



# Siempelkamp

Issue 02 | 2015

**Closed-die forging presses for Nanshan:** The King-size project – **Dr. Wolfgang Steinwarz:** Researcher, manager, team player in the service of nuclear technology – **Siempelkamp Giesserei:** Longest casting made of ductile cast iron – **"Go" for Gomeldrev:** A greenfield plant starts operation – **Zion NPP/USA:** Reactor pressure vessel successfully dismantled in Unit 2

# bulletin

The Siempelkamp Magazine

PEOPLE | MARKETS | MACHINES



- 04 Rüdiger Bartz  
**Two closed-die forging presses for Nanshan**  
King-size project in the area of metal forming
- 12 Dr. Silke Hahn  
**Interview with Dr. Wolfgang Steinwarz**  
Researcher, manager, team player in the service of nuclear technology
- 18 Mathias Weil  
**TOS KUŘIM orders 23.5 m crossbeam for a 2-column machining center**  
Longest casting made of ductile cast iron
- 22 Axel Weiss and Konstantin Putintsev  
**A greenfield plant starts operation**  
"Go" for Gomeldrev
- 28 Hans-Joachim Galinski  
**From a milestone project to a milestone plant with Siempelkamp**  
OSB investment in Kalevala
- 32 Lothar Sebastian  
**First panel sold!**  
Complete SMC press package for the WKT-Group
- 36 Carsten Otto  
**20 percent increase in capacity due to upgrading of dryer**  
FunderMax ordered Büttner's technical know-how
- 40 Hubertus Jürgens  
**Durgapur – pure performance power!**  
India's only press line for forged railway wheels was upgraded to the current technology
- 44 Christian Jurianz  
**Siempelkamp experts reach important milestone at Zion NPP**  
Reactor pressure vessel successfully dismantled in Unit 2
- 48 Dieter Trzeczak  
**Inter-ministerial committee visits Krefeld**  
Siempelkamp Maschinen- und Anlagenbau
- 52 Bernd-Dieter Wessolowski and Antonius Lanfermann  
**50 years of multi stud tensioners – an exciting history**  
Siempelkamp Tensioning Systems GmbH
- 56 Dr. Stephan Niggeschmidt  
**Siempelkamp Service = 24 hours a day / 7 days a week!**  
Driven by Perfection

## 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) Christian Hassler Text Dr. Silke Hahn and Christian Hassler  
Typesetting and Layout vE&K Werbeagentur GmbH & Co. KG Printing Griebisch & Rochol Druck GmbH

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,

“We will go where our customers need us,” is the motto for Siempelkamp service. It is our objective to support our customers with first-class services anywhere in the world.

We are there when a customer intends to turn a vision into reality. Several articles in this bulletin report about companies which are entering engineered wood production and assume leading roles in these respective markets, for example – OOO DOK Kalevala – or as the WKT-Group pursue entirely new paths for their production. We are at your service to support research projects, implement ambitious projects, and secure our customers the market advantages that they expect from the beginning.

We are there whenever special services are required. With expertise and careful actions, our experts in the field of nuclear technology contributed to reaching an important milestone during the dismantling of the nuclear power plant Zion in the USA.

At 23.5 m, the longest casting ever made of ductile cast iron was produced at Siempelkamp Foundry. Regarding this project the customer knew that Siempelkamp is the benchmark when such an ambitious project is to succeed.

In Longkou, China, two presses, a 500 MN and a 125 MN closed-die forging press, were installed simultaneously. These two presses represent an outstanding technical performance for our customer Shandong Nanshan Aluminum Co., Ltd.

Find out more in this bulletin on how we are present whenever our customers need us starting with the vision to the implementation to the spare parts service. We look forward to the opportunity to support you from the first spark of an idea all the way to the acceptance test in such a manner that will make you say “That’s it!”.

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





Slempelkamp

2 7

King-size project in the area of metal forming

# Two closed-die forging presses for Nanshan

When 7,800 metric tons (8,600 US tons) of press components with a single piece weight of up to 287 metric tons (316 US tons) and 290,000 auxiliary and accessory components are packed into 135 oversea containers and shipped from Krefeld, Germany, to China, it is critical that the entire shipping process is performed with great care to ensure all components arrive safely and in a timely manner at their final destination. This was the case for the Siempelkamp team when the shipment arrived in Longkou City in the East Chinese province of Shandong.

by Rüdiger Bartz

Two construction sites had to be supervised; two closed-die forging presses had to be installed. Though both forging presses are four-column presses of push-down design, they each have very unique design specifications. One of the presses will supply pressing forces of 125 MN (13,780 US tons) while the other, much larger press, is designed for pressing forces of up to 500 MN (55,000 US tons). With a height of 29.5 m (96 ft) and a total weight of 8,000 metric tons (8820 US tons), this press is one of the largest metal-forming presses in the world.

The press table alone has a dimension of 4 x 7 m (13 x 23 ft). A machine of this size is destined for the manufacturing of large structural parts made of titanium and nickel alloys for the aerospace industry. For the installation, both construction sites were equipped in such a way that even the heaviest components with weights of up to 500 metric tons (550 US tons) could be moved safely. The two large indoor cranes at the customer's site were

connected via a special lifting beam assembly developed by Siempelkamp Krantechnik GmbH. In this way, they were able to lift and move the heaviest parts. A lifting frame moved the extremely large structural components for the 125 MN press to the installation positions. Furthermore, during various construction phases mobile cranes were used.

## Production process and installation works: In Krefeld

All press components were manufactured by Siempelkamp in Krefeld and completed in 8 months, including the press automation, hydraulics, and press control. The transport, packaging and shipping were also organized in-house by Siempelkamp.

Following the arrival of the main press components in China, the installation began at the corresponding production locations. The installation supervision and organization team, for the most part made up of experienced specialists from Krefeld,

instructed the Chinese installation team. First, the extremely heavy lower bolsters of each press were lowered into their corresponding foundation pit and anchored to the foundation. From this point on, both presses gradually reached their final shape with the installation of the main press components above floor level. Both installation sites were equipped with a webcam so the daily progress could be observed in Krefeld. At times the observer would get a completely new picture after only a few hours, for example, when one of the four cylinders was installed or when the two upper bolsters were lowered above the press cylinders into their intended positions. Of course, such an enormous amount of ductile cast iron is not installed within only a few weeks. A time-lapse movie developed from still images taken by the webcam demonstrates the continuous installation process and the installation sequence.

On July 11, 2015, the work was complete and the 125 MN press had its final



installation inspection. With the help of leveling instruments, the installation positions of all press components were checked for accurate positioning. At times very tight tolerances of 1/10 of a millimeter (0.0039") had to be kept.

**Everything works perfectly!**

– First mechanical functional test

The following no-load test verified the functioning of all main and secondary movements of the press. This included the upper moving beam, the sliding table including tools, and the automated tool positioning system. After the functional test was passed and the press was accepted, the first forging under load took place on August 6. Metal cylinder blocks with a defined diameter of 585 mm (23") and a height of 1000-1500 mm (39" – 59") were forged. The goal of this initial forging test was to confirm the actual

## 500 MN closed-die forging press – technical data and dimensions:

- Total height of press:  
- below floor level: 28.3 m / including hydraulics = 29.5 m  
12.5 m
- Total weight: 8,000 metric tons
- Pressing force (up to 35 mm /sec): 500 MN  $\approx$  51,000 metric tons  $\approx$  56,200 US tons
- Dimensions of tool table: 7 x 4 m
- Maximum electrical capacity: approx. 27,000 KW
- Number of hydraulic pumps: 60
- Number of motors for hydraulics: 30 (each 830 KW)
- Amount of mineral oil inside hydraulics: 150,500 l
- Press speed: 0,05 – 50 mm/s
- Maximum speed of no-load stroke: 190 mm/s
- Cooling water consumption: 550 m<sup>3</sup>/hr

Control room for 500 MN press



Installation process of 500 MN press in a time-lapse film (from left to right)



Not the engine room of a submarine but the pump room for a 500 MN press



Hydraulic pump unit



applied forces. Such parameters can be checked via the final height and shape of the forged metal cylinder blocks as the final dimensions allow to make conclusions about the actual force which was applied to reach the final shape.

After the 125 MN closed-die forging press forged its first metal blocks and proved to comply with the contractually agreed pressing forces, fine-tuning remained on the agenda. During the load test all press parameters were checked again and if necessary adjusted. The positioning and movements of all main moving components as well as secondary movements had to be checked to ensure that tolerance requirements were met. This ensured

that the giant machine could apply its full forging force of 125 MN as required to produce reliable high quality forgings that are true to size. After all, the processes of pre-forging and finish-forging of ring blanks made of titanium alloys and other high-strength steels will be part of the daily work required on this press. Especially the upsetting process of large blanks, such as the "doughnuts" for ring-rolling mills, requires large pressing forces. The blanks acquire their final doughnut-shape after pre-piercing and piercing in what is practically a single operating step. The multiple tool changes which are necessary for this process are carried out by integrated gripper arms without changeover times.

### Gigantic press forces, maximum precision

At the same time the installation of the larger press, the 500 MN closed-die forging press, was mechanically completed. Final hydraulic and electrical installations were then carried out on the giant forging press. The complete switchgear as well as the electrical control panels including their control technology was supplied by Siempelkamp's subsidiary ATR Industrie-Elektronik. The operator has control over the enormous press force of more than 17,000 t / m<sup>2</sup> via a single joystick. Eight press cylinders each with a diameter of





1.4 m guarantee that the forces are applied evenly. A pressure distribution plate with an area of almost 30 m<sup>2</sup> provides the necessary even pressure distribution. At 0.05 mm/sec (0.0019"/sec), the moving bolster, with a moving mass of 2,200 metric ton (2,425 US tons), is able to form the blanks with extreme precision. The forging speed of the work piece is kept constant during the entire forging process by means of a control unit.

#### Exceptional hydraulics, innovative control system, and reliable safety

A total of 60 high-pressure pumps, driven by 30 dual shaft motors with a drive power of 830 kW each, pump 150,000 l of hydraulic oil and generate a system pressure of up to 450 bar. Since this system does not require any feed pumps, the 60 highly dynamic axial piston pumps could be installed on an area of only 1,000 m<sup>2</sup> in a maintenance-friendly way. The piping system of the giant press alone

weighs 300 t and is mounted securely with 125 t of fastening components. The high-pressure pipes have diameters up to 273 mm and the low-pressure pipes have diameters up to 914 mm.

An innovative control concept, developed by Siempelkamp, on the basis of all relevant mechanical and hydraulic press parameters allows advance simulation of all forging processes. In this way all possible start-up and emergency stop procedures, possible malfunctions as well as centric and eccentric forming processes can be simulated.

The calculation results from these virtual forming processes are transmitted via an interface to the press control. This really pays off, especially for complex components. Thus, the press force for asymmetrical components can be tightly controlled via the pull-back cylinders so that the total press force can be applied correctly to obtain the exact work piece shape. In this

way, highly stable structural parts are produced, such as landing gear components. Of course, all manufactured structural parts comply with all international aviation standards in regards to the mandatory production parameters.

Such a giant machine also offers some special features in regards to operational safety. The "full tonnage stop" protects the moving beam mechanically against overrunning the press stroke as a result of an operating error, such as a press cycle without tool, thus preventing damage to the moving beam. A patented and reliable locking mechanism of the moving beam at its upper resting position by means of four hinged half shells on the outside columns prevents accidental lowering of the bolster. This safety measure leaves people with a secure feeling especially when carrying out maintenance or set-up work directly below the extremely heavy ram of this press giant.



500 MN press with locking mechanism for the moving beam



Upper bolster during closing of the 500 MN press

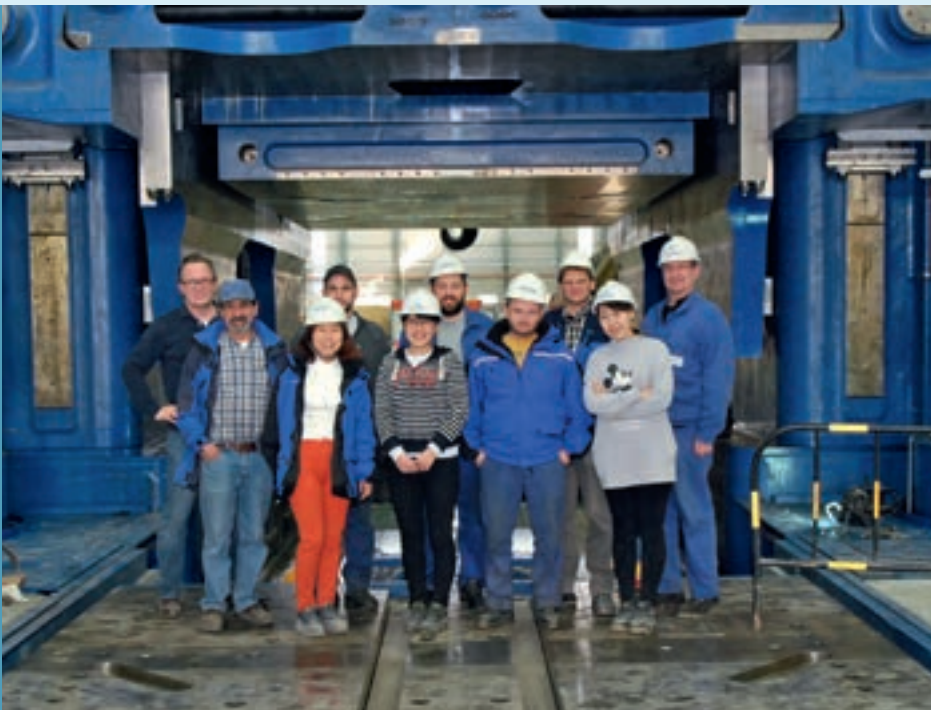


## China's aerospace industry

Back in the 1970s China began building large passenger airplanes, with the reproduction of the Boeing 707 with the code name Y-10 to be exact. However, the design department of Shanghai Aircraft Manufacturing Company did not comply with the requirements of international passenger aviation at that time. China's current objectives in the aerospace industry are very ambitious. With its recent development, the passenger jet C919, the manufacturer COMAC (Commercial Aircraft Corporation of China) wants to achieve a 15% lower Kerosene consumption compared to the current jets made by Airbus and Boeing. Starting in 2017 the C919 shall be competition to the established suppliers from Europe and the USA. Apparently, there have already been 450 orders from 18 international airline companies. Even the US American aircraft company Boeing is meanwhile cooperating with the Chinese aircraft company and will build a factory in China. A corresponding contract was already signed during the visit of the Chinese President Xi Jinping at the Boeing plants in Everett, WA, USA, in mid August 2015. Boeing wants to have medium-haul jets of the 737 series assembled and equipped at the new Chinese plant. Furthermore, the new plant is intended to be a delivery center for Boeing passenger jets for the Asian market. Comac has also received a cooperation offer from United Aircraft Corp. (UAC) in Russia. In cooperation with COMAC, UAC wants to develop and build an airliner for medium-haul routes.

Just recently Airbus shipped out its 100th passenger jet manufactured in Tianjin. Since 2009 Airbus has been manufacturing in China, its first production location outside Europe.

Hydraulic piping for the 8 press cylinders



Supervisor Mohamad Waked (2nd from left) and his team of experts



Large forging press = large hydraulic pipes

# Nanshan Group: Dedication, Commitment, Excellence



**Founded in 1978, the Nanshan Group has developed into a large stock corporation over the last 40 years and is listed in China's top 500 companies. One core business is the aluminum industry but many other market activities complement the impressive profile of this Chinese company.**

"Nanshan Group" is not only the company's name but also its corporate brand. The company has developed a multi-industrial profile which covers diverse branches of industry and areas of activity. This includes industrial and financial sectors, the aviation industry, the area of real estate as well as the education, tourism, and healthcare sectors. To meet development needs, the Nanshan Group has branch offices in many countries and regions including Australia, Italy, and Hong Kong.

The core brands of the Group include "Nanshan Aluminum", "Nanshan Textile Garment", and "Nanshan Tourism". These brands not only represent and promote Nanshan's Corporate Culture but also stand for an integrated industrial chain.

Resource supremacy and geographical advantages have helped expand the portfolio

of the Nanshan Group with additional attractive industries, for example, the wine and golf sectors – represented by Yantai Nanshan Manor Wine Co., Ltd. and Nanshan International Golf Club. These business sectors have also been able to effectively increase their market influence and brand recognition.

## **Nanshan Aluminum: Unique scope of supply**

Nanshan Aluminum, founded in 1997 and officially manufacturing since 1999, is the key industrial sector among the diversified industries of the Nanshan Group.

The company, headquartered in Longkou in the Shandong province, represents a unique scope of supply relating to aluminum and primarily covers upstream and downstream segments for this industry. This includes,

for example, energy generation, aluminum oxide and electrolytic aluminum production as well as the production of aluminum profiles, plates, belts, and aluminum foils. Nanshan Aluminum has developed into one of the most well-known aluminum processors in China.

The two mega-sized presses made by Siempelkamp are the heart of a newly designed forging plant in Longkou to manufacture forgings made of aluminum and titanium alloys for the Chinese aviation industry. The Nanshan Group has been involved in the aviation industry since 2010: The Nanshan Aviation Industrial Chain incorporates the areas of Aviation Education, Aviation Transportation, Aviation Materials Research and Development, Aviation Manufacturing and Parts Manufacturing as well as Aviation Service.

## **Yantai Nanshan University: Teaching the younger generation**

The Nanshan Group is also actively involved in education: The Yantai Nanshan University was established to pave the way for an academic career for 20,000 students from the Shandong province. Numerous exchange programs with countries around the globe are organized by the university.

The university currently consists of 14 departments including the Aeronautical School, the School of Materials and Metallurgy Engineering, the College of Mechanical

Engineering, and the School of Computer and Electric Automation.

Furthermore, the Nanshan Group also invests in other educational institutions, for example, preschools, elementary schools, junior and senior high schools as well as higher vocational schools. Numerous young people have been trained to work for the local economy. Thus, the social development of the region has also profited from the Nanshan Group.





500 MN closed-die forging press of Nanshan Group

Researcher, manager, team player in the service of nuclear technology:

# Interview with Dr. Wolfgang Steinwarz



For the last 40 years the topic of nuclear technology has dominated his life, and for over two decades he has devoted his expertise to the Siempelkamp Group: Dr. Wolfgang Steinwarz. An occasion for Bulletin to take a closer look at the life and lifetime achievement of Dr. Wolfgang Steinwarz, Managing Director of Siempelkamp Ingenieur und Service GmbH.

by Dr. Silke Hahn

Object of study – spherical fuel element of a high-temperature reactor

**Bulletin:** “The most beautiful thing that we can experience is the mysterious. It is the fundamental feeling that stands at the cradle of true art and science,” Albert Einstein once said. Were you already fascinated by the mystery of physics during your school time, Dr. Steinwarz?

**Dr. Wolfgang Steinwarz:** Yes, my passion for physics was aroused at school, and it also gave me the impetus to select what I would like to study.

**Bulletin:** Was your specialization in the field of nuclear technology an equally clear decision?

**Dr. Wolfgang Steinwarz:** Definitely, and it was also in line with the signs of the times. I grew up during the phase when German nuclear technology played a leading role on the world market and contributed a high proportion of the electricity generated for the base load current. This advanced technology was considered to be the solution to many challenges presented by the power supply – and that was my subject, as well as the fields of radiation protection, radiology and other related topics.

**Bulletin:** You spent a significant share of your professional career abroad from an early age, for example in China ...

**Dr. Wolfgang Steinwarz:** One of the most important stages in my career which I reached during my work for Siemens was my main project management responsibility for the planning, approval and construction of a nuclear power plant research reactor near

Beijing. In the 1980s I worked very hard there, together with a team of Chinese scientists, until in 1989 the crackdown on the student protests in Tiananmen Square provoked an international outcry. This brought to an end, for a considerable period of time, the West German participation in Chinese nuclear power plant projects, including this high-temperature reactor. The last phase of the development was then completed exclusively by Chinese teams. Nevertheless, I was seized by a passion for China during this period – and am pleased that today my daughter works for a large



Discussing views

Experimental phase – dialogs and exchange of ideas



## Object of study 2 – model of a large container for spent fuel elements

German corporate group in China. Some of the professional contacts I had during that time still exist.

**Bulletin: So how did you come into contact with Siempelkamp?**

**Dr. Wolfgang Steinwarz:** As the result of a long-term collaboration between Siemens and Siempelkamp on the development of a special reactor pressure vessel made of cast iron.

**Bulletin: The first distinctive milestone at Siempelkamp then was your work in Chernobyl.**

**Dr. Wolfgang Steinwarz:** That's right. After we stopped working in China, the next question was where and how things should continue. In Germany the construction of high-temperature reactors was blocked at the time. A new assignment came in the form of my contribution towards a contract forming part of an EU project in the 30 km zone around the nuclear power plant in Chernobyl. This zone had been set up in 1986 as a restricted area with a radius of 30 km around the damaged reactor block 4 on the territory of Ukraine. My assignment was to erect a melting plant for the treatment of radioactive metallic scrap as part of an EU project with the support of the local nuclear legislation. For this I conducted preliminary studies, among other things, and secured the financing.

**Bulletin: What are your lasting impressions from the time when the whole world was focusing on the Chernobyl site?**

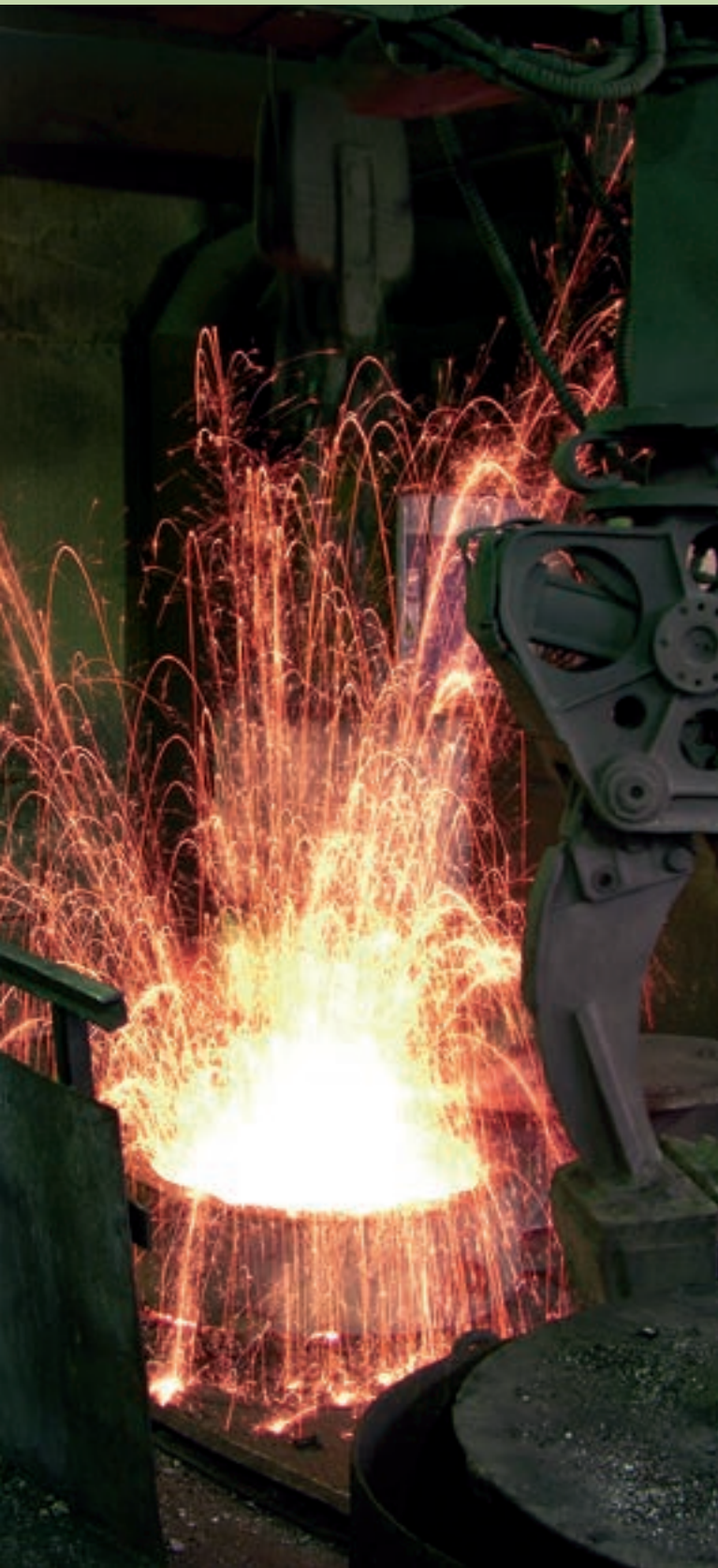
**Dr. Wolfgang Steinwarz:** It was unbelievable that – and above all how – technical tests were carried out by the operating personnel at the Chernobyl reactor plant – tests which ultimately resulted in the accident. In many of its design elements, Chernobyl did not meet the standards of Western technology. The consequences



## Dr. Wolfgang Steinwarz: Profile

- Born in 1949
- Studied physics at the University of Bonn, qualification as a physics graduate
- Doctorate in engineering at RWTH Aachen University, subject "Tritium in high-temperature reactor systems"
- Joined Siemens Interatom in 1975 as a Research and Project Manager in the field of high-temperature reactors, worked from 1984 as a Project Manager for international cooperation projects in particular with Russia and China
- From 1993 Head of the Project Department at Siempelkamp Guss- und Reaktortechnik GmbH (subsequently Siempelkamp Nuclear Technology GmbH), since 1999 Technical Director with the Casks/ Production and Recycling business units, as well as Quality Assurance and Radiation Protection
- Since 2015 Managing Director of the newly established companies Siempelkamp Behältertechnik GmbH and Siempelkamp Ingenieur und Service GmbH
- Wide range of research, publishing and committee work, e.g. as an organizer/head of the Competence Workshop at the Annual Nuclear Technology Conference, member of the Elected Board of Directors of the Nuclear Technology Society (KTG), Chairman of the Advisory Board at KTG, member of the Presidium of the German Atomic Forum
- Various activities working as an expert for the EU Commission and the International Atomic Energy Agency (IAEA)





CARLA – melting process

were enormous and are still having a negative impact on overall nuclear energy policy today. Nevertheless, my personal and professional experience with multiple intense radiation protection measurements within the 30 km zone played a decisive role in the course taken during my subsequent life..

**Bulletin: What was the status of the cask business as you found it when you joined your new employer Siempelkamp?**

**Dr. Wolfgang Steinwarz:** The CASTOR® cask body, our reference product today with more than 600 examples manufactured, had not yet reached its boom phase. It was above all the MOSAIK® casks which we sold, supplying them – as we still do – to our main customer GNS Gesellschaft für Nuklear-Service mbH. These casks are used for transporting and storing low to high-level radioactive wastes. However, one of today's money-spinners at our company had not yet been introduced – the cast iron container. During the time I worked in Chernobyl one thing was already clear to me: I wanted to focus on developing systems which were able to retain the consequences of meltdown accidents within the plant.

**Bulletin: You established a team which initially consisted of three people so that you could push forward with this development ...**

**Dr. Wolfgang Steinwarz:** ... we carried out high-tech experiments step-by-step in our melting plants CARLA and GERTA with melt temperatures of up to 2,350 °C. These experiments were funded by the federal government and subsequently also by the EU because a vehicle was required to prevent a second Chernobyl. Our experiments were so successful that they attracted international attention. For four years we involved 17 international institutions who had made a name for themselves in the field of nuclear technology – all under the auspices of Siempelkamp. Finally, in accordance with an international definition, we simulated an experiment with the melting plant Carla (= Centrale Anlage zum Recyclieren Leichtaktiver Abfälle = Central plant for the recycling of low-active wastes) on a scale of 1 to 6, which was accompanied by a great deal of international interest – and success!

**Bulletin: What is the reason for the strength of the concept and Siempelkamp's products?**

**Dr. Wolfgang Steinwarz:** The ductile cast iron, which has proven to be the best among various materials. This cast iron made of spheroidal graphite offers significant advantages, e.g. compared to containers made of forged steel. These concepts, which previously had been widespread in the USA for example, are not made of cast iron, but consist of a cylindrical cask onto which the base is welded. Our ductile cast iron casks on the other hand consist of



Demonstration object in the course of the Core Catcher development

one cast item and therefore do not have a weld seam. This makes them specially suitable for withstanding high impulsive short-term loads – e.g. plane or other crashes. This is being seen increasingly in the international market.

**Bulletin: Your casting concept is also used, for example, in the core catcher cooling structures. What level of importance have you been able to achieve together with your team for this product on the market?**

**Dr. Wolfgang Steinwarz:** The core catcher is composed of a large number of individual cooling elements made of ductile cast iron and a steel structure. This concept has a benchmark character in the field of nuclear technology, with a new modern nuclear power plant being unthinkable without a core catcher. In Finland, France and China we have carried out corresponding supply contracts for our major customer. As we have a framework agreement with this major customer, all nuclear reactor concepts of the type EPR (= European Pressurized Water Reactor) are equipped with the Siempelkamp cooling structures for the core catcher.

**Bulletin: Since 2003 all casks used in nuclear technology made by Siempelkamp have been manufactured in Mülheim. What are the prospects that this business has promised in the past and what perspectives does it promise today?**

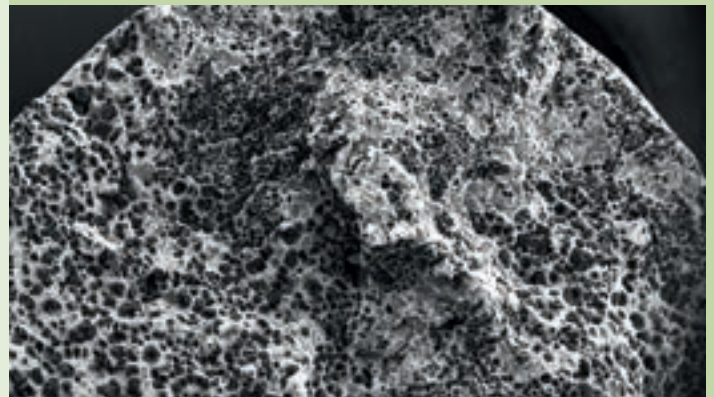
**Dr. Wolfgang Steinwarz:** From ten large casks during my early years at Siempelkamp up to the current record of 45 large casks in the year 2015, this business has grown up to a giant machine. A next important step will be the phase-out as a consequence of the German decision to close down the nuclear power plants after Fukushima. The regulations envisage switching off the German nuclear power plants successively by 2021/2022 and decommissioning them. With foresight, we have already successfully taken the initiative to strengthen our international scope in the container field.

**Bulletin: Since the beginning of 2015 the newly established company Siempelkamp Behältertechnik GmbH (SBT) has been focusing on this internationalization in order to take into account changing market requirements. How important are the international markets here mentioned by you – and which of the products are pointing the way ahead?**

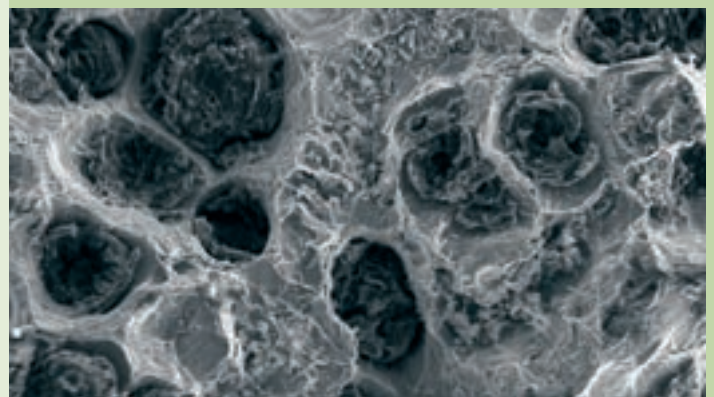
**Dr. Wolfgang Steinwarz:** We have developed independent container designs, aligning these with international waste disposal conditions in a manner which is technologically consistent. One example is the BlueBox® for the British market. We have tailored this concept to the specific terms of use, patented it since 2013 and established it as a registered trademark since the beginning of 2014.



Dr. Wolfgang Steinwarz (right) at the control center in front of the demonstration object



Ductile cast iron material sample



A glimpse into the microstructure of ductile cast iron



9 m drop test – for maximum safety



**Bulletin: What is the reason for the special shape of the Blue-Box®?**

**Dr. Wolfgang Steinwarz:** The boundary conditions in the United Kingdom provide for special fire protection requirements and prescribe a large rectangular lid in order to improve the efficiency of the loading technology and increased stackability in the container store. Furthermore, special elements of the structural design are envisaged which have to withstand different drop heights to those which are standard in Germany, for example. With two real drop tests, defined at a height of 0.45 m and 5.20 m, we ensured that we were able to deal with these special drop heights. The main elements of the test equipment were a 150-tonne crane system and a large-volume 700-tonne concrete structure with a 75mm-thick steel cover plate – the so-called unyielding foundation. Here we impressively demonstrated that we are able to cope with drop heights of at least nine meters! Reason enough to place the first orders with us.

**Bulletin: What other concepts followed?**

**Dr. Wolfgang Steinwarz:** Through our good contacts on the Russian market, which were established by our group working in the field of the wood-based materials industry and multi-stud tensioning systems, we were able to develop a synergy with a Russian engineering office specializing in nuclear technology. Together we developed a large cask based on fundamental Russian ideas. This is where the drop test was carried out a few years ago in St. Petersburg – a huge event which laid the foundation stone for the eleven so-called TUK cask bodies that have now been delivered. Numerous international markets – including China, Russia, the USA – recognize the pioneering role that we play.

**Bulletin: You have already mentioned the good contacts enjoyed by Siempelkamp Machinery and Plants, which paved the way for the opportunities which opened up for you and your team in Russia. How strong are the synergies, for example also with the foundry?**

**Dr. Wolfgang Steinwarz:** I have always appreciated the high quality of our technical collaboration. For the 20+ years that I have worked for Siempelkamp, there has yet to be a challenge that we can't overcome, such as the high quality requirements for our castings, the technology requirements, and the adjustments to the market.

**Bulletin: : You are considered to be an exceptional team player with a hands-on mentality. What does team leadership involve?**

**Dr. Wolfgang Steinwarz:** I feel as if I am a team worker, not the boss. Of course the management tasks form part of my duties. However, I have always very much appreciated taking a hands-on approach myself, carrying out tests, being present in the control

room. I was at the heart of all 21 large-scale experiments for the Core Catcher development as part of my team. I enjoy being in the halls and speaking to the people who work here.

**Bulletin: In this team you pay the greatest attention to the next generation.**

**Dr. Wolfgang Steinwarz:** It is extremely important to get young people involved, to support them. There are major differences between the training paths past and present. My generation covered a wider range of subjects than today's physicists and engineers do; education is more specialized today. The consequence of this is that the graduates sometimes have an outlook which is too narrow. In the nuclear community I have been trying for years to expand the perspectives here, e.g. by encouraging doctoral students and undergraduates.

**Bulletin: A further contribution towards this is provided by the Siempelkamp Competence Award for Nuclear Technology.**

**Dr. Wolfgang Steinwarz:** Currently the 17th annual event on the topic of "Maintaining skills in nuclear technology" is coming soon, on the occasion of the KTG Annual Conference, which I coordinate. For this I read various theses, am the chairman of the jury and always look forward to the contributions submitted.

**Bulletin: One word about the subject of the "nuclear phase-out"?**

**Dr. Wolfgang Steinwarz:** I have never been able to understand why we in Germany considered nuclear technology to be the devil's work after Fukushima – in spite of a vote of the equally represented Reactor Safety Commission, which found that German nuclear power plants comply with the strictest safety standards. The fact that in Germany – accelerated by the pressure from the media – an Ethics Commission without any technical expertise on the part of the Commission members decided to hastily abandon nuclear energy is not possible to understand economically, at least in the medium term, as well as abroad. These discussions have always been a challenge to me as part of my professional and private life.

**Bulletin: Do you have a life motto, a guiding principle?**

**Dr. Wolfgang Steinwarz:** A guiding word. Self-discipline – one of the most important characteristics which one should internalize for our special work, which is always risk-orientated. The focus is always on quality and the safety aspect.

**Bulletin: What do you like to do when you're not tackling professional challenges?**

**Dr. Wolfgang Steinwarz:** First and foremost I enjoy the time with my family, at the heart of which are my two grandchildren, as well as my garden. I find relaxation with sport and music; for 38 years I led a Chamber Orchestra in Bonn – a good antidote to work.

Longest casting made of ductile cast iron:

# TOS KUŘIM orders 23.5 m crossbeam for a 2-column machining center



A giant casting

**23.5 meters – not a typo but a particular requirement which the customer TOS KUŘIM placed on Siempelkamp Giesserei. 23.5 m was to be the length of the crossbeam for a 2-column machining center which the Czech company intended to award as a contract. After an in-depth consultation on feasibility, Siempelkamp Giesserei applied for this project, which it was awarded over three competitors from Germany and abroad, winning the contract for the “longest casting made of ductile cast iron ever”!**

by Mathias Weil

In June 2014 TOS KUŘIM, a member of the ALTA Group, submitted the inquiry for the king-size project. The particular challenge in such a contract: “There are no manufacturing-specific tolerances for casting and patternmaking in this size category; technical standards no longer apply. Only the skills of the engineers and technicians, as well as the patternmakers,

molders and fettlers can make this project a success. The experience of our employees is the be-all and end-all in such a project,” explains Mathias Weil, a Sales Representative at Siempelkamp Giesserei.

23.5 meters in length, with a unit weight in the raw casting of almost 120,000 kg –

only a few foundries in Europe are able to produce such a large component. Siempelkamp’s reputation in this field is well-known in the Czech Republic. Therefore, one of the locations where the inquiry from the machine tool manufacturer was placed was Krefeld.



Grinding and deburring of a casting in the fettling shop



## TOS KUŘIM: Profile

- founded in 1942 with the product spectrum of boring, polishing, turning, console milling and special purpose machines
- a joint-stock company since 1992
- member of the ALTA Group since 2005
- location: Brno, second-largest city in the Czech Republic
- business segment: production of precise machine tools and machining centers, especially with mobile columns and portal machining centers for complex component parts
- fields of application: heavy machine engineering, power engineering, aircraft industry, shipbuilding, railway engineering

One important criterion in the decision-making process for the order: Siempelkamp operates three machines which are considered to be the best reference for such a contract. For example, the Vertimaster VME 10 vertical turning, boring and milling machine at the Krefeld location is able to process components of up to 17 m in length. This large carousel machine made by SCHIESS with a 10 m faceplate and a 16 m processing star has been a positive addition to the Siempelkamp machine park since 2012. Secondly, Siempelkamp in Krefeld operates two gantry-type CNC portal milling machines (SCHIESS VMG 6), which belong to the largest portal milling machines in the world. The large castings for these machines were cast at Siempelkamp Foundry – a good argument in favor of the machines.

**Component length + component weight = trust in Siempelkamp expertise**

The company's experience with corresponding large dimensions was the deciding factor in issuing Siempelkamp with the contract for the record casting. "In this order of magnitude there is a lot

that is uncharted territory. At first it was important to present the customer with what we considered to be the important specifications and recommendations. This was followed by a lively dialog, ultimately the finalization process and therefore the okay from our customer to follow our recommendations," reports Mathias Weil.

Receipt of the order was followed by numerous working steps before it was time for the core tasks – molding and casting. The pattern was planned accurately down to the last detail – in this case a combination pattern, as TOS KUŘIM also intends to be able to mold an 18 m version. Here, the customer and foundry remained in close contact in accordance with the foundry's philosophy of "Modern engineering technology meets experience with solid craftsmanship". What are the specific requirements of the customer? How is the casting installed on the machine? What stresses does it have to be able to withstand in which areas? These were questions which were tabled in the dialog with the customer in order to implement the casting techniques and model concept in the best possible manner.

At the same time as the model planning, the foundry team assessed the initial solidification simulation results so that it could then optimize the model concept on this basis. With a component whose engineering technology is so complex, the residual stress is also analyzed and evaluated. The results of this calculation highlight any weak points and the caster can still carry out design optimizations in cooperation with the customer and patternmaker.

An important requirement: The deformation of the cast part during the cooling process alone amounts to 35 mm. This has to be taken into consideration during the pattern-making and mold making processes.

### Largest component – largest pit

If a casting is as large as this, the boundary conditions during production also have to be right. In the Siempelkamp molding shop this required the creation of a pit which was 3.2 m deep and 25 m long – the longest pit that was ever dug for a project! The sand bed alone on which the model is molded is 400 mm thick and extremely compacted in order to extensively

avoid deformations during the cooling process.

Such a molding process takes three weeks. Over 30 different core shapes have to be positioned with millimeter accuracy; only then is 140,000 kg of molten iron cast at 1350°C. Within 70 seconds the iron has to spread out from below in the long mold and rise uniformly so that the mold does not collapse before it is completely filled due to the heat produced. For two weeks the crossbeam then cooled down in the pit to 300°C – only then was it possible to determine whether the casting process had been successful.



Teamwork

The three-week long fettling and inspection process of the longest but also very delicate component was the next challenge. "The tests showed that the quality required by our customer had been reached, so that the component could be

primed before being sent on its way to the Czech Republic," says Mathias Weil. Thanks to the outstanding cooperation of all of the departments involved and the customer this was a successful project!

## Ductile cast iron – the secret formula

The development of machine tools since the 1950s shows: The machines are becoming larger and larger, increasingly diversified and complex, as are the castings which form the essential structural components of these machines.

Ductile cast iron is increasingly being used for this purpose. Thanks to its high strength properties, this material is ideal for complex component geometries. Easy to cast, with good mold filling properties, ductile cast iron is replacing the conventional gray cast iron, which is brittle and not so strong. With higher alloyed types it is also possible to achieve weight savings, since their strengths are particularly high. From both the technical and the economic perspective, ductile cast iron is considered to be the best solution.

With the casting of the largest cast part that has ever been made from ductile cast iron (the upper beam of a closed-die forging press with a casting weight of 320 t), Siempelkamp set new standards at its foundry in Krefeld in September 2013. Siempelkamp Gießerei GmbH is one of the leading manufacturers worldwide of hand-molded cast parts made from ductile cast iron which are used in machine-, engine- and press construction, in mill components, wind power plants and shielding containers for nuclear waste material.



Loading of the casting on Siempelkamp premises





Foundry production hall

## Castings then and now – dealing with ever-new challenges and requirements

The general method according to which the foundry works has hardly changed over the decades, or even the centuries for that matter. However, if one compares the technical possibilities available and the demands of current markets and customers, one sees how this branch of industry, and indeed Siempelkamp Giesserei itself, have developed in the last 50 years.



Molding a machine bed in the 1960s.



"Go" for Gomeldrev:

# A greenfield plant starts



"First Board" at Gomeldrev: Chief engineer Kuznetsov with Axel Weiss

Commissioned as a greenfield project in 2009, an MDF plant with benchmark character in many respects passed its acceptance test in May of 2015. This plant has not only provided an innovative boost to the Belorussian wood-based materials industry and positioned itself as an attractive employer in Belarus but it has also become a reference project for Siempelkamp!

by Axel Weiss and Konstantin Putintsev



# operation

In 2009 JSC Gomeldrev ordered from Siempelkamp the complete package for an MDF plant. With this order the Belorussian company positioned itself with a new product in a well-known line of business. With furniture factories, saw mills, drying plants, prefabricated house manufacturing, a match factory, and a veneer factory, JSC Gomeldrev is an established Big Player in the Belorussian wood and furniture industry.

The company-owned MDF production line is new: "The investment was a logical decision based on the advantages of the present location. Our customer holds the lease rights for forestry land of significant size. The company's furniture production resulted in a wood surplus. This became the basic motivation for Gomeldrev to position itself in the market with its own production line for wood-based materials," explains Axel Weiss, responsible project manager for the Gomeldrev plant at Siempelkamp.

Due to its existing production plants, JSC Gomeldrev has extensive knowledge about the manufacturing process of wood-based materials, their application areas and their further processing all the way to a final furniture product. The company's own railway connection furthermore offers ideal conditions for the wood supply to the location and the transport of the final products to the sales markets.

Gennady Korotschenko, managing director of JSC Gomeldrev, was the responsible contracting authority for the project. With comprehensive understanding and quality awareness he paved the way for all necessary permits and funding. From the beginning he was convinced of Siempelkamp's expertise. Including this order, Siempelkamp's know-how is represented five times in Belarus. Five complete Siempelkamp plants currently represent the motor of the Belorussian wood-based materials industry.

Following the signing of the contract in 2009, the focus was initially on establishing the financing and safeguarding access to funding through Euler Hermes. This regarded several project phases from the main order all the way to follow-up deliveries. The Belorussian company ordered Siempelkamp's complete concept ranging from the log feed to the sanding and packing lines.

Plant from a bird's eye view



## MDF plant for JSC Gomeldrev: Brief Overview (see page 24/25 for details)

- Location: Rechitsa/Republic of Belarus
- Product: MDF
- Press: ContiRoll® 7' x 37.1 m with forming line
- Speed: 1,000 mm/s (designed for)
- Board thickness: 3 – 40 mm
- Capacity: 650 m<sup>3</sup> LDF or 570 m<sup>3</sup> MDF per day
- Additional scope of supply: planning and engineering, front-end equipment (debarker, chip production and storage, resin blending system), energy plant, dryer, all mechanic and pneumatic transports, Sicoscan measurement technology, finishing line and storage technology, short-cycle press including automatic paper pallet storage, Ecoresinator
- Installation start: August 2013
- First board: November 2014
- Acceptance: May 2015



Gomeldrev location – an ambitious project

Material feed – from debarker to chipper



Dryer for Gomeldrev



A short-cycle press was subsequently ordered in 2010. During the project phase additional components were added, amongst others, the Siempelkamp Ecoresinator. In 2012 the way for the main delivery was clear. Installation started in July of 2013.

Team play between Gomel and Krefeld

This complete plant for MDF production was tailored to fit the customer's needs and in its existing infrastructure. On a former military site a completely new factory was built including

foundation works, concrete works, asphaltting, high-voltage connections and in-house transport vehicles. With the latest equipment and a highly flexible production line, Siempelkamp was able to support Gomeldrev, one of the largest employers in the region. Prior to construction start the Belorussian company already employed 3,000 people at two other production locations for plywood, furniture and prefabricated house production. The new MDF production location created 260 more jobs. The areas of wood supply and logistics added the need for an additional 2,000 jobs. With 65,000 people employed, the



Forming and press line



## Wet electric filter, Cyclone

Belorussian wood-based materials industry represents an important employer and industrial sector. The investment in the plant safeguards this industry's long-term competitiveness.

When designing the plant it was considered that equipment and services of local businesses in Belarus would be used whenever possible. From the installation monitoring and startup, all the way to the test run, Siempelkamp makes sure that even after the acceptance test everything is safely on track for successful operation of the plant. "Part of our scope of supply was the training of the operational personnel in Belarus. This ensured that the plant could be smoothly started up and could be operated independently by the customer's personnel after plant acceptance. A spare parts package was also provided to ensure the smooth commissioning and startup phase of the plant during the first year of production," says Konstantin Putintsev, sales and service manager and head of Siempelkamp's office for Russia/Belarus.

"To carry out such a project from the installation to the acceptance is a challenging task, especially when it has been done in such a short time frame," says Axel Weiss. "It is not always possible to deliver and start up a plant in such a short time. The collaboration with all involved parties on site was excellent and has significantly contributed to the success of the project!"

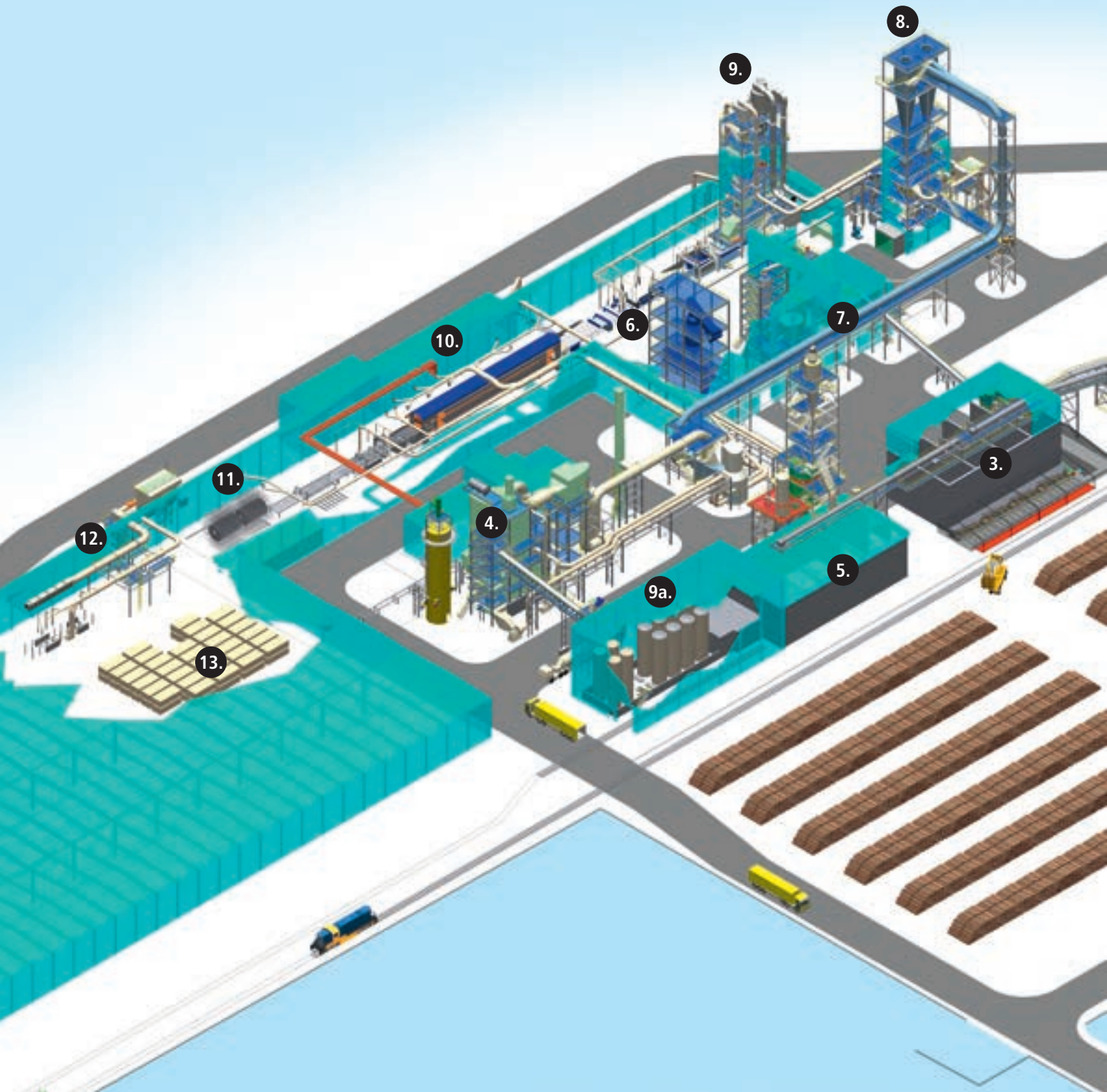


Thank you in Gomeldrev –  
a Siempelkamp cake

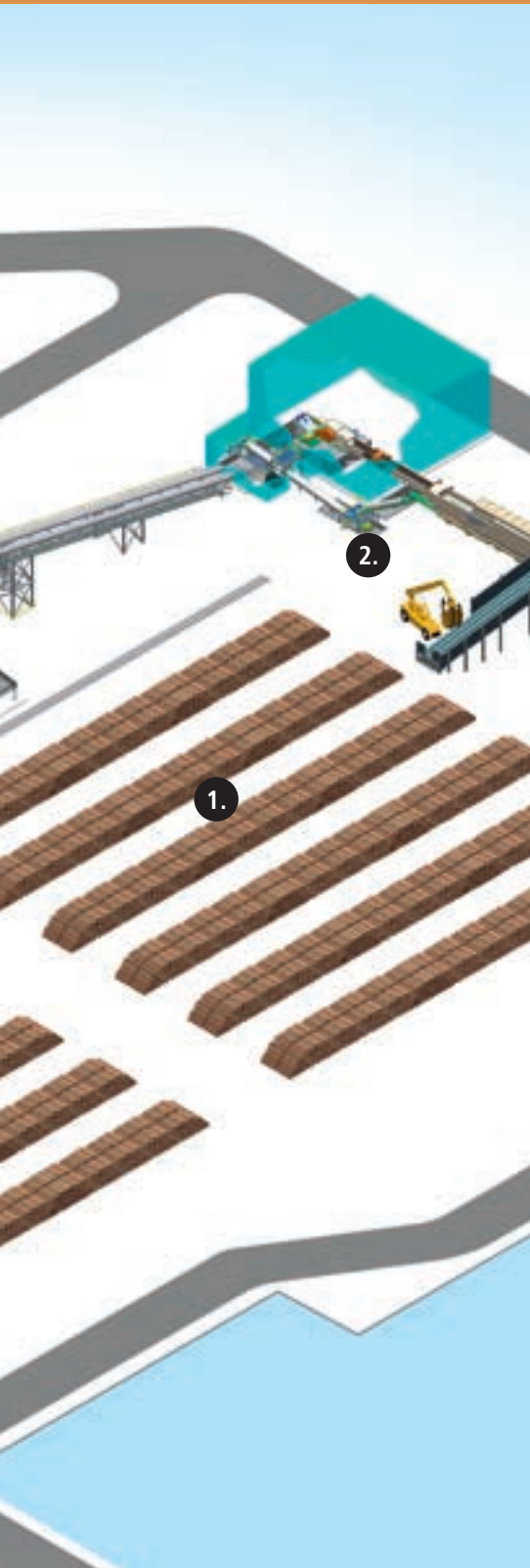


## Gomeldrev: Plant layout with benchmark character

Siempelkamp's Full-Service competence condenses into the integrated MDF-plant for JSC Gomeldrev: all participating members of the Siempelkamp Group have synergised their competence. The result is a reliable overall concept. An overview of the plant layout will illustrate this.







### 1. Woodyard

#### 2. Outdoor area

##### Debarker:

Feed conveyor: length 25,000 mm approx.  
width 4,500 mm approx. with unscramblers

Rotor debarker for roundwood comprising  
3 sections of 9 m each

##### Chipping:

4 x Roller conveyors for longitudinal conveyance  
of logs and discharge of tramp material

Metal detector for locating tramp metal

Drum chipper: installed power 560 kW, type  
HMT 525, throughput: 45 t / h O.D.

#### 3. Chip storage: e.g.

4 x Pit silo reclaim system: effective storage level  
10, 000 mm per silo

Discharge volume: 175 m<sup>3</sup>/h approx.

Troughed belt conveyor

Electromagnet for lifting magnetisable particles  
off the chip flow

2-deck vibrating screen to obtain 3 fractions

#### 4. Büttner-Energy plant

Max. furnace capacity: 48.1 MW approx.

Moving grate: 53 m<sup>2</sup>

Heating media: saturated steam, flue gases,  
thermal oil

1 x Saw dust burner

2 x Natural gas burner 10 MW

Fuels: e.g. bark, screen fines, fibre waste,  
trimming waste, saw dust

#### 5. Fuel storage

#### 6. Chip cleaning and refiner system

Silo discharge device for chip thawing bin

Scrubber

Refiner for the production of fibres by thermal  
treatment (steam) and mechanical disintegration:  
Throughput: about 20 t / h O.D., installed power  
15 MW approx.

#### 7. Büttner fibre dryer

Flash tube dryer, fibre throughput about 20 t / h  
O.D.

Twin screw conveyor for conveying the fibres to  
the fibre sifter

SicoScan moisture analyzer for a continuous  
gauging and reading of the moisture values

#### 8. Fibre sifter

Extraction system and pneumatic conveyor:  
total installed power 9,500 m<sup>3</sup>/ h approx.

Fibre sifter system to separate fibre balls and  
glue clots prior to spreading: total installed  
power 550 kW approx.

#### 9. Cyclones / Blender system

Preparation, storage, transfer system for the glue  
components:

Continuous metering of all components into the  
blowline blending process

#### 9a. Glue tank

8 x 4 Raw glue tanks, content: 100,000 l each

#### 10. Forming and press line e.g.

Fibre mat former

Forming line to the ContiRoll®

Forming width: 2,400 mm

Continuous prepress: line pressure 800 N/cm

ContiRoll® format 7' x 37.1 m

Production speed ranging between 40 – 950  
mm/s

#### 11. Cooling and stacking line

Trimming and cut-to-size station

2 x Double diagonal saw

Saw table

Roller conveyor

Board thickness gauge

2 x Cooling turners L = 5.25 m x D = 3.5 m

Board scales

Gripper carriage: stack height 4 m

#### 12. Sanding line including, amongst others,

Stack chain and roller conveyors for board stack  
conveyance

Loader station

Hexagon-head sander assembly

Inspection station for visual check of the top and  
rear faces of the boards

Stacking station

Protection board loader

#### 13. Warehouse system

Basic vehicle incl. two satellites

2,500 m<sup>3</sup> warehouse capacity

OSB investment in Kalevala:

# From a milestone project to a milestone plant with Siempelkamp

In May 2010 OOO DOK Kalevala signed the contract for the first OSB production plant in Russia which is also the largest one in Europe. In the course of the last few years a milestone project took shape in Petrozavodsk demonstrating, like no other, Siempelkamp's competence as a full-service provider. What has happened at the construction site since the groundbreaking event in June of 2010? Bulletin talked to Dr. Valery Puchkov, CEO of Kalevala Wood Processing Mill.

by Hans-Joachim Galinski



Dr. Valery Puchkov, CEO of Kalevala Wood Processing Mill

**Bulletin:** How does a large construction company come up with the idea of building a production plant for OSB?

**Dr. Valery Puchkov:** Klimenti Kasradze, the CEO of our parent company Kompakt, developed this plan in 2009. He was familiar with the OSB material which we as a construction company specializing in above and below ground construction use. We did not want to continue to import OSB. Instead, we wanted to become the first in Russia to produce OSB. Furthermore, we were and remain convinced that this product will be increasingly used in house construction and therefore can be considered a highly profitable investment.

**Bulletin:** Why was the Karelia region chosen as the location for the new plant?

**Dr. Valery Puchkov:** In 2009 Kompakt asked me to look for a suitable location. Ultimately we decided for Petrozavodsk. The decisive factor was primarily the large reserves of wood resources in the vicinity. Moreover, the location provides good transport connections to St. Petersburg and Moscow. And yet another reason: Many well-trained people live in Petrozavodsk; we have created 340 new jobs at this location. In addition, the local government provided excellent support to us.

**Bulletin:** Why did you decide for Siempelkamp to be the single-source supplier of all machines and equipment for the OSB plant?

**Dr. Valery Puchkov:** Of course we researched other suppliers but in the end we decided that Siempelkamp was the best match for our company and our needs. One important factor was Siempelkamp's vast experience in the continuous production of OSB. Another was the fact that Siempelkamp has built many production plants for wood-based materials in Russia and all of them are running superbly. Furthermore, the concept to build the plant in two stages was very appealing to



9' x 50.4 m ContiRoll® press for Kalevala



## OSB plant for Kalevala: All from one source made by Siempelkamp

Scope of supply:

- complete equipment for the front-end area ranging from the debarking plant to the strander, screens, resin preparation system, and the dryer all the way to the wet particle bunkers
- forming and press line including a 9' x 50.4 m ContiRoll® press
- complete finishing line including a double diagonal saw, a cooling and stacking line, a cut-to-size line, a storage system, a tongue and groove line, a packing line, and material flow control
- a 50 MW energy plant providing the complete process energy as well as the heat supply for all buildings
- complete automation as well as the drive and control technology



Laying of foundation stone at Kalevala in 2010 with Dr. Dieter Siempelkamp



Feeding of the log pond



us. After the first stage the plant would enable us to produce approx. 280,000 m<sup>3</sup> of boards per year. This would allow us to establish and set up marketing concepts. After the second stage, plant capacities would be expanded to 500,000 m<sup>3</sup> of boards per year. This expansion would take place while production continues to run. The intention was to bypass the required aggregates in order to continue operation. We thought that was pretty well thought out!

**Bulletin: A comprehensive foundation for your decision ...**

**Dr. Valery Puchkov:** ... which we wrapped up in May of 2010 with a supply contract. In the beginning we worked together with Sicoplan, Siempelkamp's Belgium subsidiary. The Sicoplan team was responsible for the project planning of the plant and worked closely together with our Kompakt Construction & Engineering Company which was in charge of the foundation work, operating halls, and infrastructure solutions.

**Bulletin: What happened then?**

**Dr. Valery Puchkov:** In the presence of Dr. Siempelkamp, we broke ground on

June 26, 2010. On an area of 45 ha (111 ac) construction work went on for 3 years. A gas pipeline was constructed and a 75 MW substation built. On June 25, 2013 we celebrated the grand opening. After two years of operation, we can confirm that the projected production capacity was achieved at all times.

**Bulletin: Are you satisfied with the quality of the boards?**

**Dr. Valery Puchkov:** The board quality is excellent. This is primarily due to the high quality of the logs available in this region. Another decisive factor is, of course, the



Conditioning after log pond



Heart of the plant



SicoScan measuring system



Star cooler



high technical standard of the plant. This is solely due to Siempelkamp. Combined with the competence and the commitment of our people here, everything runs smoothly. One thing leads to another; all factors must be right to produce a first-class product.

**Bulletin: Which markets do you serve with your products?**

**Dr. Valery Puchkov:** We sell the Kalevala OSB in all of Russia. We have established supply chains via trucks to St. Petersburg and Moscow; sales points that are even further away we supply by train. This system works well in Russia. Thus, you can find our products as far away as 10,000 km (6200 miles) from here.

Our OSB is primarily used in house construction as wall panels, roofing and flooring material. The use of wood for single house construction grows continuously. Our capacity alone would suffice for 200,000 houses. However, part of our production is also used for infrastructure building and packaging. Since we started manufacturing, imports have decreased by 25 percent. We are curious how this continues to develop.

**Bulletin: How important is the Kalevala project for Russia and also for the parent company?**

**Dr. Valery Puchkov:** For Russia our plant is a very important project. This was also confirmed with the visit of President Vladimir

Putin at our plant. We created jobs in a region that is far away from the centers of the country and thus set a sign for the young people! Our plant supports the strategy of achieving higher added value in our own country because we are decreasing the need for imports. It is all about a strategic product: OSB is a material which is gaining importance for single house construction in Russia. For our parent company Kompakt it is important to diversify. Next to many other areas of activity of this Group, we now can offer another product.

**Bulletin: What is your opinion regarding the cooperation with Siempelkamp?**

**Dr. Valery Puchkov:** To work together at a construction site for three years is a long time. Enough time to get to know your partner - the emphasis here is on the word partner! I want to stress, we had and have a very good relationship with the Siempelkamp team. Yes, now and then we had disagreements; however, those were always settled to our satisfaction. Together we have always found a solution. I believe, we have built an excellent plant here!



Board storage



Important resource



Kalevala with Siempelkamp equipment in May 2015



Russia's president Vladimir Putin on site at the plant

# Complete SMC press package for the WKT-Group: First panel sold!

Since April of 2015 a Siempelkamp-made SMC press has been manufacturing in Geeste, Lower Saxony, at the location of the WKT-Group. The First Panel produced on the press had such good quality that it was sold right off the press!

by Lothar Sebastian





Siempelkamp's presses for composite materials carry out the Sheet Molding Compound (SMC) process with excellent quality: Sheet-type composite compound material made up of thermosetting reactive resins and glass fibers are processed to fiber-reinforced composites. This process starts with extreme precision and ends with a high-quality product – as is the case at WKT.

The company manufactures insulating materials made of high-strength, fiber-reinforced plastics for diverse applications, for example, electrical and thermal insulation or as protection against high voltage and leakage current. The primary application areas are the fields of energy generation and distribution. Voltages ranging from 10,000 to 150,000 Volts pose no problem.

### Complete system solutions

WKT reduces the demands of its customers and its performance promise to a common denominator: "An increasing number of customers no longer want to buy single components but system solutions. We offer a complete package consisting of custom-made parts and standard parts." After making the decision to no longer buy panels but to manufacture them in-house, the company took the same approach when it came to selecting its press supplier.

With a major investment, the most modern press of its kind should be developed in order to meet the demands of the challenging material and the complex requirements. Among a group of competitors Siempelkamp distinguished itself as a complete service provider which was able to supply everything around the press including the loader and unloader units, a trimming station as well as a smoothing station from a single source.

Not only Siempelkamp's scope of supply but also its technical advantage in the market played a decisive role for receiving the order. The company has three aces in the hole:

1. **Precision:** Pressed composite parts are partially very thin which means they cool quickly. During pressing it matters to combine high closing speeds and the subsequent slower pressing to keep the process within the required narrow tolerances. Because of Siempelkamp's unique pressing system this can be done with high accuracy. The WKT press manufactures very thick as well as really thin panels. With regards to precision, Siempelkamp has an advantage – its technology allows to control the pressure distribution inside the product directly.
2. **Stress-free closing of the tools:** The fundamental question for Siempelkamp's engineers was: When upper and lower mold are fitted together, which is the guiding element, the press or the tool? The answer: Other than the

tool guidance, no other guidance shall be dominant. Without any guidance of the frame, the highly precise horizontal orientation of the upper press table takes place via hydraulic drives only. Through the movability of the upper press table along the X and Y axes, the closing of the tools is stress free and takes place without damaging the tools.

3. **Tilting of the upper table during closing:** The ability to tilt the upper table during closing of the press provides another advantage. The tilting allows both molds to line up on one of their longitudinal sides first before the upper mold is fitted together completely with the bottom mold, thus reaching a parallel position with the bottom mold. The hinged movement of the upper mold during the process of closing both molds allows the resin to be quickly and evenly distributed.

The SMC press for WKT is designed for a yearly capacity of 1,600 metric tons. With sizes of approx. 4,000 mm x 1,000 mm, it produces extra-long panels. "Regarding the panel thickness, the press provides an enormous range. This range starts at 3 mm and ends at 120 mm, the thickest panel of its kind thus far," says Lothar Sebastian, Design Manager at Siempelkamp. The tolerance amounts to +/- 0.1 mm, the pressing time to four to five hours due to the long curing time.

The press has been operating in Geeste since April 2015 and has already achieved a special milestone: the First Panel. This panel was sold off the press – the best proof that the press is operating with success!

## WKT-Group

- established in 1994
- family business with headquarters in Geeste, Lower Saxony, Germany
- 70 employees
- specializing in technically challenging heat and electrical insulation as well as effective and long-lasting protection of single components or complete buildings against extreme high-voltage and thermal stresses
- application areas: transformer and switchgear construction, high voltage and traffic engineering



Weighing and placing of the raw material



Feeding of the material into the press



The press closes



The press opens



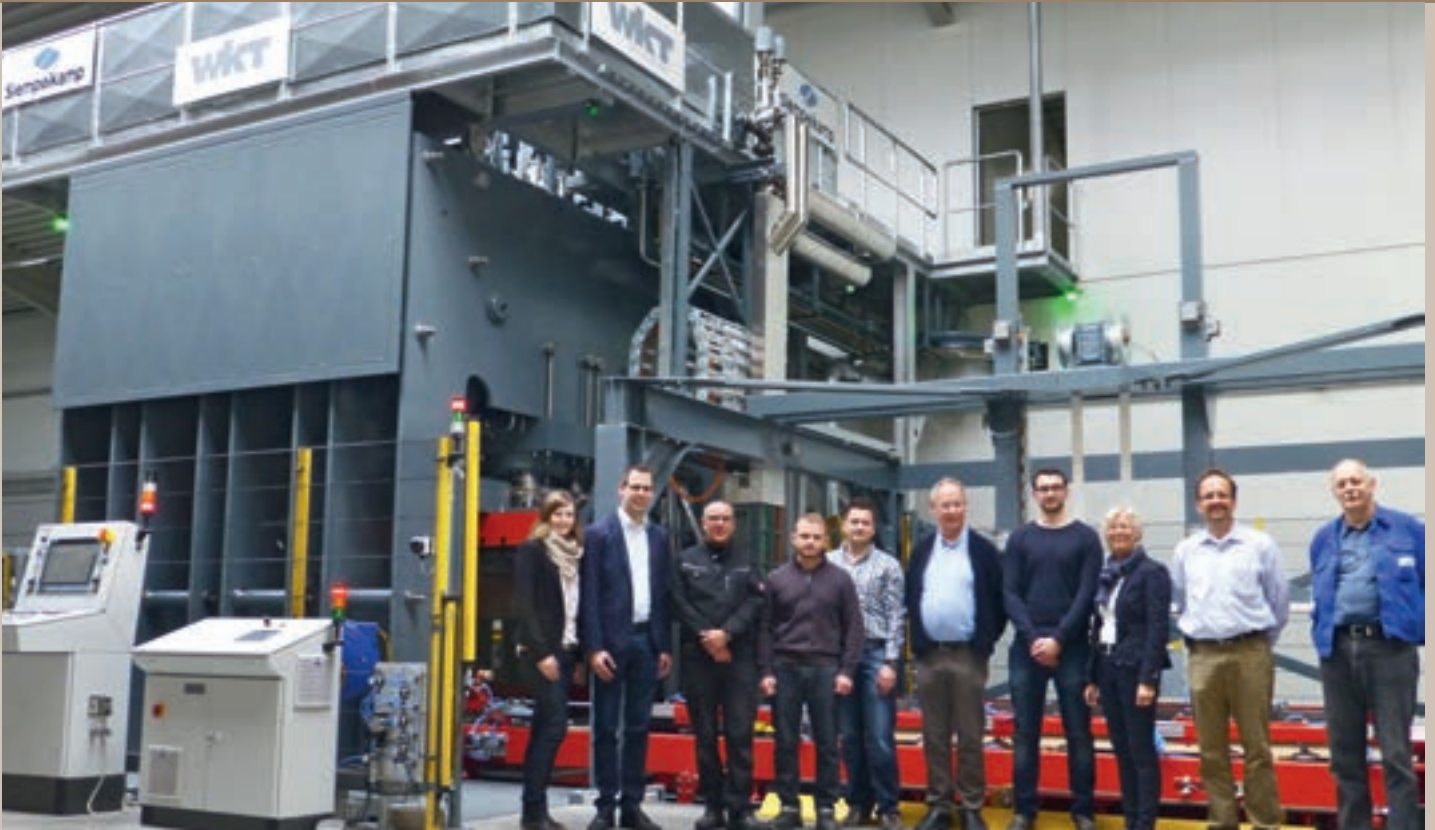
Lifting of the panel



Placing the panel after edge finishing



WKT-Team and Siempelkamp-Team



## “Only the quality matters.”

### Interview with Thomas Wernemann, Managing Director WKT

**Bulletin:** Herr Wernemann, which was the convincing factor that made you decide for a cooperation with Siempelkamp?

**Thomas Wernemann:** We wanted everything from a single source. Siempelkamp provides this type of full service.

**Bulletin:** How would you describe the cooperation between your company and the Siempelkamp team?

**Thomas Wernemann:** Everything went well. The Siempelkamp team has fully supported us with its expertise so that the proper functioning of the press was given from the beginning on.

**Bulletin:** In what markets does WKT operate?

**Thomas Wernemann:** On the provider side the German market is clearly defined. There is a total of three companies representing a similar portfolio as we do. As far as the demand goes we supply worldwide.

**Bulletin:** What is your recipe for success?

**Thomas Wernemann:** ... Our recipe for success is based on the high quality of our products. Our pressed panels do not have any trapped air inside of them. This is an important demand on our products required by the high voltage technology. Under high voltages air bubbles can lead to electrical breakdowns in our components, for example, in our insulators used in high-voltage systems and in power engineering. We want to avoid electrical breakdowns.

**Bulletin:** Who are your customers?

**Thomas Wernemann:** Primarily the energy-generating and distributing industries which are using our products in, for example, transformers.

**Bulletin:** For the collection of data from your new plant you are using our process data management system DAHMOS (=Data Acquisition Handling and Monitoring System).

**Thomas Wernemann:** DAHMOS is an important guide towards achieving a quality product. The trending of relevant process values allows to immediately detect critical plant situations; causes and correlations are quickly identified. That gives us the security to be on the right track during production and, if not, we can immediately take countermeasures.

FunderMax ordered Büttner's technical know-how:

# 20 percent increase in capacity due to upgrading of dryer



New Büttner BCB combination burner – Installation on the new vertical Büttner steel combustion chamber with no refractory lining



20 percent higher capacity and improved performance are the results of a dryer modernization achieved by Siempelkamp's subsidiary Büttner for the Austrian customer FunderMax in summer of 2015. The project illustrates: Büttner not only supplies and installs new plants but provides important support for technically far more difficult modernization and retrofit projects regarding energy plants, dryers, and burner systems.

by Carsten Otto

At the end of 2014 the wood-based products manufacturer FunderMax commissioned the Siempelkamp subsidiary Büttner with the modernization of dryer No. 2 at its production location in Neudörfel, Austria. FunderMax GmbH belongs to Constantia Industries AG, a private Austrian company with customers in many industries including the construction and furniture, sporting goods, and aircraft industries as well as machinery and generator manufacturing.



Two cranes in constant use – for a short modification phase. New components are preassembled, as much as possible, directly next to the dryer and immediately installed.



Final inspection before the new structure for the cyclones is installed.

FunderMax manufactures a wide range of wood-based materials and decorative laminates (see box) at its three locations including the headquarters in St. Veit as well as the other two plants in Neudörfel and Wiener Neudorf. During production the company, whose roots date back to the 19th century, places great value on the most considerate handling of the environment and energy resources. Numerous awards the company has earned, among them several innovation and research awards within Austria, are evidence of this commitment.

The business relationship between FunderMax and Siempelkamp is not new. The Austrian customer manufactures 500,000 m<sup>3</sup> of particleboard annually on two Siempelkamp Contiroll® presses at the plant in Neudörfel. The intended increase in performance for these presses requires an increase in dryer capacity. Büttner was brought in as the expert for drying technology. Both drying plants in Neudörfel consist of the direct heated drum dryer No. 2, made

by Bison in 1988. Furthermore, FunderMax has been operating three indirect heated tube bundle dryers made by Büttner since 2005.

After a fire in 2006 the drum of the old Bison dryer had been completely replaced by Büttner with a new higher performing single path drum including a modern drive and new bearing stations. With the

stipulation to achieve a 20 percent increase in performance, the current modernization project set new goals.

#### The challenge in achieving a 20 percent performance increase

Two factors brought Büttner and FunderMax together again in 2014: On the one hand, the worn components of the drum

## FunderMax: for people who create

- Part of Constantia Industries AG, private Austrian company for 40 years with approx. 3,900 employees
- Established in 1890 (first saw mill of Karl Funder)
- 1969 acquisition of Austrian Homogen Wood in Neudörfel
- 2005 merger of Funder and Isomax to FunderMax
- Starting 2006 establishment of companies in France, India, Switzerland, and USA
- The product portfolio ranges from raw particleboard to laminated particleboard (Star Favorit) featuring the latest decor films, to decorative high pressure laminates (HPL), to compact laminate materials (Max Exterior and Max Interior), and m.look facade panels which adhere to class A2.



The steel structure for the four new material separators in mid air...



...lifted over the drum...



...to the new foundations directly behind the Büttner drum dryer

dryer were to be replaced. On the other hand, FunderMax's objective was to achieve a 20 percent performance increase for the dryer.

"The first task by itself was not a big challenge for both companies. In order to implement the second task, however, we not only replaced the entire equipment, except for the Büttner drum, but installed more modern, higher performing and larger components," explains Carsten Otto, sales manager at Büttner Energie- und Trocknungstechnik GmbH.

Thus, the Büttner team installed a completely new heating concept incorporating Büttner's combination burner BCB. The multi-fuel burner has a capacity of 25 MW and can burn dust or gas separately or both fuels together in combined operation. Instead of the old refractory lined Z-shaped

combustion chamber, which required high maintenance effort, the new burner, now including the vertical Büttner steel combustion chamber with no refractory lining, ensures short installation times and almost maintenance-free operation as well as adherence to the required emission values.

A new flash tube pre-dryer as well as additional drum internals for the existing Büttner drum are further measures aiming at safely achieving the increase in water evaporation capacity.

The ductwork, cyclones and fan were also replaced and in terms of wear as well as in regards to a connection of the dryer to a WESP (wet electrostatic precipitator) upgraded to today's standards. With this in mind, the originally high number of high efficiency cyclones was replaced with only four modern material separators. Smaller

space requirements, less cleaning effort, and a significantly reduced power consumption were additional positive results of modernizing the system. A new materials handling system for greater material throughput completed the modification package.

The delivery, installation and startup were completed in the shortest time possible in summer 2015. Following the completion of the project by Büttner's construction management and the startup team, FunderMax in Neudörfel can now handle the increased material throughputs of the presses with the new dryer with no problems and achieve the desired higher production outputs at this location.

"This project is a good example which illustrates that Büttner not only supplies and installs new plants but also particularly specializes in technically far more difficult modernization and modification projects regarding energy plants, drying equipment, and burner systems. Apart from our own, we also bring the systems and components of all other manufacturers and all other makes up to date," says Carsten Otto.



Steel structure for the new flash tube pre-dryer on the crane hook, ready for installation



A new high-performance particle dryer is installed around the nine year old Büttner drum



## Interview with Rene Haberl, Management FunderMax

**Bulletin:** The business relationship between Siempelkamp/Büttner and your company isn't new. What made you decide to go with Büttner for this ambitious modernization project?

**Rene Haberl:** We were convinced by the concept and the technical expertise. The longstanding cooperation with Siempelkamp/Büttner and the trust resulting from it was a decisive factor particularly with regard to our very tight time schedule.

**Bulletin:** A 20 percent performance increase for a drum dryer are a considerable gain. What business areas or market activities will benefit from this performance increase?

**Rene Haberl:** We are consistently growing in the area of laminating. With our specialty products from the Star Favorit product

range, we are successful in industry and retail markets. The right carrier plate plays an important role in meeting the quality demands of our customers. Only a homogenous unfinished board will do. And that is the reason for the performance increase.

**Bulletin:** The compliance with the required emission values was a reason to approach the modernization project. In general your company stands for sustainability. To what extent is the topic of sustainability relevant for FunderMax in regards to the wood-based materials industry? What do you consider as especially important when it comes to sustainability?

**Rene Haberl:** It is a matter of assuming responsibility. In 2011 we won the most important Austrian CSR award, the

"Trigos", because we were able to reduce our CO2 emissions by a third while increasing our revenues at the same time. We want to continue this strategy and modernize our plants for this purpose. Another key focus for the industry as a whole, in particular for the wood-based materials industry, is the topic of energy use. Energy is a valuable commodity! Next to the beneficial use of industrial waste heat for the heating of thousands of households close to our production locations, we want to use energy as efficiently as possible. The mutual project also contributes to this objective.

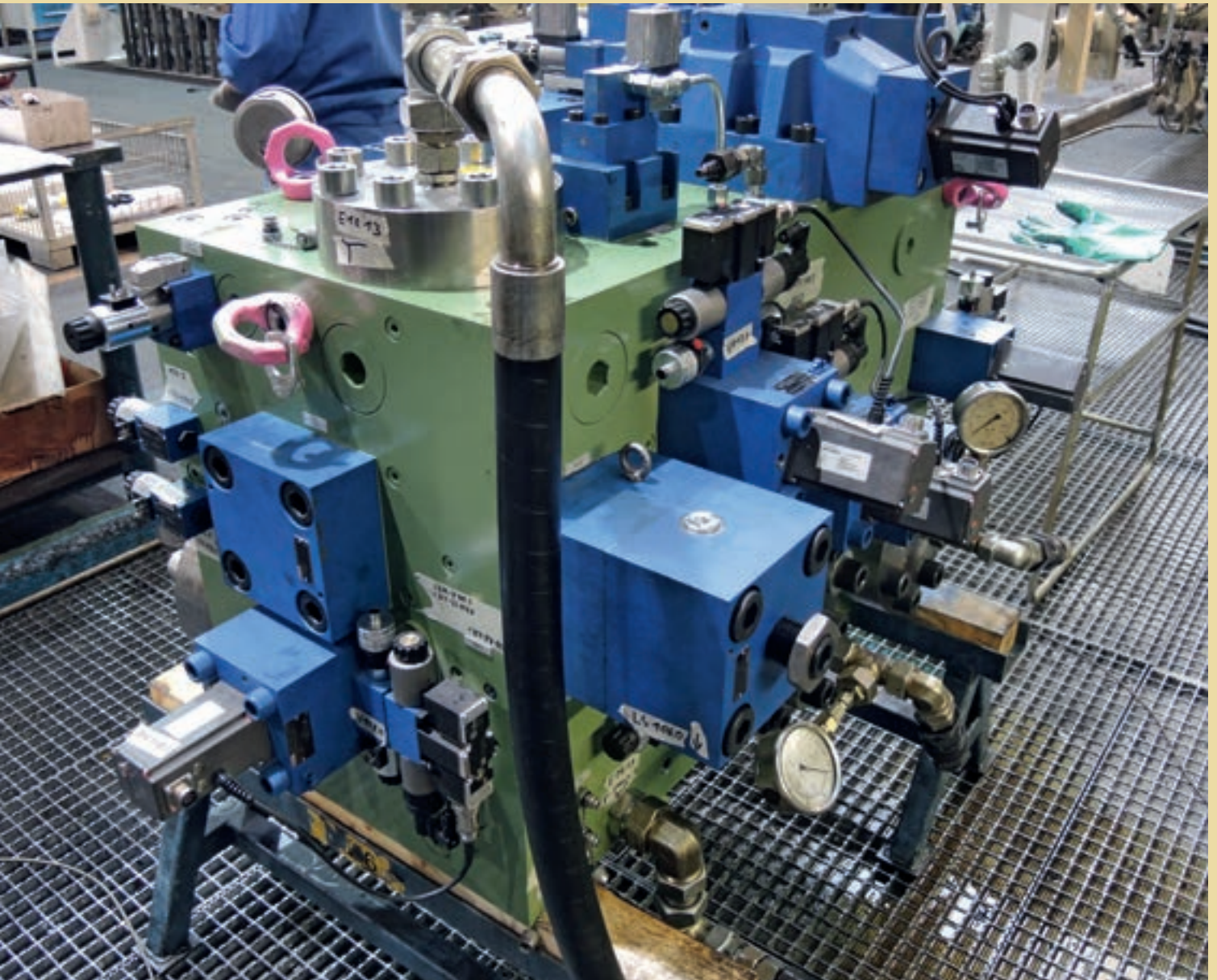


India's only press line for forged railway wheels was upgraded to the current technology

# Durgapur – pure performance power!

Siempelkamp is not only a global technology leader in the construction of new metal forming presses, Siempelkamp is also a leading supplier of modernizations to existing machinery. While certain general conditions have to be met, the Krefeld press specialist makes every effort to meet all special customer requirements from a single source.

by Hubertus Jürgens



Main control block



## Durgapur:

- 570,000 inhabitants
- Area: 154 km<sup>2</sup>
- Third largest metropolis in the Indian State of West Bengal

## Durgapur Steel Plant:

- Integrated steel plant of "Steel Authority of India Limited (SAIL)"
- 40,000 employees (combined with the special steel-making plant "Alloy Steels Plant")
- Affiliated institute: "Central Mechanical Engineering Research Institute (C.M.E.R.I.)", one of the most prestigious academic institutions for engineers in India
- Energy generation through four steam power plants which generate electricity from coal
- Optimal infrastructure through railway connection to Calcutta (supply with coking coal) and to the "Singhbhum Iron Belt" (iron ore)

Durgapur Steel Plant (DSP), a long-standing Siempelkamp customer, placed an order with Siempelkamp to upgrade their existing press line for the production of forged railway wheels. DSP is one of nine subsidiaries of the state-owned Steel Authority of India Limited (SAIL) with total annual production output of more than 1.8 million metric tons of raw steel as well as 1.6 million metric tons of semi-finished and finished products. DSP produces more than 58,000 metric tons of railway wheels and axles annually. These enormous quantities are manufactured with a press line which was originally supplied and installed by Siempelkamp in 1993. With this press line DSP is the only company in India able to manufacture forged railway wheels.

After 20 years of operation and over one million high-stress press strokes with an annual output of 55,000 manufactured railway wheels, the time had come to overhaul and replace the hydraulic and mechanical wear parts. Correspondingly, the entire electrical control system was modernized in

order to take full advantage of the new cutting-edge hydraulic control manifold. The object of the modernization was to increase the production potential as well as to optimize line safety and the safety of the production personnel. Additional focus was on increasing the manufacturing precision by implementing modern measurement and control technology.

Three presses were part of the upgrade order for the Krefeld press specialist: The largest press in the forging line is a closed-die forging press with a maximum press force of 63/12 MN. This press serves two functions, the first is forging of the wheel blanks with a press force of 63 MN and the second is piercing the wheels for the axle hubs with a force of 12 MN. The subsequent press is a 20 MN dishing and calibration press for the final forged wheels which were rolled on a ring-rolling mill. The third press of this line included in the upgrade order is a small marking press which stamps type and descriptions onto the finished forged railway wheels.



The Siempelkamp team after successful acceptance



Pump room



Total commitment

20 MN press prior to the modernization



New press frame for 20 MN press



### Teamwork between nations

The installation team assembled for the upgrading consisted of international experts from different professional groups. The on-site supervision was carried out by a small group of experts from Krefeld. The latter was already familiar with India because it had successfully carried out various other installation and upgrading orders for Indian customers such as for the 5,000 metric ton side member press at MS Global Pvt. Ltd. Additional mechanics, hydraulic engineers, and electricians for the installation were provided by Siempelkamp's subsidiaries Siempelkamp India Pvt. Ltd., India, and Siempelkamp Pte. Ltd., Singapore. In May of 2015 the installation teams were organized and work began after all parts, primarily manufactured in Krefeld, had arrived. Following a cleaning, all presses were stripped of electrical wiring, all mechanical wear parts dismantled, and the complete hydraulic system inspected for leaks. At the same time, the pressure transducers and the servo valves for the hydraulic pumps were replaced in the pump room. Nine pumps alone are responsible for the hydraulic drive of the 63/12 MN press and three additional pumps cover the hydraulic drive for the smaller 20 MN press. The control systems and switchgears for

the pump systems which feature, according to the customer's request, a redundant design were integrated into the control cabinets of Siempelkamp's subsidiary ATR Industrie-Elektronik GmbH. ATR also supplied the two state of the art control panels necessary for press control and the redundantly designed uninterruptable power supply. Two adequately sized battery banks keep the control systems running for one hour in the event of power failure.

The presses were also mechanically upgraded: The bottom sliding table was equipped with a new guiding system. The table's surface which had become uneven due to the harsh operating conditions was face-milled and a hardened coating was applied to optimize the table's surface. New cylinders for the lifting and centering device were installed to ensure that the blanks for the future railway wheels are accurately placed for the subsequent forging process. The original guides of the centering arms were replaced resulting in significant improvement in the positioning accuracy. This also made the replacement of the old hydraulic valves with proportional valves necessary which allow variable positioning. The targeted manufacturing precision is an integral aspect in every part of the production line all the way to the finish-forging of the railway wheels.

Therefore, the replacement of the complete frame of the 20 MN dishing press was also necessary. Even this larger retrofit was carried out problem-free with the new welded construction frame which was manufactured in Krefeld. With this torsion-resistant frame, the press features a significantly more stable design for future manufacturing.

Following the installation, the upgraded press line was subject to a 72-hour test run under real production conditions. After an initial line production time of approximately one month, the line capacity was increased from 15 wheels per hour to the contractually agreed quantity. A very satisfying result was that the guaranteed production capacity of 25 railway wheels per hour was significantly surpassed during a final test in the beginning of November. The Prod-IQ® process control technology, developed in Krefeld and newly installed at Durgapur, monitors and optimizes all production parameters and precisely records the number of press cycles during production. Thus, the only production facility in India for forged railway wheels not only produces a higher number of railroad wheels but also more precise wheels for the expansion of passenger and freight transport in the second most densely populated country in the world.



63 MN press

## India as a steel manufacturer: a significant economic revival

For decades China, Japan, and the USA were considered the largest steel manufacturers in the world. During the first half of 2015 India surpassed the third largest producer, the USA, with an 8% increase in crude steel production. Acelor Mittal, the largest transnational steel producer, expects that India will also surpass Japan in the next few years and therefore become the second-largest steel producer worldwide. This development takes place despite the fact that the annual per capita consumption of steel in India is at only 60 kg while the world's average is at 216 kg. The city of Bhilai, southwest of Rourkela in the State of Madhya Pradesh, was considered India's first steel city. Rich deposits of iron ore can be found here. Throughout the decades these deposits have been increasingly better developed and are considered the largest in the world. The coal necessary for smelting is also abundant in the mines of Korba, Madhya Pradesh, and in the State of Bihar. Next to Bhilai, Rourkela as well as Durgapur were also recently able to position themselves as steel cities in India. This development is an important prerequisite for a diverse and complex industrialization which establishes India as a modern industrial nation.



Forged railway wheels

Reactor pressure vessel successfully dismantled in Unit 2:

# Siempelkamp experts reach important milestone at Zion NPP

On July 31 a team of Siempelkamp nuclear technology experts from Germany and the USA reached a special milestone at the Zion NPP in Illinois: The reactor HBH (hemi ellipsoidal head) in Unit 2 was removed and therefore an important part of the contract for this project fulfilled. The conclusion: The many process steps up to the "Final Cut" and packaging were ingenious detailed services which showed: Siempelkamp has successfully established the thermal cutting method for the dismantling of reactor pressure vessels in the USA.

by Christian Jurianz

The history of this milestone: In 1998 the two reactor blocks in Zion were finally removed from the grid after 20 years of operation. The nuclear power plant had supplied electricity for Chicago and northern Illinois. In October 2010 Siempelkamp Nuclear Services (SNS) was awarded the contract by Zion Solutions for the segmentation of the internals and the reactor pressure vessels (RPV). This dismantling represents the most extensive disassembly of an NPP that has ever been carried out in the USA – and the largest individual contract which a customer has so far placed with this Siempelkamp business unit.

Since November 2014 the work to dismantle the reactor pressure vessel (RPV) in Unit 2 of the Zion NPP has been in full swing: The project started with the prep work, the exposure of the RPV from the concrete structure around the reactor flange, and the detachment. An ambitious project: Wire saws ate their way through the concrete, and then the supports of the main coolant pipe were removed from the

reactor. At the same time our team under the reactor separated off a number of small pipes which had previously been used to measure the neutron flow so that the reactor could be reliably controlled.

## **Thermal dismantling: a pilot project in the USA**

In addition to mechanical dismantling methods, Siempelkamp nuclear engineers used the thermal dismantling method – a first of its kind in the USA (see also the box). "In 2011 Zion Solutions gave us the go ahead for this method, which was the most suitable for the dismantling process. It is fast, although it does not require any massive management systems, in order to guarantee safe handling," explains Dieter Stanke, the technical manager of the process. We were able to convince our American customers that we have mastered this process perfectly and plan and implement all of the steps precisely. This is associated above all in a project like this with the fact that we are aware of our responsibility for people and work areas, i.e. we guarantee safety and prevent the spread of contamination.

## **Mechanical and thermal dismantling: two processes**

For the segmentation of the reactor pressure vessel, Siempelkamp has developed a concept with two technical processes: the mechanical and the thermal dismantling method.

The mechanical method is based on specifically designed and produced special saws, e.g. diamond wire saws. One of the advantages of this process: In the case of uneven geometric structures, it is superior to the thermal process.

The thermal dismantling process has already been used by Siempelkamp extremely successfully at the NPP in Stade. One particular advantage: The dismantling work can be carried out within a shorter execution period. The cutting speed on 200 mm-thick steel is approx. 4.0 to 10 mm/s, whereas in the mechanical process it is only approx. 0.01 to 0.25 mm/s.





Prep work = Teamwork

One main focus of attention at Zion was the shielding of the dismantling area: A rotating shielding plate frame and an external shielding plate were installed on the supporting platform. The thermal dismantling equipment, including mobile ventilation and filtration systems, were added, as well as the video monitoring technology with suitable cameras for remote control.

A strandjack system was also installed – a hydraulic system which is suitable for lifting, lowering and moving individual loads where the use of cranes, winches or other conventional means of conveyance is not possible, e.g. for reasons of space. The ability to provide support on a component with which the component to be lifted is to be connected enables particularly smooth and precise alignment. When used individually, strandjacks achieve the lifting force of a heavy-duty crane, but are more defined than cranes to coordinate when used together. This system proved successful during the course of the roof construction process for the Olympic Stadium in Munich, as it did during the

uprighting of the capsized cruise ship “Costa Concordia” – it was also to be used at Zion in order to fulfil the precision and safety requirements when lifting the loads, some of which were extremely heavy.

In May 2015 the team installed the flame cutting system and the slag pans: “They catch the majority of the radioactively contaminated slag particles produced during the flame cutting process in order to ensure quick disposal and not to endanger the infrastructure of the NPP;” explains Dirk Bender, for whom as an NIS engineer and safety expert the greatest level of care is the overriding principle when protecting people and infrastructure.

#### The first step – a premiere!

After this phase of intensive work, the time had come on May 19, 2015: The first cut was performed, the start of the segmentation phase initiated. The reactor pressure vessel was lifted with the strandjack system into the dismantling position so that the flame cutting system could begin its work.

Installation of the flame cutting system



Complete installation of the slag pans

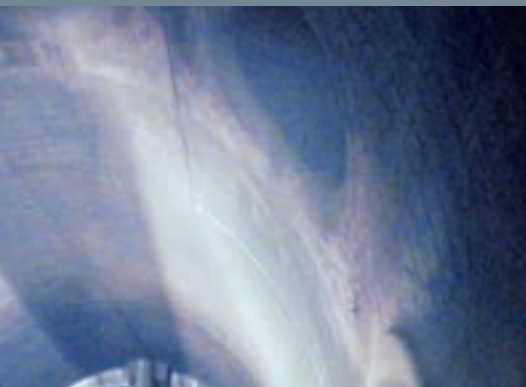




Inspection of flame cutting system



View of the first L-cut from the outside



View of the complete first L-cut from the inside



Sectional view from the outside

A skill and a balancing act: "A reactor pressure vessel weighs approximately 350 tonnes. If one were simply to remove individual parts gradually in turn, the container would inevitably become unstable. Our solution: At first we carried out pre-segmentation by means of L-cuts in the flange section, where a last piece per segment holds the connection with the RPV," says Dieter Stanke. In this way, 99 % of the produced slag are kept within the RPV.

The material is forced inwards to be taken up by the slag pans – supported by an effective ventilation this prevents contamination from reaching the outside. This process manages 5 cm per minute; parts which were as large as possible were cut step-by-step using the L-cut method until the "final cut" was ready to be performed. As mentioned, these final cuts per segment were not performed circumferentially, but in each case at opposite points of the RPV – this enables an as good as possible balance. In June the time had come for all of the segments of the upper section of the connector, which was particularly heavy, to be released, while the strandjack system ensured the necessary stability. Shielding boxes were then used to dispose of the individual parts.

This process – L-cut, final cut, lifting out the segments, packing in a horizontal position in shielding boxes – was repeated in section 2, the "midfield" of the RPV. This was then followed by the removal of the reactor dome, which was still approximately 3 m high, on July 28, 2015 and the disposal in one piece. Here it was found that the dismantling concept had performed its task perfectly – no additional contamination had penetrated towards the outside. This last large section of the RPV was transported using a "supersack",

which prevented surface contaminations formed whilst in operation from falling off. The contractually agreed service and delivery section in Unit 2 was therefore successfully completed by the Siempelkamp team.

**Praise from the customer:**  
**"Unprecedented!"**

The actual cutting-up of the entire reactor lasted only six weeks, so that the customer Zion Solutions was completely satisfied: "This is a significant milestone. SNS finished a scope of work that has never been accomplished on this scale. The decommissioning of two large reactors (internals and vessel) has never been attempted in the United States. SNS' performance in accomplishing this all important project was exceptional," was how an article in the company magazine "The Zion Way" expressed its praise on August 8, 2015.



John Sauger, General Manager at Zion Solutions, with Siempelkamp commemorative plaque



First segment on its way to be packaged

John Sauger, Executive Vice President Decommissioning ES and General Manager ZS, was also extremely satisfied, as were SNS Project Manager Jim Fryant and Vince Bilovsky, who had paved the way for the on-site cooperation: "Overcoming the challenge of executing this formidable project within an ambitious timeline in such a successful manner is due last but not least to the entire on-site Siempelkamp team, which gave its utmost in the form of efficient dual-shift operations!"

Zion is therefore not a thing of the past for Siempelkamp: Now the challenge is to repeat this success in Unit 1 by the end of 2015. The Siempelkamp team is confident that this will succeed in the same manner as the work that has already been carried out: "Part of the equipment has already been pre-assembled, the prep work started, our personnel have already undergone training in the form of the tight schedule of the dismantling project that has already been completed, i.e. they are already well-rehearsed in the demanding tasks to come. Moreover, the strandjack system has proven its worth, the use of which we have professionalized for this specific contract. The careful yet speedy work carried out in Unit 2 has provided us with many 'lessons learned' along the way – and we are ideally equipped to complete the work on the RPV in Unit 1 on time as well – and above all safely," adds Dieter Stanke.



John Sauger (3rd from right) and Christian Jurianz, spokesman of the management of Siempelkamp Ingenieur und Service GmbH (2nd from right) with team on site.



Lifting of the calotte of Unit 2

Members of the committee are getting their information first-hand in Krefeld



Siempelkamp Maschinen- und Anlagenbau:

# Inter-ministerial committee visits Krefeld

In the beginning of July the Inter-ministerial Committee for Export Credit Guarantees (IMA) held its yearly out-of-town meeting in Krefeld. During this meeting IMA also visited Siempelkamp. Siempelkamp welcomed approximately 40 visitors from the Federal Ministry for Economic Affairs and Energy as well as representatives from the Department for Foreign Affairs, the Federal Ministry of Finance, and the Federal Ministry for Economic Cooperation and Development. Furthermore, mandatories of the Euler Hermes Aktiengesellschaft and PricewaterhouseCoopers WPG AG as well as experts from different banks and export companies were among the visitors. IMA decides on export credit guarantees. They are a proven instrument for promoting foreign trade and safeguarding the financial flow of export sales for us and our customers.

by Dieter Trzeczak



Due to political or economic reasons, bad debt losses may arise when carrying out export business. To a large extent export credit guarantees of the Federal Republic of Germany safeguard against this risk. With the so called Hermes Cover the risk largely no longer lies with the exporting company or its bank but with the Federal Republic of Germany. Export credit guarantees under Hermes Cover also improve the financing conditions for the exporter and the foreign customers. With an export quota of approx. 90 % Siempelkamp is one of the many export companies that is making use of these hedging opportunities.

#### Siempelkamp products at your fingertips

Following the IMA meeting was a visit at Siempelkamp's customer Europipe in Mülheim during which the visitors were able to observe Siempelkamp presses in action. In Mülheim an der Ruhr, Europipe GmbH operates a plant for the production of large longitudinally-welded pipes for pipeline applications. As the main supplier of the Baltic Sea Pipeline Nord Stream I and II, the Mülheim-based company manufactures a total of 1,574,000 metric tons of large pipes. To do so Europipe operates, amongst others, a crimping press and an O-forming press made by Siempelkamp.

The second day started with another closed meeting. Afterwards, a visit of the Siempelkamp company premises was on the agenda. Dr.-Ing. Hans W. Fechner, Spokesperson of the Management of the Siempelkamp Group, introduced the company with a brief presentation. This was followed by a tour of the Krefeld factory halls.

In the afternoon the participants traveled back to Berlin and Hamburg. "The objective

of the meeting - ,To develop an understanding for the issues of an innovative and export-oriented manufacturing company in Germany' – was achieved. The visit in Krefeld left a lasting impression," said Dr. Ingo Junker, Head of the Berlin Division of Euler Hermes Aktiengesellschaft, with gratitude.

#### Financing expertise at Siempelkamp

With a view of the overall financing and risk management of a company, the financing for export business has gained a growing importance. Hermes Cover can help. As soon as the exporting company

## Promoting exports with Hermes Cover

Export credit guarantees of the Federal Republic of Germany ("Hermes Cover") are a proven means for promoting foreign trade. They help open difficult markets and maintain business relationships even in unfavorable times. Export credit guarantees protect German companies in the event of non-payment by foreign debtors due to reasons of economic and political nature. Next to insolvency or foreign currency shortage on the part of a customer, these reasons also include war, political unrest, and interdictions of payment. 84% of the exports covered under Federal Export Credit Guarantees were for developing and emerging countries. Three fourth of all applications for the Hermes Cover are submitted by small and medium-sized enterprises.

Hermes Cover improves the financing conditions and the refinancing opportunities for the exporter and its liquidity situation. With Hermes Cover, the Federal Republic of Germany supports export as a motor for growth for the German economy, secures jobs at home and abroad and supports the competitiveness of the German export industry. Budgetary responsibility for this instrument for the promotion of exports lies with the Federal German Government. The Federal Government of Germany has mandated a consortium consisting of Euler Hermes and PwC (cf. inter-ministerial committee) to manage the system.

#### Target group:

all German export companies and the credit institutions financing the exports

#### Criteria for granting a guarantee:

The principal criteria for granting a guarantee are eligibility for cover and whether the transaction can be justified on the grounds of the risk involved. The size of the company or the amount to be covered do not matter

#### Key figures 2014:

- Coverage: € 24.8 billion
- Coverage according to groups of countries:
  - Emerging and developing countries: € 20.7 billion
  - Industrial countries: € 4.1 billion

#### Countries with the highest cover volumes in 2014:

1. Bermuda (€ 3.2 billion)
2. Russia (€ 2.2 billion)
3. Saudi Arabia (€ 1.9 billion)
4. Turkey (€ 1.8 billion)
5. China (€ 1.4 billion)

has compiled all necessary documents and information concerning the buyer, the business can be presented to the IMA for decision.

The consideration of environmental and social aspects is of high importance when it comes to foreign trade promotion and when granting export credit guarantees. The environmental and social evaluation takes place according to the rules of the OECD and therefore applies to all export credit agencies belonging to OECD. Siempelkamp provides teams of experts to counsel customers in regards to environmental requirements.

Along with export credit guarantees issued by the Federal Government and in cooperation with selected credit institutions, these teams develop an attractive financing plan for the upcoming investment of the customer. Next to consultations in connection to export financing, we also support plant operators in the areas of project, trade as well as domestic and cross-border financing. Customers appreciate this comprehensive service and make use of it increasingly more often.

The cooperation between Siempelkamp, customers, the IMA as well as the mandatories has been excellent. So far Siempelkamp has not experienced an incident that required reporting a claim to the Federal Government and using the insurance coverage. "We were happy about the fact that we were able to welcome IMA at our company for a visit," says Dieter Trzeczak, Head of Treasury at Siempelkamp. "For Siempelkamp it was a good opportunity to personally introduce our company to IMA as an exporter and to present our products. For our customers it is a sign that we will be able to support them even better regarding financing solutions for their large investments."

## Inter-ministerial Committee for Export

The Inter-ministerial Committee for Export Credit Guarantees (IMA) decides on basic issues of cover policy and the granting of guarantees for export business. Next to the Federal Ministry of Economic Affairs and Energy, which has the lead function, representatives of the Ministry of Foreign Affairs, the Federal Ministry of Finance as well as the Federal Ministry for Economic Cooperation and Development are part of IMA. All decisions are reached by consensus.

Since 1949 Euler Hermes Aktiengesellschaft and PricewaterhouseCoopers WPG AG (PwC) have been entrusted with the management of export credit guarantees. Since Euler Hermes is the lead partner in this consortium, this type of cover became known among German companies as "Hermes Cover". Many years of experience have given the two companies a comprehensive knowledge base in the fields of export finance and export guarantees. They provide a customer-focused consultancy service to exporters and banks. In close cooperation with Siempelkamp and Siempelkamp customers, they prepare the cover applications for the decision to be made by the Federal Government. After cover has been granted by the Federal Government, the Euler Hermes and PwC experts stand ready to accompany the insured companies with ongoing advice on the project in hand. In the event that receivables are lost, they process claims without delay.



Made in Germany: infeed head – key component of the infeed section of a ContiRoll® press



# Credit Guarantees

## Regular members of IMA:

### Ministries

- Federal Ministry for Economic Affairs and Energy
- Federal Ministry of Finance
- Federal Ministry of Foreign Affairs
- German Federal Ministry for Economic Cooperation and Development

### Mandatory

- Euler Hermes Aktiengesellschaft
- PricewaterhouseCoopers WPG AG

### Experts

- Representatives from export companies as well as banks and associations

**Bulletin:** How will the use of export credit guarantees develop in the future?

**Dieter Trzeczak:** Given the current political developments inside and outside of Europe, one realizes that things are getting more complicated in this world. This trend has a direct impact on the finance and capital markets. In order to continue serving our global customers under such difficult conditions, we are forced to support our customers with the structuring of their investment financing. To make this process justifiable for us in terms of risks, we will continue to fall back on Hermes Cover. In similar ways, this probably also applies to many other export companies in Germany.

## Four questions for Dieter Trzeczak

Head of Treasury at  
Siempelkamp Maschinen- und Anlagenbau GmbH

**Bulletin:** Why does Siempelkamp fall back on export credit guarantees?

**Dieter Trzeczak:** Siempelkamp has an export share of approx. 90%. We supply machines and plants to customers worldwide. On the one hand export credit guarantees allow us to provide our customers with attractive financing options which enable many customers to finance the required investments in the first place. For us export credit guarantees are an important component in sales. On the other hand export credit guarantees cover the risks of the exporter, for example, payment risks during the production phase. This com-

ination, sales promotion, and risk protection is what makes export credit guarantees so attractive to us.

**Bulletin:** Why are Hermes export credit guarantees so attractive for our customers?

**Dieter Trzeczak:** Often times the local banks of our foreign customers are not able to finance the machines and plants purchased from us at attractive terms. With Hermes Cover and in cooperation with our local banks, we support these customers in obtaining long-term financing with credit periods of up to 10 years and above all at very attractive interest rates.

**Bulletin:** Are there alternatives to the financing by means of Hermes Cover?

**Dieter Trzeczak:** As mentioned before, Hermes is an important partner for us. However, we cannot fall back on Hermes in every case. Especially in cooperation with our financing company ACE International GmbH, we provide alternative solutions whenever Hermes cannot issue guarantees for deliveries into a certain country or to a certain customer. As an example I would like to mention leasing financing or non-recourse financing which we have used successfully several times in the past as financing instruments.

Siempelkamp Tensioning Systems GmbH:

# 50 years of multi stud tensioners – an exciting history

The multi stud tensioner of Siempelkamp Tensioning Systems GmbH (STS) has been on the market since 1965. Reason enough to take a look at a success story stretching back 50 years, which has recently reached a further milestone with the acceptance of a machine for Belarus.

by Bernd-Dieter Wessolowski and Antonius Lanfermann

1961 tensioning device at nuclear power plant Obrigheim, Germany



Since 1965, STS has been developing an excellent reputation as a specialist in the design, supply, upgrading and maintenance of highly automated multi stud tensioner (MST). These are indispensable for the opening and closing of reactor pressure vessels and other primary circuit components in nuclear power plants.

Since the prototype for a pressurized water reactor in the Baden-Württemberg town of Obrigheim until today, STS has delivered 85 multiple-stud tensioners to locations all over the world. The most recent example is the project for the Russian NPP Baltiyskaya, which underwent an acceptance test in August.

How did the multiple-stud tensioner of STS attain its market position? What are the outstanding milestones of the last 50 years? Bernd-Dieter Wessolowski, Chief Executive Officer of STS, and Antonius Lanfermann, Sales Manager of STS, explain the development, history and unique selling points.

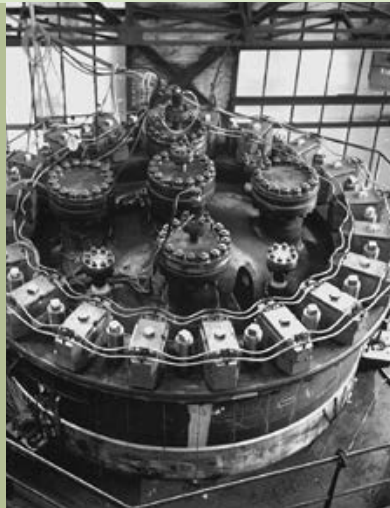
## History of Siempelkamp Tensioning Systems GmbH

- 1965 founded as Klöckner Ferromatik
- 1977 merged with Becorit Grubenausbau and formation of Klöckner Becorit
- 1993 merged with Westfalia Lünen and formation of Westfalia Becorit
- 1995 separated from Westfalia Becorit and establishment of Westfalia Nukleartechnik
- 1995 purchased by GEA AG
- 1995 GEA AG purchases the bolt tensioning product technology of WIRTH
- 1996 renamed GEA WENUTEC
- 1999 Parent company GEA AG sold by Metallgesellschaft AG (Frankfurt)
- 2000 foundation of WENUTEC AUTOMATIONS TECHNIK GmbH & Co KG and purchase by the Siempelkamp company in Krefeld
- 2003 renamed WENUTEC GmbH
- 2009 new firm of the company as Siempelkamp Tensioning Systems GmbH



Tensioning device for the superheated steam reactor  
in Großwetzheim, Germany, built from 1965 to 1969

**Bulletin:** Mr Wessolowski, the multiple-stud tensioner (MST) has been a reference product of STS for 50 years. How did this invention occur in 1965 and what has been the unique selling point of this innovation both then and now?



**Bernd-Dieter Wessolowski:**

This development is directly associated with the construction of the first German nuclear power plant for commercial operation, a Siemens pressurized water reactor in Obrigheim am Neckar, which went online in 1969. At the time the firm Klöckner-Ferromatik in Castrop-Rauxel had the best references in terms of hydraulics for mining and was therefore entrusted with the development of a machine which under the most stringent safety requirements would enable the simultaneous expansion of the 36 reactor pressure vessel studs. Short periods of use were required – a requirement which was already fulfilled by our machine at the time. Even today, these short periods of use are a contractually agreed undertaking which ensures that our MST remains the market leader for this type of tool. Incidentally, until the decommissioning of the nuclear power plant in May 2005, the prototype in Obrigheim had been in use without any significant technical problems

**Bulletin:** Were there any competitors in the early days?

**Bernd-Dieter Wessolowski:** We were initially the only supplier of this type of machine for some years in the early days, before the firm Wirth in Erkelenz began to take an interest in this product in the early 1970s. In 1995 the commercial activities of Wirth were merged with the spun-off firm Westfalia Nukleartechnik at the current location in Lünen. With today's mhWirth we have continued to work closely on a basis of trust – I always call it a partnership – until today.

**Bulletin:** The Siempelkamp ContiRoll® is now in its eighth generation. What are the innovation milestones which have advanced the MST from 1965 to 2015?

**Antonius Lanfermann:** There are many milestones that I could refer to. I consider one of the main development steps to be the changeover from manual operation to increased automation. The concept has benefited very much from the permanent updating of the electrical systems and the increase in the control technology developments – e.g. PLC control. Also the single – and subsequently double – stud driver devices for screwing in/unscrewing

## Multiple-stud tensioner 1965 to 2015:

### Continuous development

- Development of a domed jaw system for fast and secure gripping of the bolt threads
- Development of the pressure bridges, which make it possible to apply the necessary forces even in the smallest of spaces (RPV contour/geometry)
- From manual operation to increased automation; electrical systems and an increasing number of control technology developments (e.g. SPS control system)
- Single – and subsequently double – stud driver devices for screwing in/unscrewing the RPV bolts – shorter periods of use
- Expansion measurement system for detecting bolt expansion during the tensioning process; moving away from cables to radio transmission

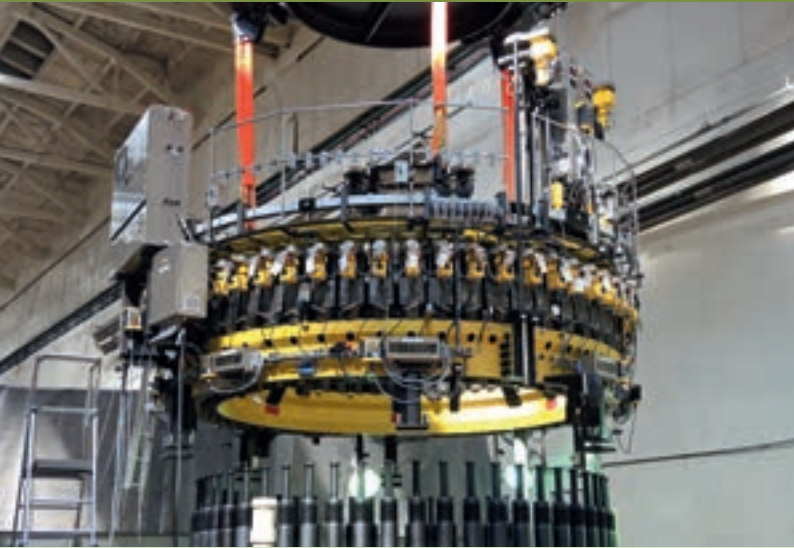
the RPV bolts were cutting-edge. They make it possible to lift the machine after use together with all of the bolts from the RPV. The pneumatic – and later electronically controlled – weight relief when turning the bolts enables them to “hover” while being screwed in and out of the blind holes of the RPV. This concept was premiered in 2003 at the nuclear power plant in Biblis. This innovation made it possible to reduce the periods of use to less than four hours (for further development steps see the box).

**Bulletin:** In which markets was this product in demand in the early years – and how has this demand developed over the years?



Bernd-Dieter Wessolowski (left) and Antonius Lanfermann

Baltiskaya stud tensioning machine is placed on the set-down structure



Nuclear power plant Gravelines 2011: Transport of a multi stud tensioning machine through the material lock into the containment



**Antonius Lanfermann:** As described, the story began in Germany; France followed suit, as here the expansion of nuclear power plants was carried out on a large scale in the 1970s in particular. This was followed by the leap across the pond to the USA, where our machines are still in use. We then entered the Russian market, which has developed over the last 15 years to one of our main markets. China was the next step, where today we are also firmly established as a supplier of MST. If one looks at the map of the world, one sees that – with the exception of Australia – we have left our mark on all continents.

**Bulletin:** The nuclear phaseout in Germany represents a major watershed in the field of nuclear technology. Have there been comparable watersheds or milestones in the last few decades?

**Bernd-Dieter Wessolowski:** Fukushima in 2011 and the resulting “immediate” decision of the German government to phase out nuclear energy is certainly a major watershed. However, it did not have much of an effect on STS initially, as we were already doing well over 90 percent of our business abroad at the time. Of course one also immediately thinks of Chernobyl. However, in terms of its impact, this accident was in no way comparable with Fukushima: On the one hand there were major differences in the way Russian and Japanese technology was assessed, and on the other hand it is important to point out the way in which these accidents were dealt with in the media. Fukushima happened in every living room due to the viral effect of online communication and therefore had a completely different influence on the formation of opinion within the population.

**Bulletin:** The technical developments of the multiple-stud tensioners are impressive. To what extent does the human factor and the collaboration of your teams contribute to the 50 years of success you have enjoyed on the market?

**Antonius Lanfermann:** Our MST product distinguishes itself from other machines and plants by the fact that it is only used for between 5 - 10 h/a, namely for opening and closing the reactor. Many customers therefore order our service for cost reasons, but also because they know that our personnel have a corresponding amount of long-term expertise at their disposal.

The experience feedback from our customer service is then used in collaboration with the Design Division so that the “weaknesses” identified during deployment then lead to technical implementation and optimization. This is one advantage which we have and make use of compared to one or the other “exclusive supplier”.

**Bulletin:** Besides the production of new machines, you also carry out upgrades of multiple-stud tensioners that have already been supplied in order to ensure that they use state-of-the-art technology. How is this market developing?

**Antonius Lanfermann:** Modernization projects will certainly remain one of the most important pillars of our business in the medium term. Since according to our contracts we have to deliver machines which are designed to last for the entire lifetime of the power plant (= 40 to 60 years), we construct them to be very robust. During the planning process we assume that a major upgrading of the machines will be carried out approximately



Training on site in Taiwan: Sales director  
Antonius Lanfermann with the customer



STS building in Lünen, Germany



every ten years – essentially due to the rapid developments in the field of electronics/software. Each machine that we supply therefore comes back to us once. However, this is meant in the figurative sense, as we carry out the measures required at the facilities on site.

**Bulletin:** One current contract is the MST for the Russian MST Baltiyskaya, which you have already been able to dispatch. How did this project go?

**Antonius Lanfermann:** As planned on balance; the standard execution period is 13 to 15 months. We also achieved this for the machine for the nuclear power plant at the Baltiysk site in Russia. After the successful acceptance test in August 2015 we were able to dispatch the shipment to Russia in September.

**Bulletin:** Multiple-stud tensioner 2015plus: What are the targets for you and your team for the near future?

**Bernd-Dieter Wessolowski:** We see potential for optimization in the near future in the field of hydraulics and for the measurement systems, but also in the field of thread cleaning systems. Furthermore, as before we are focusing on observing and analyzing our market very closely so that we can respond to new challenges.



During the plant's acceptance test

# Driven by Perfection: Siempelkamp Service = 24 hours a day / 7 days a week!

Siempelkamp Logistics & Service GmbH (SLS), operating since 2010 as an independent company in the market, is going through a comprehensive expansion phase. In an interview with Bulletin, Thomas Dahmen and Stefan Wissing, Managing Directors of this Siempelkamp subsidiary, summarize the current development of this service specialist and the continuous effort regarding the service standard in a nutshell.

by Dr. Stephan Niggeschmidt



SLS management Stefan Wissing (left) and Thomas Dahmen

**Bulletin:** “Driven by perfection” – this is a very confident statement. What does SLS do to meet this demand on itself and its services?

**Stefan Wissing:** We must operate to benefit our international customers. To do that, SLS has to continuously develop and has to remain up-to-date. This development not only means that over time we have assumed and will continue to assume new challenges. It also means that we

have received and will continue to receive and pick up suggestions and ideas for new service products from our customers. This process is ongoing.

**Thomas Dahmen:** The requirements and expectations of our customers on SLS have significantly changed over the last few years. The manufacturers expect minimum reaction times from us as a spare parts specialist. Today they are satisfied if we

react to their request within 24 hours, tomorrow it will have to be within 12 hours and eventually within one hour. That is why we have to offer our remote service 24 hours a day and 7 days a week and have to further optimize our spare parts service accordingly. This is the future.

**Bulletin:** This means that SLS must reinvent itself constantly. What consequences does this continuous develop-



ment have? Specifically, how do SLS customers benefit from it?

**Stefan Wissing:** We are in the midst of a learning process: Our experiences with industries such as the automobile industry, which has a higher service demand than the wood industry, are applied to our customers in the wood industry. The automobile industry will say: "You cannot deliver within 24 hours? Then you are no longer our supplier." And that's the end of it. If excellent service is possible for such industries, then it is also possible for the manufacturers of wood-based materials.

**Thomas Dahmen:** The essential prerequisite here is optimal logistics. The requirements for such are ideal in Bad Kreuznach. This location provides a direct connection to the highway (Autobahn) and is in close proximity to the Frankfurt airport. With new storage buildings planned at this location, we will once again significantly raise our quality standards in terms of service and logistics. If SLS can deliver quickly and at market-appropriate prices, our customers might even be able to do without their own storage facilities in the future.

**Bulletin:** What other measures are on your agenda? What new service products will SLS customers be able to count on in the future?

**Stefan Wissing:** Currently, we are orientating the personnel structure of SLS towards the future. Since April 1, we have been implementing a new setup which provides our service with more drive and

will help to establish us more firmly as a partner within the Siempelkamp Group and also with Siempelkamp customers.

**Thomas Dahmen:** An important step in this direction was the introduction of our barcode system which is absolutely unique in our industry. The machine engineering industry cannot yet be compared to Amazon, as an example, where you order goods today, receive them tomorrow and in between you are able to check the status of and track the delivery. However, such traceability of the complete service chain, ranging from the order to the installation, is currently a big topic for us. This is what we want to achieve.

**Stefan Wissing:** What we have in mind is the complete traceability of each individual part that we supply to our customers. Where, in the logistics chain, is the part right now? Has it already been ordered, has it been delivered, has it been installed? For the amount of parts that our machines and plants are made of, this system is ideally suited to keep track of the current condition. And not just that. Such a system would furthermore allow the monitoring of the installation process at the construction site. What progress are we making? Are the parts installed in the correct order? Is everything installed completely?

**Bulletin:** And with that we come to the buzzword of "Industry 4.0" and the computerization of manufacturing technology. Is Siempelkamp service a major player here?

**Thomas Dahmen:** To answer this question, I want to once again reference the comparison to the automobile industry. Here, nowadays, it goes as follows: lift the hood, hook up the test plug, and two minutes later you have your result. This is how it is also going to be in machine and plant engineering in the future. One day someone will walk along the press and will receive on a terminal device, via RFID technology (Radio Frequency Identification), from the gearbox the message that it needs to be maintained. I believe until then five to ten years will pass. However, here at SLS we are on track to implement this technology to the benefit of our customers.

**Stefan Wissing:** Even though RFID is not a topic yet, our barcode system as a maintenance system certainly is. If the barcode is appropriately integrated into the maintenance management of the customer, it provides optimal control functions for our customers. They receive a detailed overview of which maintenance or service measures are required. I am convinced that we can develop so much more from this barcode system.

**Thomas Dahmen:** By the way, for a machine and plant engineering company of this size, this is completely new territory. However, despite an impressive team of 120 employees, SLS is still small and flexible enough to effectively press ahead with such developments. This, once more, emphasizes our claim of "Driven by perfection".



Service team in the field



International service meeting



# Siempelkamp

G. Siempelkamp GmbH & Co. KG

## Machinery and Plants



**Siempelkamp**

Maschinen- und Anlagenbau

Siempelkamp Maschinen- und Anlagenbau GmbH



**ATR**

ATR Industrie-Elektronik GmbH



**Siempelkamp**

Maschinenfabrik

Siempelkamp Maschinenfabrik GmbH



Büttner Energie- und Trocknungstechnik GmbH



**Siempelkamp**

Logistics & Service

Siempelkamp Logistics & Service GmbH



CMC S.r.l.



**Siempelkamp**

Siempelkamp CZ s. r. o.



Hombak Maschinen- und Anlagenbau GmbH



**Siempelkamp**

Siempelkamp (Wuxi) Machinery Manufacturing Co. Ltd.



Sicoplan N.V.



Ventilatoren – Apparatebau



**Siempelkamp**

Siempelkamp (Qingdao) Machinery & Equipment Co. Ltd.



Strothmann Machines & Handling GmbH

## Sales companies/Representatives

### Australia

Siempelkamp Pty Ltd.

### Russia

Siempelkamp Moscow

### Brazil

Siempelkamp do Brasil Ltda.

### Belarus

Siempelkamp BEL

### China

Siempelkamp (Wuxi) Machinery Manufacturing Ltd., Peking

### Singapore

Siempelkamp Pte Ltd.

### France

Siempelkamp France Sarl

### Spain

Siempelkamp Barcelona

### India

Siempelkamp India Pvt.Ltd.

### Turkey

Siempelkamp Istanbul

### USA

Siempelkamp L.P.

## Foundry



**Siempelkamp**

Giesserei

Siempelkamp Giesserei GmbH



**Siempelkamp**

Giesserei Service

Siempelkamp Giesserei Service GmbH

## Engineering and Service



**Siempelkamp**

Ingenieur und Service

Siempelkamp Ingenieur und Service 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.

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)