



**Siempelkamp**

Issue 01 | 2015

**LIGNA topics 2015:** Cut your cost! – Improve quality, increase plant capacity, lower costs  
**Art meets industry:** How art is created at the Siempelkamp Giesserei **Team work of Siempelkamp Krantechnik and DEMAnor:** Aker Solutions receives biggest SKT gantry crane so far **SLS service orders for Finsa, Spain:** Servicio integral – Full service

# bulletin

The Siempelkamp Magazine

PEOPLE | MARKETS | MACHINES



- 04 Inga Bambitsch  
**Cut your cost! – Improve quality, increase plant capacity, lower costs**  
LIGNA topics 2015
- 10 Ulrich Kaiser  
**ContiRoll® Generation 8 – Capacity increase with the original**  
Particleboard plant at Falco, Hungary
- 16 Dr. Silke Hahn  
**Siempelkamp engineers from 1990 to 2015**  
Constructive at Siempelkamp
- 20 Frank Gerst  
**How art is created at the Siempelkamp Giesserei**  
Art meets industry
- 24 Ute de Vries  
**Aker Solutions receives biggest SKT gantry crane so far**  
Team work of Siempelkamp Krantechnik and DEMAnor
- 28 Goetz Sondermann  
**Man, machine, ring-rolling**  
On-site at Electrostal
- 32 Dr. Stephan Niggeschmidt  
**A new website, a brochure that's hot off the press and participation at the LIGNA fair open up direct access to Siempelkamp service**  
SLS worldwide
- 36 Dr. Peter Seliger  
**Refinery in Leuna put to test by SPG**  
"TOTALLY OK"
- 40 Carsten Otto  
**New duct burner saves energy**  
Addition to Büttner's own-brand range
- 44 Hubertus Jürgens  
**India – side member press, the 4th**  
Siempelkamp presses for side members
- 50 Dr. Michael Schoeler  
**"Welcome to the club"**  
Siempelkamp develops a press for hybrid materials for the Wolfsburg research center
- 56 Michael Willelen, Wolfgang Beck und Armin Lingen  
**Servicio integral – Full service**  
SLS service orders for Finsa, Spain

## Imprint

Publisher G. Siempelkamp GmbH & Co. KG, Marketing/Communication Department, Siempelkampstr. 75, 47803 Krefeld (Germany)  
Executive Editor (Officer responsible for compliance with German press law) Ralf Griesche Text Dr. Silke Hahn, Inga Bambitsch and Christian Hassler  
Typesetting and Layout vE&K Werbeagentur GmbH & Co. KG Printing KARTEN Druck & Medien GmbH & Co. KG

This publication is published in German and English. Reprints, in whole or in part and including illustrations, require the Publisher's permission, which in most cases is gladly given. Visit Siempelkamp on the Internet: [www.siempelkamp.com](http://www.siempelkamp.com)



Dr.-Ing. Hans W. Fechner  
Chairman of the Executive Board  
G. Siempelkamp GmbH & Co. KG

## Dear Readers:

Once again, in 2015, we will be represented at LIGNA in Hannover, the world's leading trade fair for forestry and wood industries. We would like to use this occasion to present customers and industry professionals with innovative Siempelkamp technology – not only at our booth at the fair but also inside this issue of bulletin.

With the Ecoresinator P resin blending system for particles, the ContiBooster mat pre-heater and the surface layer wind former Ecoformer SL for particleboard, Siempelkamp's Machine and Plant Engineering business unit has developed its ideas introduced at LIGNA 2013 into market-ready products. Under the motto "Cut your cost!" these products allow plant operators to save material and energy. The use of the new drive system Ecodrive for ContiRoll® operators results in reduced energy consumption at improved service life. With the future further development of its online tool Prod-IQ.quality to Prod-IQ® Next, Siempelkamp concentrates on the topic "Industry 4.0" and the self-optimizing plant.

Our subsidiaries Siempelkamp Logistics & Service (SLS) and Büttner Energie- und Trocknungstechnik GmbH (Büttner) will also be represented at LIGNA 2015. SLS will use its presence at the fair to inform visitors about its comprehensive spare parts service as well as its portfolio of retrofits and modernizations. This information is also available in a new brochure and on the company's website. We would like to invite you to read about the complete transformation of a press line for our Spanish customer Finsa in this bulletin which SLS carried out successfully, next to many other projects involving modifications. Büttner is introducing its new duct burner in this bulletin. The duct burner features a special nozzle design which ensures an optimal flame front and thus, uniform heating of the drying air.

However, other business areas also have interesting things to share. Siempelkamp Krantechnik (crane technology) in Moormerland supplied the largest gantry crane built to date to Aker Solutions, a global provider of products, systems, and services for the oil and gas industries. Siempelkamp Giesserei (foundry) has been involved in artistic projects and has been supporting artists in the realization of their ideas. To do so the company is casting different castings which are then re-worked by the artists and integrated into their art work.

Enjoy this issue of our bulletin!

With best regards from Krefeld

A handwritten signature in blue ink, appearing to read 'H. Fechner'. The signature is fluid and cursive, written in a professional style.

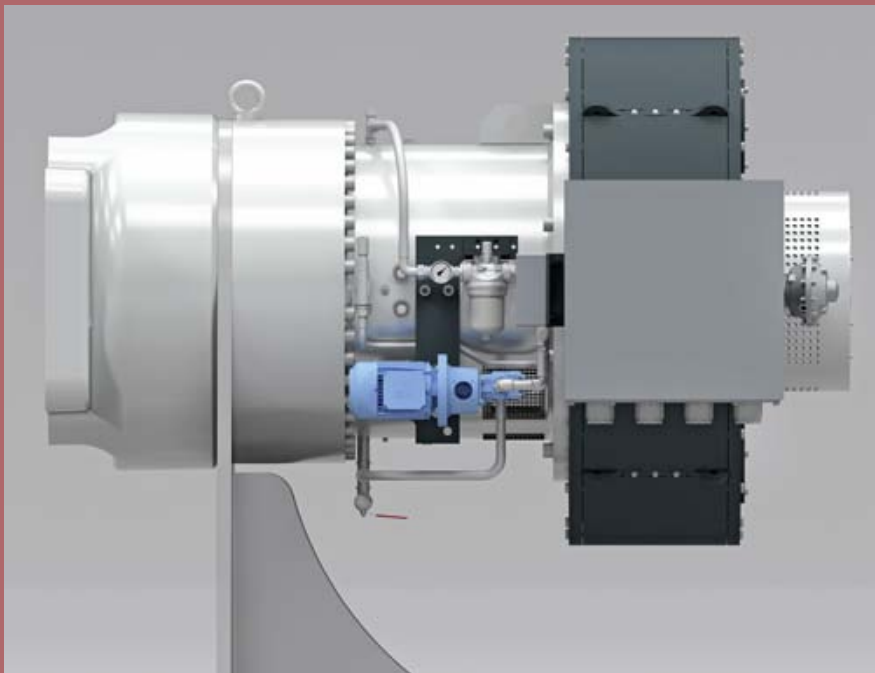
Dr.-Ing. Hans W. Fechner

LIGNA topics 2015

# Cut your cost! – Improve quality, increase plant capacity, lower costs

Lowering production costs, improving quality, and increasing plant capacity are the key factors that plant operators have consider to ensure and increase production efficiency. With the motto "Cut your cost!" Siempelkamp sums up these customer requirements and develops machines and components to support manufacturers of wood-based materials in their endeavor to cut costs. At this year's LIGNA, the world's leading trade fair for forestry and wood industries, Siempelkamp will present to industry professionals new concepts as well as market-ready systems which will optimize the operation of wood-based material plants. Apart from developments in the areas of drive technology, resin blending, mat forming, and preheating, with Siempelkamp's further development of the proven control technology system Prod-IQ®, the focus of the fair is particularly put on the topic "Industry 4.0".

By Inga Bambitsch



Ecodrive

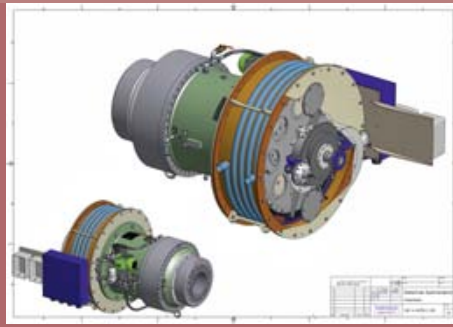
## 7 % energy savings with drive system Ecodrive for presses

One for all: For performance-strong operation of the ContiRoll® discharge drums Siempelkamp developed the **Eco-drive** which can be used with any ContiRoll® model. The drive system consists of an energy-efficient electric motor and a two-stage gearbox. With the synchronous motor, a variable speed press drive at consistently high torque can be implemented. With the new Ecodrive plant operators can achieve a high degree of efficiency even at low speeds. At full load this translates into energy savings of 7 % compared to previously used drive systems. At partial loads the advantages of the Ecodrive drive system in terms of energy efficiency become even more apparent. With the Ecodrive Siempelkamp customers literally

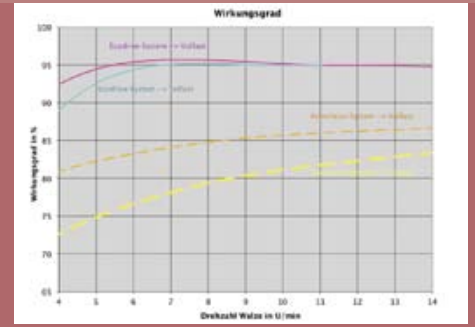




Ecodrive installed on ContiRoll®



Ecodrive drawing



Ecodrive power curve

save money and achieve a quick return on investment.

Maintenance efforts and the corresponding downtimes are also minimized with the new Siempelkamp drive system which is the first drive system that was completely developed in house. Due to the low rotational speeds of the synchronous motor, the wear of parts (e. g., bearings and gearwheels) is reduced. Using only two gear stages also minimizes the probability of failure.

Siempelkamp’s innovative Ecodrives can be supplied together with a switchgear as component of a new plant. However, it is designed in such a way that it can be easily retrofitted into existing plants with minimum expense for conversion work. With the Ecodrives plant operators rely on consistent torques and constant outputs at optimal synchronization characteristics when operating their ContiRoll® presses.

**Cost efficiency for wood-based material production**

At LIGNA 2013 Siempelkamp presented innovative concepts for the cost-efficient production of wood-based material boards with a consistent high quality. These concepts have meanwhile been developed into market-ready machines which have been tested extensively in customer plants and have also been sold. The **Ecoresinator P**,

the innovative resin-blending system for particleboard production, the new surface layer wind forming machine **Ecoformer SL** and the mat pre-heater **ContiBooster** are available for purchase with immediate effect.

**Ecoresinator P: Resin savings for particleboard production**

Since Siempelkamp introduced its innovative resin-blending system for MDF, the Ecoresinator for fibers, at LIGNA in 2011 the system has been sold 26 times to date. The customers’ need for resin and material savings is unbroken. After all, the Ecoresinator is proven to lower resin and material consumption by 15 %. The manufacturers of particleboard also want to save. That is why Siempelkamp developed the Ecoresinator P for particles.

During first trials at a Turkish customer the Ecoresinator P achieved resin savings of approx. 10 % for the core layer. At a Siempelkamp customer in Central Europe, the innovative resin-blending system for particles is currently being further developed. Two systems have already been sold.

Siempelkamp developed the Ecoresinator P together with its subsidiary CMC Texpan in Colzate, Italy. To do so the experience gained from the development of the Ecoresinator for MDF was used. In both systems, special nozzle technology ensures

fine and even resin-coating of the core layer particles. To do so the centre layer is divided.

Afterwards, the special nozzles which are arranged in a staggered manner opposite from one another apply a fine mist of resin to the two particle flows from the inside and the outside.

Conclusion: At low investment costs the Ecoresinator P provides large savings. When installing the Ecoresinator P as a retrofit, the customer’s glue kitchen including the dosing system for resin and additives remain unchanged.



Ecoresinator P



Ecoresinator P

**Ecoformer SL: 5% percent less material consumption for surface layer forming**

For the subsequent forming of the surface layer Siempelkamp, in cooperation with CMC Texpan, has brought another concept to market maturity: the wind former Ecoformer SL (Surface Layer). Compared to traditional systems, the Ecoformer SL uses up to a proven 5 % less material and provides optimal forming of the surface

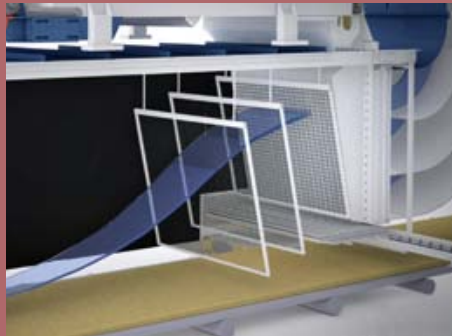
layer. These characteristics make it a "must have" for particleboard production.

Blowers create the air flow needed for the distribution of the surface layer particles in mat-forming machines. The new Ecoformer SL is equipped with two small axial blowers in the lower sector as well as two larger ones in the upper sector. Via these blowers the air speed can be controlled individually at different heights inside the wind chamber. An intermediate chamber

provides for uniform distribution of the air flow to a perforated plate positioned behind the chamber. From here the air is routed to individual air nozzles. Mechanically controllable baffles also help control and adjust the air flow at different heights. This principle has improved the air flow accuracy from +/- 5 % to +/- 1 %. As a result an unprecedented precise and controlled air flow inside the entire wind chamber is created which leads to an even more



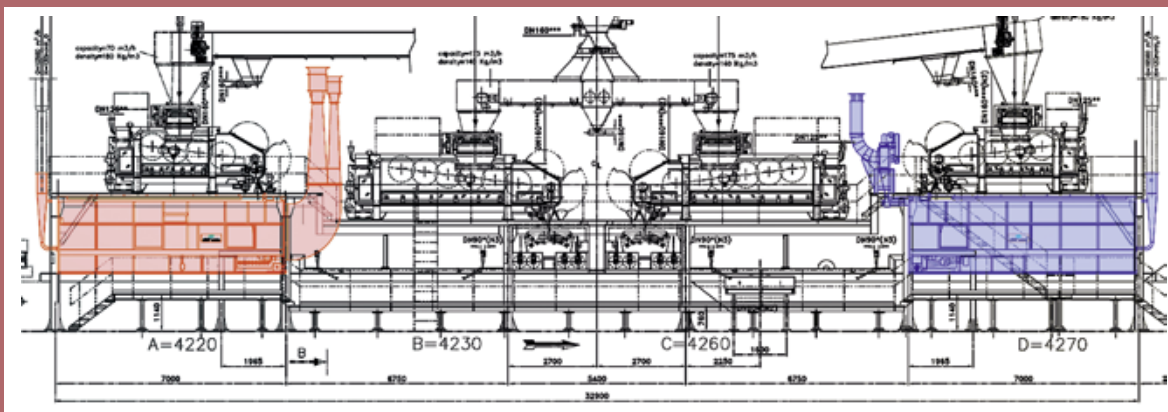
Ecoformer SL



Operational principle Ecoformer SL



Ecoformer SL



Ecoformer installation location



uniform forming of the surface layer and high-quality board surfaces.

Furthermore, the pressure loss inside the wind chamber could be reduced seven-fold. To achieve the necessary pressure, less energy is required. For particleboard manufacturers using the Ecoformer SL this translates into proven energy savings of up to 65 %.

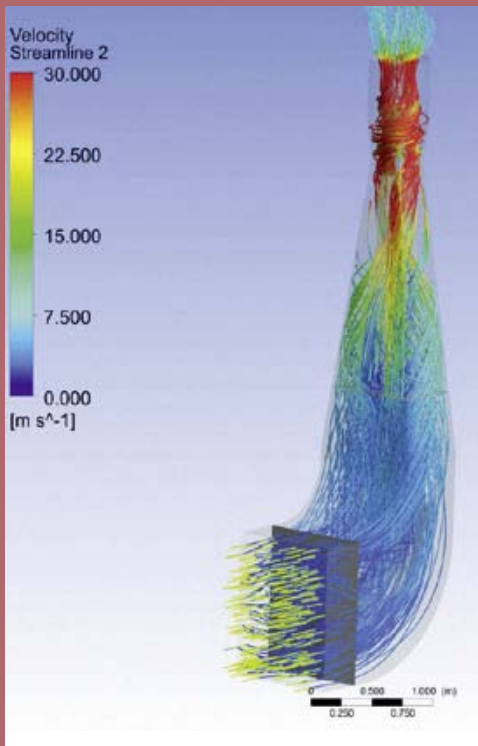
Optimized accessibility to the system and the simplified cleaning of the short and round air nozzles improve the system's ease of maintenance. Thus, shut-down times are decreased, availability and productivity of the plant increased. The Ecoformer SL can be installed as part of a new plant as well as used as a component of a retrofit package. It is designed to fit exactly into the space that becomes available when replacing the traditional wind forming system.



ContiBooster in the test



Drastic reduction of the pressure loss with Ecoformer SL (CFD simulation)



**ContiBooster for up to 10 % and higher outputs**

With the ContiBooster, Siempelkamp offers customers an innovative, simple and cost-effective version of its proven concept for mat preheating via steam. The installation of the system in existing plants takes only a few days but provides quick results. For the production of particleboard with varying board thicknesses plant operators achieve up to 10 % and higher outputs.

In the innovative system, Siempelkamp specialists replaced the intermediate belt in the infeed area of the press with a steam-permeable screen belt. An additional

belt including a cleaning device and a belt preheater on top of the mat with a thickness of up to 350 mm provides for uniform steam and heat supply as well as safe and reliable operation.

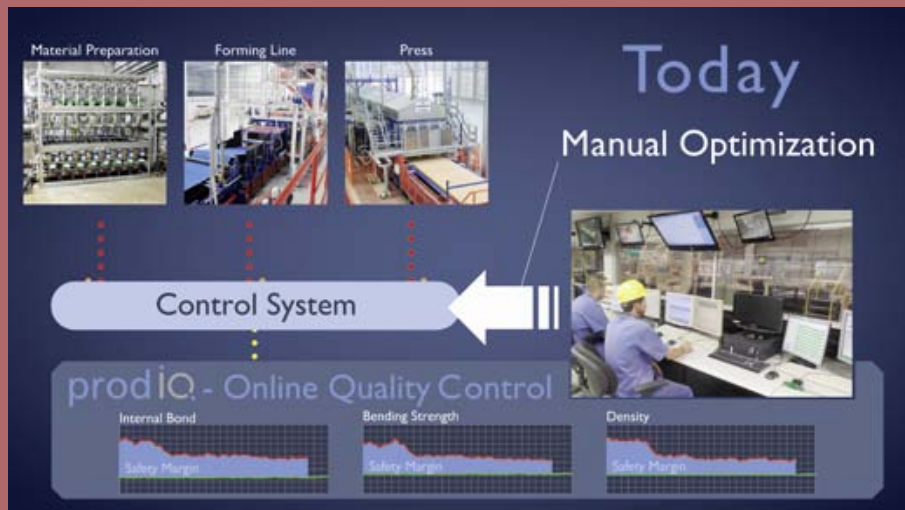
During the preheating phase, steam distributors, which are mounted above and below the screen belt, inject up to 500 kg/h of steam into each side of the mat. Thus, the board's surface layers (approx. 40 % of the mat) are heated and moistened. Moreover, the steam distributors can be pulled out sideways making them easy to maintain. At the customer's request, Siempelkamp can also supply the steam generator for the ContiBooster.

### Prod-IQ® Next – The road to the self-optimizing Siempelkamp plant

Next to the newly developed drive system Ecodrive and the plant components developed to optimize the blending and mat-forming processes as well as mat pre-heating, Siempelkamp will present its version of a self-optimizing plant at this year's LIGNA. Plant operators using Siempelkamp's process control system Prod-IQ® already take advantage of auto-

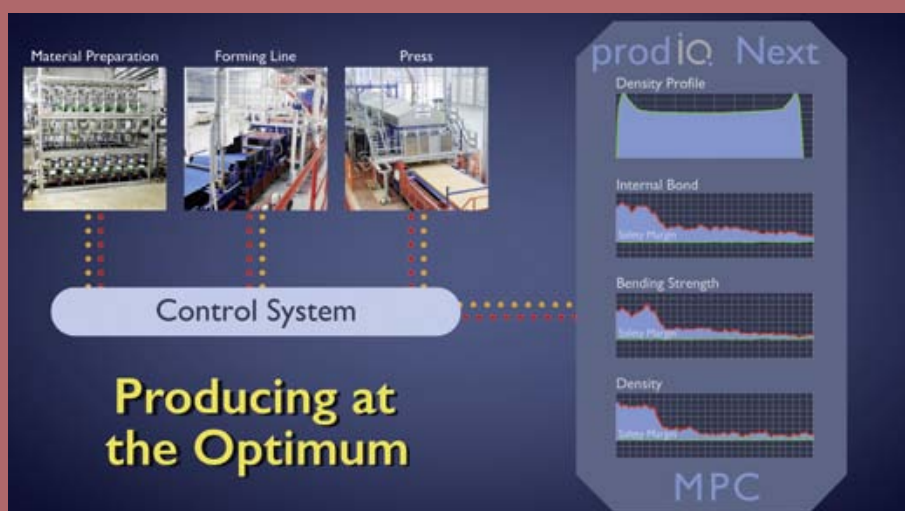
matic product changeovers, data flow from the ERP system to the machine and back as well as cost trending. Prod-IQ® is well suited as a retrofit to existing plants. The module Prod-IQ.quality (SPOC) provides Siempelkamp customers with an online quality forecast. This means the quality of the finished board is already known as soon as the board leaves the press. In this way, time-intensive quality measurements in a laboratory can be avoided.

With Prod-IQ® Next Siempelkamp goes one step further: In a self-optimizing plant customers will only specify the type, characteristics and quantities of the products they want to manufacture. The remaining criteria ranging from production changeovers to the desired products to online quality control takes place fully automatically. Thus, during manufacture, production settings can be selected automatically which contribute to cost-optimized production with as little material and energy consumption as possible and highest possible production speeds. With Prod-IQ® Next Siempelkamp customers manufacture at an optimum level!



Prod-IQ.quality today

Prod-IQ® Next in future



### Industry 4.0 – To further develop what proved to be effective

Siempelkamp is the only supplier today that can provide its customers with online quality control for products with Prod-IQ.quality (SPOC). Prod-IQ.quality (SPOC) has proved effective in more than 20 plants. It is a self-teaching system which, by means of laboratory samples, mathematically describes the connections between numerous process settings and the resulting product quality (e. g., internal bond, bending strength, thickness swelling, and surface soundness) and thus, makes these usable. In this connection, experts speak of mathematical process modeling. The quality of the boards is calculated with high accuracy at the moment when the finished board leaves the press. For strength values, predictions with an accuracy of 94 to 97 % can be made; for the raw density of the board even with 99 % accuracy. With the help of online quality trends, the operator can assess the production quality and, if necessary, manually intervene.

At exactly this point the concept of the self-optimizing plant comes into play. Prod-IQ® Next is the further development



of the current system to a higher-level control circuit, that adjusts the plant settings to manufacture at optimal cost and at the same time ensure the desired board properties – without the need for operator intervention. A control technology concept for this task is the model-based predictive process control (MPC). MPC uses a dynamic model of the process to be controlled in order to calculate the future behavior of the process depending on the input signals. This allows the calculation of the optimal input signals, in terms of a power function, which will result in optimal output signals.

Here, the statistical process modeling with Prod-IQ.quality (SPOC) is the foundation. The statistical process modeling is combined with the analytical modeling, that is, with the physical, rheological and chemical simulation of the mat's changes inside the press. Among others, these changes determine the raw density profile. Through this hybrid modeling, the press process can be completely simulated. To do so, on the one hand, an analytical simulation is carried out to show what is going on inside the press and, on the other hand, a statistical calculation is carried out to determine which quality level results from the simulation. With the help of such a model, settings can be simulated and calculated to ensure the desired quality including the necessary safety reserves. At the same time, cost-optimized production is guaranteed, for example, by reducing resin factors and mat weight, increasing the press speed or lowering the energy consumption.

Siempelkamp customers currently using Prod-IQ.quality have already created the foundation for a self-optimizing plant with Prod-IQ® Next and with it a production at an optimum level!

## Siempelkamp at LIGNA: Hall 27 Booth F35

Whether it be press operation with Ecodrive, resin blending system for particles with the Ecoresinator P, Ecoformer SL for the forming of the optimal particleboard surface layer, ContiBooster pre-heater or fully automatic process optimization with Prod-IQ® Next: With Siempelkamp technology, plant operators rely on increased quality, higher outputs, and reduced costs. At LIGNA 2015 customers and industry professionals are once more given the opportunity to convince themselves of Siempelkamp expertise.

## To manufacture at an optimum level with Siempelkamp technology

### Ecodrive

- synchronous motor and two-stage gearbox for the operation of ContiRoll® discharge drums
- high efficiency levels
- **saves 7 % in energy** compared to traditional drive systems

### Ecoresinator P

- blending system for particleboard production
- fine and even resin-coating of the core layer particles
- **saves up to 10 % in resin**

### Ecoformer SL

- wind forming machine for particleboard surface layers
- uniform forming increases quality of finished boards
- **5 % material savings**

### ContiBooster

- mat preheating for particleboard, MDF and OSB
- heats approx. 40 % of the mat
- **up to 10 % and higher proven increase in plant capacity for particleboard production**

### Prod-IQ® Next

- further development of Prod-IQ.quality to a higher-level control circuit
- fully automatic cost-optimized settings for plants while, at the same time, achieving the desired board quality without operator intervention

Particleboard plant at Falco, Hungary

# ContiRoll® Generation 8 – Capa



Via GIM Export, Göttingen, Germany, Siempelkamp sold a complete forming and press line to Falco Zrt. Szombathely, Hungary, in February 2013. Main component: a 8' x 45 m ContiRoll® press of the 8th Generation which replaces a field-proven Siempelkamp multi-daylight press. The press replacement not only increased the yearly plant capacity to 450,000 m<sup>3</sup> of particleboard but also ensures the required board quality necessary for the manufacture of melamine-faced particleboard with mirror-gloss finish. With the Generation 8 ContiRoll® Falco relies on the original in the area of high-end production technology for wood-based materials.

By Ulrich Kaiser

# city increase with the original



## History of the ContiRoll®

The first ContiRoll® was completely set up and tested in the test field in 1983. Immediately after its introduction to the market in 1985, the ContiRoll® became a top seller and quickly became established as the leading system for the continuous production of wood-based materials. The US company Louisiana Pacific ordered five ContiRoll® plants – all in 1985. The first ContiRoll® in Europe was supplied to the French company Isoroy in 1985 as well.

By September 1986 Siempelkamp already had 17 orders for continuous presses. In Germany Glunz AG ordered the first ContiRoll® for its plant in Meppen a year later. Between 1984 and 1989 Siempelkamp sold a total of 47 plants in 16 countries, 39 of which were intended for the wood-based products industry. By the end of 1996 it became clear that Siempelkamp was definitely on the right track. The area of machine and plant engineering generated a total turnover of more than 685 million German Marks with its 1,140 employees. The ContiRoll® had established itself as the leading system for the continuous manufacture of wood-based products. In 1997 the press was used for OSB production for the first time.

To date the ContiRoll® has been sold 289 times to customers worldwide and its success appears unbroken. In 2014 twelve (12) wood-based materials manufacturers ordered partial or complete plants including the proven continuous press from Siempelkamp. Since LIGNA 2011 Siempelkamp has been offering the Generation 8 ContiRoll®. With innovative pressure distribution plates, an additional row of cylinders and optional differential cylinders for the production of light-weight boards, this press generation allows unprecedented adjustability of the press and the production of new types of wood-based materials.

When the customer started negotiating with Siempelkamp for a new forming and press line in the beginning of 2013 the following was clear: first, the customer wanted to increase plant capacities and second, improve the quality of its products so that they allow direct laminating. "With our many years of experience, the knowledge of our planning and manufacturing specialists and the features offered by Siempelkamp plants, these were two wishes that we gladly satisfied for the customer. The tight time





Surface and core layer mat-forming machines

schedule, however, presented a challenge for us," explains Ulrich Kaiser, Sales Manager Turkey & Key Account Kronospan at Siempelkamp. At contract signing in February 2013 the acceptance test was scheduled for April 2014. "With the combined efforts of all participants, we were able to meet all deadlines," says Kaiser.

Today, approx. one year after the acceptance of the equipment, Falco manufactures on the retrofitted Siempelkamp plant in Szombathely 450,000 m<sup>3</sup> of high-quality unfinished board for selling and for surface laminating in the customer's own plant. In order to achieve these outputs, Falco replaced its field-proven Siempelkamp multi-daylight press with a complete Siempelkamp forming and press line. Siempelkamp supplied all components from the system feeding the mat-forming machines to the

cooling and stacking line. The machines were integrated between the existing front-end equipment and the existing unfinished board storage inside a newly built production hall. Next to new dosing bunkers for the existing resin blending system, the system feeding the resin-coated chips to the mat-forming machines was also part of the Siempelkamp supply. The 4-head mat-former is equipped with extra long wind chambers with integrated roller bed which ensures optimal forming as well as the uniform discharge of oversized particles.

#### Uniform pressure distribution with ContiRoll® Generation 8

The highlight of the new order: a 8' x 45 m ContiRoll® press. Falco decided for a continuous press of the 8th generation and with it the original of high-end technology for the production of

Extra long wind forming chamber



Disc screen above core layer mat-forming machines





Traversing surface area weight scale

wood-based materials. With its innovative pressure distribution plates and six rows of cylinders the Siempelkamp press operates virtually isobaric. With it Falco will be able to manufacture boards of a consistent high quality while, at the same time, saving resin and lowering sanding tolerances. The perfect board surfaces allow subsequent direct laminating and the manufacture of mirror-gloss surface structures. With additional differential cylinders, which allow the active opening of the press, the ContiRoll® can also produce boards with low raw density. The forming and press line is designed to achieve a daily output of 2,500 m<sup>3</sup> for boards with a thickness of 16 mm. Forming and press line are equipped with a width adjustment feature from 6 - 8' and allow the flexible production of boards with a thickness ranging from 6 – 45 mm.

The cooling and stacking line for jumbo stacks of masterboards with lengths ranging from 6,200 – 11,255 mm transfers the boards to an automatic intermediate storage which has previously been used for the multi-daylight press.

#### Measurement, control and automation technology from one source

The forming and press line is equipped with Siempelkamp's measurement technology system SicoScan. SicoScan continuously monitors the moisture content and weight of the mat as well as the mat thickness and the blow detection at the press outfeed. All measuring data is collected in a central database and pro-





Formed mat



Board after leaving the press

cessed with Prod-IQ® which is directly connected to the plant's ERP system. Thus, the customer monitors the production data at all times and is able to systematically increase plant capacity and consequently, improve its competitiveness.

Once again, Falco trusts in Siempelkamp's expertise when it comes to upgrading its wood-based material production plants to the latest state-of-the-art technology. With the replacement of its multi-daylight press with a new continuous forming and press line from Siempelkamp, the customer is best equipped to compete

on the highly competitive European wood-based materials market in the future. With the Generation 8 ContiRoll® press, Falco relies on the original in the area of high-end wood-based material production technology and with it on high product quality at best plant availability.

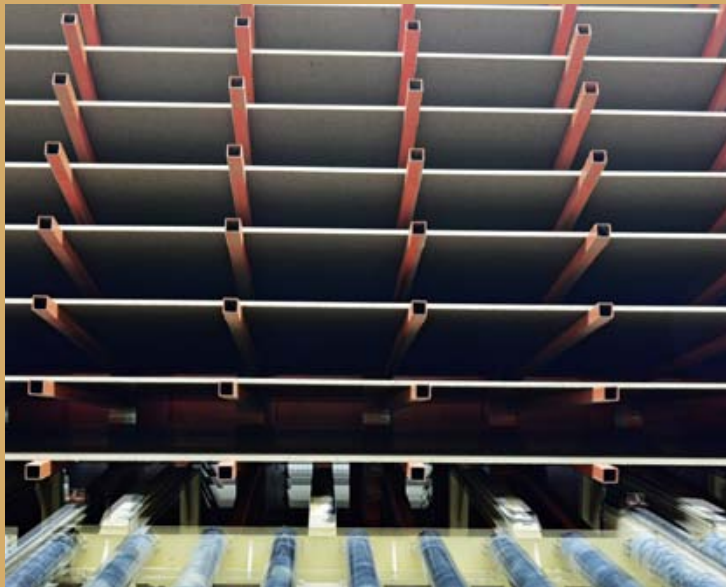


Double diagonal saw





Star cooler



Star cooler, detail



Stacking



## Falco Zrt. Szombathely

In 1939 Falco was established as a saw mill in Szombathely, Hungary. Today, the company is one of the leading board producers for the furniture and building industries in Central and Eastern Europe. In between are more than 75 years of company history. The most recent part is about the company's investment in the new forming and press line made by Siempelkamp.

In 1952 the Falco saw mill in Szombathely was put under government control and started, as the first plant in Hungary, producing particleboard seven years later. As part of the formation of the West-Hungarian wood industry state combine, the two largest regional wood-industry companies merged in 1974. In the following years Falco added to its production range the lamination of particleboards as well as a cement bonded particleboard plant. In 1992 the company changed its legal form to stock corporation and became Falco Zrt. In 2007 Falco became part of the Kronospan Group. To this date Falco's focus has remained on innovative surface structures and designs which has been increasingly more specialized over the years.

Constructive at Siempelkamp:

# Siempelkamp engineers from 1990 to 2015

**Picture this: Two engineers meet, one of them has been working for 40 years, the other for 5 years – two different worlds collide. One of them knows how the markets and industries work and has a clear experience-based advantage. The other provides knowledge fresh from a university and is bursting with ideas. Is this picture just a cliché or reality? Bulletin wanted to find out and conducted an interview with two engineers: How are education and company practice different from one generation to the other? How is the cooperation between experienced and new employees at Siempelkamp?**

By Dr. Silke Hahn



Bulletin conversation interviewees:

## Lothar Sebastian – Profile

- born in 1948
- after secondary school, at the age of 14 received training as technical draftsman and earned his vocational diploma; later studies in mechanical engineering with focus on design at the Bochum State School of Engineering and at the Ruhr University Bochum at night school
- became head of design at the age of 27 and has remained in this position since
- at Siempelkamp since 1991
- had to perform all calculations on paper prior to computers

## Michael Diederichs – Profile

- born in 1979
- degree in mechanical engineering (focus on design and development) from RWTH in Aachen
- at Siempelkamp since 2009
- current position: development engineer in the area of metal forming
- is thankful that thousands upon thousands of FEM calculation steps are carried out with the help of the latest computers for him.





**Bulletin:** Mr. Sebastian, Mr. Diederichs, you have completed your studies with a time difference of approx. 35 years. What technical areas played a focal role for you?

**Lothar Sebastian:** For me it was machine design. This included hydraulics, statics, dynamics, the theory of the wheel gear, rolling bearing technology, that is, the whole bandwidth of mechanical engineering. Primarily in the design building of the university, we designed an enormous variety of parts ranging from gearboxes, to combustion engines, steam boilers and steel bridges from the concept to the technical drawing including parts lists.

**Michael Diederichs:** These principles were similar for us. Later, we concentrated on safely finding a good solution to a problem with a white sheet of paper as the starting point. Here, the focus was on methodology,

the necessary steps to find the solution to the problem.

**Lothar Sebastian:** OK – the practical implementation in the design class used up a significantly larger share in my generation. I prefer to compare it to the keyword “penetration”. In the foreground for us was to design complex tasks from A to Z. And all that without machines, that is, computers and other tools that are standard today. Manual work was a must for us in a dual sense because we simply did not have the equipment that is taken for granted today. There were no calculators, only slide rules existed. The advantage: The manual work supports the penetration process because the manual work taught the material in greater depth.

**Michael Diederichs:** I agree with this. During my studies it was not necessary to draw by hand because we had other

options available. However, we were also aware that if someone had problems sketching something on paper, the computer could not make up for it later. The system has to be understood otherwise the computer cannot deliver the desired result. This goes for CAD programs as well as for modern calculation tools.

Let’s look at this from the customer’s perspective: An engineer who has mastered his area of expertise and does not blindly rely on tools is the basis for an excellent product. Whether we take the older or younger generation: Our education is closely connected to the current state of technology – for me that was CAD software.

**Lothar Sebastian:** ... and today I envy the younger generation for a multiple body simulation program such as ADAMS (see box). Such program allows the work to be



done quicker and with significantly higher accuracy.

**Bulletin:** An exciting comparison. Let's talk about Siempelkamp. Why were you interested in working for Siempelkamp and what were the special challenges when you started working for the company?

**Lothar Sebastian:** For me Siempelkamp was the Mercedes among the press manufacturers. I am from the Ruhr district and had many experiences in the area of heavy engineering prior to working for Siempelkamp. I knew about Siempelkamp from specialty books. I had large respect for the reputation this company had in the field of press manufacture.

**Michael Diederichs:** For me there were two aspects that captured me when it came to Siempelkamp. On the one hand the variety of tasks which this company carries out as a "hidden champion". I was immensely excited to start working for a world market leader that develops high-tech products and, at the same time, always strives to expand the borders of what is possible. On the other hand, after my job interview with you, Mr. Sebastian, I was hooked to work for someone who is so enthused about his profession.

**Bulletin:** What is the daily work life like for customers in different countries? Are there similar situations – for example, a similar major demographic shift and the generational change resulting from it in our industry as postulated, for example, by the German Association of Engineers?

**Lothar Sebastian:** I personally think that the demographic shift and the shortage of skilled workers resulting from it is especially drastic in Germany. Siempelkamp is very

## ADAMS & Co.: Technical terms and their meaning

### ADAMS: Automatic Dynamic Analysis of Mechanical Systems

Brand name of a software that simulates the motion behavior of three-dimensional mechanical systems considering all physical interactions. Siempelkamp engineers use this system to research the dynamics of moving parts as well as the distribution of loads and forces in mechanical systems.

### CAD: Computer-Aided Design

Originally, CAD stood for the use of a computer as a tool that aided technical drawing. Today, professional CAD applications are complex software systems used for the design and construction of technical solutions.

### FEM: Finite Element Method

The finite element method is a modern and computer-assisted calculation method in engineering and a standard tool for the simulation of solid bodies.

much aware of this and believes in connecting experienced old-school experts with young people.

**Michael Diederichs:** I have noticed a similar development in France. Many companies there implement specific structures to make the best use of employees according to their age, experience and last, but not least, their key skills.

**Bulletin:** Is there a barrier between old and young at Siempelkamp – or can a common denominator be found?

**Michael Diederichs:** There is no barrier, but naturally there is friction. However, without friction there would be no points of contact. Friction questions what seems firmly set and avoids cementation.

**Lothar Sebastian:** I do not see a clear barrier between old and young. After all, the age groups are a continuum with fluent transitions. We also do not only concentrate on the recently graduated engineers working at Siempelkamp. By working closely with colleges and universi-

ties we are already in touch with future graduates with bachelor's or master's degrees who will become the Siempelkamp employees of tomorrow. We are familiar with their curriculum and these students receive good insight into what is important for our company.

**Bulletin:** Topic 'curriculum contents' – what is the current situation regarding the so called skill subjects such as managerial skills, self-organization ...?

**Michael Diederichs:** They weren't considered independent subjects during my studies. Today that is different, the generation after mine is taking these courses at universities and colleges.

**Lothar Sebastian:** ... and it also plays a decisive role to what degree the company culture of the employer further develops these skill sets. We at Siempelkamp value a healthy combination of formalists and idea providers. A company needs both kinds in order to have the right people for traditional tasks as well as for chasing visions.

**Michael Diederichs:** At Siempelkamp we also have good communication and teamwork. I have never experienced that an older colleague wouldn't share his knowledge with a younger one. On the other hand, I have never experienced that a younger employee would not help an older one.

**Bulletin:** What sentence do you never want to hear from your coworker?

**Lothar Sebastian:** "This does not interest me." In our profession the willingness to show interest is a fundamental requirement. By the way, I have never heard this sentence spoken at Siempelkamp.

**Michael Diederichs:** I would not want to hear the following sentence from an older colleague: "We have always done it like

this." This basically leads to the same reservation as the one you pointed out, Mr. Sebastian. To question things is a basic requirement for our work.

**Bulletin:** Mr. Diederichs, what did you learn from Mr. Sebastian?

**Michael Diederichs:** I find it impressive how you penetrate complex tasks and how you present a precisely justified and reproducible approach to solving a problem based on this foundation.

**Bulletin:** Mr. Sebastian, vice versa a question for you – what do you envy when it comes to the younger engineers?

**Lothar Sebastian:** I envy the options they have that are opened up by new tools.

And I envy the differentiated study programs in the fields of technology and mechanical engineering which open up completely new perspectives.

**Bulletin:** Despite the many differences, is there something that connects you?

**Lothar Sebastian:** I think we both value the many opportunities that Siempelkamp makes available to engineers. The company's highly sophisticated product range with very different trades allows engineers to work virtually in all disciplines of mechanical engineering.

**Michael Diederichs:** ...and to be the spearhead of technological development despite this diversity!



Art meets industry:

# How art is created at the Siempelkamp Giesserei





**These images are impressive: large component parts, which often weigh several hundred tonnes, take on a monumental form in the foundry Siempelkamp Giesserei. The ladles, from which the 1,300 °C hot iron flows into the mold, look tremendous. The finished castings are renowned in various branches of industry. Who would have known that this is also where art is created?**

By Frank Gerst

Many guests of Siempelkamp Giesserei marvel at the artwork decorating the administrative building at Siempelkampstraße 45. The pictures and drawings symbolize the commitment of the company to arts as well as the support provided even to unknown artists. It is not uncommon that large industrial companies support the visual arts. But Siempelkamp Giesserei, as the global leader in manufacturing complex casting geometries, makes one step further: it not only exhibits artwork, but also actively supports artists in implementing their ideas.

#### Casting meets art

Two worlds collide, when casting and art meet. On the one side: the artist, who sees the appeal of cast iron material in its surface structure rather than its mechanical characteristics. On the other side: the caster, for whom the precise analysis of the molten iron is most important to ensure that the resulting component withstands high loads at times, e. g. as grinding bowl.

These opposites attract each other. Working with the artists is interesting time and time again. As is the case with the newest project, which can be seen at Kunsthalle Basel: a total of 100 small

cast iron ball segments, with a diameter of 16 cm and weighing approx. 1,600 g, form the artwork "Marsch" (march), designed by the Berlin artist Nevin Aladag.

The manufacturing process was particularly exciting in this case: a polystyrene model was manufactured for every single ball segment, which the artist worked on by hand. This gave each ball an individual shape. The template was an original canon ball from Basel Historical Museum. In order to preserve the special surface characteristics, every ball segment was gently shot blasted, and flashes were carefully ground off.

The ball segments were then placed in a line system, which represented the lines of sheet music. The balls thereby symbolize the first notes of "Rondo alla Turca" by Wolfgang Amadeus Mozart. The varying heights of the ball segments give the impression that they hit the wall at varying speeds – a nod to military music.

#### Pop art from the foundry

Casting art is also established in Krefeld, the home of the Siempelkamp Group – in the form of pop art. In front of the



Ball segments after cleaning



Art work installed at the exterior wall of the Kunsthalle Basel

View to Museum Haus Esters art museum in Krefeld with the "toothbrush" in front



Museum Haus Esters art museum, planned by star architect Mies van der Rohe, there is a "toothbrush with white toothpaste in a cup on a washstand". This sculpture was cast in the Siempelkamp Giesserei and erected in 1983 in front of the museum villa for the hundredth anniversary of the Krefelder Kunstverein (Krefeld art association). The idea for the sculpture came from a "big name" of modern art: Claes Oldenburg, one of the most important ambassadors of American pop art alongside Andy Warhol and Roy Lichtenstein. He became particularly known for sculptures made of simple materials or representing every day objects.

#### Krefeld casting expertise for the Kilianskirche church

A particularly delicate cast iron artwork can be marveled at in the Kilianskirche in Heilbronn. The two main portals of the West tower structure, designed by artist Franz Gutmann, were cast in Krefeld. The 5,100 kg heavy gate at the North portal represents the banishment from paradise. The picture of the Crucified Jesus on the door of the South portal was inspired by the Shroud of Turin. The model setup for the approx. 4.40 m high and 3.60 m wide portals was manufactured from wood. The wooden model can still be seen today as artwork in the Schloss Moyland art collection.

The innumerable castings for various branches of industry still represent the typical products of the Siempelkamp Giesserei product spectrum. Beyond that, sculptures and artwork will continue to represent the quality products made in the Siempelkamp Giesserei – be it sacred art or pop art, be it delicate or heavy-weight!



"The banishment from paradise" – North portal of the Kilianskirche in Heilbronn



**“Exhibition catalog”: Siempelkamp is part of this artwork!**

**Sculpture “Tzaphon” (fountain), Düsseldorf State Parliament  
Artist: Dani Karavan, Israel**

With a 15 m diameter and weighing approx. 120 t, this fountain sculpture can be categorized as a casting typically manufactured by Siempelkamp Giesserei. “Tzaphon” originates from Hebrew and means “compass”. Thus, it is no coincidence that the center line of the two fountain halves runs exactly from north to south, and points to the entrance area of the State Parliament. Initially, water was to flow in the gap between the two sculpture halves and symbolize the Rhine as axis of life in the Rhineland. This idea turned out to be not technically possible.

**Sculpture “Výstup”, Krefeld  
Artist: Madalena Jetelova**

This 14 meter high and 1.50 m wide sculpture, which was also cast in the Siempelkamp Giesserei, proves that art objects do not have to be small necessarily. It can be marveled in the outside area of Krefeld’s community center.

For the casting in 2005, a pit was especially created in the biggest molding area of the Siempelkamp Giesserei, in which the Czech artist constructed the polystyrene model over the course of several days. In order to create the rough, maculate structure of the sculpture, Madalena Jetelova worked on the individual polystyrene plates using a chainsaw. The 40,000 kg heavy raw cast body symbolizes the aspiration of the artist to escape the narrowness of the depressing system in the Czech Republic at the time. The Czech word “Výstup” means “egress”.

**Rinderbrunnen, Kranenburg  
Artist: Franz Gutmann**

In 1988, the castings for the Rinderbrunnen fountain, which can be looked at on the market square in Kranenburg, were made in the Siempelkamp Giesserei. The sculpture was created by Franz Gutmann, a sculptor from the Münsterland region. The fountain bears a bull and two cows at the trough.



Fountain sculpture in front of the Düsseldorf State Parliament



Stairway to heaven at the outside area of the community center Pax-Christi in Krefeld



Team work of Siempelkamp Krantechnik and DEMAnor:

# Aker Solutions receives biggest SKT gantry crane so far

At the end of August 2014, a heavy load convoy traveled from Moormerland in North Germany to Egersund in South Norway. The freight: the biggest gantry crane, which Siempelkamp Krantechnik (SKT) has ever manufactured. The full gantry crane is the result of a pleasant cooperation between SKT and the Norwegian crane specialist DEMAnor AS – with team work being the priority.

By Ute de Vries

“Det passer som hånd i hanske,” says the Norwegian – which in English means: “That fits like a hand in a glove”. That’s exactly how close the cooperation between SKT and the Norwegian partner DEMAnor AS was for the king-size crane project.

The Norwegian company Aker Egersund AS made the inquiry about the full gantry crane at the end of 2013. The Norwegian company is part of Aker Solutions, who is a globally active supplier of products, systems and services for the oil and gas industry.

“We received the inquiry from Aker Solutions via DEMAnor AS. An outstanding partnership and cooperation has formed between the Norwegian company and us over the past few years. We have delivered several special cranes to Norway for DEMAnor since the beginning of 2013, which are being used in a wide range of industries,” says Heinrich Kampen, Executive Director at Siempelkamp Krantechnik.

## DEMAnor AS: our Partner

<b>Company:</b>	DEMAnor AS has been the Norwegian representative of DEMAG Cranes AG, a company of the Terex Group, since 1949.
<b>Location:</b>	Drammen, approx. 40 km southwest of Oslo
<b>Core competency:</b>	Everything concerning material handling: industrial cranes ranging from the wide scope of standard cranes to customer-specific solutions – e. g. overhead traveling cranes, slewing cranes, modular cranes for light lifting operations. There is also a large range of hoists, winches, drives technologies, combined with engineering competence.
<b>Special applications:</b>	Cable carousels for offshore sea cable manufacturing.
<b>Guideline:</b>	“Your material handling – our responsibility!”

## Aker Solutions: the customer

<b>Company:</b>	Aker Solutions is a global provider of products, systems and services to the oil and gas industry. The company employs approx. 17,000 people in about 20 countries.
<b>Established:</b>	1841 as Aker Mechanical Workshop in Oslo
<b>Location in Norway:</b>	Aker Egersund AS, Egersund
<b>Core competency:</b>	Its portfolio of oilfield products, systems and services stretches from concept studies and front-end engineering to subsea production systems, maintenance, modifications and operations services and solutions for extending the lifetime of oil and gas fields.
<b>Values:</b>	“Building customer trust is key to our business. After all, together with customer satisfaction, it forms the foundation of our company.”

View from crane cab



Full gantry cranes in various designs are part of the Siempelkamp Krantechnik portfolio. "Be it as a single or double girder crane, in a box girder or structural piping design: we have delivered various designs for a wide range of application areas over the past few years – ranging from shipyard

operations via steel storage to container storage for hazardous material containers," says Heinrich Kampen.

The hand fits perfectly into the glove in the newest project, thus both partners combine their services to a coherent over-

all concept. The cranes were sold by DEMAnor AS, who established the customer contact and also took charge in dealing with the respective end customer. The complete engineering for the cranes, the manufacturing, installation and commissioning were carried out by SKT in Moormerland. The installation and commissioning on-site as well as the entire after-sales service, on the other hand, was performed by the DEMAnor team.

#### Crane project no. 5 – or: a full gantry crane for Aker Egersund

The Norwegian-German dream team started its now fifth joint crane project in this proven constellation. The customer already had a crane in use, which was to be replaced by a new model – and accordingly had precise demands. The SKT crane concept was convincing, with the core piece of the system, the specifically custom-made special magnetic crossbeam, being the absolute highlight (see box). The project was commissioned in February 2014.



## Load lifting device: a special design!

- Designed as specially constructed magnetic crossbeam, by request of the customer it can be universally used for sheet steel transport as well as for profile transport
- Concept: a main magnet system including a rotatable crossbeam with 27 round magnets and an emergency power supply. The round magnets transport sheet metal plates of various shapes
- Control of the magnets: individually or in groups via a magnetic control system
- Also includes: a second integrated magnetic system consisting of one girder with 5 rectangular magnets, which can be retracted into or extended out of the main crossbeam by means of a separate hoisting gear

The crane was designed as single girder full gantry crane with a load capacity of 10.5 t at the magnets and a span distance of 24 m. Together with the approx. 12 m jibs on both sides, the total crane girder length amounts to 48 m. The total construction height of the crane is 18.2 m.

The crane girder, which is designed as welded box girder, has a construction height

of more than 2 m. For transporting purposes, the crane girder had to be designed with two screwed joints allowing it to be disassembled into three parts. Trolley tracks are connected in the lower girder area for the double-rail trolley. The crane girder by itself has a total weight of 38 t; the entire crane weighs about 110 t. Taking this main data into account, it is the largest gantry crane ever delivered by Siempelkamp!

The equipment of the 18 t crane also covered the entire palette: a rotatable trolley with slanted cable tensioning, oscillation damping, a movable crane cab, camera system, full accessibility, control container on the crane bridge as well as a magnetic crossbeam for sheet steel transport with integrated magnetic crossbeam which can be lowered for profile transport are just some of the



Rotating crab and magnetic crossbeam





Installed crane

special equipment features. In addition, the design of the crane was customized to suit outside operation close to the Norwegian North Sea coast.

The heavy load convoy started its journey to Egersund at the end of August 2014; the freight with a total weight of more than 100 tonnes had to be distributed onto ten trucks altogether.

The main components were designed to be splittable, in order to allow for transport via ferries and Norwegian roads.

The on-site installation and commissioning was jointly performed by DEAMnor and SKT in this case. Thanks to the good team play, the crane has now been successfully handed over to the customer.

The SKT team would like to take this opportunity to thank the competent and experienced DEMAnor project team, consisting of Nils Petter Lauritsen, Morten Andersen and Stig Ree-Lindstad, for the very good, cooperative and always very pleasant cooperation. We say: "Tusen takk"!



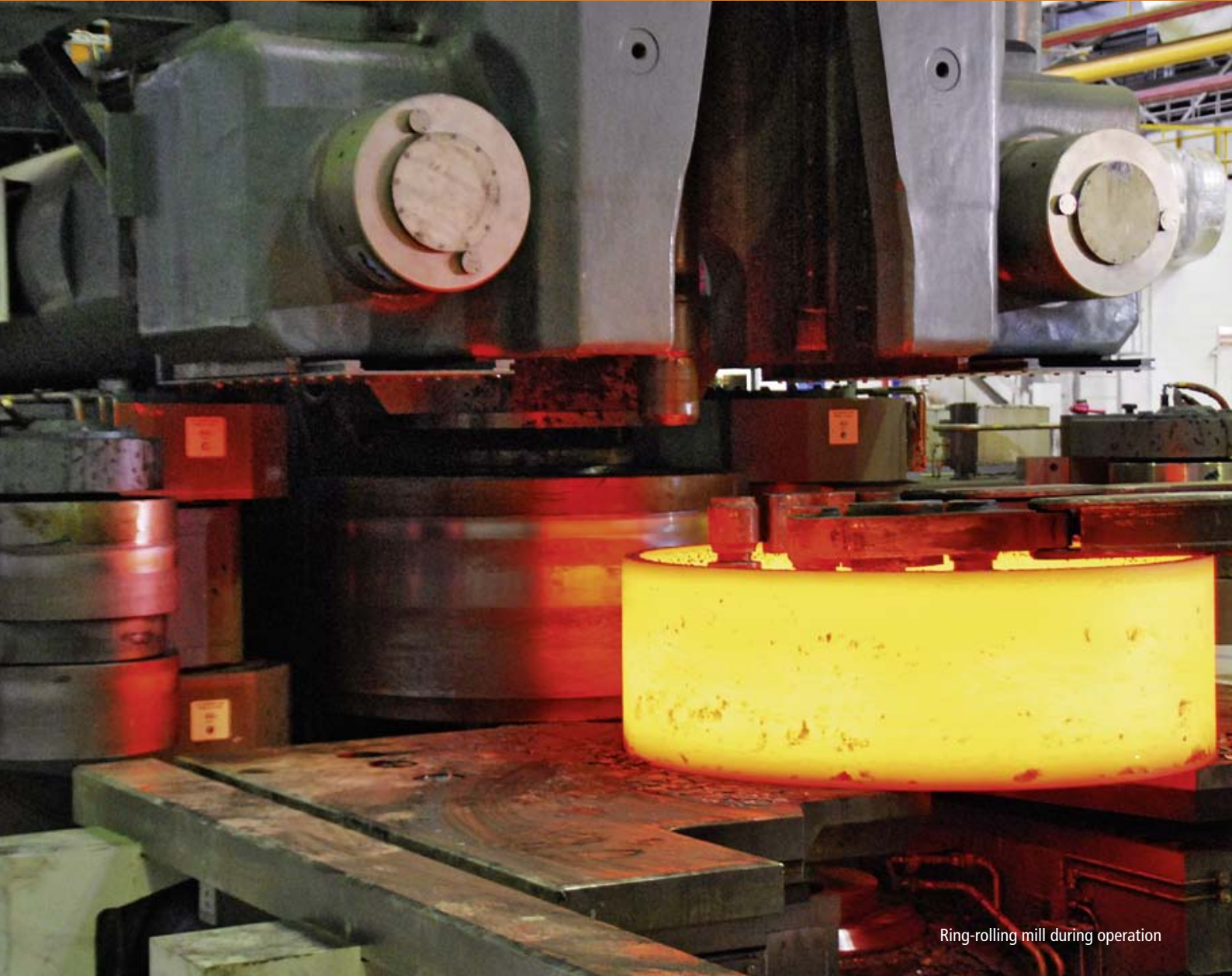
Preparation for loading



Magnetic crossbeam loaded

On-site at Electrostal:

# Man, machine, ring-rolling mill



Ring-rolling mill during operation

According to the motto 'Lord of the Rings', a special first-time event took place in Russia in October 2014: The first ring-rolling mill ever made by Siempelkamp for JSC Metallurgical Plant Electrostal was inaugurated at the company's location in Russia (we reported about the event in Bulletin 02/2014). Since January 2015 the first rings made of steel have been manufactured there. Man and machine are warming up ...

By Goetz Sondermann



The innovative ring-rolling mill had passed its crucial test in Krefeld during the in-house startup in July 2013. The mill was designed to produce rings made of steel and special materials such as nickel-based, titanium and aluminum alloys with a maximum diameter of 2,500 mm and a height of up to 600 mm. Rings with rectangular or profiled cross sections made of these extremely rigid yet lightweight special materials are mainly used as mechanically and thermally stressed components in the aerospace industry.

With maximum radial and axial pressing forces of 6,300 kN each, the ring rolling mill is one of the largest of its kind. The Siempelkamp control SicoRoll which was developed specially for ring-rolling guarantees high process accuracy.

#### Live at the 'Man-Machine-Interface'

15 months after the plant was started up and following its inauguration another important milestone in the exciting chronology of this mill took place (see timeline). In the beginning of 2015 the employees of the Electrostal team had the opportunity to prepare for their new jobs together with Siempelkamp technologist Ralph Ludwig.

After the first test rolling cycles at the customer's site, Ralph Ludwig travelled to Russia to provide the Electrostal personnel with onsite startup training. JSC Metallurgical Plant Electrostal is located approx. 50 km east of Moscow in the city of Electrostal (155,000 inhabitants). Founded in 1917 the company employs approx. 1,000 people.

## Ring-rolling mill for Electrostal: Key data

<b>Rolling force:</b>	Radial 6,300 kN; Axial 6,300 kN
<b>Drive capacity:</b>	Main roll 1,260 kW Axial roll 2 x 630 kW Total approx. 3,200 kW
<b>Ring dimensions:</b>	Maximum diameter 4,000 mm; Height 40 to 600 mm
<b>Roll speed:</b>	Control range 0.3 – 1.2 m/s Rated speed 0.7 m/s
<b>Dimensions:</b>	Main dimensions approx. 22,000 mm x 6,500 mm

The training focused on familiarizing the team with the new ring-rolling mill and its control program SicoRoll so that the mill can be used optimally. Numerous Siempelkamp customers make use of these training opportunities at either Siempelkamp's Academy or directly at the customer's site in order to penetrate the new technology in the best possible way.

All participants involved in the rolling process, for example, metallurgists, process technologists, and the actual workers

**March 2011:** Electrostal orders the ring-rolling mill from Siempelkamp

**July 2013:** Factory startup of the ring-rolling mill in Krefeld

**October 2013:** Dismantling and transport to Russia

**October 2014:** Inauguration at Electrostal,  
followed by first rolling cycles

**January 2015:** Personnel training and additional  
testing operations on site at Electrostal



Pre-acceptance of ring-rolling mill with customer in Krefeld



carrying out the rolling, took part in the training. Ralph Ludwig summarizes the need for sophisticated training: "Some people provide important data for the rolling process, others optimize the processes and again others oversee the entire rolling process."

#### SicoRoll: Makes the radial/axial ring-rolling mill process work

The focus during the training was put on SicoRoll, the technology program for Siempelkamp's radial/axial ring-rolling mills. Both the basics as well as the usage of the system were on the training agenda. Following an introduction to the ring-rolling process, the Electrostal team concentrated on the many factors influencing the process, including ring temperature, flow curves at elevated temperatures, rolling forces and torques. Basic knowledge regarding the three phases of the radial/axial ring-rolling mill process was also provided. The chronology of the process is complex even if the actual loading, rolling and unloading process per ring only takes 3 minutes.



Control station



First rings are rolled





## Ring-rolling mill fully installed



1.) During the **initial rolling phase** the punched spherical ring blank is rolled in radial direction at a pre-selected speed to flatten the blanks and also to level existent geometrical imperfections. This provides a good starting point for the main rolling phase.

2.) During the **main rolling phase** the ring growth curve as one of the two main reference process inputs is controlled in such a manner that the technologically desired ring growth rate is achieved or the machine is used to capacity respectively.

3.) During the **calibration phase** the ring is rounded in order to reach the perfect target geometry. The third phase goes hand in hand with a reduced ring growth rate. Since mass fluctuations cannot be avoided completely, just two of the three geometrical ring shape variables at a time can be achieved precisely, either outer diameter and wall thickness or outer diameter and ring height.

Siempelkamp has developed the program package SicoRoll especially for the entire rolling process. It guarantees high process accuracy; parameters such as rotational speed, forces, torques or ring position can be easily predetermined, optimized, monitored and adjusted. Thus, SicoRoll supports the user not only during process planning but also provides the customer with the ability to adjust the process during rolling. All this and more was discussed during the startup training; the structure of and the benefits of having the program were explored as well as the use

of the user interface explained. Trial rolling operations took place and were followed by fine-tuning and adjusting processes in order to reach the best possible result. Meanwhile the team has manufactured several rings with excellent results and therefore, can consider themselves among the 'Lord of the Rings'.

The training for the new ring-rolling mill and SicoRoll was a definite success for the Russian team: "A first-class sleeve rolling machine and an excellent disc rolling machine," was how the participants praised the new mill.

#### All clear for controlled rolling operation

At Electrostal all signs for controlled rolling operation are set on go. Best condition for the acceptance of products: In 2014 the plant received the conformity declaration, that is, the confirmation that the international quality requirements AS/EN/JISQ 9100 are met. This is based on the ISO 9001 series of standards and contains the appropriate supplements that are industry-specific to the aerospace industry.

Next, the Siempelkamp specialists in Krefeld need to determine, in a close dialog with the customer, which priorities have to be set for further development of the ring-rolling mill concept. Topics such as the process stability and repeat accuracy will play a role during this exchange of ideas, as will the definition of new benchmarks for further successful projects.

SLS worldwide:

# A new website, a brochure that's hot off the press and participation at the LIGNA fair open up direct access to Siempelkamp service

Since 2014 Siempelkamp service has been operating under a new organizational structure: At the Krefeld, Bad Kreuznach and Wolfratshausen locations more than 100 employees of Siempelkamp Logistics & Service GmbH represent combined service expertise (we reported in Bulletin 02/2014). In 2015 the team takes the keyword 'service' to a new level and expands communication channels with worldwide customers. Via new online representation, a brochure hot off the the press as well as through personal contact at LIGNA 2015, plant operators have access to the company's broad range of services.

By Dr. Stephan Niggeschmidt

## One company, three locations in Germany: An overview of SLS services

### Specialties in Bad Kreuznach:

- Quick original spare parts service (standard spare parts business) for plants from Siempelkamp, Küsters, Metso and Bison
- Central distribution center for worldwide deliveries
- Excellently stocked spare parts warehouse

### Specialties in Krefeld:

- Sales and handling of projects involving upgrades and modifications
- Spare parts sales
- Service specialists for worldwide inspections, maintenance work and support in case of production downtime

### Specialties in Wolfratshausen:

- Services tailored to the area of finishing, for example, upgrades to electronic controls, new controls for trimming and cross-cutting saw units, modernizations of transfer carts and storage systems
- Complete overhaul of the double diagonal saw mechanics



Upgrading ...



“Customers requesting our services evaluate these services on the basis of time, quality, and costs and do so across the entire service chain. Therefore, plant operators can be assured that we identify their spare parts needs immediately and provide adequate solutions. Our quick and gapless communication proves that time, quality and ultimately costs are also given a major role here,” explains Stefan Wissing who, next to Thomas Dahmen, is the managing director of SLS.

During the LIGNA year SLS will launch three communication tools which will make access to our service even easier for customers worldwide.

**Our drive: Perfection – now also online and as a brochure**

In time for LIGNA 2015 (from May 11 to May 15, 2015) the new SLS website at [www.sls-siempelkamp.com](http://www.sls-siempelkamp.com) goes active. The SLS slogan “100% efficiency for each project” also applies to the recently released online presence available in German and English: Retrofits or upgrades, spare parts service or support – all areas of the service expert are presented in a clear and compact way. No matter where and for what a plant operator needs quick support: The 24-hour emergency hotline, online support and field service offer quick, effective and most of all custom-fit support. Furthermore,

the new website provides information to locations, contacts and practical detail to after-sales services of SLS.

SLS is also providing customers with a brand-new printed brochure: The new brochure makes the SLS portfolio and contacts available any time quick support is needed. The brochure can be obtained at LIGNA in Hannover where the SLS team will be represented for the first time.

**Best German engineering worldwide: Live at LIGNA**

“We will go where our customers need us,” is the motto for Siempelkamp service.



This not only applies to the skilled personnel at the three German branch offices, but also applies to the teams at international locations, the teleservice, the emergency hotline and to LIGNA.

For the first time, the SLS team is represented live at the Siempelkamp booth in Hannover and is looking forward to meet industry visitors of the fair!

## Clear concepts, innovative technology for higher efficiency: Siempelkamp's modification and upgrade packages

With comprehensive modernization packages Siempelkamp service will bring all Siempelkamp plants as well as plants made by Küsters and Bison to the latest state-of-the-art technology. Furthermore, customers can rely on innovative, tailor-made solutions for plant optimizations.

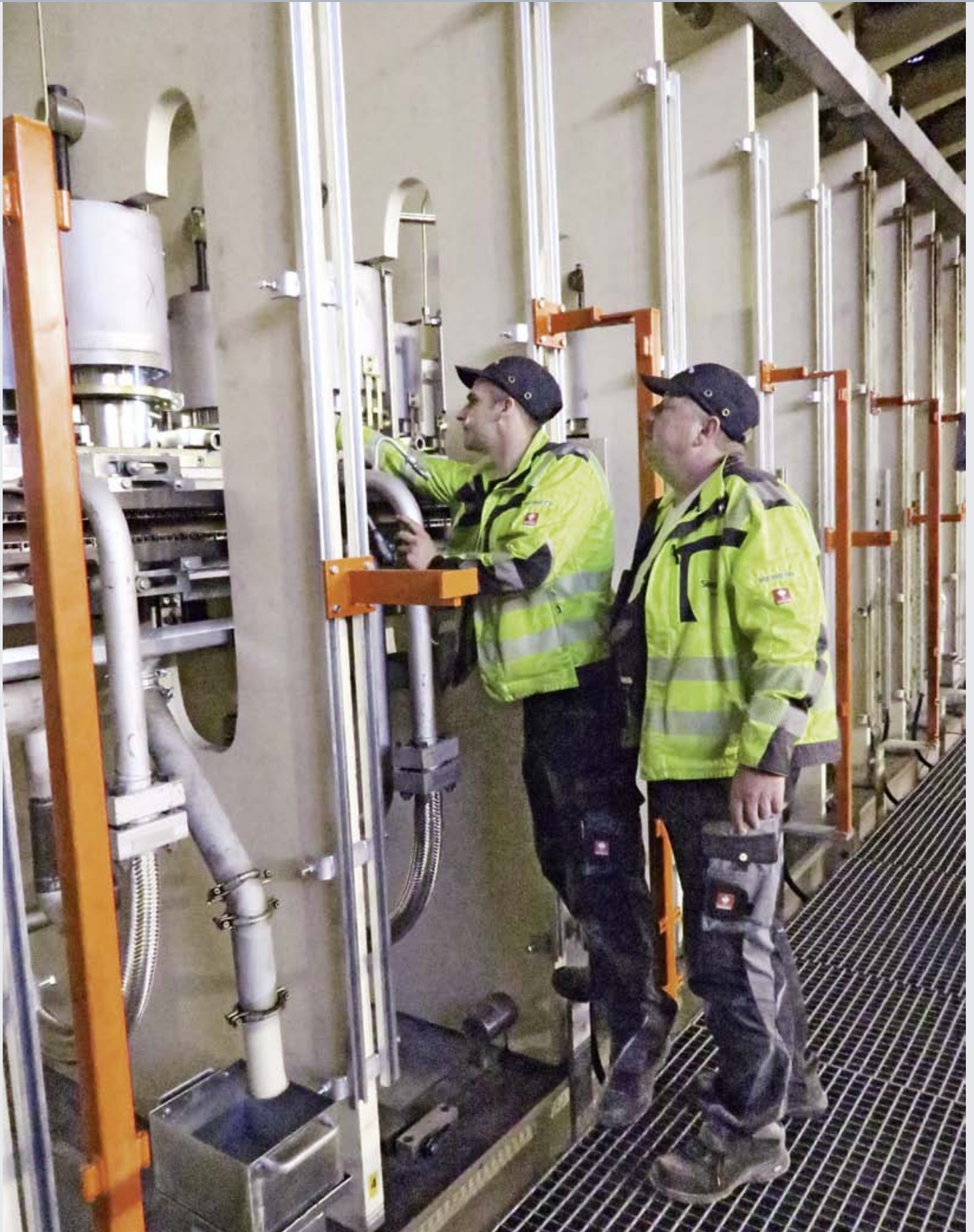
Plant operators utilize modification and upgrade solutions for

- ContiRoll®
- Multi-daylight presses
- Short-cycle press systems
- Küsters and ContiPress® press systems
- Board finishing equipment





... Inspection and maintenance






“TOTALLY OK”:  
Refinery in Leuna put to  
test by SPG



Visual checks in a piping section

All five to six years, as is specified by legislation, refineries and big chemical plants are put to the test. The production process is offline, cleaning and maintenance work is carried out, the technical supervision authority (TÜV) and other inspection bodies check the machines and plants for safety and integrity. In June 2014, it was the third time for the TOTAL Raffinerie Mitteldeutschland GmbH (TRM) in Leuna, in which roughly ten percent of the crude oil required in Germany is processed to mineral oil products. Siempelkamp Prüf- und Gutachter-Gesellschaft Dresden (SPG) was also involved in the inspection.

By Dr. Peter Seliger



After a construction time of three years, the TOTAL refinery started further processing crude oil into gasoline, diesel, heating oil, liquid gas, crude gasoline, kerosene, bitumen and methanol in 1997. The French TOTAL group thereby secured the preservation and expansion of the well-established chemistry location, Leuna, after reunification with a direct investment of €6 billion.

Nowadays, the refinery is an important economic factor and client for numerous regional and supraregional companies. The processing capacities are tremendous: 12 million tonnes of crude oil can be refined each year. A large proportion flows through the Northern Druzhba pipeline from Siberia via Belarus and Poland to the refineries Schwedt and Leuna. A freight train carrying this amount would reach back to the Ural region and would have 180,000 tank cars!

3 million tonnes of gasoline alone are produced each year. This quantity covers the requirements of the approx. 1,300 gas stations in the catchment area Saxony-Anhalt, Thuringia and Saxony to the greatest possible extent. The refinery site has an according size: the area, which has been built on with 12,000 t of steel and 700 km piping, is about as big as 500 soccer fields. The 140 m high torch can be seen from afar. The refinery's appearance is also impressive at night, when more than 15,000 lights illuminate the refinery site.

#### The perfect general inspection

The third major downtime of the refinery's existence meant that the plants were offline for about six weeks in mid-2014. One of TRM's operator duties is to subject their refinery plants to a general service and maintenance process. This ensures the functional, optimized and legally-compliant plant operation. An effort which requires time: more than three years of planning was necessary, in order to plan the inspection work, maintenance projects and upgrading to detail.





Testing and inspection work in the outside area of the TOTAL refinery

Not only the time expenditure, but also the teams and the equipment in Leuna developed into unseen dimensions: 3,000 additional employees from contractual partners were on-site – around 600 employees are required for normal operation in the refinery. 30,000 spare parts and equipment items, some of which weighing tonnes, were required; 85 cranes moved these loads to their final point of destination.

The steel cupola of the cracker regenerator alone weighs 165 t at a diameter of 10 m. The teams built a special crane over the course of one week, in order to lift this load 40 m high. Hundreds of plants were emptied, cleaned, disassembled into all their parts, repaired, checked and reassembled. TOTAL had invested 65 million in this job. A large proportion of this was

intended for the project FCC and alkylation plant. Because the aim in future is to produce more chemical base materials from the crude oil, such as propylene. TOTAL is thereby reacting to the downward demand of gasolines.

#### SPG: a TOTALly qualified partner

In order to again be considered as contractual partner for the large-scale project, SPG had obtained further qualification in the form of a SCCP certification (Safety Certificate Contractors for Petrol). Here, the focus is on the setup and proof of a company-own management system for occupational, health and environmental protection (SGU). This serves to reduce the number of accidents during maintenance, repair and inspection work and seeks to



The TOTAL refinery connected to power – © Matthias Kuch



help prevent work-related illnesses as well as environmental and property damage. The SGU system is subject to an annual inspection by the technical supervision authority (TÜV).

#### Team work of the Dresden Siempelkamp technicians

As in 2008, the Siempelkamp experts had been commissioned to plan and execute service life monitoring programs – e. g. for important columns, reactors, containers, fittings and piping.

The testing services included visual tests, using a video endoscope amongst other things, and in addition, more than 2,000 ultrasonic wall thickness measurements and 1,100 geometry checks. The SPG specialists

carried out penetrant and magnetic particle testing as well as 330 radiographic tests in 200 positions. An ambulatory component metallography (replica technology) and hardness measurement of pipes, elbows, molded parts and weld seams at 100 testing positions allowed conclusions to be made regarding the structural conditions and possible damage caused by the operating loads. According to the findings, consistently satisfactory results were achieved. The final evaluation had 750 pages and formed an 11 kg heavy file package!

The local press also reported on the large-scale project: the "Sächsische Zeitung" dedicated a full page reporting on the involvement of the Siempelkamp technicians from Dresden in June 2014.

The conclusion: "Once again we have completed a comprehensive program consisting of engineering and testing services to the full satisfaction of our customer. And it does not stop there, as we have already been assigned new tasks in the field of service life monitoring during refinery downtimes for 2015," says Dr. Peter Seliger, Head of Plant Inspection at SPG, with regard to upcoming projects. And the past inspection will be followed by another inspection in Leuna: the preparations for the next general service and maintenance process in 2020 will start in three years time.

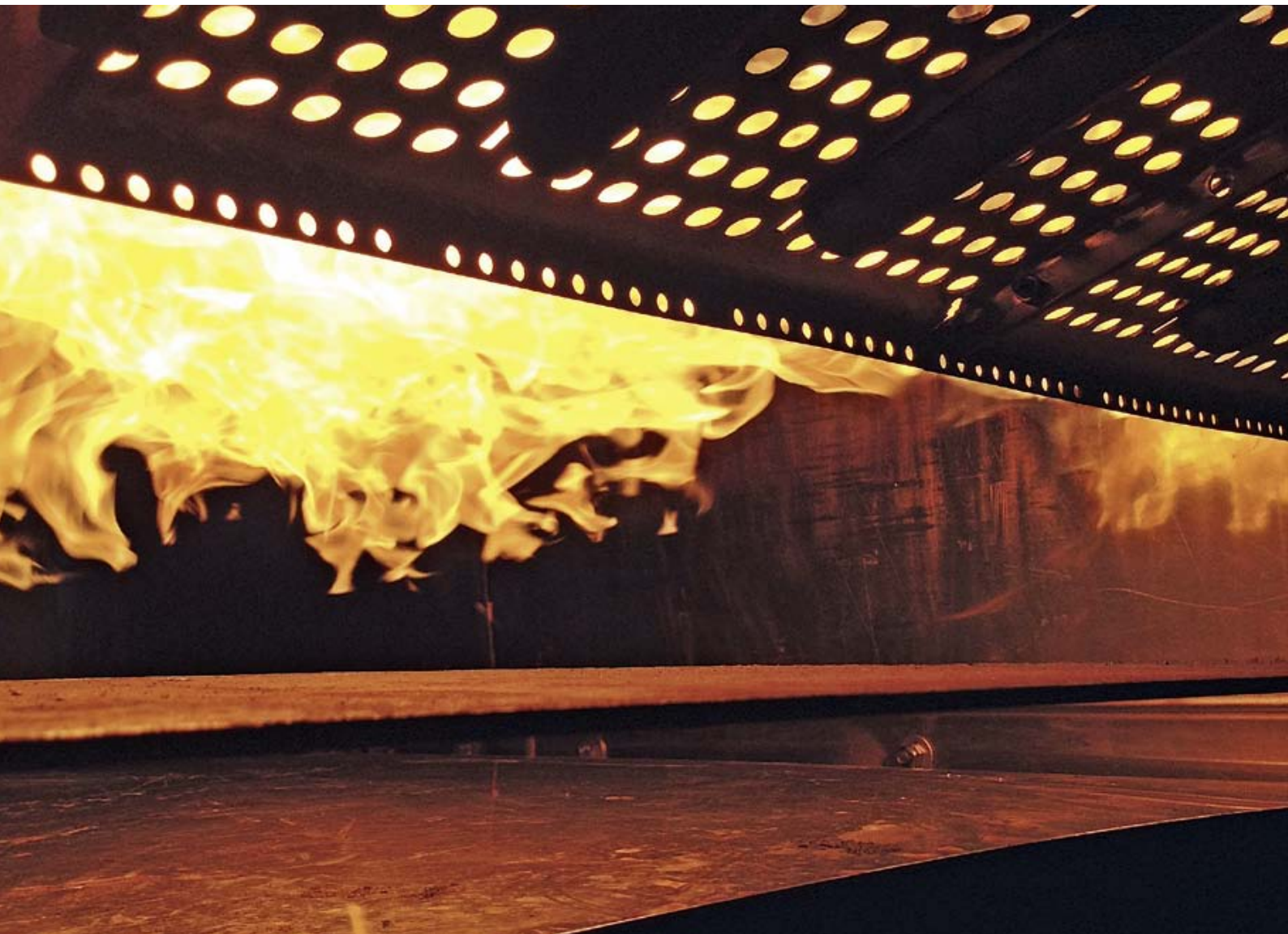


Ultrasonic testing on a weld seam



Repair of valves





View from below of the new air baffles

## Addition to Büttner's own-brand range: New duct burner saves energy

To meet the specific requirements of customers in the wood-based products industry Büttner has been manufacturing its own burners since 2007. The latest addition in the range of the company's own brands is a duct burner. The highlight: the special nozzle design ensures an optimal flame front which consequently results in a uniform and almost streak-free heating of the drying air. This saves energy and increases product quality!

By Carsten Otto

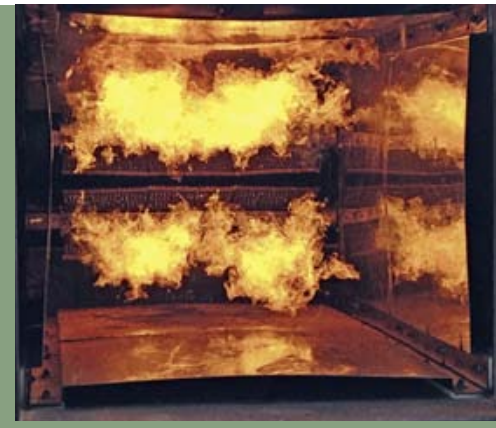
In the overall structure of a plant burners are highly stressed components which have to carry out a complex job: They supply the necessary heating energy for the drying of chips, strands, and fibers by burning sander dust and screening dust, gas and oil. Büttner energy plants also use production waste materials and biomass to generate heating energy.



Test area for the new duct burner at the outside area of an institute in Duisburg



Burner in test mode with full gas volume



Burner in test mode with reduced output

Due to this diversity, different burners are used in wood-based material production plants equipped with dryers and energy plants. They have to ensure highly efficient and economical burning during which the individual components are subject to extreme thermal stress and very high wear.

For Büttner this was reason enough to pay special attention to the "burner" topic and to start relying on brands of their own: In 2007 the company developed its own combination burner. Since then a team of experienced engineers has been working

exclusively on the development, design and manufacture of burners and all peripherals.

Next to the burner, the areas of fuel supply, environmental technology and control technology play a part here. In cooperation with Büttner's own electrical department, a control system and software were developed specially for the burner to ensure that the burner works optimally together with the dryer and energy plant.

This commitment has borne fruit many times already: The Büttner Type BCB com-

bination burner was successfully used for the first time in 2008 and has since then been consistently developed. In 2011 and 2013 the concept was met with great interest by the expert audience at LIGNA in Hannover. Meanwhile more than 50 of these burners with outputs ranging from 5 to 50 MW have started operation.

**New type BLB duct burner**

The new burner in Büttner's product range took shape in 2013: Back then Büttner decided to design and build its own duct

View into the burner duct, new trials with improved gas nozzles



Outside the new burner duct, preparations are made for the next series of tests





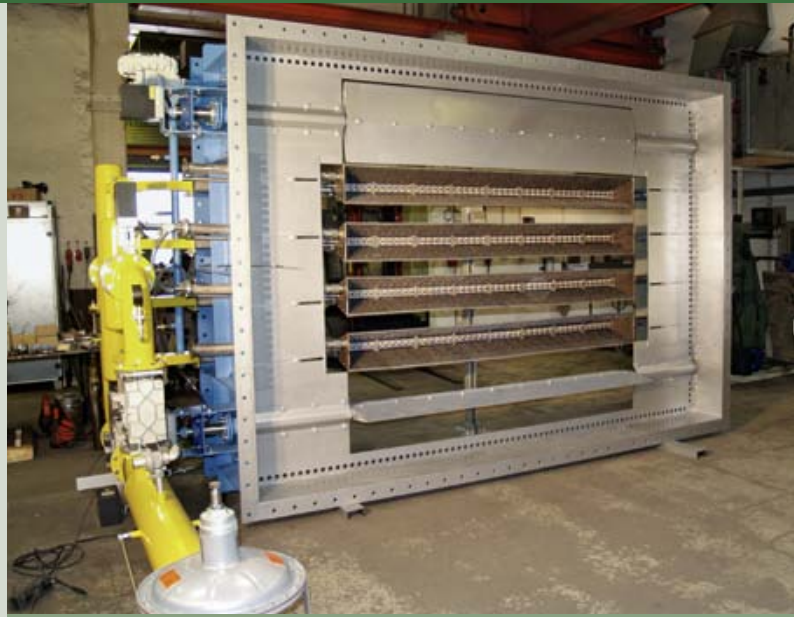
burners. These burners primarily burn natural gas and are integrated into the fresh air intake ducts of fiber dryers. There they often represent one of several types of heating or are used as a backup system.

The development started with the design of a small 5 MW burner with the associated gas control system and an air blower responsible for the required air flow above the burner. In the test area of an institute in Duisburg, Germany, this burner was built and intensively researched by Büttner experts with the help of state-of-the-art measurement technology.

One of the secret formulas surrounding the Büttner development is the high level of in-house development: Even the nozzles have been developed and manufactured in house in order to achieve an optimal result regarding the flame front. The nozzle design features special drill holes which are crucial for a uniform and streak-free heating of the drying air (see also our interview with Carsten Otto).

Inside the intake duct the duct burner acts as a flow resistance which, to a certain extent, is required for the burner to function. "In any case, the new design was supposed to function with significantly less air pressure drop since any additional pressure has to be applied by the dryer fan and results in higher energy costs," explains Büttner Sales Manager Carsten Otto.

The development specifications for the burner also required it to have a modular design. This represents another customer advantage in regards to cost savings because it is now unnecessary to design each burner size anew. Apart from the burner itself, all other components were also tested until everything functioned smoothly and met the high Büttner quality requirements.



The new burners can be integrated into existing drying plants or can replace older burners resulting in increased drying capacity due to reduced air resistance.

So many benefits meet the needs of the customers: Well-known companies in the wood-based products industry have ordered three Büttner duct dryers Type BLB with outputs of 25 MW and 40 MW to date. Further orders are expected.

By the way, the above mentioned 5 MW duct burner still works even after the long and hard development phase. Meanwhile it heats Büttner's laboratory dryers at the Siempelkamp test field!

## Büttner burner benefits: Type BLB is impressive!

- 60 % less air resistance compared to other makes used to date
- at medium dryer size, electric energy savings of the dryer fan of at least 100 kW
- complete integration of the electrical system of the burner into the programmable control (SPS) of the dryer
- high safety: flame monitoring by UV cells and ionization probes
- minimal maintenance efforts and spare parts needs due to modular design
- high manufacturing quality
- significant cost reduction of the burner by producing it in house
- startup of the burner by Büttner – no additional need for personnel of the supplier

The picture shows the new type BLB duct burner with an output of 25 MW. Fully installed and ready to undergo quality control.



Only high-quality components are used; pictured here the gas control valve.

# “The right nozzles make all the difference.”

Interview with Carsten Otto

**In what ways does the in-house development of dryers by Büttner pay off for the plant operator? In an interview with Bulletin, Büttner Sales Manager Carsten Otto explains why the company started developing its own brands.**

**Bulletin:** Why did you decide in 2007 to develop burners for chips and fibers in house?

**Carsten Otto:** The manufacturers which design such burners supply their products to an industrial spectrum which is nearly unmanageable. The specific requirements of our core discipline, the wood-based products industry, is not part of their focus. That is why we decided to develop a spe-

cific burner that will meet these requirements and therefore, also the requirements of our customers.

**Bulletin:** In 2013 you faced the same issue with the duct burner ...

**Carsten Otto:** That's right. We also bought these types of burners, which are primarily used in flash tube dryers in MDF and insulation board plants, from different manufacturers. Based on our success with the combination burners, we decided to also design and build duct burners in house because we saw a potential for optimization in this area as well.

**Bulletin:** How?

**Carsten Otto:** Our own brand consists of a higher number of self-developed

components. We quickly moved away from the gas nozzles available on the market and designed our own system featuring special drill holes that ensure an optimal flame front. We also experimented with the air baffles around the nozzles. Not only the angle of these deflectors but also the number and size of the holes through which a uniform air flow is achieved is decisive. Here every change in degree and millimeter really mattered.

**Bulletin:** Three burners have already been sold. Will this topic also “fuel” your representation at LIGNA 2015?

**Carsten Otto:** In deed. The new Büttner duct burner is one of our new products which we want to present to our customers with interesting exhibits.



# Siempelkamp presses for side members India – side member press,



Side member press fully installed

Siempelkamp is well established as a reliable and competent partner for the Indian supplier industry for commercial vehicle manufacturers. After an installation time of six months the 4th side member press for this industry sector was started up on schedule at MS Global Automotive Pvt. Ltd. in June 2014. The basis for placing this order with the Krefeld press specialist was a reference project completed two years prior at KLT Automotive and Tubular Products Ltd. in Oragadam, India. Close to Chennai, a metropolis of 6.5 million people, Daimler India Commercial Vehicle (DICV), a 100 % subsidiary of Daimler AG, invested in a modern plant in 2012. DICV with its trademark BharatBenz was the main customer of the chassis components made by KLT at that time. Now DICV commissions MS Global to manufacture its side members on the new press.

By Hubertus Jürgens

# the 4th

MS Global ordered the complete production line for the 50 MN side member press

“All from a single source” – the complete press line including all hydraulic drives and state-of-the-art control electronics was manufactured according to the Siempelkamp company motto. All component parts, such as the 100 t lower main beam, were manufactured within the Siempelkamp Group. After securely packing the 30 press main components including accessories from Siempelkamp’s own factory, a total of 670 t of parts were sent to India.

Next to the press, an automatic tool turning device with double tool change carriage and two shifting tables, roller conveyors for the loading and unloading of the material as well as a subsequent straightening device were part of the scope of supply. All main components of the 50 MN high-performance side member press are welded constructions. The upper beam is mounted via four vertical side stands each onto the lower beam in this 8-column press design. In this way, the press design ensures uniform pressure distribution at optimum torsion resistance. Four hydraulically controlled main cylinders generate the pressing force while the moving bolster is pulled back into the starting position after the press cycle is completed by four retraction cylinders.

## With maximum precision

Siempelkamp is committed to provide ‚maximum precision‘ even for its large presses. By means of a patented control and regulatory process Siempelkamp guarantees that the maximum eccentric parallelism deviation of the ram during the press cycle amounts to only 1 mm – and that with regard to a length of 10 m! This ensures that distortion of the bent side members that are taken out of the mold is kept to a minimum and will only require minimal post correction. In this way, even with ‚maximum precision‘, precise side members are manufactured!

Components corresponding to this high level of quality are a requirement for BharatBenz to maintain its excellent reputation as a quality manufacturer. MS Global can now offer this high



quality for side members manufactured on the new production line from Krefeld. After all, the longitudinal chassis beams for trucks have to ensure that, at their lowest possible weight, they can carry the maximum recommended load reliably and long term. Due to the country-specific road conditions and the high loads that have to be transported, especially high torsional rigidity for the side members is required. This can only be achieved by means of exactly defined cold-forming during the pressing process which requires, next to an excellent molding tool, a homogenous press load distribution across the entire machining length.

## Unprecedented manufacturing speed

In order to manufacture such high-quality component parts in line with the market, the press has to deliver high quantities. The



## Side members – the load-bearing chassis components:

Next to obvious component parts for commercial vehicles such as the driver cabins or the tires, there are also some concealed parts which, however, significantly influence the overall construction of a vehicle. An example for the latter parts are side members.

Two of them, in symmetric arrangement, connected with cross members form the lead frame, the supporting structure of the vehicle. The engine with its mounting, the drive train and the transmission are arranged between the side members. The axles of the wheels are, by means of wheel suspension, also directly connected to the side members. The chassis, the driver's cabin, the tank as well as other auxiliary units are mounted onto this platform. Furthermore, the side members have to take the entire payload of the trailer and the lead frame has to have high torsional rigidity to ensure good driving stability for all road conditions.

The process for manufacturing side members is divided into the following steps: Step 1: The blanking, blanks (sheets of metal with a defined steel grade and homogenous material thickness) are cut to the target length and width in the side member press. Step 2: After a tool change, the part's outer shape is cut and holes are pierced into the blank simultaneously during the 'cutting and piercing' press cycle. The holes are later used for mounting individual components and aggregates to the side member. Step 3: The bending process, the blank is bent along its outer shape into a channel-shaped part. The press tool needed for this process consists of a positive and negative die. Finally, the finished side members are checked, primarily by laser, for correct nominal dimensions and straightened.



Turning device in front of the press



Turning device

Siempelkamp side member press scores high in this regard: Its manufacturing speeds are unprecedented and the press provides impressive production times. For blanking of a sheet with a thickness ranging from 6 to 9 mm of the base material BSK46 the press cycle is 20 seconds. The press cycle for cutting and piercing takes only 17 seconds. The final processing step, the bending process, is again 20 seconds.

The set-up times are also impressive: With the tool changing system installed outside the press, dies and molds can be changed within 15 minutes. A turning device turns the upper tool by 180° and thus simplifies the installation of the tool. The double change carriage allows tool setups to be carried out during ongoing press operation.

"Other details include quick and precise positioning of the blanks. While a feeder system, manufactured by the Siempelkamp subsidiary Strothmann, transfers a processed part onto the unloading roller conveyor, at the same time a blank is positioned on top of the lower die along defined marks. A pneumatic cylinder then moves the blank lengthwise to the final machining position.



Tool shifting tables in front of the press



Main cylinder and customer



Hydraulic system



Upper beam during machining in Krefeld



Lower beam: welded construction

### Chennai – India’s automobile city

Chennai, formerly called Madras, is the capital of the Indian state of Tamil Nadu. The sixth largest city in India with an estimated 6.5 million inhabitants is located on the Bay of Bengal directly on the southern Indian coastline. Including the inhabitants of the metropolitan area, Chennai, with 8.7 million people, is India’s fourth largest agglomeration. Due to its direct location on the Indian Ocean, important centers of trade and business and large industrial locations have formed around Chennai. In these areas computer technology, pharmaceutical and medical technology products as well as automobiles and their component parts are developed and manufactured. Due to the strongly represented automobile industry, Chennai is also called the “Detroit” of India. Next to large international companies including Daimler, Ford, Hyundai and Nissan, 90% of all Indian automobile suppliers are also located in the greater area of Chennai. Due to its rapidly growing production locations Chennai, according to Forbes Magazine, is one of the ten most rapidly growing metropolises in the world. More than 34,000 registered companies are located in the 15 districts of Chennai.



Here, a spray device coats the blank with lubricant. This synchronization regarding the press cycle provides for a continuous material flow during side member production," says Hubertus Jürgens, Area Sales Manager at Siempelkamp. "A downstream camera checks for completeness of all holes while the finished part is still on the outfeed roller conveyor. In case of a difference to the preset hole count, the press cycle is interrupted in order to allow for a tool verification and to remove the sheet for post-machining."

The risk of tool damage or premature wear during piercing is minimized by an active piercing impact damping system. A hydraulic control helps to absorb, to a high degree, the impact caused by the piercing process. The operator is able to adjust the degree of damping according to the tool being used and the thickness of the blank.



Installation of the lower beam





Ladder beam



Metal plate



Finished side member

## MS Global Pvt.Ltd.

MS Global Automobile Private Limited was established on August 03, 2011 in Sriperumbudur Taluk in the greater Chennai area. The main activities of this supplier to the automotive industry include the manufacture of measurement, testing, navigation, and control systems as well as chassis components. Despite its short company history, MS Global is one of the main suppliers to BharatBenz, an important commercial vehicle manufacturer of the rapidly growing Indian market. MS Global Pvt. Ltd. is a subsidiary of MyungShin Industry Co., founded in 1982 and headquartered in Gyeongju, South Korea. One of the company's main business partners includes Hyundai Motors, a Korean automobile manufacturer with strong international orientation.



Joining an association



Siempelkamp develops a press for hybrid materials for the  
"Welcome to the club"

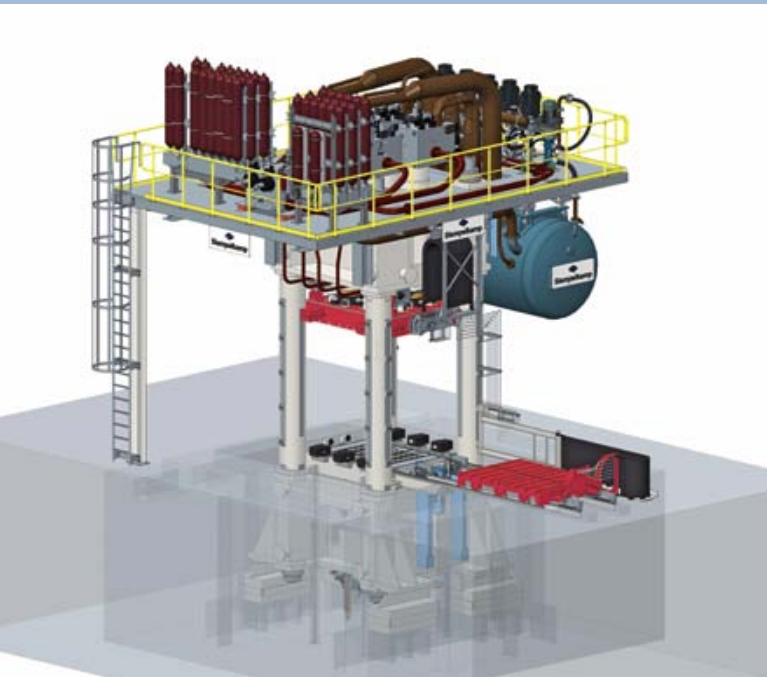


## Wolfsburg research center:

Since October 2014 Siempelkamp has been a member of a well-known brain pool. The "Open Hybrid LabFactory e.V." (OHLF) combines the expertise of approx. 250 researchers from science and industry. As mentor from the area of machine and plant engineering, in particular regarding composite presses, Siempelkamp is a fully committed member. A special compliment: A reference project for the research association is developed and will be built in Krefeld – a 25,000 kN press which can produce hybrid materials with utmost accuracy!

By Dr. Michael Schoeler





The composite press, 25,000 kN



The press table during manufacturing

Since October 2014 the Krefeld specialist for machine and plant engineering has been a full member of OHLF e.V. – a research center for approx. 250 researchers from science and industry who are dedicated to a common vision: to develop innovative technologies and new light-weight materials for the automobile of the future (see box). The project which is financed with more than 100 million Euro has the objective to revolutionize automobile construction.

Siempelkamp's involvement in this elite project has not only been as an association member but also as a manufacturer. The company developed a reference press for OHLF which has attracted the attention of the automobile industry. This press is able to manufacture the desired hybrid materials with a pressing force of 25,000 kN. The motto is to 'kill two birds with one stone': Composite materials based on carbon fibers are combined with metal, for example, during the press process.

The mixture of metal and composite material is highly attractive especially in the automotive industry. The combination of low

weight and strength is decisive for the technological lead in the market. Composite parts are extremely light and hard and are

## Open Hybrid LabFactory: The creative workshop

Key data:	2012 the public-private partnership "Open Hybrid LabFactory" is initiated, 2013 founding of the association "Open Hybrid LabFactory e.V."
Location:	Wolfsburg
Full members:	Next to Siempelkamp, and amongst others, members include the Braunschweig Technical University, Volkswagen AG, BASF SE, ThyssenKrupp Steel Europe AG, and the Fraunhofer Institute
Research focus:	Technical solutions for the economical and ecologically sustainable mass production of hybrid lightweight components made of metal, plastic, and textile materials



Constituent advisory board meeting

therefore used as standard parts in many application areas in automobile construction. However, load-bearing structures, for

example, require further challenging properties such as the high strength featured in steel. Here, hybrid materials come into

play because the mixture of metal and composite materials offers both advantages, namely, the ability to produce lightweight parts with the properties of steel.

Inside the Open Hybrid LabFactory the involved companies and research institutes want to develop the entire value-added chain starting with the design of the parts and components, to the production of carbon fibers and the production process for hybrid materials, all the way to the recycling.

**Siempelkamp press for OHLF: Precision work with high pressure**

The press process is of central importance when it comes to the manufacture of the desired hybrid materials. The process has to succeed with high accuracy, only then, will the material meet the high requirements. Not acceptable, for example, is when during the pressing of the carbon fiber layers air bubbles become trapped inside the material. As soon as these parts are dried with heat after painting, the air expands, breaks through the fine surface and causes pinholes in the paint. These parts are rejects because the automobile industry sets high quality standards. Another challenge is to evenly distribute the viscous synthetic resins between the fiber layers.

**Research groups:** Design/Simulation, Fibers/Matrix/Semi-finished products, **Component production/Automation**, Testing technology, Environment/Recycling

**Siempelkamp involvement:** Participation in the research group "Component production/Automation" – Material development and production technology for economical and multi-functional lightweight construction – Topic "Hybrid press"





Lower beam during machining in Krefeld

Siempelkamp presses provide this type of precision work and furthermore avoid the dreaded air pockets effect: The layers are not only pressed down from above but an additional tumbling motion from the side helps squeeze out the air pockets. This process is similar to applying a protective cover to the screen of a smartphone. "Even at high pressures, the Siempelkamp press operates smoothly", explains Dr. Michael Schöler, Head of Research and Development at Siempelkamp (see also "Three questions for...").

### Hybrid press for OHLF:

#### Key data

- 4 cylinders
- Pressing force: 25,000 kN
- Press area: 1,800 x 2,500 mm<sup>2</sup>
- Speed: 800 mm/sec
- Accuracy: +/- 0.05 mm
- Maximum drawing force: 10,000 kN
- Order received: August 2014
- Test run: End of June, 2015

The test run for the hybrid press and its acceptance test in Krefeld are scheduled for the end of June 2015. Once both are completed, the actual challenge for the OHLF members begins: To support the German automotive industry in expanding its lead in global competition in the long term.

Groundbreaking on December 11, 2014



OHLF building, south view



OHLF building, north view



# Vision "Open Hybrid LabFactory": Three questions for Dr. Michael Schöler

With the Open Hybrid LabFactory e.V. and the commissioned Siempelkamp press, the participating researchers and companies set ambitious targets. Dr. Michael Schöler, Head of Research and Development at Siempelkamp, explains in detail.

**Bulletin:** What exactly makes the topic "hybrid materials" so interesting?

**Dr. Michael Schöler:** The term "hybrid" refers to a system which combines two different technologies in order to bring out the best of both. In the case of our research topic the challenge was to combine low weight with the strength of steel. In the automotive industry this is a combination that is in strong demand. From generation to generation automobiles have become heavier. We want to break this trend. Automobiles have to become lighter in order to make the electric drive more feasible – this, however, cannot happen at the expense of the loading capacity. That is why research and industry are pushing strongly to further develop this material combination. Siempelkamp is proud to play a key role in this development.

**Bulletin:** What attracts you to the LabFactory?

**Dr. Michael Schöler:** It is an honor to be part of this association and to work to-

gether with other ambitious partners in an exchange of ideas to develop an ambitious vision. The order to develop a composite press was a particular compliment for Siempelkamp because our expertise has thus been given a key role.

**Bulletin:** What can we expect from the Wolfsburg research team in the following years?

**Dr. Michael Schöler:** The association has developed a research roadmap reaching into the year 2030. Currently, the composite press, contributed by Siempelkamp, sets an important milestone. This press contributes its part in developing a closed process chain for the production of fiber-reinforced plastic-metal hybrids. In the next few years we will work on the linking of individual process steps and then on optimizing processes with the goal to increase quantities. At the end of this roadmap stands our vision of economic mass production.



Dr. Michael Schöler









SLS service orders for Finsa, Spain

# Servicio integral – Full service

In the tranquil municipality of Nelas in Portugal with its 5.000 inhabitants all preparations towards the production of the ‚First Board‘ are in full swing. One of Europe’s leading companies in the wood-based products industry, the Spanish company Finsa, will start manufacturing particleboard and “superPan” utilizing an existing Siempelkamp plant which Finsa has owned since 1998. This was made possible with the help of Siempelkamp Logistics & Service GmbH (SLS), which not only retrofitted the press for the new product but also helped the customer move the plant from Cella, Spain to Portugal. In addition to this retrofit SLS received five more orders from the Spanish board manufacturer and continues to provide its largest customer with “Servicio integral” (English: full service).

By Michael Willemen, Wolfgang Beck and Armin Lingen

In April 2014 SLS received from Finsa the order to retrofit the customer’s field-proven Siempelkamp particleboard plant. Objective of the endeavor: The economical production of superPan, an innovative wood-based board with MDF surface layers and a particleboard core. The first point on the agenda was to move the plant, which had been shut down several years ago, from Cella in Spain to the 700 km distant Nelas in Portugal. Due to the global economic crisis in 2008/2009, Finsa was forced to discontinue the operation of its press in Cella which had primarily manufactured particleboard for the furniture industry and for further in-house processing. With the revival of the wood-based products market in Spain, Finsa’s business picked up again. In 2014 the customer decided that by retrofitting and moving its proven particleboard plant from Spain to Portugal, it could produce the innovative product superPan more economically and consequently, more competitively.



Press line

## Retrofitting to a new product

To modify the plant for the production of the new product, SLS extended the press by 6 m. This upgrade resulted in an increase in plant capacity to 1,200 m<sup>3</sup>/day. The pre-press of the plant was equipped with an

additional de-aeration zone for improved pre-compacting of MDF surface layers. SLS also upgraded the chain guides, belt tracking cages and reversing rollers for the ContiRoll® and supplied the required spare and wear parts. Additionally, SLS carried out several different modifications in the



area of cooling and stacking. In the area of control system technology, SLS replaced the FerroControl control system of the double-diagonal saw and the SPC press control system. SLS also installed a new visualization system.

Furthermore, the hotplatenes of the press were overhauled. To do so they had to be taken to Siempelkamp's machine factory in Krefeld. Here, they had to undergo a manual cleaning, a visual inspection and finally, a repair. Next, the smoothness of the hotplatenes was checked with the help of a portal milling machine and the top and bottom surfaces were reconditioned. Afterwards, on-site experts checked all fixing threads and the exact fit of all connection brackets, installed different accessory parts and painted and preserved the surface areas. Safely packaged, the hotplatenes were finally shipped to Nelas, Portugal.

## superPan – an exclusive Finsa product

superPan is a wood-based board which consists of two external MDF surfaces and a core of particleboard. It combines the positive properties of MDF, a surface that can be directly laminated or painted, with a light core of particleboard. Compared to traditional particleboard or MDF production, the preparation of the wood for superPan production is more complex because fibers as well as chips have to be prepared and fed through different mat-forming machines. Few wood-based products manufacturers combine both preparation processes and only one, that is the Spanish manufacturer Finsa, feeds the prepared chips and fibers to a single ContiRoll® press.

The company is manufacturing superPan exclusively and holds the patent for this innovative product. Due to its smooth and highly dense surfaces, superPan is especially suited for a number of decorative finishes, such as paint, print, lamination, oil-finish and digital print. It is typically predestined for furniture and door production.

Installation of mat former bunker







The new part



Dieter Kleine and José Pichel from Finsa

**The upgrade allows for the production of thicker boards**

Next to the modification of the forming and press line in Nelas, SLS received, in December 2014, another order from Finsa for the modification of an MDF line for the production of thicker boards. The forming

and press line in Ourense, Spain will be modified in such a way that it will be able to manufacture boards with a thickness of 50 mm instead of the 40 mm boards to date. As part of the modification the press infeed area will be equipped with a power infeed hotplaten and the associated additional secondary heating circuit for the

thermal oil supply. Furthermore, a state-of-the-art mat scale, a new metal detector, and the retrofit of the mat trimming unit are part of the scope of supply for Finsa. As part of the modification to achieve thicker boards, the pre-press will be equipped with a longer de-aeration zone in order to pre-compact the higher fiber mat.

Extension of ContiRoll®



New flexible infeed head





## Finsa – Siempelkamp customer by tradition

Finsa's company history began in 1931 as a saw mill – today the Spanish company, headquartered in Santiago de Compostella, with 3,015 employees manufactures a wide variety of panel-type wood-based products. From particleboard to MDF to laminated boards and special products to the further processing of finished boards, Finsa offers a comprehensive portfolio. In this context the company attaches an increasing importance to international presence.

For SLS Finsa has been the biggest customer in the last two years which has made extensive use of Siempelkamp's service and upgrading expertise. Finsa has also been a long-term customer of Siempelkamp Maschinen- und Anlagenbau GmbH that has acquired many new wood-based material production plants over the years. In 1988 Finsa bought its first Siempelkamp press which manufactures particleboard in Ourense, Spain.



Partially rebuilt hydraulics

With this line the customer will manufacture thicker MDF used primarily in door production. The modification work is scheduled to begin in August 2015.



The plant from above





Cooling and stacking line during installation



Electrical system upgrade

**Two new short-cycle presses, one electrical system upgrade**

In addition to the two orders for retrofits in Nelas, Portugal and Ourense, Spain, Finsa placed other orders with SLS. SLS is supplying a short-cycle press each with a pressing force of 500 N/cm<sup>2</sup> to the Spanish Finsa locations Santiago de Compostella and Rabade.

Concerning electrical system upgrades Finsa placed an additional order with SLS.

In May 2015 the successful acceptance of an electrical system upgrade for a Siempelkamp short-cycle press took place in Nelas, Portugal. First, the short-cycle press was moved from Bilbao, Spain to Portugal where it was then, together with the paper layup system and the board handling system from a Siempelkamp short-cycle press in Valencia, Spain, integrated into a complete line. For this project SLS engineered the electrical system for the press based on the existing electrical components at the site to meet the customer's

needs. Discontinued components were replaced with new ones. Furthermore, SLS was responsible for the integration of the individual plant components and for their startup.

Why Finsa entrusts Siempelkamp with its upgrading endeavors and what complete concept stands behind the numerous Finsa locations and plants is explained by Vicente Almanacid, Project manager at Finsa, in an interview with Bulletin.

The plant from above



The steam injection press from 1988 in good condition







## Interview with Vicente Almonacid

### 1. What can you tell us about the development of the Nelas location?

**Vicente Almonacid:** Finsa has been operating a Siempelkamp Single daylight steam injection press for MDF since 1988. This press manufactures MDF with a thickness of up to 100 mm which is processed, for example, into furniture components and panels. In 1996 Finsa started up a multi-daylight press which manufactured particleboard until 2009. The global economic crisis in 2008/2009 had a negative impact on the demand for furniture on the Spanish/Portuguese peninsula and consequently, also on the demand for wood-based material panels.

Finsa responded to this with the shutdown of four production units including three ContiRoll® presses. Among those shut down was the press in Cella, Spain, which was used to produce particleboard. The economic situation has significantly improved since 2014 and Finsa decided to strengthen the Nelas location in Portugal.

The ContiRoll® line from Cella, which had not been used since 2009, was dismantled in 2014 and transported to Nelas. There, the press replaces the older multi-daylight press. The production of particleboard and superPan will start mid-2015.

The Nelas location is also home to two Siempelkamp short-cycle presses. One short cycle is Pagnoni and the last is Siempelkamp. With the startup of the continuous press, we also need additional capacity for surface lamination.

### 2. How many active production units does Finsa currently have?

**Vicente Almonacid:** Including Nelas we produce particleboard, MDF and superPan at eight locations in Spain, France, and Portugal. Furthermore, we operate glue factories and a printing plant for decor papers. At practically all locations we own production units for the lamination of unfinished boards.

The majority of our production units are equipped with continuous presses made by Siempelkamp. We operate six ContiRoll® presses. The first ContiRoll® started production in Ourense, Spain, in 1988. This press is still running today and manufactures top-quality boards.

### 3. Which products will be manufactured in Nelas?

**Vicente Almonacid:** The newly installed plant with the ContiRoll® press will manufacture particleboard as well as superPan. superPan is a product exclusively manufactured by Finsa. It consists of a core layer of particleboard and two MDF surface layers. Furthermore, we will produce MDF with the Single daylight steam injection press. The majority of the unfinished boards will be laminated with the help of two short-cycle presses.

### 4. What is special about superPan?

**Vicente Almonacid:** Well, it is a super product: It is lightweight due to its particleboard core and due to its fiber cover layers it features smooth closed surfaces which can be painted, foil-coated or melamine-coated. The physical and mechanical properties of superPan are excellent and support the use in diverse applications.

We also manufacture several derivatives of superPan, for example, superPan Plus for post-forming and superPan Star. These boards feature a 20 % weight reduction due to added polymers.

All in all it is a very good product which requires a sophisticated production process. Just think of the simultaneous preparation of chips and fibers. This part makes the front-end processes of the production very complex. Furthermore, the forming of chips and fibers into one board requires perfect handling.

### 5. How is the superPan production in Nelas now structured?

**Vicente Almonacid:** As mentioned above, we have moved the forming and press line for particleboard production from Cella, Spain, to this location. There was one special feature: The mat-forming machines were originally supplied by Metso, the press line with ContiRoll® by Siempelkamp. For that reason we had to commission two teams for the new installation. Dieffenbacher upgraded the mat-forming machines with new forming heads. Siempelkamp upgraded the press line with a revised pre-press and extended the ContiRoll® by 6.6 m. The press was upgraded with the new flexible infeed. The cooling and stacking line with

stack storage system for jumbo stacks is also modernized by Siempelkamp. The complete front-end area remains the same. With this technical equipment we are able to produce particleboard as well as superPan according to market conditions.

### 6. Which raw material do you use?

**Vicente Almonacid:** The wood for our production is obtained from within a range of 300 kms. There is plenty of wood growing in the area, especially maritime pine. We also use a certain percentage of recycled wood which we process into chips. Furthermore, we use the waste material from sawmills. The resin for the production process comes from our own plants.

### 7. How many jobs will be created?

**Vicente Almonacid:** At the location we currently have 160 employees. With the startup of the new line we will hire an additional 50 people. We are very happy with our Portuguese employees. They are reliable and involved employees.

### 8. How did the installation progress?

**Vicente Almonacid:** To move an existing plant to a new location presents an endeavor with many surprises. Initially, we had planned to place the forming and press line in the same place where the multi-daylight press used to be. Due to the height and length of the hall this was not possible. That's why we had to build a complete new hall. In the end, we at Finsa were able to coordinate everything effectively and integrate the various subsections technically and according to schedule. We have known Siempelkamp for a long time. We appreciate the Siempelkamp employees and Siempelkamp technology. Once again, everything was completed to our utmost satisfaction.

### 9. When will the line start production?

**Vicente Almonacid:** The heavy installation will be completed soon and at the end of May 2015 we will manufacture the 'First Board'. Afterwards, we want to ramp up production as quickly as possible because our customers need boards.

Mr. Almonacid, thank you very much for this interview.

The interview was conducted for Bulletin by Ralf Griesche





# Siempelkamp

G. Siempelkamp GmbH & Co. KG

## Machinery and Plants



Siempelkamp Maschinen- und Anlagenbau GmbH



Siempelkamp Maschinenfabrik GmbH



Siempelkamp Logistics & Service GmbH



Siempelkamp (Wuxi) Machinery Manufacturing Co. Ltd., China



Siempelkamp CZ s. r. o.



ATR Industrie-Elektronik GmbH



Büttner Energie- und Trocknungstechnik GmbH



CMC S.r.l.



Hombak Maschinen- und Anlagenbau GmbH



Sicoplan Engineering  
Sicoplan N.V.



Ventilatoren – Apparatebau



Machines & Handling  
Strothmann Machines & Handling GmbH

## Sales companies/Representatives

### Australia

Siempelkamp Pty Ltd.

### Brazil

Siempelkamp do Brasil Ltda.

### China

Siempelkamp (Wuxi) Machinery Manufacturing Ltd., Peking

### France

Siempelkamp France Sarl

### India

Siempelkamp India Pvt.Ltd.

### Russia

Siempelkamp Moscow

### Belarus

Siempelkamp BEL

### Singapore

Siempelkamp Pte Ltd.

### Spain

Siempelkamp Barcelona

### Turkey

Siempelkamp Istanbul

### USA

Siempelkamp L.P.

## Nuclear Technology



Siempelkamp Nukleartechnik

Siempelkamp Nukleartechnik GmbH



Siempelkamp Behältertechnik

Siempelkamp Behältertechnik GmbH



Siempelkamp NIS Ingenieurgesellschaft

Siempelkamp NIS Ingenieurgesellschaft mbH



Siempelkamp Tensioning Systems

Siempelkamp Tensioning Systems GmbH



Siempelkamp Krantechnik

Siempelkamp Krantechnik GmbH



Siempelkamp Prüf- und Gutachter-Gesellschaft

Siempelkamp Prüf- und Gutachter-Gesellschaft mbH



Siempelkamp MSDG

Siempelkamp MSDG S.A.S.



Siempelkamp Nuclear Technology UK

Siempelkamp Nuclear Technology UK LTD.



Siempelkamp Nuclear Technology US

Siempelkamp Nuclear Technology Inc.



Siempelkamp Nuclear Services

Siempelkamp Nuclear Services Inc.

## Foundry



Siempelkamp Giesserei

Siempelkamp Giesserei GmbH



Siempelkamp Giesserei Service

Siempelkamp Giesserei Service GmbH

G. Siempelkamp GmbH & Co. KG

Siempelkampstrasse 75 47803 Krefeld Germany

Phone: 02151/92-30 Fax: 02151/92-5604

[www.siempelkamp.com](http://www.siempelkamp.com)