



# up grade

Newsletter for customers, employees and partners  
volume 22, issue no. 42, December 2019

## News

### Leistritz plant in Thailand

The development of the Leistritz production site in Chonburi (Thailand) is impressive. After its opening in 2012 and capacity expansions in 2016 and 2018, the production of turbine blades is now being further expanded. Once again, Leistritz Turbinentechnik GmbH relies on latest screw press technology from LASCO.

## Know-how

### Preforming technology – stretching

Stretching occupies a special position among the conventional processes of metal forming. The surface and length of a workpiece are formed incrementally by fast, free upsetting. Fully automatic stretching systems are predestined for use as preforming units in the production of die forgings.

## In practice

### MSK relies on LASCO robotics

MSK Steel Forging Ltd. in Karacabey/Bursa has been producing vehicle parts with a LASCO die forging hammer type HO-U 630 and handling robots for forging since September this year. The family-run company thus operates the first fully automatic hammer forging cell in Turkey.





**Lothar Bauersachs**  
Sprecher der Geschäftsführung

## Regaining optimism

Many factors give rise to the assumption that the mood in the forming industry might get clearly bleak at the end of the year: First there are the unclear prospects due to unresolved trade conflicts between leading industrial nations. Will the escalation in tariffs continue? Which direction will the steel price take?

There is the incipient change in the automotive industry, the shift towards e-mobility. Which vehicle parts will still be needed in future car designs and which will no longer be? There is the Brexit. When will it come? How will it happen? What impact will it have on established joint processes with British partners? And finally, there are the subdued economic expectations of recent months. Are we at the beginning of a period of stagnation or even recession? Is it perhaps just a - hopefully - short economic slowdown?

In view of the numerous open questions regarding future market development, caution and skepticism would be expected among the metalworking industry and its technology suppliers. It is therefore all the more remarkable that we at LASCO have observed increasing confidence among our customers instead. This is not yet reflected in official survey results, but the development is becoming increasingly evident at this year's trade fairs, which are always trend indicators. We were pleased to see this trend also at the LASCO booth. This autumn, the world's leading trade fair for metalworking, EMO Hannover, was visited by more company executives than two years ago - almost 58 percent - according to the organizer VDW, who reported that more than half of the visitors had come with investment intentions, and even 62 percent among the visitors from abroad. LASCO contributes to this tendency in the metal forming industry with innovations and new developments - especially in the field of automation solutions.

These positive signs should encourage us all to be optimistic and to look forward to 2020 and the turn of the year. I wish you and your employees a peaceful festive season!

Yours Lothar Bauersachs



During their excursion to EMO, LASCO apprentices experienced how effectively the company presented itself at this leading international trade fair.

Positive EMO results – also for LASCO

# Guarantee for good business

**From 16 to 21 September around 117,000 international manufacturers from 150 countries met at the world's leading trade fair for metalworking. EMO Hannover satisfied expectations and offered many visitors orientation on the development of their markets.**

Guarantee for good business, showcase for the international market, impulse generator for the future of production - this is how many exhibitors describe EMO Hannover 2019. From LASCO's point of view, participation in the trade fair was successful. Visits to the booth again reached the high level of the last EMO 2017.

LASCO presented topics related to solid forming on a new 200 m<sup>2</sup> booth. The focus was on innovative LASCO solutions for aluminum forging, which is highly interesting in view of the strong demand for lightweight forging solutions. LASCO presented an RCW 450 forging roll with torque drive and automatic quick roller change system as well as a fully automatic 6-fold electric upsetting system

for valve forging. These units are excellently suited for performing in process chains. In addition, LASCO presented options for cost and time optimization in machine manufacturing through „Virtual Commissioning“ of machines and systems.

Despite the subdued economic expectations in recent months, the mood in the exhibition halls was very good, according to EMO Commissioner General Carl Martin Welcker. Many exhibitors report a surprisingly high number of visitors at their booths. „EMO Hannover had once again proved to be steady as a rock and provided orientation for further developments in production technology even in uncertain times,“ Welcker said.

## Big business for solid forming in Cleveland/USA ForgeFair breaks all records

**Organized every two years, ForgeFair in Cleveland is the largest and most important trade exhibition for the solid forming industry in North America.**

With 172 exhibitors and more than 2,000 visitors from 20 countries, the trade exhibition broke all its own records this year (21-23 May). European companies were well represented among the exhibitors. Many did not want to miss the opportunity to find out at first hand where the US market is heading

in these uncertain times of trade conflicts and political caprices.

LASCO participated with its American subsidiary LASCO Engineering Services L.L.C. and was able to establish many interesting contacts. The focus of interest for American forming companies visiting the LASCO booth was on automation solutions for existing and planned production lines.

The presentation given by Mike Gill, President and CEO of our American subsidiary, about the new LASCO service of „Virtual Commissioning“ also met with great interest.

## Braun increases production capacity at Aesculap plant in Poland

Braun Aesculap Chifa Sp.z.oo, a company of the B. Braun Group (Melsungen, Germany), has ordered a further hydraulically driven die forging unit LASCO HO-U 200 (20 kJ blow energy) for its plant in Nowy Tomysl (Poland). The machine has been in production since the first quarter of 2019 and contributes to further expanding production capacity and product quality. In addition to energy efficiency, output and robustness, mainly the positive experience with the LASCO units in operation was decisive for the new order. The forming technology at Aesculap's Polish plant will thus be further upgraded to meet the requirements of the future.

The B. Braun Group is an international company for pharmaceutical and medical supplies with nearly 64,000 employees in 64 countries and sales of EUR 6.9 billion. The business is divided into four divisions: *Hospital Care* equips hospitals and plays a key role in the product sector for clinical care and in-patient treatment of patients; *Aesculap* is the world market leader for hand-held surgical instruments; *Out Patient Market (OPM)* focuses on patient care outside hospital facilities, and *B. Braun Avitum* is one of three global full-service providers of extracorporeal blood treatment.



Modern aircraft engines are quieter and more efficient than ever before. A key component are turbine blades manufactured with LASCO screw presses such as the SPR 900.

LASCO screw press ordered

# Leistritz continuously expands production in Chonburi

**The Chonburi/Thailand plant of Leistritz Turbinentechnik GmbH is developing with impressive success. It is now being equipped with another LASCO screw press.**

The increase in global air traffic and the strong demand for engines that are both powerful and low-emission at the same time ensure full order books among qualified engine manufacturers and their suppliers. Leistritz Turbinentechnik GmbH, with its headquarters in Remscheid, has been supplying aerospace and energy technology partners with engine and turbine components for 110 years. In 2012, the Leistritz Group began setting up its production site in Thailand. At the Chonburi plant, LASCO forming machines are used for the forging of high-precision turbine

blades for all the latest engine generations. In the meantime, LASCO screw presses of type SPR 630 (6300 kN press force), SPR 900 (9000 kN press force) to SPR 1600 (16000 kN press force) as well as a hydraulic LASCO multiaxial press type Flex 40/60 are in operation. The systems have been commissioned in the past seven years.

The high degree of capacity utilization at the plant, combined with the prospect of further growth in orders, has now made it possible to invest in another SPR 900 screw press.

## Fairs + Dates

### IMTEX Forming

Bangalore, India  
24.–28.01.2020

### Annual Meeting Cold and Hot Solid Forming

Düsseldorf, Germany  
26.–27.02.2020

### MEFORM

Freiberg, Germany  
19.–20.03.2020

### Euroforge General Assembly

Czech Republic  
22.–29.03.2020

### 34<sup>th</sup> Colloquium on Deformation

Zauchensee, Austria  
21.–25.03.2020

### EFB-Kolloquium

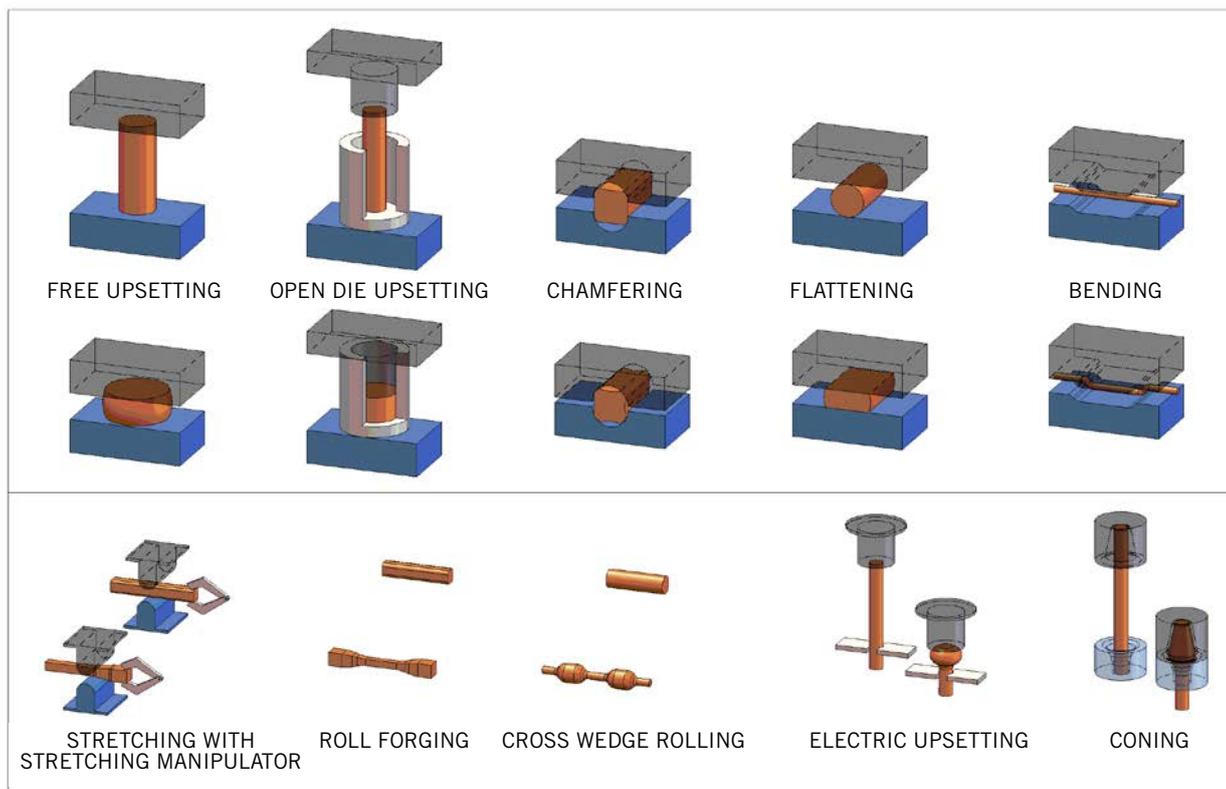
Bad Boll, Germany  
24.–25.03.2020



Automated forging hammer HO-U 160 in schematic representation.

## Marovt d.o.o. stays on course for growth

Marovt d.o.o. in Slovenia has ordered another hydraulically driven LASCO die forging hammer for its Stranice plant. The HO-U 160 (16 kJ blow energy) unit will be used for the production of forgings for various industries, including the automotive, aerospace, medical and shipbuilding industries. Founded in the early 1970s by Oto Marovt and named after him, the company is one of the fastest growing family businesses in Slovenia and is considered one of the most advanced industrial producers of forgings in Europe. Production at the three locations Stranice, Loce and Slovenska Bistrica is focused on precision forgings and turned parts. LASCO machines have been performing reliable production work in solid forming for years.



Overview of preforming processes for forgings

# Preforming processes for die forgings - Part 2

## Stretching – a special kind of free upsetting

In issue no. 41 of our UpGrade, the first part of our series „Preforming processes for die forgings” already described different rolling processes in more detail. In the second part of this series, machines and systems will be presented which produce preforms for die-forgings in the so-called stretching process.

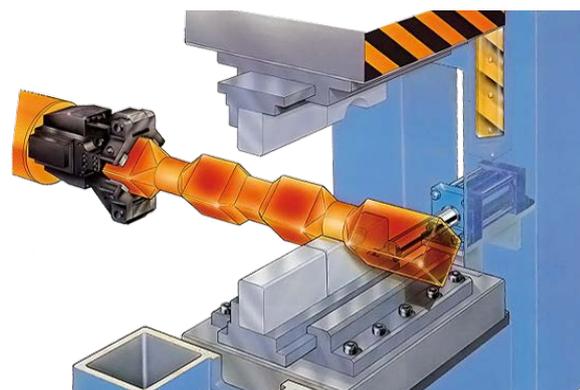
### 1. General remarks:

The term stretching is used to describe the gradual reduction of the cross section and the associated increase in surface area and length of a workpiece. Forging blanks are stretched through rapid free upsetting and are thus formed incrementally. Depending on the size and desired degree of deformation of the blank, the stretching cycle consists of forming steps that follow each other in short succession.

Within a stretching cycle, the blank is positioned in step sequences between two tools adapted to the contour, the so-called „stretching saddles”, and formed to size. Depending on the desired contour, it may be necessary to rotate the blank between individual stretching steps. This may require the stretching of a forging blank in several stretching cycles.

- In forming technology, this process is preferably realized with fast hydraulic presses. These include the AR (automatic stretching line) and AR-D (automatic double-acting stretching line) series developed by LASCO for this purpose.

- Open-die forging presses are often used for the production of semi-finished products, which also place the blank in the required stretching position in fast, short strokes and with a freely movable or rail-mounted manipulator. Open-die forging presses will not be discussed in this article.



Shifting device AR

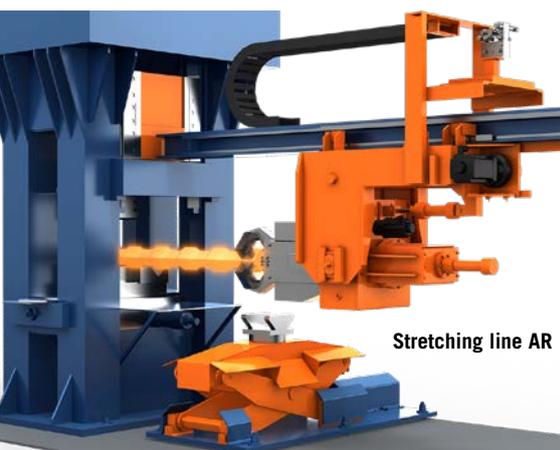
## 2. Stretching with die forging hammers

Unjustifiably, the conventional, very economical option of stretching with a LASCO die forging hammer is underestimated. With the so-called roller blow control, fast blow sequences can be specified in which the upper ram does not move into the TDC between the forming operations. This enables the operator to carry out stretching operations quickly and efficiently.

Fully automated LASCO hammer lines forge with two synchronous industrial 6-axis robots. In this case, the integrated roller blow control allows to carry out most diverse stretching cycles. The die forging hammer and robot follow the specified stretching program and perform the individual stretching steps fully automatically.

## 3. Stretching with special hydraulic presses

### A) Automatic stretching line AR



As early as the 1980s, LASCO developed and used the first fully automatic stretching lines for the preforming of front axles for trucks. The line consists of hydraulic presses and integrated automated manipulators.

Stretching operations in rapid succession form the typical stretching cycles. Therefore, the hydraulic LASCO presses are designed for high stroke rates with 100 strokes/min. This requires a high working speed (the speed at which the maximum pressing force is reached). According to the application, which depends on the forming stroke, working speeds at 120 to 180 mm/s are reached. As described above, a stretching cycle consists of individual stretching operations.

Between the stretching operations, the blank is turned depending on its contour. In order to reproduce different cross-sectional shapes, e.g. flat or round, automatically movable

tools, also known as stretching saddles, are arranged horizontally (see picture page 4). All process parameters are specified in a stretching program at the operator terminal. Each step of a stretching program contains parameters such as feed rate, angle of rotation, type of stretching saddle, pressing force, etc.

The complete stretching cycle runs fully automatically between press and manipulator.

A 2-axis overhead gantry manipulator transports and positions the forging blank between the stretching saddles following the stretching program, where axis 1 carries out the feed and axis 2 the rotation. At the beginning of the stretching process, the blank is axially fed to the manipulator gripper via a stroke-controlled turntable in the correct position. At the end of the process, the manipulator transfers the stretched blank to another handling device.

### B) Automatic double-acting stretching plant AR-D

LASCO developed and realized a special stretching line for stretching forging blanks for turbine blades 10 years ago. This is a horizontal double-acting stretching line with two press rams moving synchronously towards each other. The special feature here is that no valve control is necessary for the cyclic movement of the rams. The hydraulics operate smoothly with a high degree of efficiency. Single piston pumps are directly connected to both cylinders and are driven jointly by one motor. The working cycle of the piston pump corresponds to the forward and backward stroke of the press ram. The working speed is determined by the drive speed

of the frequency-controlled drive motor, while the working stroke remains constant (see operating principle). The penetration depth of the stretching saddles into the blank is determined by the volume of oil in the press cylinder and thus by the stroke position of the press piston. An increase of the oil volume in the press cylinder means a higher penetration depth, a reduction of the oil volume reduces the penetration depth. Servo pumps are used for this purpose, which are controlled in a closed loop depending on the piston position.

This leads to highly dynamic adjustment of the stroke position of the press ram between each stretching operation at 200 strokes/min.

In the AR-D 320/200, two 2-axis gantry manipulators, in accordance with the stretching program, transport and position blanks up to 2.5 m in length and 200 kg in weight synchronously between the two press rams. At the same time, the manipulators turn the blank into the programmed position, depending on the stretching program, in order to form the blank incrementally at up to 3200 kN each with the two stretching saddles.

The fast stroke sequence makes it possible to produce preforms which are heated sufficiently at the end of the stretching process so that they can be forged without intermediate heating in the subsequent forging process.



Scan now and discover the working principle.



Stretching line AR-D

*In our next issue, the third and last part of this series will be devoted to preforming by upsetting and bending.*



## New apprentices at LASCO warmly welcomed

# Start in vocational training

**As of September 1, 2019, nine technical and two commercial apprentices as well as one dual student added to our 50 apprentices.**

In addition to a student of industrial mechanic/Bachelor of engineering (mechanical engineering), three participants in the project 1+3 of the Coburg Chamber of Commerce and Industry (IHK), which aims to integrate refugees from war zones via the combined

dual vocational training system, are among the new job starters. The project was initiated for the industrial region of Coburg by Friedrich Herdan, Chairman of the Board of Langenstein & Schemann, Holding and President of the IHK Coburg, as early as 2016.

At present, LASCO is providing vocational training for a total of 62 apprentices. The number of apprentices is not only currently well above the industry average - at present it is 17 percent - but it has been significantly higher for decades.

## Experience abroad for skilled labor during vocational training

# Participation certified

**In view of the increasing international division of labor („globalization”), it is valuable for qualified personnel to have gained their own experience abroad.**

The Erasmus program of the European Union already allows apprentices to gain their own experience in Europe. As part of the vocational training, students have the opportunity to take part in a three-week internship in

order to get to know the living and working environment of the host country. As repeatedly reported in our UpGrade, LASCO apprentices have regularly taken part in this program for years.

This year the apprentice mechatronics technician **Max Koop** and the apprentice industrial mechanic **Luis Flurschütz** (both in their 4th year of vocational training) were guests of industrial companies in Belgium respectively Austria.



**Participants in the Erasmus vocational training programme from this region were awarded a certificate at the Chamber of Commerce and Industry in Coburg. Our picture shows them together with representatives of the Municipality of Coburg, the Chamber of Commerce and Industry, training companies and the vocational school.**

## Spotlights



**Milestone:** Julia Thomä (3rd from left) and Enrico Ryschka (left) have successfully completed one part of their dual training at LASCO. Together with technical product designer Maximilian Knapke (r.), they received the certificates for their training as industrial clerks from the Coburg Chamber of Commerce and Industry in a ceremony. Their next goal is to graduate in business administration (Thomä) or industrial economics (Ryschka) at the University of Coburg. CEO Lothar Bauersachs (2nd from right) and training officer Luisa Wachsmann (2nd from left) congratulated them on their achievements.



**Role models:** As repeatedly reported, young people who are committed to the public welfare in an exemplary manner in their free time are awarded the „Dr. Kapp Vorbildpreis” (prize for voluntary work) every year in Coburg by bayme vbm, the Association of the Bavarian Metal and Electrical Industry. Julia Thomä and Verena Roos were recently awarded this prize, both of whom are completing dual studies at LASCO (classical training + specialist studies). Ms. Thomä has been playing an active part in the Gundelsheim Musikverein e. V. (music society) for more than 10 years, both in musical and organizational terms, and is an active member of the Gesellschaft für Betriebswirtschaft e. V. (Society of Business Management); Ms. Roos is a trainer of children in the climbing department of the German Alpine Club in Coburg and the karate department of the gymnastics community, as well as a ministrant in the parish of Neustadt near Coburg. Our picture shows the two after receiving their certificates together with managing director Robert Welsch (r.) as well as Luisa Wachsmann (l.) and Jochen Bühling, who are responsible for training.

### up grade

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From left to right: Friedrich Herdan and Lothar Bauersachs, the honored employees Elke Hornung, Klaus Geelhaar, Markus Griebner, Andreas Hübner, Bernd Schubert, Manfred Wagner and Christian Lorch. Works council chairman Peter Wache (right) congratulated on behalf of the workforce.

Management and employee representatives congratulated on work anniversaries

## Active contribution to company success

**LASCO Umformtechnik GmbH honored the performance and loyalty of seven employees who have been working for the company for 40 respectively 25 years and who actively contribute to the success of the machine tool manufacturer.**

In a ceremony, Lothar Bauersachs, CEO, Thomas Götz and Robert Welsch, Managing Directors, thanked Klaus Geelhaar and Elke Hornung (both for 40 years), as well as Markus Griebner, Andreas Hübner, Christian Lorch, Bernd Schubert and Manfred Wagner (all for 25 years) for their work and loyalty to the company. As a token of recognition, certificates and loyalty bonuses as well as the honorary medal of the Board of Trustees of the Bavarian Employers' Association and honorary certificates of the Chamber of Commerce and Industry were handed over in the presence of works council chairman Peter Wache. During the event, Friedrich Herdan, Chairman of the Management of the Langenstein & Schemann Holding, congratulated them.

**Klaus Geelhaar** began his vocational training as a machine fitter at LASCO in 1978. After successfully completing his apprenticeship, he started his career as a service technician. Due to his extensive technical expertise, he was employed as a procurement specialist from 2001, where he benefited in particular from his IT knowledge, which he had acquired in commercial data processing training courses. Geelhaar has been a member of the works council since 2010 and represents the interests of employees with disabilities.

**Elke Hornung** has also been with the company for 40 years. After her vocational training and successful final examination as an industrial clerk in 1982, Elke Hornung joined the purchasing department. There she specialized in material procurement. With great experience and conscientiousness, she has been fulfilling her tasks as a link between production and purchasing ever since.

**Markus Griebner** joined the company in 1993 and learned the profession of energy electronics technician. After relevant further training, he now works as a service technician at home and abroad, has a reputation as a specialist for hardware and is in charge of electrical installations on complex large-scale production lines for solid and sheet metal forming as well as for the production of sand-lime bricks.

**Andreas Hübner** began his apprenticeship at LASCO as an industrial mechanic for machine and systems technology in 1994. To this day, he has been responsible for programming and operating the oxyfuel cutting system for separating large metallic components.

**Christian Lorch** also joined the company in 1994 as an apprentice industrial mechanic for mechanical and systems engineering. After

successfully passing his final examination and completing his basic military service, he has since worked as an experienced specialist in mechanical manufacturing. Lorch has acquired extensive specialist knowledge, has mastered the technique of horizontal milling and is employed at large milling machines.

**Bernd Schubert** began his career at LASCO in 1994 and was deployed at an early stage as an experienced service technician for the commissioning of complex control systems at home and abroad. Through further training, he qualified as a state-certified electrical engineer. He applied his knowledge above all to robot programming and became a highly qualified service specialist. His knowledge was and is particularly in demand in the development of the Chinese market for LASCO machines. Since 2018 he has been the coordinator for sales and technology for the LASCO subsidiary LASCO (Beijing) Forming Technology.

**Manfred Wagner** began his apprenticeship as a lathe operator at LASCO in 1986. After three years as a skilled worker, Wagner took part in further training courses to become a state-certified technician and time and motion (REFA) specialist. Shortly after rejoining the company in 1994, he switched to production scheduling, where he draws up work schedules and calculations. In addition, he accompanies the manufacturing process of LASCO machine components by carrying out value analyses.



**Erdinc Meric**  
Sales Manager  
MSK Steel Forging Ltd., Turkey

## Convinced of the benefits

**up grade:** Mr. Meric, your company produces fully automatically with the new LASCO hammer now. What do you expect to come of it?

**Erdinc Meric:** Investment in new production technology is always about long-term reliability and sustainability. Not only the requirements of today's markets have to be met, but also those of future markets, as far as they can already be recognized or predicted today. At present, automation may give us a competitive advantage, but sustainability is crucial, as it enables us to meet our customers' quality and efficiency requirements.

**up grade:** You opted for LASCO technology. Why?

**Meric:** The acquisition cost of production facilities is only one aspect of the investment decision; admittedly a very important one. However, you do not know what a production facility really cost the company until it is taken out of operation at the end of its useful life. LASCO is THE pioneer of automatic forging and has proven the quality and efficiency of its solutions in many ways since the 1990s. Dozens of systems are successfully in operation worldwide. This offers us investment security.

**up grade:** From your point of view, what was the cooperation like in the manufacturing and installation process?

**Meric:** The professional understanding at technician level enabled a rapid process. Thanks to acceptance of the machine and training of our machine operators in Coburg, the assembly and commissioning of the production cell in Karacabey took less than a month. This was a very successful project for us.

**up grade** LASCO 42/19



## MSK Steel Forging Ltd.

# Tour de force in Turkey

**MSK Steel Forging Ltd. is operating the first fully automatic hammer forging cell in Turkey. The company has been producing parts for the domestic and European automotive industry for several weeks now. The new LASCO production technology serves to secure the competitiveness of the company.**

For the family business, the investment was a financial tour de force which, despite the devaluation of the Turkish lira, was mastered in the international currency exchange. MSK Steel Forging did by no means want to compromise on the quality and efficiency of the production line. For good reason: The fully automatic hammer forging cell is intended to secure competitiveness in highly demanding markets for years to come.

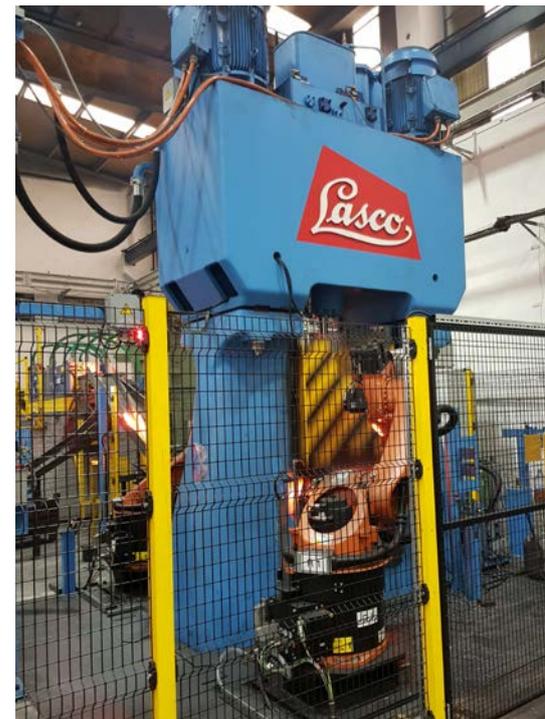
The line ordered in mid-2018 consists of a hydraulically driven HO-U 630 double-acting die-forging hammer (63 kJ blow energy) with forging and handling robots. After ten months of production, it has been used for manufacturing hinges for car doors since September 2019. In the standard process, the work-piece undergoes two preforming operations in multiple die impressions before being finish-forged in the final die impression.

MSK Steel Forging has been a successful player in the Turkish forming industry for hot steel for over 30 years. The company was founded in 1995. On the Marmara Sea, approx. 150 km from Istanbul, MSK produces in Karacabey/Bursa on a 35,000 square meter site with approx. 25,000 square meters of operating space. The integrated steel forge with associated workshops for die making, forging, heat treatment and machining includes various forging hammers and hot presses. The company's own tool shop contributes significantly to the success of the company.

The parts produced range in weight from 200 grams to 10 kilograms. In the automotive sector these are mainly common rails, crank-

shafts, camshafts, drive flanges, cranks, connecting rods, pistons, hinges, ball joints and upset parts. The die forgings are delivered as semi-finished or finished parts to customers in Germany, Mexico, Brazil, Spain, Hungary, Italy, the Netherlands, Romania, France and Turkey. According to the company, the export share is 55%.

MSK attaches great importance to the training of its employees to qualify them as specialists on an international level. This facilitates cooperation with customers right from the product development stage.



**The fully automatic forging cell in operation at MSK Steel Forging**