

New system technology represents a boost in the advance of science

Each additional forming stage enables increased complexity in the manufacture of functional parts. Likewise, servo technology is opening up fresh manufacturing possibilities. To be able to offer a wider range of parts ARNOLD UMFORMTECHNIK has invested in new pressing technology.

Fastener manufacturers too need the advantage of standing out from the crowd on the market. So the decision by ARNOLD UMFORMTECHNIK to acquire two new 7-stage servo presses from Nedschroef Machinery was very firmly a strategic one. On the new machinery, the company can now manufacture more complex functional parts and high-quality products.

“Not only does the new NC714 give us an additional forming stage, it also provides a range of technical benefits. Its cutting quality ensures a better initial state for the forming process. And with the shorter feed length, we can now manufacture shorter parts,” said Andreas Stern, listing some of the benefits. He has worked as a design engineer at ARNOLD UMFORMTECHNIK for six

years, designing parts for the 5, 6, and now the new 7-stage press. He was also involved in the procurement process for the machine.

Image 1: ARNOLD UMFORMTECHNIK can now make complex components and precision parts in stainless steel and copper on the new Nedschroef servo press.
(Image: ARNOLD UMFORMTECHNIK)



Image 2: The 7-stage machine possesses a total pressing force of 1,100 kN and is equipped with an integral inductive preheat system.
(Image: ARNOLD UMFORMTECHNIK)



„Not only does the new NC714 give us an additional forming stage, it also provides a range of technical benefits.“

Andreas Stern, Design Engineer,
ARNOLD UMFORMTECHNIK

Tobias Kraus, who works with Stern, explained further: “Previous machines worked with a flywheel drive. With the full servo drive, we now have a completely new drive technology at our disposal. The machine can run at any speed, without the need to build up power beforehand. Correspondingly, the machine also achieves its full pressing force at any speed.”

The machine's features provide process flexibility

The servo technology makes it possible for the process to run at a speed individually adapted to the part in question. Moreover, the transfer system ensures an easy transition to the next forming stage. The high-speed cutting system operates at 10 m/s. That ensures that the severed wire suffers barely any deformation, and achieves an even

volume distribution for the forming process that follows. With the high volume constancy and the good cutting quality, we can produce short lengths. Another feature of the press is the capacity to reduce the seven stages to six. In this situation, the seventh stage is replaced by a roller unit. Which means that for example, we can manufacture threads, knurls, small recesses or other simple shapes. Ultimately this gives cost



„With the full servo drive we now have completely new drive technology at our disposal. The machine can run at any speed, without the need to build up power beforehand. The machine also correspondingly achieves its full pressing force at any speed.“

Tobias Kraus, Design Engineer,
ARNOLD UMFORMTECHNIK

advantages because we can omit work processes.

The machine, which possesses a total pressing force of 1,100 kN, is equipped with an integral inductive preheat system. This makes it possible to manufacture complex formed parts in stainless steel. The die cooling/heating system is also an advantage when producing stainless steel formed parts. It has a positive effect on tool service life because tools wear much faster when working with stainless steel than they do with steel.

Image 3: The 7-stage press offers countless options for implementing complex component assemblies for specific applications and customer specifications.
(Image: ARNOLD UMFORMTECHNIK)

The aim was to expand the range of manufacturable parts

For ARNOLD UMFORMTECHNIK the new press also represents a stronger position on the market. “Previously, we had to decline certain components; now we can produce stainless steel formed parts, for example. And with the sequential forming options, we are gaining a better understanding of forming in terms of the setup process. Likewise, the simulation facility means that we are better able to check feasibility” explained Tobias Kraus.

With the versatile lubrication options, the press will also be processing special materials. ARNOLD UMFORMTECHNIK is focusing on stainless steel formed parts and copper formed parts – both becoming increasingly significant in the mobility sector. “And with the gentle removal process from the Nedschroef NC714, we can even manufacture impact-point-sensitive parts. Moreover, with the high volume constancy provided by the high-speed cutting, we can manufacture short parts and transport-critical parts,” said Andreas Stern.

Producing complex component assemblies for specific applications

The two new systems have been in use at the fasteners manufacturer – based in Forchtenberg in south-west



Germany – since April 2018. And the company's experience of the Nedschroef press has been excellent. "Any errors during the forming process are picked up more quickly so that the machine switches off before a tool is damaged. For example, the machine detects when a part has not been correctly placed and immediately stops", said Stern. And during setup trials for an initial manufacturing run, the reject system would quickly detect any imperfectly adjusted tools. Readjusting fine-tunes the process ready for series production.

And the new system technology has another benefit. Parts which previously were made on an accurate but larger press can now be produced on the new press, offering a price advantage. Last but not least there are countless options for implementing complex component assemblies for specific applications and customer specifications. For example, we can produce complex steel parts and stainless steel parts, copper contact pins and bushes, stainless steel double-flanged bushes, wheel axles, knurled hollow parts, precision

press-fit elements, as well as drawing parts indicating a certain amount of complexity.

Besides the normal range of parts that ARNOLD UMFORMTECHNIK makes for customers in the automotive sector and its suppliers, the intention is that the new machinery should now be focused on the electromobility sector. "At the experts' forum to which we invited customers and prospective customers, we explained the expanded opportunities that the machines represent. Our customers have taken up the offer. We have already processed a large number of new orders on the Nedschroef presses," said Andreas Stern.

New generation of machines opens up new market potential

The decision to acquire the new technology was a step-by-step process. And at the machine development stage, it was important for ARNOLD UMFORMTECHNIK to be able to bring their own ideas of the machine's design to the table, for example, the facility to sepa-

rate parts. "Our cooperative work with the machine's manufacture was marked by trust and a concerted exchange of engineering knowledge. Any of the usual start-up difficulties were mostly resolved quickly and successfully. Moreover, we are in constant touch with the manufacturer who provides good support", said Stern.

ARNOLD's set-up technicians also needed to rethink their procedures. This was because, compared to a conventional press, the setup procedure was considerably more complicated. The machine also operates with more technically sophisticated software. So it was very much a challenge - for machine manufacturer and user both. But with the new technology and the advancement, it means that the Forchtenberg fastener manufacturer is now well equipped for future challenges.

Copy: Annedore Bose-Munde

ARNOLD UMFORMTECHNIK GmbH & Co. KG

Carl-Arnold-Straße 25
D-74670 Forchtenberg-Ernsbach, Germany
Phone: +49 7947 821-0
Fax: +49 7947 821-195
info@arnold-fastening.com
www.arnold-fastening.com

Marietta Höhr
Marketing & Communications
Phone: +49 7947 821-201
marietta.hoehr@arnold-fastening.com

The ARNOLD GROUP – BlueFastening Systems

With a foundation of many years of expertise in the production of intelligent fastening systems and very complex extruded parts, the ARNOLD GROUP has developed over a number of years into a comprehensive supplier and development partner for complex fastening systems. With our new positioning of "BlueFastening Systems" this development process will now continue under a united and harmonised structure. Engineering, fastenings, and functional parts, together with feeder processing systems, all from a single source – efficient, sustained and international.

Since 1994 ARNOLD has been part of the Würth Group.