upgrade

Newsletter for customers, employees and partners
volume 19, issue no. 36, July 2016

Trends

Virtual commissioning

"Virtual commissioning" enables the realistic simulation of machine processes and operating conditions already in the engineering stage. This very special LASCO service will further improve the existing high commissioning competency for complex lines in terms of time and quality.

Know-how

More possibilities in the pre-forming process

LASCO has designed different variant types of multi-axial hydraulic presses. Equipped with up to four press axes that act independently, "HWS" and "FlexiMat" are able to produce even complex geometries in the forging process.

In practice

Stretch reducing mill convinces

At BENTELER Steel/Tube GmbH (Paderborn/Germany) the first LASCO stretch reducing mill convinces in continuous operation. The renowned company has been operating successfully an STW 2500 as pilot user in the fully automated LASCO forging line for the production of semi-finished tubes.

LASCO UMFORMTECHNIK
WERKZEUGMASCHINENFABRIK

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

Technology leap

More intelligent, more individual, more efficient, faster and more linked-up – these are just some of the promises of the new industrial age. In Germany the government has taken over the management of "Plattform Industrie 4.0" (Platform Industry 4.0) and called for the implementation of the "fourth industrial revolution". Comparable administrative initiatives abroad are e.g. the "Industrial Internet Consortium" (IIC) in the USA, the "Industrial Value-Chain Initiative" (IVI) in Japan and corresponding target agreements in the current Chinese five-year-plan. But what is it actually about?

Internet and communication technologies (IKT) are to fuse with production technologies in order to enable new, innovative products and services that way. The aims are basically classic such as quality, cost and time efficiency, but also resource efficiency, flexibility, versatility as well as robustness in volatile markets. The characteristic of industrial production is the high adaptation (up to lot size 1) of the products under circumstances of a highly flexibilized production. The required automation technology is to become more intelligent by processes of self-optimization, -configuration, -diagnosis and cognition and to give better support to people in complex tasks. No other line of industry world-wide is challenged by this highly ambitious aim more than the mechanical engineering sector.

Being a technology supplier since 1863 – the age of the first industrial revolution by the use of mechanization through water and steam power – LASCO is also taking up the challenge of industry 4.0 passionately. Already, we offer products and services in which mechanics, hydraulics, electrics, electronics and binary logic are interlocked with internet and communication technologies to become high performance and high efficiency systems. Inspired by concrete requirements of our customers we develop innovations on the pulse of progress. We do not regard this as a "revolution", but simply as a paraphrase of our core tasks.

Yours
Friedrich Herdan

Industry 4.0

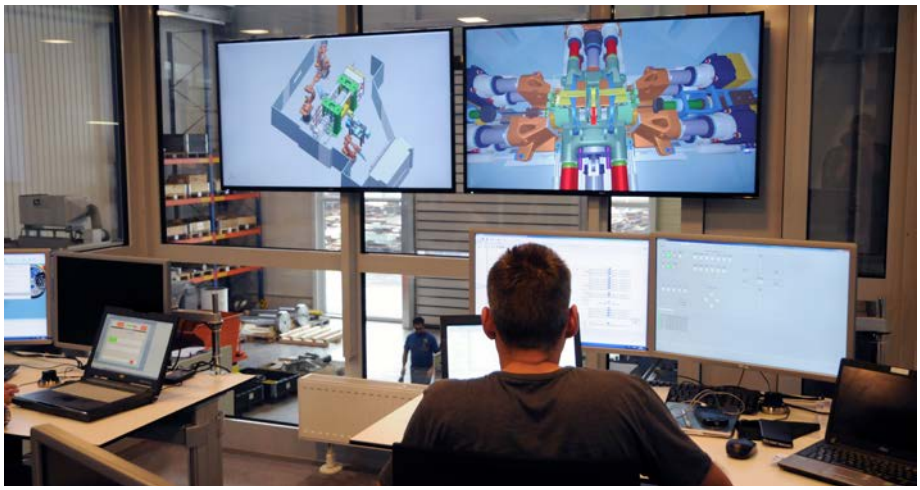
Virtual commissioning

LASCO provides the new advanced service "virtual commissioning" to its customers. Imponderabilities during commissioning on site are reduced to a minimum – especially in case of complex lines.

Linked lines are becoming more and more complex, and the demand for the earliest possible time of starting up is increasing. International competitive pressure is more and more shortening the phases which users can make available for readjustment and optimization even for pilot plants. Lines are to run smoothly preferably right from the start by complying with all duties imposed at the same time.

LASCO is taking these legitimate expectations of its customers into account and is introducing the new service "virtual commissioning" additionally. As early as in the engineering stage, all machine processes and operational statuses are simulated on the computer. For this purpose all digital data are used that were evaluated in the engineering stage: 3D CAD data, SPS and robot programs, drive concepts and their parameters etc. As our virtual simulation performance already takes place far ahead of the actual real commissioning, this method opens up a calculable and shortened commissioning period on site. Possible faults are recognized at an early stage and correction loops are minimized.

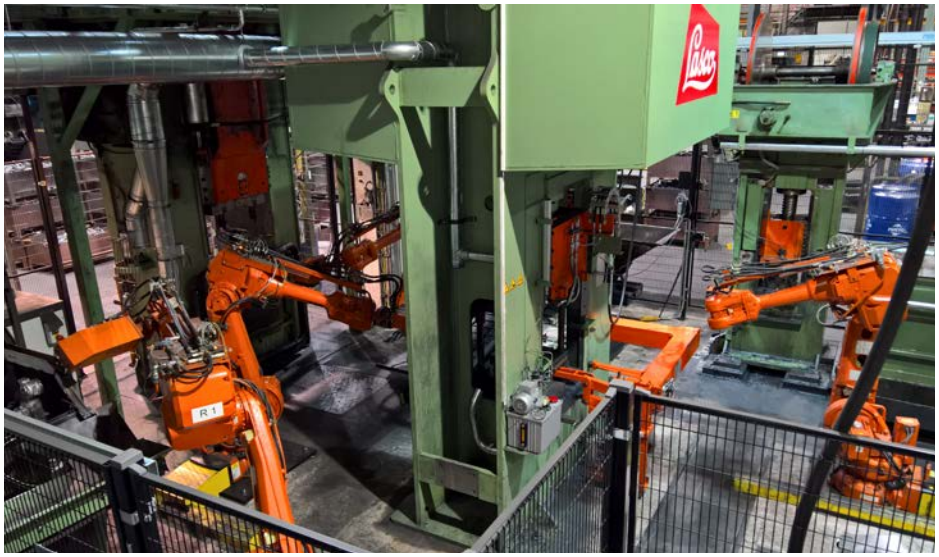
LASCO has been using the new "virtual commissioning" very successfully for the line of a German customer in recent months and is also going to use this method before the shipment of a large-scale line to the USA. The new service allows to give a genuine demonstration of the functionality of the ordered production lines to the respective principals already at a time far ahead of installation.



The new workstations of "virtual commissioning" at LASCO are located high above the hall floor.

Iran shows great interest in German machines

The Iranian industry pushes for a revival of the traditionally excellent relationship to German enterprises. This is the impression the exhibitors at the first AMB Iran (International Exhibition for Metalworking) got in Teheran after the lifting of the embargo. LASCO presented itself at an own stand together with the Iranian representation Emdad Engineering and contributed a paper that was the first to be presented after the opening of the accompanying symposium. LASCO's product portfolio attracted much interest during all three days of the event, and the mechanical engineering company was able to make numerous new contacts. 111 enterprises – 68 of which from Germany – participated in the event organized jointly by Messe Stuttgart and the VDW (Verein deutscher Werkzeugmaschinenfabriken e. V. – both from Germany). The AMB proved to be a success attracting more than 2,000 visitors from Iran, and nearly 500 trade visitors attended the accompanying symposium. A remake of the AMB is therefore envisaged for May 2017.



High-quality Fiskars™ axe blades (shown left) are produced fully automatically (see production line above) – in Billnäs/Finland. LASCO integrated existing and new line components to make up an efficient, fully automatic production line.

Fiskars™ axes have to do with LASCO quality in future, too.

Penetrating power made in Finland

Fiskars Corp. in Helsinki (Finland), internationally known for high-quality parting and cutting tools, has realized a production line together with LASCO for the first time.

This cooperation is exemplary for demonstrating how benefit can be increased, when the expertise of the technology user and the technology supplier are pooled with the aim of maximum efficiency enhancement. Fiskars' original intention was to minimize material consumption in the production of axe blades and to reach longer service life of the tools as well as higher output with a new pre-forming press. During the project planning meetings with LASCO, it quickly became apparent, however, that additional potential could be unlocked by integrating the trimming process into the functions of the pre-forming press as well as by automation. Therefore, an induction furnace, four robots and the master control were added to LASCO's scope of supply to integrate the existing screw press (finish-forging) and a new hydraulic press from LASCO. This press type VPE 250 is equipped with pre-forming and trimming tools.

Fiskars Finland Oy Ab (Billnäs) uses the new line for the production of axe blades from 800 g to 2.5 kg. LASCO engineering had to consider especially the conditions on site as well as the optimum integration of both existing and new line components such as material feed, heating system, temperature shunt, forging robots and forming units by focusing especially on the existing large product range as well as forming tools which are appropriate for automation.

Whereas LASCO installed and demonstrated its scope of supply in Coburg, where Fiskars carried out an acceptance inspection, the line was installed in Finland by Fiskars personnel themselves. Cooperation was very constructive and successful, which not least was reflected in the short implementation period of eight months.

FlexiMat for turbine blades

Leistritz Ltd. In Nongkham Sriracha (Thailand) will be using a FlexiMat 40/60 for the production of turbine blades from titanium and nickel alloys and stainless steel for aero-engines in the future. The unit generates forming forces of 4,000 kN (horizontally) and 6,000 kN (vertically) via three separate, synchronized hydraulic drives. The pre-formed parts will then be finish-forged with a LASCO screw press type SPR 1600.

Calibrating press for front shock towers

MAGNA BDW technologies Soest GmbH is expanding its production capacities by ordering a LASCO calibrating press type KP 315 (press force 3,150 kN). Equipped with a hydraulically driven shifting table for the lower tool and a hydraulic servo direct drive, the machine guarantees optimum calibrating. The shifting table is moved in and out with the press cycle to load and unload the parts. The press is used for calibrating front shock towers from die-cast aluminium for the automotive industry.

Electric upsetting line for engine valves

Nanjing International Marine Equipment & Spares Ltd. (Nanjing/China) is going to use a horizontal LASCO electro-upsetter with direct current method for the production of valves for big engines from the end of this year. This line will be setting new standards not only in energy efficiency, but also with regard to dimensions and weights of the parts. The pre-forming unit was already designed by LASCO for future fully automatic operation.

Higher material and energy efficiency reached by

Up to six press axes acting independently

Optimization of the pre-form and minimization of the flash have always been core requirements in modern solid forming processes and are dramatically gaining importance in times of rising material and energy costs. Such optimization cannot always be achieved with conventional single-acting presses. Therefore, LASCO has launched a range of multiaxial presses.

Single-acting presses are characterized by the fact that the functions "closing of the die" and "forming" are, as a rule, carried out simultaneously. Thus flashless forging is not possible, as the die would have to be closed before the actual forming step takes place.

Double-acting presses provide more opportunities e.g. with an additional drawing cushion. Highest flexibility is reached, however, by hydraulically driven multiaxial presses. Depending on the application these are equipped with two to six press axes acting independently from each other and are used for traverse impact extrusion and upsetting e.g. in the production of pre-forms for turbine blades.

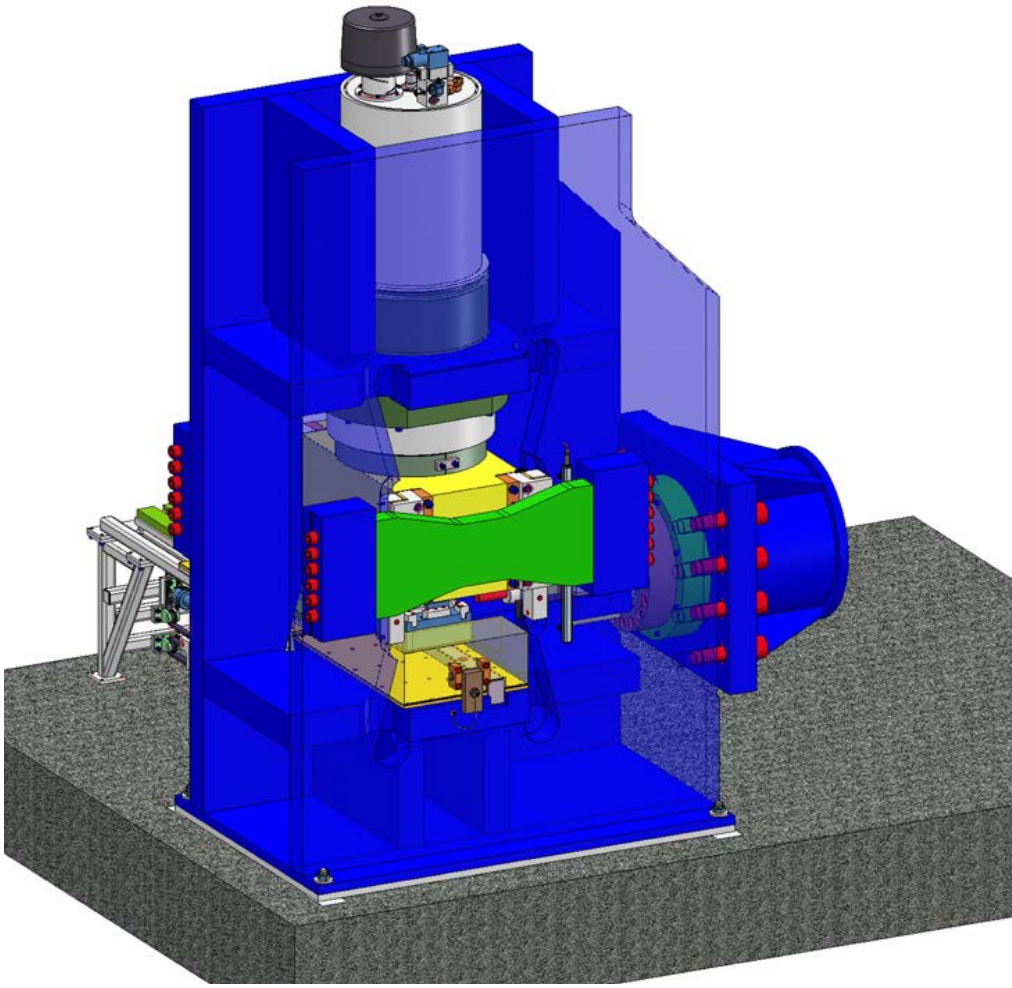
– We are going to report separately and in more detail about a special project, a multiaxial press with six axes for the production of large crankshafts, in one of our next editions.

Hydraulic horizontal forging machine – HWS

The **HWS** is a further development of a hydraulic forming unit based on the mechanical horizontal forging machine, which is still frequently used world-wide. A feature of this type is that the main drive used as eccentric drive for the upsetting punch is connected with the knuckle joint of the clamping drive via a push rod. A disadvantage of this design is the mechanical connection of the two forging axes. In addition die heights must be maintained exactly due to the knuckle joint.

The independent hydraulic axes of the **HWS** remedy these disadvantages. The clamping force, which can be set to up to 150% of the maximum upsetting force, closes the dies safely and independently of the upsetting operation. Nevertheless, existing tools can be maintained. The necessary control engineering for later automation with robots and transfer systems is already provided for.

A LASCO **HWS** with an upsetting force of 3150 kN will be delivered to a manufacturer of turbine blades in autumn this year. This customer owns several conventional horizontal forging machines and expects significant improvement in the accuracy of their pre-forms of blades from this investment.



Hydraulically driven horizontal forging machines, such as the LASCO HWS shown in the schematic view, provide a lot of advantages in the production of precision parts with demanding geometries over the conventional solutions for horizontal forging.

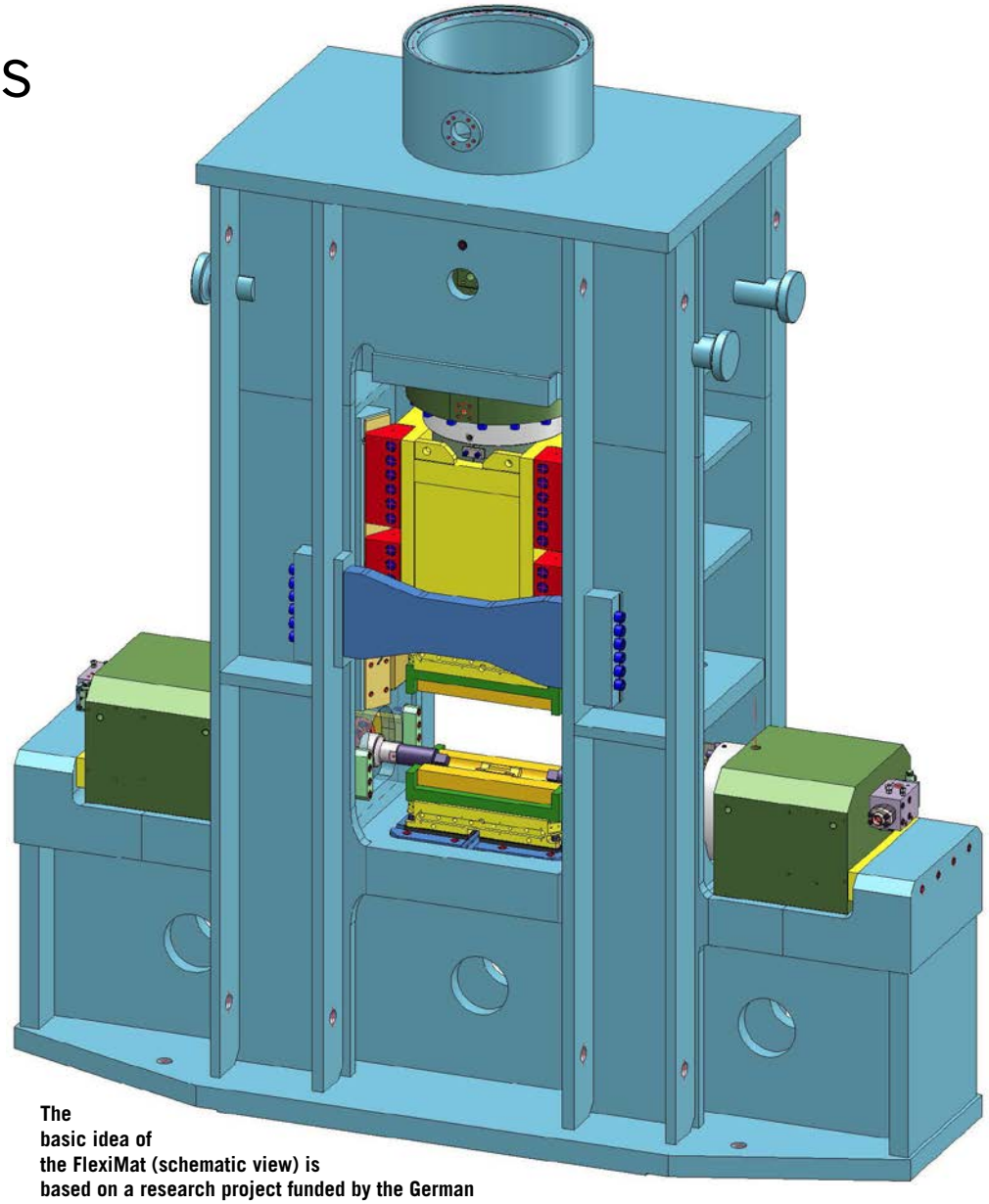
multiaxial presses

Hydraulic pre-forming machine – FlexiMat

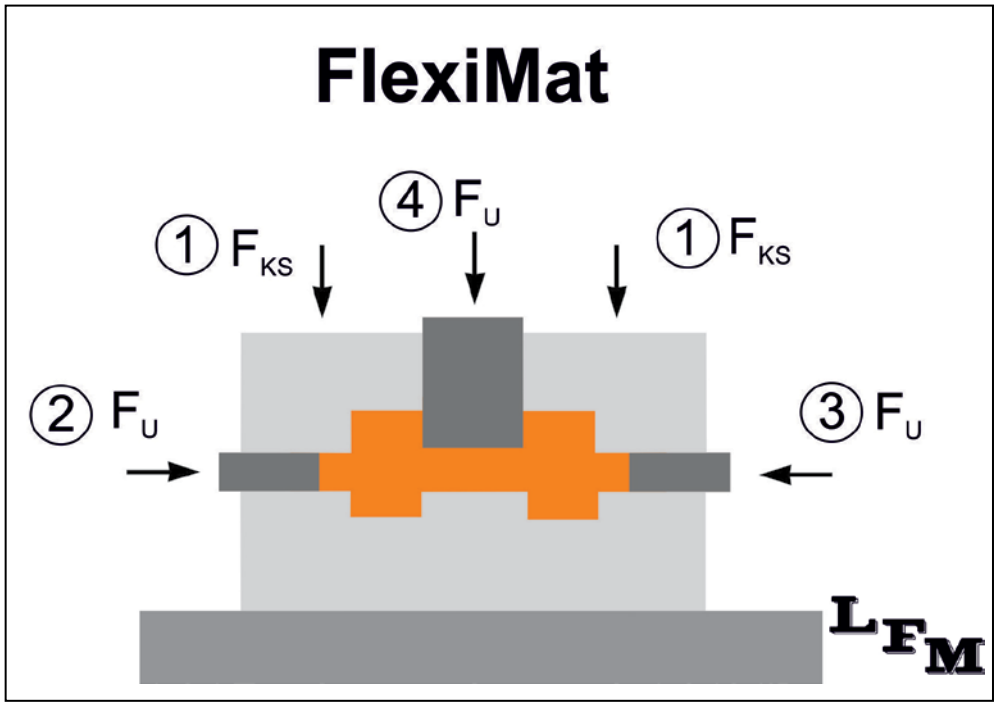
Starting point of the development of the **FlexiMat** was a project funded by the German Federal Ministry of Education and Research (Funding number: 17PNT023) and carried out by enterprises of the solid forming industry and LASCO under the direction of LFM Iserlohn. They jointly designed the pre-forming machine, developed its basic functions and evaluated its efficiency.

The **FlexiMat** is characterized by a modular design with up to two vertical closing and forming axes and two independent horizontal upsetting axes. Thus up to seven basic shapes can be produced – and in combination more complex geometries can be made via several forming steps. Up to three forming steps are envisaged. The parts are transported by transfer systems that allow both single and multiple operations.

LASCO has meanwhile developed the **FlexiMat** to a point that it is ready for series production. From the very beginning it has been received with great interest. The first press of this type, a **FlexiMat** 40/60 with a horizontal upsetting force of 4,000 kN and a closing force of 6,000 kN was ordered by our customer Leistritz Turbinentechnik (see cover picture of this edition). The press will be delivered to the plant in Thailand and used as pre-forming unit for the LASCO screw press SPR 1600 that was acquired at the same time.



The basic idea of the FlexiMat (schematic view) is based on a research project funded by the German Federal Government and was brought to readiness for series production by LASCO.



Equipped with up to two vertical closing and forming axes as well as two independent horizontal upsetting axes the FlexiMat can be used for producing complex geometries.

Change at the top of the sales department

LASCO counts on continuity

For the change at the top of the sales department LASCO counts on continuity as well as special technology- and company-related experience.

Our longstanding Sales Director Dr. Stefan Erxleben retired on 1 July 2016. Dr. Erxleben, who joined the company on 1 May 2000 was at first responsible expert in "powder metal forging lines". It was already in the same year that he became Head of the sales department. Since that time he was building up an excellent network with our customers at home and abroad. His sound expert knowledge characterized him in the same way as his ability to make new contacts. We thank him for his commitment and wish him all the best for the new chapter in his life.

Dipl.-Ing. Jochen Günnel, sales professional at LASCO for many years, will be the new Head of Sales. Günnel has been selling our machines and lines in North and South America as well as Italy on his own responsibility so far. He has been able to gather relevant experience in the field of forming technology as well as in the building material sector and has already held the position of Deputy Sales Director so far.

Thus the sales function, which is demanding and essentially important especially in the mechanical engineering sector, will be filled with an experienced employee from within the ranks of the company. Smooth transition in customer acquisition on both the domestic and international markets of forming technology and the building material sector as well as in the internal sales organization will be guaranteed.

The young skilled workers were congratulated on their successful professional qualification by the LASCO Managing Directors Lothar Bauersachs (3rd from left) and Robert Welsch (right) as well as the LASCO training supervisors for industrial jobs, Björn Bühling (2nd from left) and Georg Pfeuffer (left).

Ceremony at the end of vocational training

New-fledged experts

Ten young men finished their vocational training as skilled workers in technical jobs at LASCO successfully.

The industrial mechanics Patrick Höfler and Robert Bätz were especially honoured for their excellent performance (average grade 'very good') during a ceremony traditionally held by the Chamber of Commerce and Industry Coburg before young skilled workers enter into the workforce. Managing Directors and supervisors from LASCO wished the following new-fledged experts all the best for their career start: Wolfgang Schelhammer (electronics engineer - operating technology), Henning Müller-Blech, Fabian Schütt and Jonas Beetz (mechatronics), Edy Hamuyela, Martin Hentschel and Maximilian Müller (industrial mechanics), Nico Barth (cutting machine operator – turning lathe systems).

Spotlights

Energy efficiency proved: LASCO received the first certification according to DIN EN 16247-1. The so-called "energy audit", which is required by law, primarily serves to recognize saving potential and specifies adequate methods for this. Therefore it is an important step for companies to optimize energy use. Being one element in the scope of the so-called "Energiewende" (complete transformation of the energy sector) in Germany, such an audit according to DIN EN 16247-1 has become mandatory recently and must be repeated every four years at the latest.

25 years with LASCO

Andreas Weber	01.01.2016

10 years with LASCO

Yanik Cengiz	01.05.2016

Recently retired

Rudi Steiner	31.03.2016

Sadly mourned

Kurt Beer	† 22.12.2015
Gerhard Müller	† 27.03.2016
Elfriede Häfner	† 04.04.2016
Gertrud Rose	† 14.06.2016

Fairs + dates

ChinaForge Fair
Beijing, China
21. – 24.09.2016

International Conference on Forging Technology
Pune, India
22. – 23.09.2016

Senafor
Porto Alegre, Brazil
05. – 07.10.2016

EuroBLECH
Hanover, Germany
25. – 29.10.2016

6th Asia Forge Meeting
Chiba, Japan
07. – 10.11.2016

Increased efforts for keeping skilled workers in the region

Vocational training in the limelight

LASCO has always attached greatest importance to train young people to become excellent skilled workers. The training ratio has been around 15 % in the 25-year average . As apprentices who have passed an apprenticeship at the mechanical engineering company have excellent career perspectives inside and outside of the company, demand for an apprenticeship at LASCO continues to be high despite decreasing numbers of school leavers.

Nevertheless, enterprises are forced to take increased efforts to make sure they secure their demand for skilled workers medium to long-term due to the demographic development in Germany. Friedrich Herdan, LASCO shareholder, has put together a package of measures in his capacity as President of the Chamber of Commerce and Industry Coburg in order to future-proof the highly industrialized region of Coburg in this field too. Outstanding initiatives were the foundation of the technical college of mechanical engineering in 2012, the expansion of the range of integrated degree programmes at the University of Applied Sciences Coburg as well as the center of excellence for mechanical engineering, plant manufacturing and automotive.

The classical vocational training with the so-called "dual system" combining subject-related theoretical instruction at vocational schools with practical vocational training in companies is considered to be the ideal way to the professional career. Most mainly medium-sized companies carry out professional training themselves to secure young specialists for their companies. LASCO's training ratio has been well above average in the trade for decades.

However, "competition for the brightest minds" has been increasing. This is reflected in the rising number of events and fairs for occupational orientation in many regions, which more and more vocational training companies participate in.

LASCO uses selected events to inform school students about the company and the variety of qualified jobs and related career perspectives. This year the company has already participated in various fairs giving occupational information e. g. on vocational training both to school students and qualified workforce in Upper Franconia and South Thuringia.

Recently an editorial team of the local TV channel "iTV" tried to find out how apprentices themselves experience their career entry at LASCO. At LASCO's invitation they did some shooting on site. The feature will be broadcast within the series "Vocational training in Coburg".

LASCO shareholder Friedrich Herdan (left) talking with young people on the LASCO stand at the fair for vocational training of the Chamber of Commerce and Industry Coburg, which Herdan opened in his capacity as its President together with Hans Michelbach (2nd from left), member of the German parliament.

up grade
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Interview

Dr. Knut Stork
Rolling mill manager
BENTELER Steel/Tube GmbH
Paderborn (Germany)

Successful cooperation

up grade: Dr. Stork, you have been using the first LASCO production line in your rolling mill for a few months now. What advantages does it have over former lines?

Dr. Knut Stork: The solution, which we worked out and implemented together with LASCO, was primarily to replace lines that were running the risk of a complete breakdown due to their age. The implementation of a new piercing press and a new stretch reducing mill helped us to improve relevant quality features and increase productivity at the same time.

up grade: What were the reasons for short-listing LASCO when you were searching a suitable technology provider?

Dr. Stork: LASCO, a German supplier, was ready to implement a tailor-made solution together with us, to involve our special know-how in the design stage and to assist us in realizing the very ambitious schedule.

up grade: The core of the line is a new development, the stretch reducing mill STW 2500. As a pilot user, did you not expect undesirable initial difficulties?

Dr. Stork: The basic pre-condition of the commissioning of the line was to stick to the tight schedule in order not to put at risk the delivery dates for our customers. After our cooperation in the design stage and successful pre-commissioning we were convinced that we would be able to adhere to our plans and get a reliable and robust unit with the new stretch rolling mill from LASCO. Of course, there may always be some unforeseen need for optimization during the start-up stage, which we were able to solve jointly, however, and to stick to the envisaged schedule.

up grade: Did this leap of faith in the machinery and plant engineering company pay off from your point of view?

Dr. Stork: It did, indeed. LASCO always supported us in the design stage as well as during commissioning, and this was the reason why we were able to implement successfully this project, which was critical for us both timewise and technically.

Pilot user

BENTELER Steel/Tube GmbH (Paderborn/Germany) has been using a fully automated forging line from LASCO for the production of semi-finished tubes for about two years now. The new stretch reducing mill STW 2500 designed and built by LASCO for the first time is integral part of the line.

The BENTELER group with a workforce of about 30,000 at 161 production sites in 40 countries stands for outstanding expertise in materials, production and technology in the automotive, steel/tube and distribution sectors. BENTELER Steel/Tube develops and produces customized tubes for special clienteles and applications. The enterprise is one of the leading manufacturers of weldless steel tubes and welded precision steel tubes in the international market. Their own steelworks allows constant further development of their high material competences, required material optimization and strategic new developments.

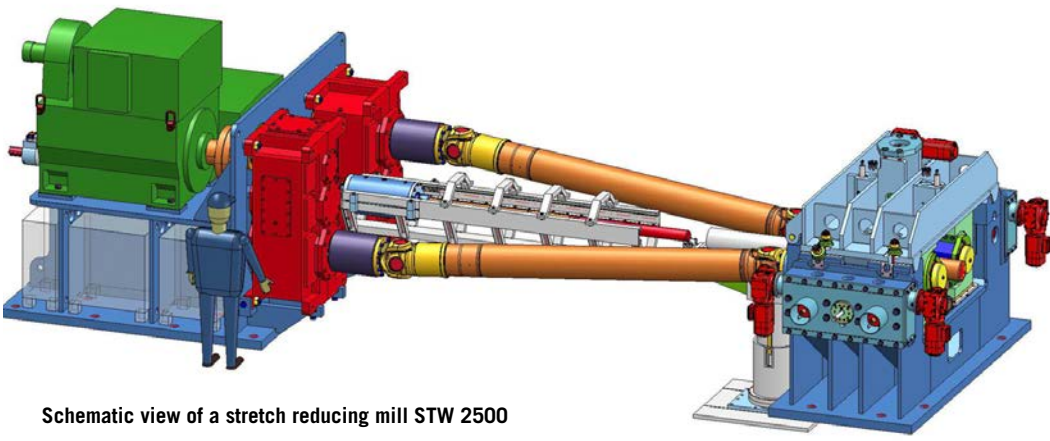
The deciding factor for BENTELER to place the order was LASCO's proven experience in the manufacture of rolling machines for metal-forming. The line consists of a backward extrusion press VPE 500, the stretch reducing mill STW 2500, a roller conveyor and manipulators – all placed ahead of a stretcher for ironing tubes up to 15 times their lengths.

The stretch reducing mill is designed for pre-forming high-alloy ferritic steel tubes from a round continuously cast steel block which is formed into a hollow part in the upstream backward extrusion press VPE 500. Its outer diameter and wall thickness are then considerably reduced with the stretch reducing mill.

The operations "indenting" and "backward extrusion" are carried out by the hydraulic extrusion press VPE 500. For this purpose, a shifting slide is integrated into the press ram, which can accommodate up to three tool mandrels. During the press stroke the mandrels which are not involved in the forming operation immerge into special cooling and lubricating systems for being either cooled or lubricated. The distance between the mandrels allows direct loading and unloading. Low cycle times are reached due to the high pressing velocity of 300 mm/s and the simultaneous lubricating and cooling cycles.

The tools are designed in such a way that the roller gap narrows in axial direction, and the wall thickness of the base tube body is continuously reduced. Elongation, in which the wall thickness is reduced and the casing is calibrated and lengthened, is effected by the mandrel.

Two speed-controlled drives (driving power 2.5 MW), consisting of a motor and a gear box with speed reducer, drive the two roller axes independently of each other. Helix angles (reduction) and support roller adjustment are infinitely variable via servo motor drives.



Schematic view of a stretch reducing mill STW 2500