



Newsletter for customers, employees and partners volume 22, issue no. 41, August 2019

Visit us: Hall 16, Stand H03 16.–21.09.2019 Hanover – Germany

News

conFAIR convinces forging industry

The first EUROFORGE conFAIR in Berlin convinced the European forging industry. 55 leading exhibitors from different partner technologies of the solid forming industry - among them **of course** LASCO - demonstrated the claim and complexity of their innovations. Developments, topics and trends in the industry were highlighted in numerous scientific and industrial presentations – e. g. the effects of e-mobility, the potential of lightweight construction and the new opportunities offered by industry 4.0.

Know-how

Material efficiency through preforming

Minimal flash formation due to optimally pre-formed forged blanks drastically reduces the amount of material used in die-forging. LASCO offers the comprehensive portfolio of suitable units.

In practice

Valvital orders 5,000 ton press

The renowned Italian forging company Valvital (Agliè/Turin) invests in a LASCO screw press with 50,000 kN press force. The LASCO SPR 3150 is equipped with a number of special features for the forging of large-volume flange shafts. Our cover picture shows the SPR 3150 during assembly.





Editorial



Lothar Bauersachs CEO

Substance is decisive – not show

The discussions representatives of the European forging world held during the first EUROFORGE conFAIR in Berlin were informative and constructive. Many of them took home knowledge and inspiration, some perhaps even something like "homework". Users of forming processes gained insight into new technical possibilities that competitors may already be using. Scientists did not only describe the tasks and state of research in relevant fields. They also learned about the limits currently being reached by mechanical engineers and ideas for future fields in the forming industry, which can only be explored after basic research has paved the way. Technology suppliers such as LASCO were able to present advanced solutions and took up new ideas for further developments from user descriptions and project sketches made by researchers.

The event once again showed me for myself what positive impulses can come from meetings when science, mechanical engineering and practical applications come together in the right framework. The idea of EUROFORGE, the umbrella organization of European forging associations and companies, to combine a trade fair and a scientific lecture program was very well received. With the selection of speakers, topics and exhibitors, the organizers also demonstrated a sense of what moves the industry. Therefore, the positive reaction of the participants to the event and the call for repetition is not surprising.

In the forging world, too, there are certainly plenty of trade fairs and congresses worldwide. Considering the effort and costs involved, it would hardly make sense to participate in all of them. It is therefore legitimate to ask whether there are not already too many of them. In order to succeed as an industry hub, events must offer more substance than show. In this respect, the first conFAIR was exemplary.

Yours

Lothar Bauersachs

Trends + Markets

EMO opens its doors in Hanover in September

Invitation to the world trade fair for metalworking

The world's leading trade fair for metalworking EMO, which takes place every two years, opens its doors again in Hanover. From 16 to 21 September 2019, LASCO will be presenting smart production technology.

Under the slogan "Smart technologies driving tomorrow's production", the entire spectrum of modern metalworking technology will be shown at this year's EMO. The latest machines as well as efficient technical solutions, product-accompanying services, sustainability in production and much more will be presented.

LASCO will be presenting topics related to solid forming and, in particular, aluminum forging on 200 m² (Hall 16, Stand H03). Innovative inventions and advanced technologies expand the possibilities of solid forming of this special material, which is of great interest not least because of demands of the automotive industry for lightweight solutions. On display will be preforming units, i.e. an RCW 450 forging roll (torque drive and automatic quick roller change system) as well as a fully automatic 6-fold electric upsetting unit for valve forging, whose use in interlinked forging lines significantly increases material



The former Foreign Minister and Vice-Chancellor of the Federal Republic of Germany, Sigmar Gabriel (middle), was a keynote speaker at EUROFORGE conFAIR and informed himself about innovations and competition in mechanical engineering with Lothar Bauersachs, CEO of LASCO (right).

efficiency (see our know-how article on pages 4 and 5). LASCO will also inform about the options of cost and time optimization with digital twins in "virtual commissioning" as well as multiple forming steps enabled by the LASCO MXP forming system.

EMO Hanover is the most important international meeting place for manufacturing technology worldwide. The focus is on forming and cutting machine tools, manufacturing systems, precision tools, automated material flow, computer technology, industrial electronics and accessories. Around 130,000 trade visitors from 160 countries and all important industrial sectors are expected to attend, including mechanical and plant engineering, the automotive industry and its suppliers, aerospace technology, precision mechanics and optics, shipbuilding, medical technology, tool and mold making, steel and lightweight construction.

EUROFORGE conFAIR a great success right from the start

Due to the outstanding feedback from visitors and exhibitors, the next EUROFORGE conFAIR is already being planned for 2021. At its premiere in November 2018, this European trade fair with an accompanying scientific lecture program attracted more than 600 trade visitors from 35 countries to the ESTREL Hotel & Congress Center in Berlin. At the exhibition, 55 participating companies - including LASCO - offered a comprehensive overview of the wide-ranging technology of solid forming. Renowned speakers from industry and science discussed innovative technologies and challenges for the industry in a global context. In keynotes, former Foreign Minister Sigmar Gabriel and the President of the Leibniz Association, Prof. Dr. Matthias Kleiner, emphasized the importance of innovation and digitization for the future competitiveness of the industry.



Cross wegde roll QKW 700 (left), die-forging hammer H0-U 500 with forging and handling robot

Slovenian group aims to expand market position

Unior forges connecting rods fully automatically

The Unior Group has commissioned a fully automatic forging line for the production of connecting rods for cars in Zrece (Slovenia) in close cooperation with LASCO.

With 100 years of experience, Unior is one of the leading suppliers of forgings to the European automotive industry. The focus of the manufacturing program in the forge is on die-forging of steel (83%), machining of forged parts and production of sintered parts. In the current project, a hydraulic LASCO double-acting die-forging hammer HO-U 500 and a LASCO cross wedge roll QKW 700 with a special high-speed function were used as core units. These have now been combined to form the fully automatic forging cell using state-of-the-art handling equipment

Mahle orders six electric upsetting machines

Mahle Ventiltrieb GmbH (Wölfersheim) is expanding its production capacity by adding further fully automatic LASCO electric upsetting units of the latest generation.

The further development differs from predecessor models by technical features that increase the performance of the unit, reduce installation space and optimize handling.

For the hydraulic drive, the new, particularly compact CytroBox is used for the first time. Thanks to servo pump technology, the new drive generation offers higher performance and energy density with a significantly lower oil volume. The six electric upsetting units type EV12 are linked to form a work cell which is fed fully automatically by two 6-axis



News

Fairs + Dates

EMO Hanover, Germany 16.–21.09.2019

Motek Stuttgart, Germany 07.–10.10.2019

MSV Brno Brno, Czeck Republic 07.–11.10.2019

EuroPM Congress & Exhibition Maastricht, Netherlands 13.–16.10.2019

Automation Working Group Clausthal-Zellerfeld, Germany 17.10.2019

Global Forging Summit Shanghai Shanghai, China **17.–18.10.2019**

and two industrial robots suitable for forging and equipped with patented LASCO gripper technology. In cooperation with local companies, the downstream trimming process was automated and integrated into the LASCO master control. The trimming cell consists of a mechanical press and two handling robots with necessary additional equipment. The project was completed within a few months. Connecting rods will be manufactured automatically at the Zrece site shortly.

> forging robots and unloaded by a centrally located Scara robot.

In Wölfersheim, Mahle operates several LASCO valve forging lines with electric upsetting systems as preforming units. The new equipment is an expansion of capacity and will go into operation at the end of the year.

Work cell with six electric upsetting machines EV12 for valve production

Know-how



Preforming processes for die-forgings - Part 1 Higher material efficiency in process chains

In the case of die-forgings, the share of material in the unit costs is 30 - 50 %. For this reason alone, optimal preforming is required to reduce costs. The aim is to adapt the mass pre-distribution as closely as possible to the final shape at an early stage of production.

In die-forging, it is generally not possible to produce the forged part from the forging billet in one forming step and impression. Limits are set by the forming degree feasible with the material, material flow, die stress, but often also by the available maximum energy and pressing force of the forming unit.

Therefore, an impression for preforming is often provided in addition to the finishing impression, which is made according to the geometry of the forging to be produced and takes into account the shrinking process during work piece cooling. It serves to improve the material flow when filling the cavities, and to increase the service life of the finishing impression. The preform operations in steel forging are also used for descaling.

Comprehensive portfolio of preforming units Over the last ten years, LASCO has focused its new developments very strongly on the preforming of forgings and offers the complete portfolio of technologies for preforming in solid forming.

The figure above gives an overview of the possible processes. In a three-part series of our know-how article, we will look at the individual processes in detail, i.e. in

- part 1 preforming through rolling,
- part 2 preforming through stretching and
- part 3 preforming through upsetting and bending.

Preforming through rolling

Rolling is a process recognized throughout the industry in which cross and forge rolling play a pioneering role.

Decades ago LASCO started to develop a generation of cross wedge and forging rolls,

which are based on the same concept but differ in special forming characteristics.

The basic design of cross wedge and forging rolls is based on a two-roll stand with parallel, horizontally arranged shafts. Similar to presses, the rigidity of the frame of cross wedge and forging rolls is decisive for reproducible work piece accuracy. Depending on roll type and size, these can be multi-part constructions pre-stressed by tie rods or rigid, welded one-piece frames.

While cross wedge and forge rolling is ideally suited for large batch sizes at short cycle times, skew rolling and axial feed cross rolling are predestined for small batch sizes.

Classical forge rolling and cross wedge rolling Both machine types (Fig. 1 and 2) are



equipped with torque drives and quick roller change systems. The processes are often used in the automotive industry. However, in cross wedge rolling there is the problem of "contraction" and the so-called "Mannesmann effect". In order to prevent these effects, the reduced diameter should be between 40-60% of the original material. In addition, a constant tool temperature (approx. 200 °C) and a suitable lubricant are indispensable for aluminum preforming.

Axial feed cross rolling

A special feature of cross rolling is the axial feed cross rolling (AVQ). The axial feed cross roll (Fig. 3) is used for preforming small quantities of billets to special geometries. The round material is actively drawn through two forming rollers. The diameter reduction is achieved by axial adjustment of the forming rollers. A particular advantage of this type of roll is the relatively simple and product-independent design of the work rollers.

The compact, horizontally arranged axial feed cross roll has two work rollers (ø 630 mm,



Fig. 3: Axial feed cross roll AVQ

Know-how

Fig. 1: Forging roll RCW

circumferential speed 1000 mm/s) which are axially adjustable. Both rollers are driven via cardan shafts by asynchronous motors and intermediate transmission. The motors themselves are very easy to control and to regulate via frequency converters. The billet is pre-accelerated by a separate drive and can reach speeds of up to 640 rpm during operation, depending on its diameter.

Longitudinal rolling

Another special design is the longitudinal roll with dynamic roller gap adjustment. The basic structure of this special longitudinal roll largely corresponds to that of our traditional forging roll with torque drive. Dynamic roller gap adjustment is achieved via two hydraulic cylinders, each of which is coupled to one of the two bearing housings of the upper roller. The RCW 630, for example, has a rolling force of 2,000 kN. The LASCO patent no. DE 103 19 258 B4 gives a detailed description of this process.

In longitudinal rolling, the restrictions due to the "Mannesmann effect" and "contraction" do not exist. Options such as two stretching manipulators and automatic loading and unloading devices lead to the shortest possible cycle times, as idle times are largely avoided.

Skew rolling

The STW skew rolling mill (Fig. 4) is used to produce preforms of seamless tubes.



Fig. 2: Cross wedge roll QKW

Starting from round material, a reverse extrusion operation is first carried out on a hydraulic press. The preformed billet is then fed horizontally onto the mandrel of the stretch rolling mill. Several active rollers are adjusted steplessly during the process and thus produce a continuous wall reduction and extension of the billet.

Fig. 4: Skew rolling mill STW

Internal



Training supervisor Björn Bühling with apprentices Giwan Mardinli and Maximilian Gäbelein (right) during instruction in the LASCO apprenticeship training center.

Two ways to become a skilled worker at LASCO **Education becomes future**

The high competence of skilled workers is one of the reasons for the success of German companies. LASCO offers two ways in the so-called dual system of practical instruction and school theory.

Maximilian Gäbelein (18) and Giwan Mardinli (28) come from different worlds - Max from Lichtenfels (Germany), Giwan from Syria. But their professional home at LASCO connects them. Max has been training as a mechatronics technician since 2017. A classical apprenticeship with three and a half years of combined training as industrial mechanic and electronics technician.

Giwan came to Coburg as a refugee in 2015. Although he had studied biology in his home



After the ceremony of the Chamber of Commerce and Industry in Coburg, from left to right: Joachim Reinhardt, Lukas Albrecht, Simon Roos, Johannes Seifert, Jan Escher, Noah Martin, CEO Lothar Bauersachs and training supervisor Björn Bühling.

country, his academic past did not bring him any future in Germany. At LASCO he is being trained as an industrial mechanic in an alternative way. In Coburg, refugees have been undergoing a "1+3" model since 2016, a dual apprenticeship extended by one year, which is combined with subject-related German lessons.

LASCO is currently training 62 young people, who will become skilled workers in industrial, technical and commercial fields within the framework of the successful dual system with world-wide recognition, in which also 14 students are trained in the dual degree studies of Mechanical Engineering, Electrical Engineering, Automation & Robotics and Business Administration. With a training rate of 17 percent, which is far above the industry average, LASCO considers itself well equipped to counter the shortage of skilled workers.

Career start at LASCO

Lothar Bauersachs, CEO of LASCO, and Björn Bühling, training supervisor, were once again able to congratulate young professionals on the successfull completion of their vocational training at LASCO. The performance of the industrial mechanics Johannes Seifert and Noah Martin in the final examinations was particularly positive. Both are studying for a dual degree, which combines classical vocational training with a university degree in mechanical engineering. Electronics technician Joachim Reinhardt, mechatronics technician Lukas Albrecht and cutting machine operators (milling machines) Simon Roos and Jan Escher can also start their careers as skilled workers now.

10 years with LASCO

/olker Thauer	16.06.2019
Maximilian Escher	01.09.2019
Björn Pätzoldt	01.09.2019
elix Reisenweber	01.09.2019
lobias Ross	01.09.2019
Natthias Schneider	01.09.2019
Bianca Höfler	01.11.2019

25 years with LASCO

Manfred Wagner	01.08.2019
Andreas Hübner	01.09.2019
Christian Lorch	01.09.2019
Bernd Schubert	03.09.2019

40 years with LASCO

Elke Hornung	01.09.2019
Sadly mourned	

Ernst Eichhorn	† 15.11.2018
Rainer Oswald	+ 07.06.2019

...........

Spotlights



Service training at the parent company: LASCO has been known for top quality products and services for more than 150 years. In order to be able to meet these requirements worldwide, we train our specialists from our subsidiaries abroad here at our headquarters. Recently, colleagues from our Chinese subsidiary completed a training program in Coburg. In the picture (from left): Xang Xiqing (electrical technician), Guo Jungfeng (mechanic), Bernd Schubert (coordinator Service/ Sales, LASCO (Beijing) Forming Technology Co. Ltd) and Wu Quisheng (mechanic).

Volume 22, issue no. 41 – August 2019 **Publisher:** LASCO Umformtechnik GmbH Hahnweg 139 - 96450 Coburg **Senior Editor:** Jochen Günnel **Photos:** LASCO, Burckhart Hanke, IHK zu Coburg, Valvital S.p.a.

Internal

Representatives of Coburg businesses made unanimous decision at the CCI General Assembly

CCI President Herdan re-elected

Friedrich Herdan, Chairman of the Management Board of LASCO Langenstein & Schemann, Holding, was appointed President of the Chamber of Commerce and Industry in Coburg for a further four years and took up his 4th term of office as CCI President.

The election decision of the General Assembly was taken without a dissenting vote. One of the first congratulators on the re-election was Bavarian Prime Minister Dr. Markus Söder. He described Friedrich Herdan as an upright representative of the interests of the Coburg region vis-à-vis the Bavarian State Government. Dr. Söder thanked Herdan for "good ideas, outstanding dedication and great time commitment" to the region in the north of Franconia.

The Coburg Chamber of Commerce and Industry represents around 8,500 commercial enterprises in the Coburg economic region, which has its strengths in mechanical



Friedrich Herdan presents to Bavarian Prime Minister Dr. Markus Söder (left) the Prince Albert Teddy Bear, which was created by the Coburg Teddy Bear Factory Hermann on the occasion of the 200th birthday of the British Queen Victoria and her Coburg husband Prince Albert of Saxony-Coburg and Gotha.

engineering, the insurance industry and the automotive supply industry. Friedrich Herdan has held the honorary office of President for more than 10 years. He was first elected in 2008. Since then he has been intensively involved in the development of the region's infrastructure and the sustainable securing of the supply of skilled workers, in particular by intensifying training and further education as well as the integration of migrants. His initiatives include the founding of the Technical College for Machinery, Equipment and Automotive and its establishment in Coburg, as well as the recognized pilot model "1+3" for the training of refugees.

"LASCO AR" available free of charge in Play-Store and App-Store Experience virtually machine functionality



With the help of "LASCO AR", smartphones and tablets can make the functionality of machines and systems virtually visible and tangible. The app is provided by LASCO free of charge.

As part of the technical development under the aspects of "Digitization" and "Industry 4.0", LASCO is making available for the first time an application that enables the use of "Augmented Reality" in order to make the functionality of complex machines, systems and production processes more comprehensible. First applications are available. The service will be expanded.

Download and install the app for free via the App Store (Apple/iOS) or

Play Store (Google/Android). To do this, scan the QR code (right) with your device or enter "LASCO-AR" in the search function of the store. If you have already installed "LASCO-AR", please update your app.

Open and use the app wherever the LASCO AR logo (right) is displayed, e.g. in the demo printed on the left. Hold your smartphone or tablet with the camera over the picture and learn more about how the system works.







Interview

Pier Giorgio Pellegrini President Valvital S.p.a. Agliè (TO), Italy

Predestined for the task

up grade: Mr. Pellegrini, your family-owned enterprise will be using a LASCO forming machine for the first time in its history. What was the key factor in this decision?

Pier Giorgio Pellegrini: We want to be able to manufacture larger flange shafts with higher weights than before. This requirement associated to reproducible quality and economy can neither be met with our current production equipment nor with standard forming machines. Therefore, we were looking for an internationally established supplier who could design a machine individually based on wellproven technology. This restricted the circle of possible suppliers considerably.

up grade: What advantages do you see with LASCO?

Mr. Pellegrini: LASCO screw presses are characterized by extremely high rigidity, high energy performance and high efficiency. These characteristics had to be maintained and the basic construction had to be further developed so that all our performance obligations could be fulfilled. LASCO, with its teams of engineers and designers with many years of experience, is predestined for this task. It was not difficult for us to have confidence in the company.

up grade: How challenging is the cooperation?

Mr. Pellegrini: We signed the order for the SPR 3150 at the beginning of last year and intend to put the forging line into operation this autumn. 13 months for production - this time frame alone makes it clear that this is an exceptional project. We were impressed by LASCO's advice and cooperation, in particular by its flexibility in implementing our wishes. If commissioning is carried out smoothly and production then runs as we expect it to, we can all be highly satisfied.

Beyond standard

With its first LASCO screw press, the high-performance forge Valvital is attracting attention among experts. The Italian company ordered the precision screw press SPR 3150 with a number of extras, whose size and equipment aims to significantly strengthen the enterprise's competitive position.

The SPR 3150 forms the core of a new forging line for the production of flanged shafts up to a diameter of 450 mm and a length of 900 mm. The weight of the parts to be forged reaches up to 200 kg. The LASCO screw press technology was specially developed and adapted for Valvital in order to handle such dimensions reliably and reproducibly. The gross energy of the SPR 3150 was increased from 710 kJ to 850 kJ and the ram stroke from 750 mm to 900 mm. The special screw with a diameter of 600 mm is designed for highest loads. The press achieves a permanently permissible press force of 50,000 kN. The hydraulically driven shifting slide in the ram and a specially adjustable ejector are further special features of the extraordinary high-performance machine.

Valvital, with its headquarters located in Agliè (Turin), is specialized in pressed and forged products for agricultural machinery, industrial vehicles, earth moving machines and mining machinery. The medium-sized family business mainly produces ready-to-install parts and semi-finished products such as gear shafts, flange shafts, pinion shafts, double-wheel shafts and drive shafts. The company supplies above all customers based in EU countries, such as Germany, Scandinavia and France, but also customers in other countries.

Valvital was founded in 1971 by Cavalier Gino Pellegrini and his son Pier Giorgio Pellegrini, now President. From the very beginning, they concentrated their activity on hot forging processes and mechanical machining, and quickly gained a high reputation for the quality and precision of their products. Originally specialized in the manufacture of valves for marine engines, Valvital diversified into the market of agricultural machinery, industrial vehicles, earth moving and mining machinery as early as the mid-1970s.

In Agliè near Turin, the owner-managed family business has a 43,000 square meter site and produces with 85 employees on 9,500 square meters of roofed area with several semi-automatic and fully automatic forging lines as well as with its own machining shop.



Typical Valvital products: Semi-finished products (left) and finished products (right)