 2500 are punch and forming machines, produce according to the highest quality standards worldwide.

Pressing force kN	Table length up to mm	Table depth mm	Number of strokes up to 1/min	Stroke in mm	Plunger adjustment mm	Tool-inst. height*) up to mm	Additional lifting stroke in mm
630	1.500	550	450	10-80	60	400	3.250
800	1.500	650	450	10-80	60	400	3.250
1.000	1.500	650	450	10-80	80	400	3.250
1.250	2.000	800	350	20-120	100	450	3.700
1.600	2.000	800	350	20-120	100	450	3.700
2.000	2.000	1.000	240	20-160	125	500	4.100
2.500	3.000	1.250	150	40-200	150	600	5.800
3.150	3.000	1.250	150	40-200	150	600	5.800
4.000	3.500	1.400	100	100-300	200	700	7.100
5.000	3.500	1.400	100	100-300	200	700	7.100
6.300	4.000	1.600	60	200-400	250	800	8.800
8.000	4.000	1.600	60	200-400	250	800	8.800

Values for standard range. Special versions possible.

*) Tool installation height

QUALITY AT A GLANCE:

- Stable base body, made optionally from a cast, or as a welded steel construction
- Power unit with a 4-bearing eccentric shaft
- 4 different drive variants for optimum adaptation to the process requirements
- Fully-automated stroke adjustment with a patented system.
- Highly precise plunger guidance through backlash-free, pre-tensioned roller re-circulating guidance systems.
- Reliable pressure oil lubrication within a closed circuit.
- Two internal independent press force detection systems for machine and tool safety (machine size 4 or bigger)
- Simple maintenance thanks to compactly arranged, easily accessible components

Economic efficiency

Tracing this crucial question

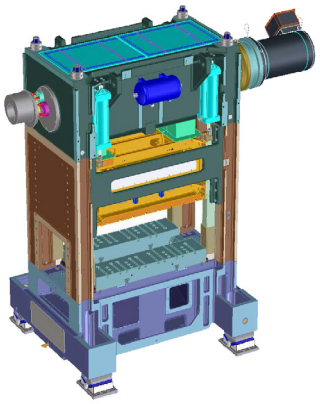
Our punching machines are quality products with long lifespans, which reliably perform their services in your halls over a period of decades. The significant technical characteristics of our presses also lead to an increase in your process efficiency within a short time.

	Our product	Your advantage
Main body	Split version with tension rods, crossbars between the stands. Material choice of cast iron, steel or a combination of both.	The split design improves the vibration behaviour of the machine. The material choice has a positive influence on the net weight and stability of the machine. The rigid design increases the precision and protects the guide system. These factors are expressed through a longer life span, longer tool service lives and better part quality.
Power unit	Eccentric shaft, four-fold bearing, with mass balance (rotating or oscillating). Drive: Direct drive, planetary gear, back gear, drag-crank, servomotor	The power unit is stable and operates vibration-free, which results in a longer lifespan of the components and therefore reduces maintenance costs. The motor-transmission combination is selected according to the process and optimises the speed and energy consumption of the machine: more output, less consumption.
Stroke adjustment	Fully-automated, hydroelectric stroke adjustment.	A stroke change is carried out fully automatically within a few seconds. This results in a significant increase in machine availability. With servo-presses, the stroke adjustment, alternatively the pendulum stroke, permits better adjustment to the forming process. The use of a stroke adjustment leads to a reduction in energy consumption.
Guidance	Backlash-free, pre-tensioned roller linear guidance systems.	These highly precise guidance systems permit perfect force absorption in all directions. They are designed for the lifespan of the press and are therefore maintenance-free.
Plunger movement	Connecting rods positioned far apart from one another. Deceleration at the lower dead centre	The guidance system and the connecting rod alignment are the guarantor for the extraordinary parallelism of the table and plunger, even under eccentric loads. The result: longer tool service lives and consistently high part quality. For servomotors or drag-crank transmissions, the deceleration at the lower dead point effects an improved forming of parts as well as a reduction in noise levels.
Design	Compact construction. Assemblies for lubrication, hydraulics and pneumatics in the installation profiles arranged on the press stands. Oil tanks in the press table. No separate aggregates	Thanks to the integration of the components in and on the press, the space requirements of the system are reduced. A logical construction in functional groups as well as the arrangement in self-contained installation profiles on the stands ensures excellent access and visibility, and therefore plays a role in the reduction of maintenance costs.
Lubrication	Pressure oil lubrication. Closed circuit.	The pressure oil lubrication continually ensures large lubrication quantities at critical lubrication points. Thanks to the closed circuit, few dirt particles enter the lubrication circuit from outside. As a result, the lifespan of the lubrication points and filter is increased.
Operation	Mobile control panel with touchscreen.	The ergonomic control is set up intuitively and is easy to operate. A quick learning phase for the machine operator ensures the operation as a result of minimal operating errors. Flexibility results from numerous options.
Simulation	Simulation tool for stroke number calculation for servopresses is integrated into the press control..	Taking the press and transfer data into account, the optimum operating mode for the tool can be calculated directly in the press control in order to achieve maximum productivity.

Set-up of the FlexLine

A glimpse inside

As a precision forming machine, the FlexLine is constructed according to the highest standards. Tried and tested principles and new developments merge into a symbiosis.

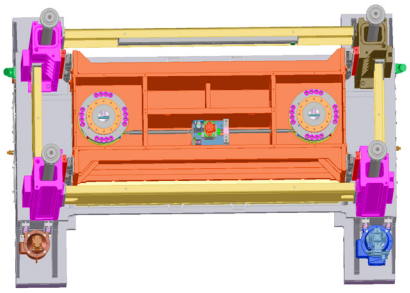


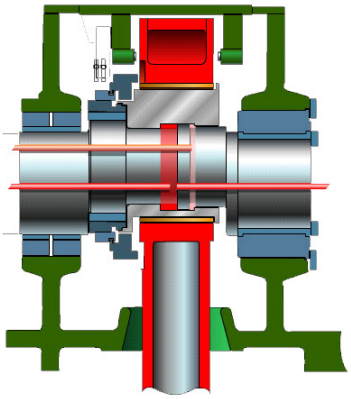
MAIN BODY

The stable main body is designed as a split construction. Split machines have better vibration and deformation behaviour than monoblocks, and are also easier to transport. The individual elements are connected via tension rods. All components are available either as cast iron or steel-welded constructions in the standard version. Cast iron machines are normally heavier, but have better vibration characteristics. The plunger can also optionally be realised as a cast iron or steel-welded construction. All components are optimised by means of FEM calculations. This combination of the maximum stability and optimum weight distinguishes our presses. Table passageways and the layout of the table and plunger plate can be realised according to the customer's specifi cations.

GUIDANCE SYSTEM

We have used linear guidance systems as plunger guidance for 20 years. A guide rail is positioned on each press stand and 2 to 4 carriages, depending on the press size. The carriages are supported on the rails via rollers and can be subjected to tension and compression. The carriages are pre-stressed backlash-free in relation to the rail. The rails are attached to the press stands with a patented system so that no assembly pre-stress occurs. This guarantees maximum guidance precision, as well as perfect parallelism of the table and the plunger at every point of the plunger stroke. The guidance system's lifespan corresponds to the lifespan of the press. The complete guidance system is connected to a central pressure oil lubrication. This system is completely maintenance and adjustment-free.



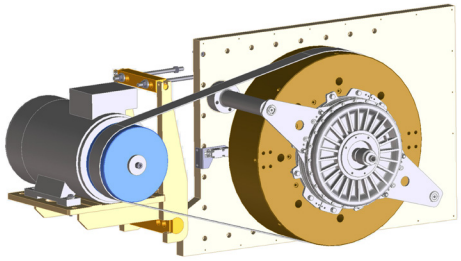


LUBRICATION

The lubrication of bearing points, guides, spindles, etc. is realised through a closed pressure oil lubrication circuit. The lubrication is designed so that up to 10 times the amount of oil is fed per lubrication point compared to a classical lubrication system. The bearings are supplied through internal channels so that the lubrication oil arrives directly at the most sensitive positions. The lubrication oil fl ows back through the press stands to the oil tank which is integrated into the press table. The excess of lubricant effects excellent cooling of all lubrication points and regulates the temperature distribution of the machine. The closed circuit reduces the oil-air exchange. As a result, less dirt particles enter the lubrication circuit, which leads to an extension in the lifespan of the lubrication points and the filter.

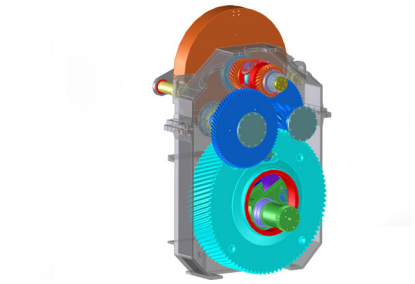
Drive technology

Performance and flexibility



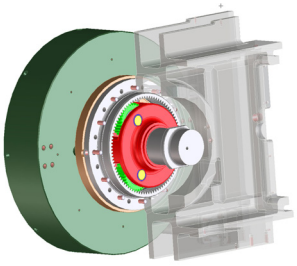
DIRECT DRIVE

The drive is implemented through a frequency-regulated asynchronous motor via high-performance drive belts to the flywheel. The flywheel, coupling and brake form a compact drive unit. This drive variant has proved its worth with high-speed presses in combination with an oscillating mass balance.



DRAW-CRANK DRIVE

The draw-crank drive is a compact drive with a variable reduction ratio. As a result of the asymmetrical alignment of the drive and drive shaft and their connection with a „draw-crank", a deceleration of the plunger speed is achieved at the UT (similar to link-drive transmissions). This is the ideal drive for drawing and embossing operations.



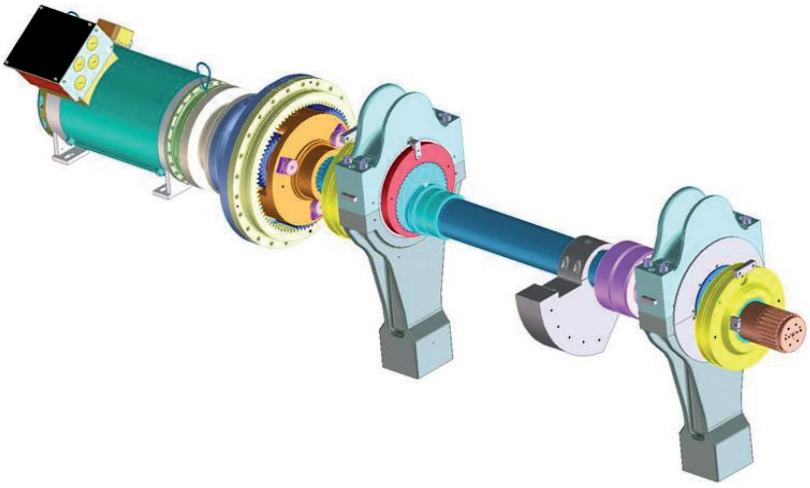
PLANETARY DRIVE

Punching and forming machines with planetary gears are the ideal combination of force and speed. The flywheel, coupling, brake and back gear form a compact drive unit with an axial connection to the eccentric shaft. The ideal drive for standard punching operations.

SERVODRIVE

This drive by ANDRITZ Kaiser is carried out through the use of one or several torque-servomotors. Thanks to the servodrive, exact plunger speeds are possible, attuned to the respective product to be produced. The innovative combination of this servodrive with an automatic stroke adjustment enables a 360° movement of the eccentric shaft to be generated at every stroke height. The output performance increases in two ways as a result:

- by up to 60% in comparison to conventional eccentric presses.
- by up to 25% in comparison to pendulum stroke operation..

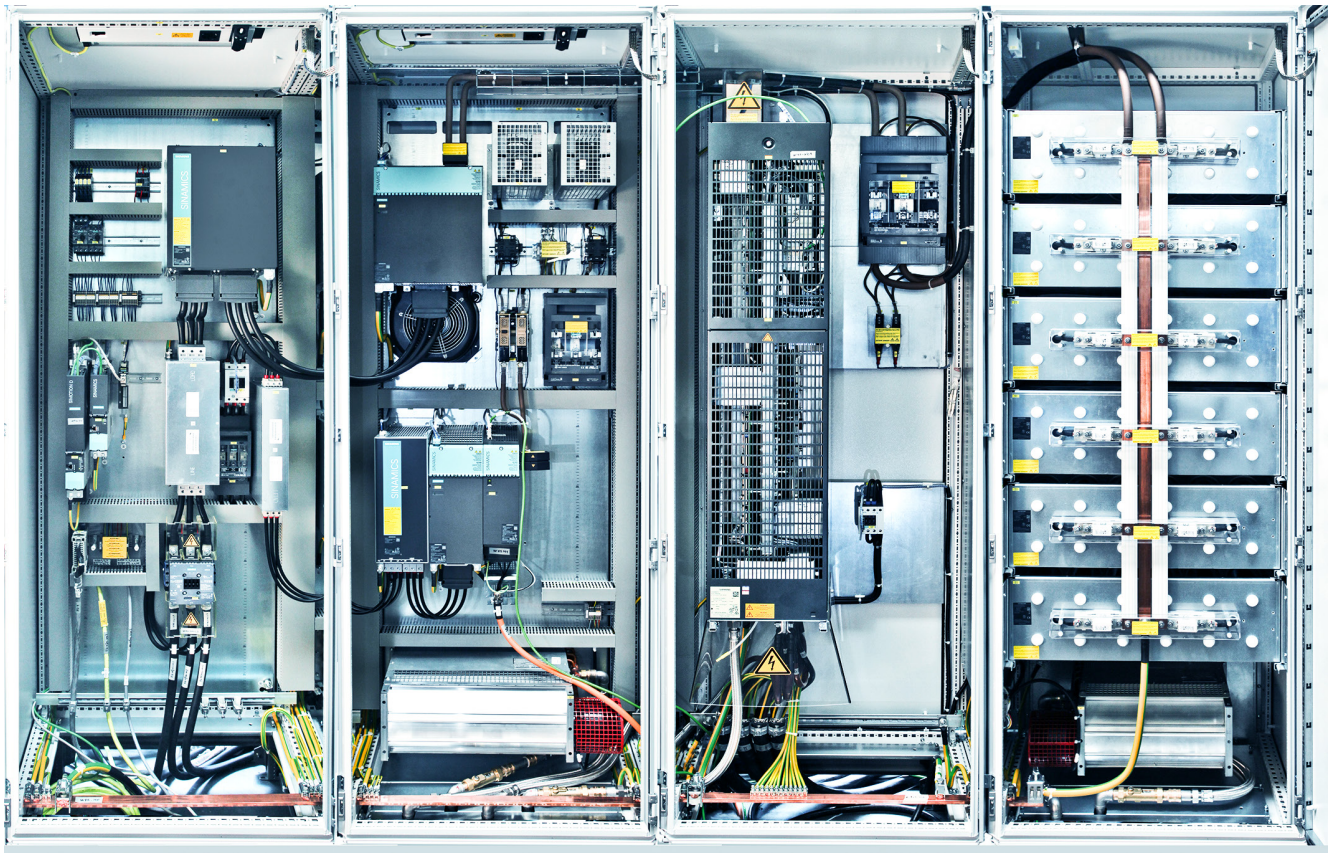


FLEXIBILITY IN PERFECTION.

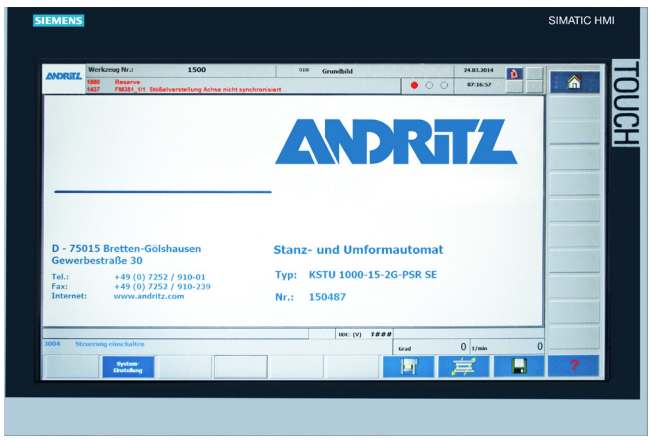
Control and visualisation

Proven technology, state of the art design

The press controller is based on the SIEMENS SIMATICS S7-1500 series. Functions such as tool protection, interfaces for the integration of peripherals, process monitoring and remote diagnostics are already integrated as standard



Drive cabinet on a 3150 kN servopress



PC 477

VISUALISATION

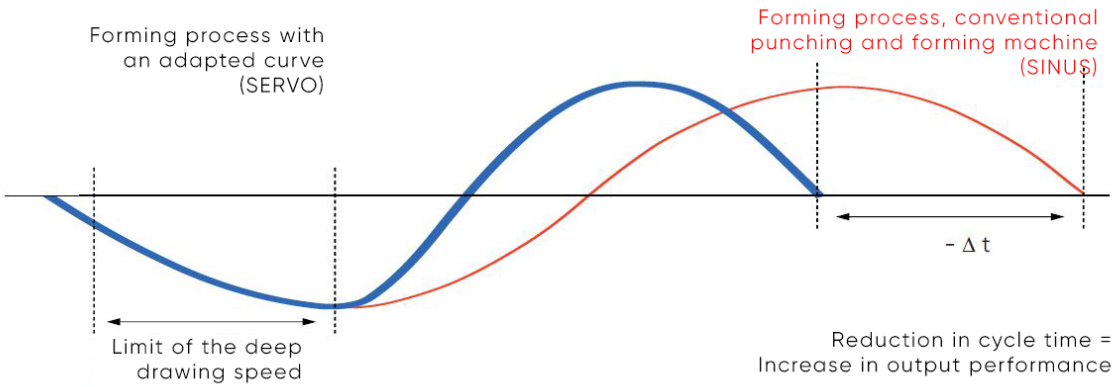
Ergonomic, intuitive user interface for fast and safe machine operation. Input via touch screen. Various control variants based on Windows industrial-PC solution are available for different process requirements.

A mobile two-hand control panel for set-up operation is available as standard. Remote maintenance with TeamViewer is already standard in the basic version.

Servotechnology

The pinnacle of this technology

ANDRITZ Kaiser has made servomotor-driven presses since 2006. The combination of the highly flexible servodrive with our tried and tested, high-quality press technology opens up new possibilities in forming technology. The servomotors supplement the standard available drive options.



WHY A SERVOPRESS ?

With servopresses, the conventional drive is replaced by a servomotor, which can be regulated in terms of speed as well as position. The plunger movement is therefore freely programmable. The motors are designed so that a maximum motor torque becomes available during the forming process. To increase the number of strokes, the plunger can also be moved more slowly within the forming area and faster in the remainder of the cycle. When using complex automation (transfer, tool functions, etc.) the press can be accelerated and braked several times within a cycle as required in order to best adapt the press cycle to the automation cycle - and in turn, the forming speed can be reduced for the same cycle length in order to achieve better part quality. For this reason, servopresses are in many cases quicker and more economically effi cient than conventional mechanical presses.



Servopress control

Automatically on target

The ANDRITZ servopress was developed under the stipulation that every machine operator must be in a position to optimally adjust the press to the tool and the forming conditions.

SIMULATION

The integrated tool for the calculation of the drive technology can be operated intuitively. Mechanical and electrical limit values are stored in the simulation software and ensure a practical design. Additional software components, for example for transfer or feed, can be connected with the press tool in order to achieve a comprehensive simulation. The speed of the calculation programme and the intuitive user interface allow the calculated values to be compared to the actual machine characteristics immediately.

SLIDE MOVEMENT CURVE CALCULATION TOOL INTEGRATED IN PC

With the input of 4 (alternatively 8) basic process parameters, the press control independently calculates the energyoptimised movement sequence of the plunger (graph) as well as the optimum operating mode (rotational or pendulum operation).

A. START of the forming. Position in angular degrees or millimetres prior to UT
B. SPEED START of the forming - stroke/min
C. END of the forming. Position in angular degrees or millimetres after UT
D. SPEED END of the forming - stroke/min

TRYOUT

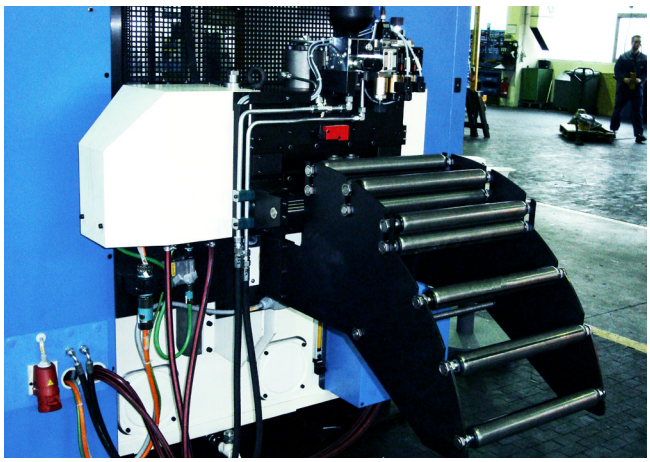
The press can be extremely accurately controlled through a hand-operated device. Due to the fact that with servopresses the work capacity of the drive and the pressing force are also available at extremely slow plunger speeds, the tools can be sensitively run in under real force conditions. The plunger can be stopped in any position and reversed if necessary.



All from a single source

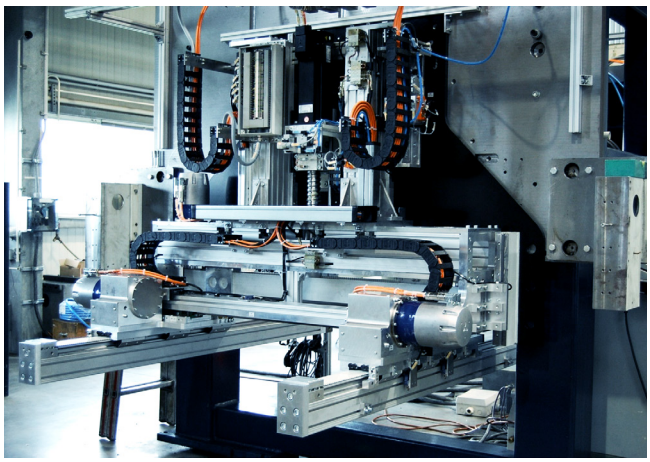
The press and its environment

Few presses work without ancillary systems. Therefore, our Team accompanies you throughout the complete realisation of your production line. Tool technology, material flow, process and operator safety are considered from the beginning of the project and integrated into the whole concept.



ROLLER FEED

We manufacture electronic roller feeds up to 1500 mm belt width. The drive is carried out via a servo or torque motor using toothed belts or gears on hardened and polished upper and lower rollers. The upper roller is hydraulically applied. The intermediate release is carried out via dynamic cams which automatically adapt themselves to the number of strokes of the press.



TRANSFER SYSTEMS

Quick, low-vibration and precise electronic 2D or 3D transfers, in compliance with the most modern technology, with light and stable tool rails made from aluminium profiles. The stroke movement of the axes is optionally carried out via servomotors or highly-dynamic linear motors; other movements are carried out via servomotors. The transfer system can be equipped with a multitude of customer-tailored active and passive grippers.



TOOL CHANGING SYSTEMS

We manufacture systems for semiautomatic and fully-automatic tool changing, including automatic change of transfer rails. Every system is adapted precisely to the customer's specifications and enables an optimum re-equipping time with reduced space requirements. This package is rounded off with a well-founded safety concept and ergonomic operation.

Project management

Success through professional planning

PROFESSIONAL PROJEKTMANAGEMENT

We accompany you from the initial concept phase right through to the complete ready-for-operation handover of the production line, and further into the initial production phase. As a complete system supplier, we are available at all times regarding technical and commercial matters. We have professional project managers who, supported by professional tools, ensure punctual and transparent project management. We wish to make certain that you are completely satisfied with your system in every respect.

ANDRITZ Kaiser – your reliable partner in every situation




MORITZ



ANDRITZ KAISER

ANDRITZ Kaiser stands for highest quality in metal forming technology. Decades of experience and the technical specifications of our automatic stamping and metal forming presses guarantee customers high precision, productivity, and reliability.

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