Over the last 20 years, the drag link system patented by Andritz Kaiser GmbH from Bretten, Germany, has stood the test of time in over 300 stamping and forming presses under harsh operating conditions. The “intelligent gear unit,” as managing director Stefan Kaiser refers to the drag link drive, features a variable transmission ratio and force paths within the operating range that are almost twice as large as those in eccentric presses. Using the servodrive means that the plunger motion also becomes programmable by the user. The press is therefore highly flexible and can be adapted easily to different tasks or materials. For many parts, optimized motion control increases output by up to 80 percent compared to eccentric presses.

Lower consumption thanks to energy-efficient drives
As the basic motion of a drag link drive approximates very closely the motion profile of a servo-press, it is usually possible to significantly reduce the number of drive motors required compared to a purely eccentric press, thereby considerably decreasing...
energy consumption. Heavy-duty water-cooled complete torque motors of the Simotics T-1FW3 series were used in all the servo-presses. Mounted centrally above the press, one or several of these torque motors drive the drag link system and therefore the plunger via an internal gear. The drive system is completed by an energy accumulator, optionally in the form of capacitor modules or an additional compact asynchronous motor of the Simotics M-1PH8 series. This temporarily stores the regenerative energy produced during braking and releases it again to cover peaks in demand during acceleration processes.

**Targeted motion control with Simotion**

The drag link servo-presses by Andritz Kaiser are controlled by the Simotion D445 motion control system in the modular mounting technology of the Sinamics S120 drive system. An optimized plunger travel profile is generated automatically using the “curve generator” tool specially developed for use with Simotion in servo-presses. The press manufacturer has flexibly integrated the tool into its operator interface under Simatic WinCC and created a simple operating screen for a Simatic Multi-Panel MP377. The installation of new tools is made easier with a handheld controller. Thanks to servodrive technology, the handheld device can also be used to arrive precisely at the required plunger position and to incorporate it into the program. The Multi-Point function is another new addition, enabling data points to be programmed at any point in the plunger’s travel. The forming motion can be reduced at such data points – for example, to cut threads or to introduce inserts. Wolfgang Wiedenmann, deputy sales manager at Andritz Kaiser, predicts that “hybrid processes such as this will be required more and more in the future.”

The Simotion curve generator automatically calculates an optimized plunger motion and determines the exact feed length or transfer time.

The information is particularly convincing. Our expectations with regard to productivity, product quality, and energy efficiency were greatly exceeded. The user-friendliness is excellent as usual, and machine handling is still easy.”

Wolfgang Wiedenmann, Deputy Sales Manager, Andritz Kaiser GmbH

**Increase in productivity and product quality**

One of the first users of the latest generation of servo-presses by Andritz Kaiser is Hako Automotive, a division of Ferdinand von Hagen Söhne & Koch GmbH & Co. KG. The stamping facility located in Wuppertal produces complex structural and assembly components for leading car manufacturers on a KSTU 8000 drag link servo-press with a press force of 800 t, a 400 mm stroke, and automatic stroke adjustment. The diversity of the stamped and formed parts requires a particularly flexible machine.

Stefan Kaiser sums up, “The experience and results gained with and from Hako Automotive and other users were thoroughly convincing. Our expectations with regard to productivity, product quality, and energy efficiency were greatly exceeded. The user-friendliness is excellent as usual, and machine handling is still easy.”