upgrade

Newsletter for customers, employees and partners
volume 20, issue no. 38, September 2017

EMO Hannover 18-23·9·2017 Come and see us! Hall 15 – stand G 19

Trends

LASCO presents Multiplex press

With the Multiplex press MXP, LASCO places a new system at the disposal of the forming industry, which combines the forming characteristics of a servo-hydraulic press with those of a die-forging hammer. The new concept (see picture right) will be presented to the expert audience at the leading trade fair for metal-working EMO in Hanover for the first time.

News

Completely new forge for Crosby

The US American Crosby Group (Longview, Texas), a company with long-standing tradition, moved to a new plant with its complete forge. LASCO supplied the essential line components for five new fully automatic forging lines.

In practice

Kuźnia Sułkowice on successful course

Since its complete privatization in 2003 the forge Kuznia Sułkowice has developed into the largest employer in Sułkowice (Southern Poland). According to the company, LASCO forming machines have essentially contributed to the lasting success – meanwhile there are seven in number.

LASCO UMFORMTECHNIK
WERKZEUGMASCHINENFABRIK

Friedrich Herdan
Partner and
Chairman of the Board
Langenstein & Schemann GmbH

Renaissance of protectionism?

Globalization deeply changed our economic system, boosted growth and wealth in many places of the world, but also increased competition considerably. This put entrepreneurs, employees and economic areas that were not sufficiently competitive under pressure, and provided the breeding ground for the strengthening of populism and nationalism.

Statements like „Imports lose us our jobs“ manifest this view.

We as enterprises are therefore well-advised not to let it get to ourselves, but to rely on what evidently generated our previous success. Open markets and free trade are necessary preconditions for jobs and prosperity. This is true for today and the future none the less than it was over decades in the past, in which this was general economic knowledge, though.

Yours

Friedrich Herdan

Extended potential for lightweight construction components

EMO: LASCO presents MXP

LASCO is presenting the newly developed hydraulic Multiplex press MXP to the international expert audience at the world's leading trade fair for metal working EMO Hannover 2017.

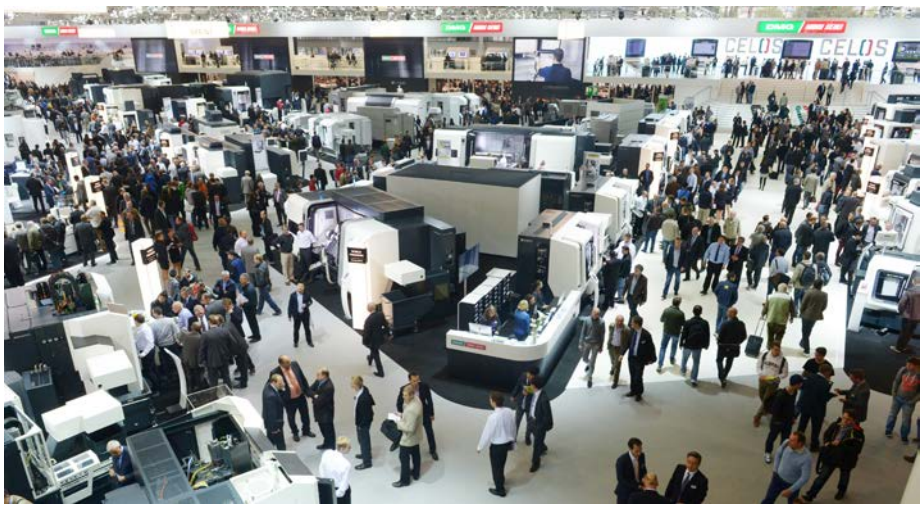
Current and foreseeable trends in requirements of the key industries pile pressure on cost efficiency and production-oriented possibilities of the forming industry. Therefore, LASCO has developed a machine concept that allows industrial forges to react flexibly to new automotive drive systems in the changeover phase: The Multiplex press MXP is servo-hydraulic press and die-forging hammer at the same time.

Especially production engineering in the automotive industry is marked by constant competition between optimal lightweight construction and reasonable costs. Therefore, enterprises in the massive forming sector, which deliver a considerable part of their production to the automotive industry, will have to find new ways. The answer are component constructions with bending rigidity and buckling strength and partially formed functional elements made from thin or thick sheet metal, for cold or hot forming processes, requiring very high forming forces for shaping, though. This - on the other hand – can result in high investments and thus force up unit costs.

LASCO's solution is the newly developed Multiplex press MXP. The innovative machine concept combines the drive system of the force-bound hydraulic press with that of the energy-bound hydraulic die-forging hammer. The advantage resulting from this is that the drawing operations are carried out with the smooth sequence of motions typical of hydraulic presses, and final forming and/or calibrating at a pre-set energy can be carried out with extremely high forces.

The machine is perfectly suited for pressing and bending operations, as it runs at high idle down speeds and starts the pressing operation directly after touching the work-piece. Separate hydraulic circuits for ram and drawing cushion allow independent control of the motions.

After the pressing and/or drawing operation, the ram is supplied with an exactly preset energy, which is transformed into very high forming energy in the bottom dead center due to the short forming stroke. The control allows one to several freely programmable forming impulses with high frequency, whose individual energies add up. The resulting ultimate force for forming and/or calibrating reaches a multiple of the nominal pressing force of the machine without overstraining or expanding the machine frame. Combined drawn/stamped parts can be produced with highest accuracy at comparably low investments by downstream incremental forming impulses.



© Deutsche Messe, Archivbild (2013)

After a four-year break, the world's leading trade fair for metal-working once again opens its gates in Hanover from 18 – 23 September 2017. Following its motto "Connecting systems for intelligent production" its focus will be on the topics digitalization and networking for production. At the beginning of June 2,050 companies from 45 countries enrolled for it, more than 1,400 exhibitors of them alone are from Europe. LASCO is presenting innovations and products in hall 15 on stand G19.

View of the new plant of the Crosby Group in Longview, Texas, where five fully automatic forging lines are in operation.

The US American Crosby Group is prepared for the future

Bulk purchase from the technology supplier

The Crosby Group from Longview (Texas, USA) moved its complete forging production to a new plant and gave it a complete facelift.

This is something absolutely special even in LASCO's company history of more than 150 years: an order for more than two dozen line components for forging lines, including 7 forming units and 14 handling robots. Crosby has been cooperating successfully with LASCO since the 1960s and therefore placed extreme confidence in the German technology supplier with regard to its key project of future-oriented restructuring and equipment of its forge. LASCO took over leading responsibility for the five envisaged fully automatic forging lines in the newly built plant in Longview.

LASCO supplied five servo hydraulic double-acting die-forging hammers (HO-U) with blow energies between 16 and 160 kJ, a stretching line AR 250/300, an upsetting and calibrating press VPE 200 as well as 14 forging robots and two rail-mounted manipulators within the scope of this ambitious project. In addition, LASCO was entrusted with the task of programming and implementing the master control of the five forging lines, which also include five trimming presses with press forces between 1,000 and 6,000 kN. The fully automatic forging lines have been in operation successfully for about half a year now.

The Crosby Group with its company history of almost 180 years is one of the world's leading producers of components for the heavy lift industry, like forged crane hooks, shackles, swivels and loops.

Unior Group extends forging division

The Unior forging division with activities in Slovenia, Croatia and China continues to grow. Its equipment with LASCO forming machines at the main factory in Zrece was increased by a hydraulic double-acting die-forging hammer HO-U 400 with a blow energy of 40 kJ some days ago, which is used for the production of connecting rods for vehicle engines. The Unior Group generated a turnover of approx. €168m in 2016. The forging division with focus on die-forging and the machining of steel is the most important of four business units, one of which is the production of high-quality chassis components.

Synergies important for RÜBIG group

Since their foundation in 1946, Rübig & Söhne GmbH (Wels, Austria) have developed from a small die-forge into a competence center for metal. A staff of more than 350 combines knowledge and experience in the three business units of the RÜBIG Group system engineering, heat treatment and die forge in order to reach synergies in the solution of application-specific customer requirements. RÜBIG make high demands both on themselves and on their suppliers – and therefore cooperates with LASCO among others. Now the second die-forging hammer (HO-U 315) has been ordered for delivery in autumn 2017.

China invites experts to MetalForm 2017

In 2017 LASCO is again presenting itself at the ChinaForge Fair, the biggest international trade fair for forging technology in China. Together with the parallel events of "SheetMetal China 2017" (stamping), "MetalComp China 2017" (metal pressings) and "MetalFb China 2017" (sheet metal forming), it is part of the "MetalForm 2017", which takes place on the ground of the world exposition and in the International Congress Center in Shanghai from 19 – 22 September 2017. More than 400 national and international exhibitors on 25,000 m² will be present. The trade fair is organized by the Confederation of Chinese Metalforming Industry (CCMI).

Series: Basics of solid forming (2)

How to determine machines sizes

This article concludes the topic reported on already in our last edition, which is supposed to support practicians of the trade to calculate roughly and simply the forming forces respectively machine sizes required for their specific forming tasks. These methods are not supposed to replace scientific calculation methods, though, that are used for concrete calculations of a forming unit.

Determination of the size of screw presses

If you want to determine roughly the size of a screw press, the required forming force is determined as a first step.

Forming force:

$$F = k_w \times A$$

F in N — *max. pressing force*
A in mm² — *projected surface including flash land*
$\mathbf{K_w}$ in N/mm² — *deformation stress*

with: $k_w = k_j \times y$

$\mathbf{K_j}$ in N/mm² — *yield stress*
Y — *shape factor*

Source: LASCO and Tschätsch

The forming energy can also be roughly determined.

Required energy:

$$E = k_{correction} \times F_{Max} \times s_E$$

E in kJ (kNm) — *forming energy*
$\mathbf{s_w}$ in m — *forming stroke*
$\mathbf{k_{correction}}$ — *corrective factor (for rough calculations 0.2)*

$$E = 0.2 \times F_{Max} \times s_E$$

Source: LASCO and Tschätsch

An exact calculation is more elaborate, however, and hardly required in practice.

shape	work piece	y	b/s
1	upsetting in the die without flash formation 	4	3
2	upsetting in the die with slight flash formation 	5	4
3	die-forging of simple parts with flash formation 	7.5	6–8
4	die-forging of difficult parts with flash formation 	9	9–12

k_f-values [N/mm²]* depending on temperature and material

material		forging temperature [C°]				
material no.	EN denomination	900	1000	1100	1200	1300
1.0401	C15	k_f 160	140	110	70	50
1.0503	C45	k_f 190	160	120	80	50
1.7220	34 Cr Mo 4	k_f 200	170	120	80	(60)
1.4718	X 45 Cr Si 9 3	k_f 240	190	170	120	/
1.4006	x 10 Cr 13	k_f 280	220	170	90	/
1.3505	100Cr6	k_f 220	180	130	90	(60)
	Inconal alloy X 750	k_f 220		190	140	

* for an average forming velocity $\varphi = 10[s^{-1}]$

Simplified calculation formula

$$E = F \times s$$

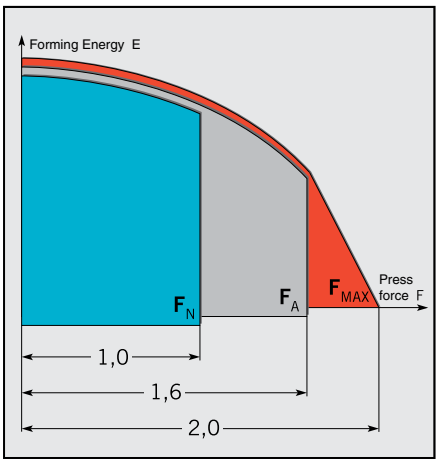
energy = forming force x forming stroke

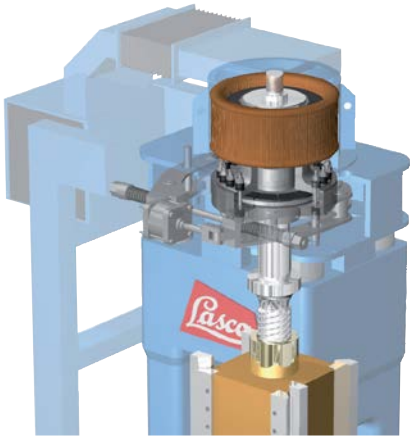
The simplified calculation formula clearly shows that the energy parameter largely depends on the forming stroke. Long forming strokes also require high forming energy, short forming strokes e.g. for calibrating or coining tasks only require low energy.

LASCO screw press series: High and low energy for the same press size

Because of the demand for flat forging parts and such requiring much deformation, LASCO developed two different series of screw presses:

Units with high energy
SPR series

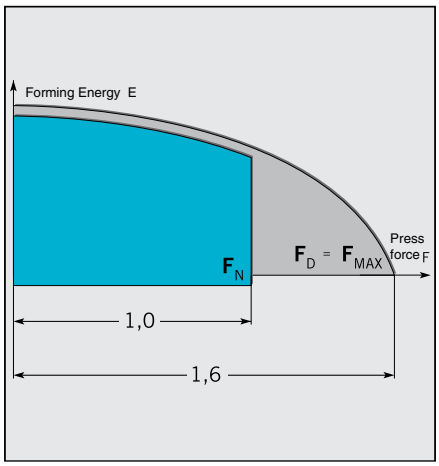


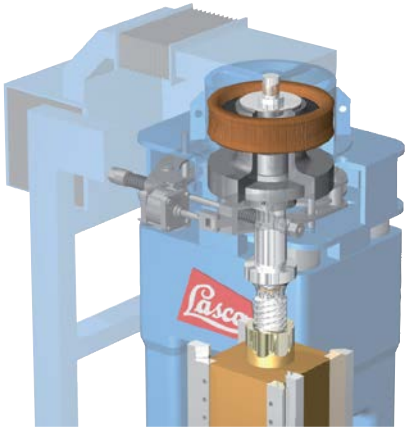


Schematic view of the basic drive design of the SPR series.

Due to their high working capacity, presses of the SPR series can be used universally and are particularly suited for a wide range of die-forging tasks – also with long forming strokes. They are equipped with a slipping clutch working as overload protection.

Units with low energy
SPP series

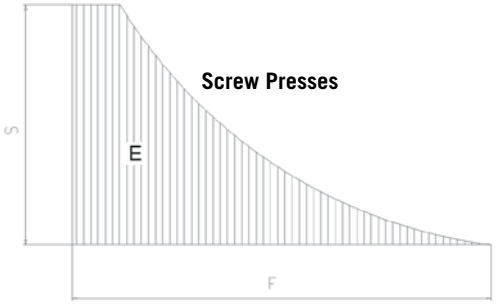


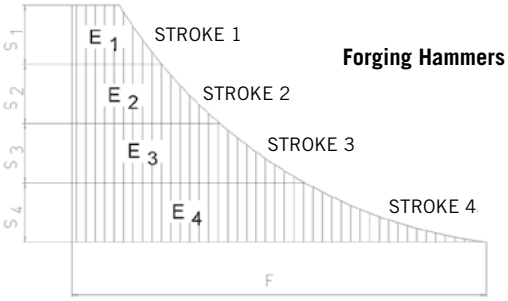


Schematic view of the basic drive design of the SPP series.

The screw press of the SPP series is the answer to forming tasks with short forming strokes. The maximum energy stored in the flywheel is lower than that of the SPR. Therefore, the unit is protected against die-to-die blows even without a slipping clutch.

The energy stored in the flywheel of the screw press and adjusted via the impact velocity of the ram splits up in several forming steps which are operated at the same time or in turns, and can also be added up via an additional working stroke, if only one operation is required. As the forming force cannot be exceeded due to the slipping clutch, intermediate trimming might be advisable.

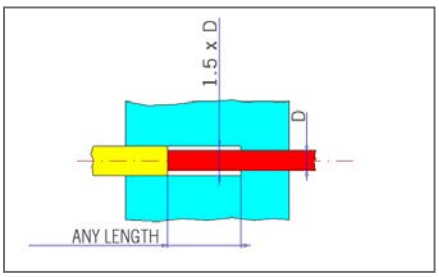




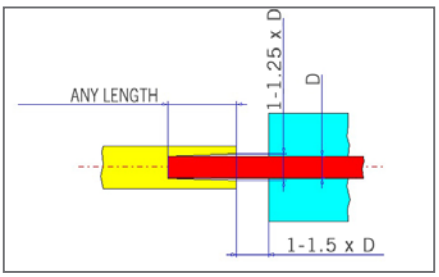
Recommendation for indenting, coning and upsetting

The following findings and our experience from many years' forging practice apply to nearly all machine types:

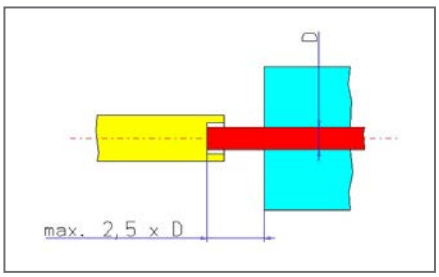
With sufficient temperature, skillful indenting can save forming steps of cone upsetting. Our LASCO experts will be pleased to give advice.



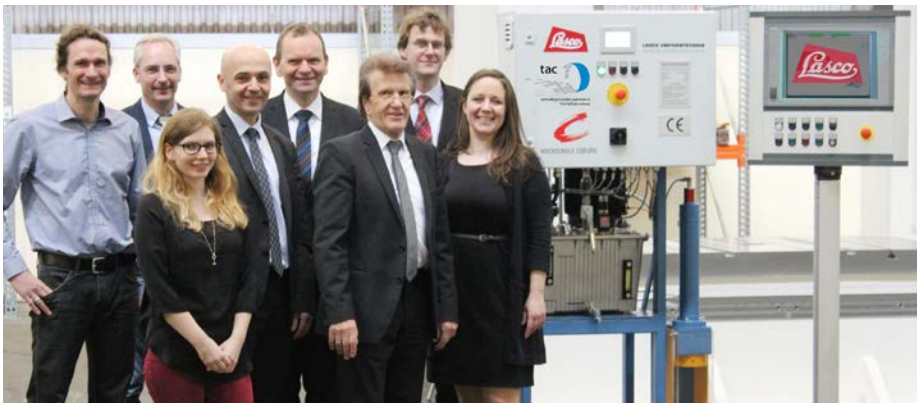
Intending



Coning



Upsetting



During the handover of the LASCO hydraulics test bench (from left): Dipl.-Ing. Ingo Ernst and Managing Director Production Robert Welsch (both LASCO), Tanja Feller (TAC), CEO Lothar Bauersachs (LASCO), Prof. Dr. Jürgen Krahl, President University East Westphalia-Lippe (formerly Managing Director TAC), Friedrich Herdan, Chairman of the Board LASCO Langenstein & Schemann, Holding, Dr. Olaf Schröder and Managing Director Caroline Rahn (both TAC).

Test system developed for University of Applied Sciences

LASCO supports research

The largest institute of the University of Applied Sciences Coburg, the "TAC – Technology Transfer Center Coburg", is pleased about the special LASCO test bench, which was particularly developed for the purpose of research.

The project "Development of a sensor technology for finding out the state of aging of hydraulic oils during the production process" determines the aging of various hydraulic oils via a simulated real industrial process. It is still common practice today to change hydraulic oils in manufacturing equipment at fixed time intervals as a precautionary measure. It is the aim of the three-year research project to avoid damage to hydraulic components caused by prematurely lowered oil quality by the use and evaluation of suitable sensor technology. Another aim is to fix dynamically the oil change interval depending on the result of the oil quality analysis and to extend it considerably, if possible.

LASCO developed and realized a hydraulic test bench for this research project, which allows more quickly to parameterize and simulate various operating conditions occurring in the real production process. In addition, a sensor transmits the results to the respective machine manufacturer and/or user online thus realizing a control as required by „Industrie 4.0" (i. e. the fourth industrial revolution).

Securing the supply of skilled labour through professional training

LASCO has always regarded it as an essential task to meet its medium- and long-term demand of highly qualified skilled labour above all by first-class professional training of young people. This is why the training ratio of the company has been higher than the average in the machine tool sector for decades. Currently it is around 17 percent. On 1 September 17 young women and men started their apprenticeship at LASCO. Among the job starters are again five participants in the project "Vocational Training 1+3" within the scope of the integration of refugees from war zones. In total LASCO is training 60 job starters at the moment.

Spotlights

Role models: Already for the 13th time, bayme vbm awarded the Dr. Kapp-Vorbildpreis (prize for voluntary work) to apprentices of its member companies. Together with 70 other young prize winners Sina Heß (student of mechanical engineering in dual system studies – left), Luis Flurschütz (apprentice as cutting machine operator – middle) and André Höllein (apprentice as mechatronic technician – right) were honoured for their voluntary work for the common good. In their free time, Sina Heß works as a lifeguard and voluntary ski instructor and supports a senior citizen in organizing her day-to-day life; André Höllein is member of the volunteer fire department, the Bavarian Red Cross and the rural youth at Meeder (near Coburg) and takes care of the green areas around the pond in his home village; Luis Flurschütz works as auxiliary ski instructor, helps to organize the flea market of the sports club Oberlauter and plays the tuba in a youth orchestra.

10 years with LASCO

Albert Landgraf	01.02.2017
Markus Otto	01.03.2017
Andreas Bauer	19.06.2017
Thorsten Höhmann	01.08.2017
Kai Bauersachs	01.09.2017
Faruk Ciritoglu	01.09.2017
Annemarie Galle	01.09.2017
Dominic Heidl	01.09.2017
René Müller	01.09.2017
Steffen Müller	01.09.2017
Kevin Reißenweber	01.09.2017
Timo Schramm	01.09.2017

25 years with LASCO

Angela Rath	07.01.2017
Robert Welsch	01.05.2017
Stefan Fink	01.09.2017

40 years with LASCO

Matthias Löffler	01.09.2017

Sadly mourned

Joachim Niller	† 04.01.2017

Bavarian Order of Merit for Friedrich Herdan

Highest appreciation

The Chairman of the Board of the LASCO-"Holding - Langenstein & Schemann" and President of the Chamber of Commerce and Industry (CCI) Coburg has been awarded the Bavarian Order of Merit as a „token of honorific and grateful appreciation of his outstanding services rendered to the Free State of Bavaria and the Bavarian people".

In the Antiquarium of the Munich Residence, Bavarian Prime Minister Horst Seehofer honoured Herdan as an influential entrepreneurial personality in the Coburg area, who has made the long-established company LASCO Umformtechnik GmbH with its staff of approx. 400 at the Coburg site and a total of 500 in the corporate group a global player as manufacturer of machine tools, production lines and automation technology for metal forming and the production of building materials. In addition, he has been involved in committees and functions at the Chamber of Commerce and Industry Coburg on an honorary basis. With his outstanding commitment, untiring energy and strategic farsightedness Herdan stood up vigorously for the improvement of the general economic set-up in the region in his capacity as President of the CCI Coburg, emphasized Seehofer, and in doing so, he focused special attention on the location factors transport infrastructure, recruitment of skilled labour and professional education.

Herdan campaigns for an airfield, which is fit for the future and appropriate for instrument flight, and demands the systemic connection of Coburg to the high-speed ICE rail network of German Rail (Deutsche Bahn AG). CCI President Herdan also attaches special importance to the vocational integration of refugees with high prospects of permanent residence by developing the pilot scheme "Vocational education 1 + 3", which is unique in Germany. This project implies the prolongation of the dual vocational education of refugees by one year and simultaneous language acquisition.

Moreover, Herdan has been town councillor in Coburg since 2008. He has also been member of the advisory board of the Technology Transfer Center Automotive (TAC) at the University of Applied Sciences Coburg since 2008 as well as member of the university council and the foundation council of the Science Foundation Upper Franconia since 2015.

Bavarian Prime Minister Seehofer emphasized that Herdan had won high recognition in his capacity as entrepreneur by his commitment to the technological and economic region. According to Seehofer, Herdan had made an outstanding contribution to the Free State of Bavaria and its citizens. In gratitude for and appreciation of his professional and diversified voluntary commitment he has been awarded the Bavarian Order of Merit.

Friedrich Herdan received the Bavarian Order of Merit from Bavarian Prime Minister Horst Seehofer (right) in the Antiquarium of the Munich Residence.

Fairs + Dates

International Forging Congress (IFC)
Hangzhou, China
17.–22.09.2017

ChinaForge Fair
Shanghai, China
21.–24.09.2017

CMTS Canada
Toronto, Kanada
25.–29.09.2017

SENAFOR
Porto Alegre, Brasilien
08.–10.10.2017

Forging Technology
Mumbai, Indien
05.–07.10.2017

MSV Brno
Brünn, Tschechien
09.–13.10.2017

Metalex
Bangkok, Thailand
22.–25.11.2017

up grade
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LASCO congratulates successful vocational training graduates

Eleven young people proved their qualification as skilled labour very successfully in the recent final examinations at the Chamber of Commerce and Industry Coburg after several years of professional training at LASCO. They received their certificates in a public ceremony at the Kongresshaus Coburg. Some of the first well-wishers were the training supervisors from LASCO. Back row (from left) Georg Pfeuffer (training supervisor), Marvin Tischer, Philipp Walter, Bastian Marx, Felix Höfer, Franziska Faber, Robin Beez; front row (from left): Björn Bühling (training supervisor), Andreas Illmer, David Lipinski, Patrick Seubold, Fabian Büchner und Alexander Zeuß.

Interview

Bogumił Banaś
Executive Partner
Kuźnia Sułkowice S. A.,
Sułkowice
(Poland)

Polish forge on successful course

Four in one go

The long-established forge Kuznia Sułkowice S. A. in Sułkowice (Poland) has been on successful course since 2003: thanks to privatization, clever market positioning, courageous investments, committed workforce and last but not least also with the help of LASCO technology.

Kuźnia Sułkowice S. A. was founded more than 130 years ago. With a current workforce of about 250, the enterprise is the largest employer in Sułkowice (Southern Poland). The success story of the forge is also one of the Polish economy at the beginning of the 21st century, because the enterprise, which used to be a state-owned company for a long time, was completely privatized in 2003. Since then it has undergone a very dynamic development by investing in most modern technology.

Its key business is the hot forging of high quality die-forged parts weighing between 0.10 and 10 kg. The company is one of the largest producers of forged scaffold couplers in Europe. A wide range of hand tools completes the product portfolio.

The company is equipped with modern machinery: 14 forging hammers, 2 forging presses, a tool shop and a hardening shop. Recently, the mechanical processing department has been expanded considerably. Currently, Kuźnia Sułkowice has 30 CNC machines, including 3- and 5-axis milling centers, turning centers with robots and 5-axis turning machines with milling function and counter spindle.

For many years already, the enterprise has been familiar - and highly satisfied - with LASCO technology, a fact that motivated Kuźnia Sułkowice in its modernization drive to rely on LASCO again and to purchase four modern hydraulic double-acting die-forging hammers in one go. Meanwhile another HO-U 200 has been purchased so that seven LASCO hammers are in operation in the forge at present.

The altogether ultramodern machinery has strategic importance for the forging company. Kuźnia SułkowiceS. A. is facing up to competition with the most renowned metal forming and metal processing enterprises in Europe. Just favourable unit labour costs would not be sufficient in order to survive in this competitive environment in the medium and long term. Over and above, the Polish supplier must be able to produce the required quality within a narrow timeframe. Kuznia Sułkowice S. A. has been proving this excellently for some years already. Its continuing success is therefore far from being surprising.

Forming machines from LASCO are the key technology in the modern forge of Kuźnia Sułkowice S. A.

Direct hit

up grade: Mr. Banaś, it's practically without reservation that your company relies on products from LASCO as far as die-forging hammers are concerned. Why is that?

Bogumił Banaś: Some years ago, we decided on forging hammers from LASCO. At that time we already had two LASCO units in our plant, the hydraulic drop hammers KH 200 and KH 315, and very much appreciated their reliability, accuracy and simple operation. This was the reason that we wanted to purchase further LASCO hammers, this time modern hydraulic double-acting die-forging hammers: two HO-U 160 and two HO-U 400. We relied on an experienced and internationally recognized company and were not disappointed. With these investments we hit the bull's eye. When our market success required the investment into another hammer it was a mere formality to choose an HO-U 315 from LASCO.

up grade: When four machines have to be delivered and installed at the same time, one or the other problem can arise, can't it?

Banaś: The handling of the order went perfectly well. Actually, we hadn't expected anything else from LASCO. Delivery was made on time, practically dead on the hour, installation and commissioning were carried out by qualified personnel and took a few days only. Finally, professional training in machine operation was carried out.

up grade: How does your company benefit from the new machinery?

Banaś: Equipped with such economic and efficient hammers, we compete today with forges from all over Europe. The features of the machines allow us to offer to our customers forging parts that weigh up to 10 kg and are made with utmost precision and accuracy. At the same time the parts show minimum die taper (1°), which means that material can be saved. The reliability of the hammers allows us to offer very short delivery times, as we don't have to allow for fault times. Our maintenance costs are also lower than customary in the trade. In addition, we were able to take up parts from acid-proof steel and bearing steel into our product portfolio.