



**Siempelkamp**

Issue 01 | 2011

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**Special lifting devices for nuclear technology:** Siempelkamp utilizes synergy potentials  
**Siempelkamp's OSB benchmarks:** From multi-daylight press to continuous production  
**Mickey Mouse meets Siempelkamp:** Special crane systems by Siempelkamp Krantechnik

# bulletin

The Siempelkamp Magazine

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

## Dear Readers:

This edition of Bulletin provides many perspectives which turn our projects into meaningful stories. However, they all have one common thread.

On the one hand it would seem likely to put the focus on the markets and nations with an increased demand for Siempelkamp products. The countries that are most willing to invest include Russia, the Republic of Belarus, and the Ukraine (see pages 4–9). Our customers benefit from a growing relevance of the wood-based products industry in these countries. In Russia, for example, the government has realized that a country's economy cannot be reduced to oil and gas production. In these days the buzz word here is 'diversification'.

On the other hand the focus of this Bulletin could be directed toward our principle 'all from one source'. The machine and plant business unit increasingly supplies complete plants, for example to Metro in Thailand (see page 28). We have clearly expanded our vertical range of manufacture with this competence. The buzz word here is 'vertical diversification'.

Thirdly, our articles illustrate from how many different industrial sectors all Siempelkamp competence areas are requested. The sectors that use our products are far-ranging. They include, but are not limited to, the wood-based panel industry, the metal forming industry, and other growth areas including aviation, energy generation, transport, and drinking water supply (see pages 60–63). The buzz word here is 'lateral diversification'.

Whoever concentrates on one core area of business, also commits himself to this core area's life and business cycle. We are concentrating on core competences instead. In close dialog with you, our customers, new application areas become permanently visible for which we can offer the appropriate products and services!

With kind regards and best wishes from Krefeld

A handwritten signature in blue ink, appearing to read 'H. Fechner', written in a cursive style.

Dr.-Ing. Hans W. Fechner

The blessing of the foundation stone at the OSB plant Kalevala



Siempelkamp presses and press lines for the Russian Federation:

# The product is only as good as the equipment



Traditional timber construction

The business relationships between Siempelkamp and our Russian customers have a historic status: Siempelkamp already supplied press lines for the plywood industry to tsarist Russia and later to the former Soviet Union. Thanks to the increasing relevance of the local wood-based products industry and the awareness that a Siempelkamp plant stands for quality, the Russian Federation has become one of the most significant customer markets for the Krefeld company.

By Hans-Joachim Galinski

Siempelkamp's ties to the Eastern European countries withstood two world wars. Until 1939 Russia was one of Siempelkamp's most important customers for plywood presses and production lines.

Shortly after World War II, Siempelkamp's competence became needed again in the East. During USSR times special presses for the aerospace industry were in great demand. The aerospace company Khrunichev in Moscow produced on Siempelkamp

presses components for the proton space rockets and structural parts for the Russian space station. Over the years, Siempelkamp also supplied numerous presses for the production of parts used in MiG fighters and Tupolev aircrafts.

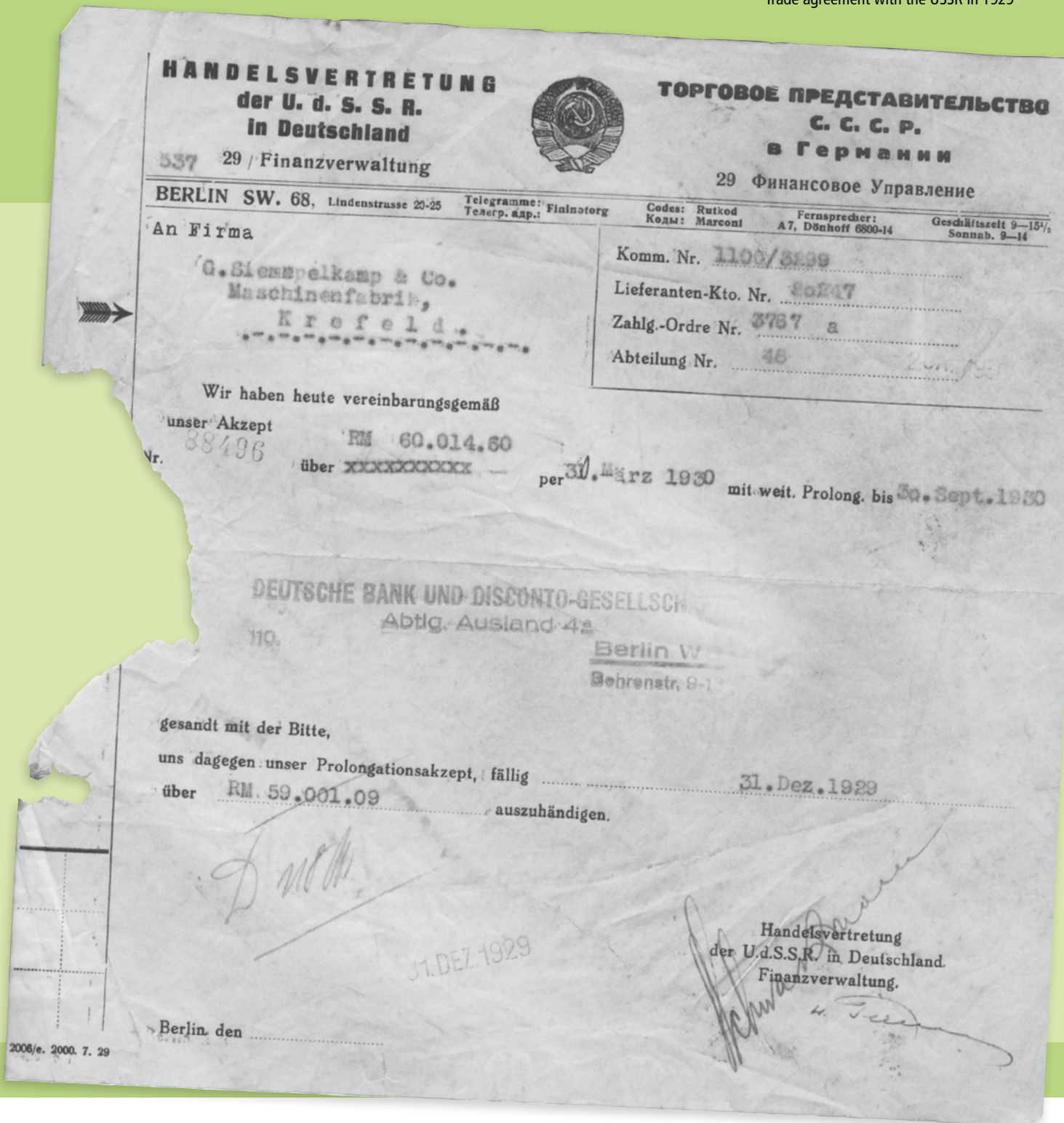
Today Russia, the Republic of Belarus, and the Ukraine advance the business in Eastern Europe for the Krefeld company. The constantly increasing gross domestic product, which achieved a record high in 2007 with an 8.1 percent increase, has played

an important role. The worldwide economic crisis hit the Russian trade balance especially hard because its success is based primarily on the sales of natural gas and oil.

Nevertheless, clear signs of a recovery are currently noted. Especially German companies with over 6,000 representations there have become Russia's most sought-after trade partners and suppliers to the Russian economy. Next to China and Singapore, Russia is regarded as the most popular target country for investments worldwide.

Another big influence for the Eastern European business is the increasingly important role that the wood-based materials industry plays in Russia: "The Russian government has realized that Russia's economy cannot be reduced to just the production of natural oil and gas but that an actual value creation has to take place in the country. Therefore, this dependency is to be reduced with suitable measures," describes Hans-Joachim Galinski, Siempelkamp sales manager for Eastern Europe (subject-related interview on page 8).

Trade agreement with the USSR in 1929





ContiRoll® infeed particleboard production



Siempelkamp short-cycle presses at Kronospan, Scharija

### Wood-based materials industry: greater added value in the country – greater strength for the middle class

A whole bundle of measures is to reach the wood industry and is aimed to quadruple the wood production within a decade, increase the added value in the country, and strengthen the middle class. Part of these measures includes an exemption of import duties on wood-processing machines, punitive tariffs for the export of logs, support measures for construction projects, as well as clearly reduced interest rates for loans. Due to these measures, the willingness to invest has significantly increased.

Another driving force for the Russian wood-based materials industry: Compared to the inhabitants of the other BRIC countries – Brazil, India, China – the Russian citizens have the highest average income. Consequently, Russia benefits from a purchasing power that bestows the consumer industry with good prospects. The demand for furniture is constantly rising. Furthermore, the building of homes is in full swing.

### Russia's business climate: better than ever

Optimism thus prevails with the German companies which invest in Russia: According to the result of a Russia analysis published by the Institute for Eastern European Studies of the Freie Universität Berlin in January 2011, more than 63 percent of the companies surveyed state an improvement in the business climate in the Russian Federation during 2010. In 2009 only 12 percent of the companies stated an improvement. When asked about the advantages of the Russian market, most survey participants emphasized the good growth and profit opportunities, the consumer demand, and a well-educated workforce. Next to reduced taxes on the Russian market, cost structures and special economic zones were regarded as an advantage for the investment location.

A product is only as good as the equipment it is produced on. Customers from the times of the Tsarist Empire to the Russian Federation have trusted in Siempelkamp to reliably increase their market position, even under partly difficult economical and local general conditions. In this respect Siempelkamp has, as a technology supplier, achieved an excellent reputation in one of the world's most important future markets!

#### Siempelkamp in the CIS states/Russian Federation since 1990

ContiRoll®	17
Multi-daylight presses	1
Short-cycle presses	18
Dryers	22
Modifications	4

#### Complete plants sold since 2007

MDF	4
Particleboard	4
OSB	1
Insulation board	1

## Art Progress and Ugra Plit: Two premières, two times "first board" !

Twice in the last few months a Siempelkamp project in Eastern Europe reached the final stage with the pressing of the "first board". At the end of October 2010 this event took place for Ugra Plit in Russia, at the end of February 2011 for the Ukrainian company Art Progress. Both plants represent a première.

For Ugra Plit at the Khanty Mansiysk location Siempelkamp contributed to building the first modern particleboard production plant in Siberia. The plant was built in an area of Russia that has one of the highest wood resources. 54 percent of the region that covers an area of 530,000 km<sup>2</sup> is covered in forests. The state-run company decided to go ahead with the project to revive the local wood-based materials industry beyond the gas and oil production in order to increase the added value in the country.

The Siempelkamp scope of supply for Ugra Plit included a 7'x18.5m ContiRoll® press, the planning and engineering, a thermal energy plant, a dryer, a diagonal saw and the automation. The plant produces particleboard with a thickness ranging from 6 to 40mm. Initially designed for a daily capacity of 500m<sup>3</sup>, the plant can be modified to increase the daily capacity to 800m<sup>3</sup>. Work has already started on a 10m extension of the ContiRoll® press associated with the capacity increase.

A challenge for this project are the extreme climatic conditions: For seven months wintry conditions prevail in the western Siberian region with temperatures dipping to minus 40°C. The average temperatures in July, the warmest month of the year, reach highs between only 16 and 19°C. Nevertheless, Ugra Plit now has a reliable particleboard production and provides new and qualitative jobs for the region.

### First MDF plant and a short-cycle press for the Ukraine

A new Siempelkamp plant for Art Progress in the Ukraine also recently pressed its "first board". The newcomer in the wood-based materials industry ordered for the Korosten location a complete plant with a 9'x35.4m ContiRoll® which can be extended to 40.4m. The order volume also includes the planning and engineering, an energy plant, a dryer, a cooling and stacking line, a finishing line, storage technology and a packing line.

As the first MDF plant in the Ukraine, this plant also represents another first. The projected capacity amounts to 750m<sup>3</sup> per day, that is, 250,000m<sup>3</sup> per year. The board thickness ranges from 3 to 40mm.



Ugra Plit, particle dryer



Ugra Plit, ContiRoll® press



Art Progress, the 'first board'



Art Progress, forming and press line



Art Progress, MDF dryer

# “Made in Krefeld” meets fertile soil in the Russian Federation!



Increased private consumption, GDP growth, and the trust in German machine and plant competence are important drivers for the successful business of German companies in Eastern Europe. Without a long-term individual commitment, a company's successful positioning in Eastern Europe is lacking the right profile. For many years Hans-Joachim Galinski, sales manager for Eastern Europe, has had this responsibility at Siempelkamp.

## **Mr. Galinski, what makes the market of the Russian Federation so interesting for Siempelkamp?**

With at least 50 percent of the world's total forest, Russia has the world's largest wood resources. Even though two thirds of the country is covered in forests, only about 30 percent is harvested. A large part of this percentage is exported as log wood without any further added value. More than one third of all wood products sold in the country have to be imported. While the USA makes \$270 billion with wood products, Russia makes only \$19 billion. The wood-based material consumption of 43 m<sup>3</sup> per 1,000 inhabitants in a year corresponds to only approx. one third of the consumption in Western Europe and to only one fifth of the American market. This documents the backlog demand existing in the Eastern European countries.

## **What products does this backlog demand focus on?**

Especially for OSB we have noticed a strong upward trend. Due to measures by the Russian state supporting home construction, building activities have increased noticeably. Currently, we are building in Karelia, close to Petrozavodsk, with our customer Kalevala the first OSB plant on Russian soil. Additional plants will follow. Many OSB projects are even developed for Siberia. The current yearly turnover amounts to 400,000 to 450,000 m<sup>3</sup>. According to a statement Egger sales manager Reinhard Hätti made in “HK Holz- und Kunststoffverarbeitung” magazine, wood-based material producers expect this turnover to double in the next three years.

## **Which role will particleboard and MDF play in the future?**

Two thirds of the Russian particleboard plants have not survived the fall of the Soviet Union. Nevertheless, particleboard will maintain its central role for the Russian furniture industry. New investment projects will bring this product forward again. MDF was not popular prior to the fall of the Soviet Union. If anything, wet fiberboard was produced. Today MDF is well-established and its demand is satisfied by the latest investments in Tomsk, Igorevka and Apsheronk. Since we have observed an increasing acceptance for MDF in Russia, we expect, just as in Western Europe, a yearly growth in the two-digit range. Therefore, we expect new investments starting as early as 2013.

## **How did the transition from controlled economy to free-market economy take place in the wood-based materials industry?**

After the fall and dissolution of the Soviet Union, economically weak and technically outdated plants closed quickly. The market experienced an impetus as new companies, partly industry newcomers, revived the wood-based materials industry. To date this has happened mainly with an unusual commitment of the private sector from within the country but often from Western European companies.

## **Which wood-based material producers are in leading positions today?**

Russian as well as foreign manufacturers share the market. Strong Russian companies manufacture in the north-west Russian Sheksna, in Priozersk at Lake Lagoda, UPG in Zeshart and Perm, as well as Russian Laminate in Sergiyev Posad close to Moscow, and in Igorevka, to name a few. However, even beyond the Ural mountains there are well-positioned Russian companies today with large potential for growth.





Hans-Joachim Galinski

As strong international wood-based material manufacturers, the Kronospan Schweiz AG and its mother company, the Swiss Krono Group, are present in Russia. Kronospan Russia produces particle-board, MDF, and HDF at the Egorievsk location close to Moscow. Even the building supplier Pflaiderer is present close to Novgorod with an MDF/HDF plant. The Egger-Group opened its first particle-board plant in Shuya in 2006.

**To what extent was Siempelkamp able to place its products with these big players?**

At all earlier mentioned wood-based material manufacturers, Siempelkamp presses and other equipment are operating. For us this is a very pleasing result!

**How close is Siempelkamp to these customers?**

For many years we have taken account of the fact that the Russian market is opening up and developing. Even in difficult times Siempelkamp was represented with a local office, first just with a representative office, today with a central sales and service company in the center of Moscow led by Heinrich Quanz, a prehistoric rock of the wood-based materials industry. Together with our distribution partner Minto Möbel Handels GmbH in Cologne, represented by Mikhail Kostjuschkin and Konstantin Putinzev, we permanently develop interesting new projects. Our motto, "Invest in lean times and profit in boom times," meanwhile goes for all countries of the Russian Federation. Presently, production plants in the Ukraine, the Republic of Belarus, but also in the South of Russia and in the distant Khanty Mansiysk are developed. All the more important is our representative office in Moscow, firstly, in order to meet the local demand and secondly, in order to satisfy the growing need for service of our customers.

**How long-term do you rate the chances of a machine and plant manufacturer for the wood-based material industry in Russia?**

From a present day perspective – I regard the chances as long-term! To begin with, compared to Western Europe, Russian consumers have a strong backlog demand. Furthermore, we come up against an enormous potential for modernization, a high need for highly technological goods and appropriate know-how at the producers. "Made in Germany" is still an important and unique selling point. With many years of well-founded experience with the Russian market and the needed products, the Siempelkamp company especially benefits in this respect.

**As sales manager for Eastern Europe you have been familiar with the Eastern European market for 20 years. What is the biggest challenge of your work?**

For me one of the biggest challenges for a lasting cooperation is harmonizing the Western way of thinking and acting with the "Russian soul". Against this background, we build smaller and often bigger bridges every day which shall help to reduce obstacles. More than 70 years ago, Otto Wolff said: "Germany has to open up the Russian market". The emphasis here was on "open up". In my opinion, the key to success, today more than ever, lies in the conveying of know-how and the training of Russian skilled personnel in Germany and Western Europe. By the way, this is the way Chinese companies have handled it consistently for more than four decades.

# The process chain is everything: New methods for switchgear cabinet construction

In switchgear cabinet construction the entire system is more than the sum of the individual component parts. It is not important whether switchgears with bus systems, combinations of different switchgears or ready-assembled mounting plates are used. Instead it is important to interlock design and production in order to control the process from the inquiry to the finished and approved switchgear cabinet. How can this interconnectedness be implemented so that switchgear cabinets can be produced economically and technically sound? ATR Industrie-Elektronik GmbH and Siempelkamp Maschinen- und Anlagenbau have developed a sophisticated process chain.

By Timo Amels





... at the Krefeld plant

To what extent are Siempelkamp and ATR Industrie-Elektronik GmbH connected with one another? ATR produces all switchgear cabinets for Siempelkamp Maschinen- und Anlagenbau and is therefore involved in all plant projects. The interface partner within the Siempelkamp business unit Machine and Plant Engineering is the division for Automation Technology. This division creates the electrical documentation that is exactly tailored to the production processes of ATR.

Both companies organize the process chain from the electrical design to the finished and tested switchgear cabinets as if all processes were handled in one and the same company. The benefit for the plant operator: The know-how of the different companies complement one another optimally because these are two specialized partners, one from the area of switchgear cabinet construction and the other from the area of machine and plant engineering, that are working together on one solution. All processes and the interface management are designed in such way that the equipment arrives as one at the customer site.

“With this strategy we have the objective to differentiate ourselves from the large competition in switchgear cabinet construction. The advantage for the customer: We meet the customer demand by producing switchgear cabinets that are technically sound and

inexpensive at the same time because the close integration of design and production is an enormous benefit,” explains Timo Amels, Managing Director ATR Industrie-Elektronik GmbH.

Werner Schischkowski, Manager of Siempelkamp’s division for Automation Technology, adds: “Unique selling points in switchgear cabinet construction require vision. Everything that can be manufactured can be used in some way. The search for considerations and alternatives to the conventional switchgear cabinet construction will find its limits when one starts thinking about an optimal mechanical, electrical, and thermal design which will cover most of the common applications in machine and plant engineering. A head start against the competition can be most effectively achieved with an optimally controlled process chain. This is exactly the point where we start. We use the opportunities offered by our company structure and network!”

#### **Process chain efficiency: Foresighted thinking is everything**

What is the process chain procedure like in practice? From the beginning on Siempelkamp and ATR rely on foresighted thinking. A significant part of standard switchgear assemblies is produced for stock and is thus available for pre-wiring on time. This ensures optimal lapses of time.



Handicraft



Keeping track of everything

Before production start, the scope of supply and services as well as the implementing regulations are discussed in order to guarantee transparency without friction losses from the beginning on. Afterwards, production is precisely informed about scope and details of the projects. Even the time guidelines for the production are defined.

Afterwards ATR carries out the material planning for long-term projects. The ordering of material takes place via the interface of the machine supplier in ATR's ERP system. A cumbersome exchange of documents is omitted. Component parts are directly ordered from the supplier without paper handling. Switchgears and cabinet plates arrive pre-assembled to whatever degree needed. Terminal blocks are ordered pre-assembled via graphics and specifications or are assembled during the production process.

#### Enclosure layout: putting system into everything

Enclosure layout plans are developed by Siempelkamp's electrical design department. New constructional designs are discussed and optimized with ATR. The drilling data for the mounting panels are directly transferred via the CAE system to one of the

three ATR drilling machines. Prior to equipping the mounting panels, all necessary component parts are assigned to the operations. Only the required parts are available, completely labeled and pre-assembled. Cable ducts and mounting rails are transferred from the CAE system to NC-Cut. The cut takes place semi-automatically.

Conventionally, the switchgears are exclusively wired by trained electricians. Here, the circuit diagrams that are optimized to this process are primarily used. For terminal boxes and consoles, the teams are using special wiring lists that tremendously shorten the time needed for wiring. It goes without saying that pre-assembled cables are also used. Another important process step ensuring quality and quick processes: During production and wiring work respectively, specific tests are performed which will shorten the final functional test.

#### On the test bench

According to test specifications and inspection plan, all switchgear cabinets are tested with regard to their functionality. The test concept is designed in such manner that all drives are preset and equipped with the respective set of parameters. "Our motto is:



Timing

We will preset and test as much as possible but as little as necessary," says Timo Amels.

Siempelkamp machines and plants are king-size and therefore cannot be tested and started up in the factory. "The more important it is to be prepared for the start-up at the customer's site with tested switchgear cabinets and oftentimes with the associated plant components. This will shorten the start-up times tremendously," explains Werner Schischkowski. With competent inspections, ATR makes a substantial contribution in this area.

This process chain demonstrates: The future of switchgear cabinet construction is determined not only by technical skills but mainly by the competence and know-how needed to control the involved processes. "We are proving this fact daily from the enterprise resource management to the tested switchgear cabinet," say Werner Schischkowski and Timo Amels.

### ATR Industrie-Elektronik GmbH: Profile and portfolio

- 1970: Establishment of ATR as a company in the fields of development and production of automation plants in Viersen, Germany
- 1987 Merger of Industrie-Elektronik (company name since 1980) and ATR Antriebs- und Regeltechnik to become ATR Industrie-Elektronik GmbH and, as a result, the integration of measurement and control components needed for drive and automation solutions
- Since 1988 ATR Industrie-Elektronik GmbH has been a company of the Siempelkamp Group.
- Core competence: production of switchgears as well as development and construction of measurement and control electronics
- Quality management: in 1996 certification to DIN EN ISO 9001
- Quality standard: "For us, quality is not only related to product quality. Qualified consulting, short delivery times and flexibility also take a crucial role in our concept of quality!"
- Our production is complying with DIN VDE / DIN EN standards. With respect to the engineering of switchgears we also produce in line with international standards such as UL or CSA. The UL / cUL authorization may be exercised through our own staff.

Insulation board production according to Siempelkamp's dry-process:

# New process technology with great benefits for the environment

By Dr. Karsten Lempfer



**In insulation board production, many issues are important: How can the growing expectations of energy efficiency be implemented? Which process technologies ensure the greatest possible bundle of advantages? The production method around the ContiTherm® principle by Siempelkamp is the solution.**

The energy demand for room heating and water heating takes up a large share of the total primary energy consumption, in Germany it amounts to approx. 35 percent. This is a significant share especially in view of the fact that the costs for primary energy are constantly increasing in many countries, something that will not change due to limited resources.

Since the availability of fossil energy sources is limited, it is becoming increasingly urgent to reduce the primary energy consumption through better heat insulation of buildings. Energy efficiency standards are discussed and implemented in many industrial nations. Within the scope of the 2009 Energy Conservations Regulation, German building regulations determined that the energy consumption for heating and hot water supply is to be decreased by 30 percent. Basically, this is to be implemented by improving building insulations in new constructions as well as during renovations of old buildings.

The implementation of this new 2009 regulation brings about an increased need for thermal insulating materials from which also the manufacturers of wood-fiber insulation boards will benefit. Wood-fiber insulation boards are, in regard to the entire thermal insulation market in Germany, a niche product. They secured

their market existence by being a "green product" in the 1960s and 1970s. However, soon technical advantages of the boards increasingly became the focus which manifested themselves in such keywords as "summer thermal insulation," "a diffusion-permeable construction," and "soundproofing".

With the introduction of the environmental product declaration (EPD) there is now an opportunity to concentrate more on ecological aspects again. At the end of their life cycle, wood-fiber insulation boards are considered superior to insulation material made of mineral wool since they can be burned without releasing toxic chemicals. There is not much imagination needed to know that, on the basis of the EPD, limitations can be expected on the maximum amount of non-renewable primary energy that will be allowed in a building.

The capacity utilization of the wood-fiber insulation sector is accordingly good and reflects double-digit yearly growth rates. New investments are planned. Those who, like Siempelkamp, come up with a convincing equipment and process concept for the production of wood-fiber insulation board ensure the interest of producers worldwide. Companies such as Gutex in Germany or Mozyr DOK in the Republic of Belarus bought the Siempelkamp concept.

Just recently, in the fall of 2010, the company from the Republic of Belarus ordered a complete plant for the production of wood-fiber insulation board in Krefeld.

#### **Innovative and energy-efficient: Siempelkamp's dry-process with ContiTherm®**

Several years ago Siempelkamp developed a dry-process for the production of wood-fiber insulation board in order to avoid the disadvantages of the traditional wet-process used in Europe since 1932. The entire water management for the wet-process and the complex drying of the boards could be omitted. Thus, it was possible to provide customers with an attractive benefits package including, for example, reducing the energy consumption by more than 30 percent, lowering the board density, and producing homogeneous single-ply insulation boards in up to 240 mm thickness.

What makes Siempelkamp's dry manufacturing process so unique? A distinguishing feature is the use of a continuous calibration and hardening device based on the pre-heating unit ContiTherm®. Here, the pre-pressed fiber mat is heated by blowing a steam-air mixture with an exactly controlled dew point through it. In doing so, the steam of the mixture condenses and heats the fibers rapidly to the

dew point temperature while, according to the process, the desired equilibrium moisture is kept.

A specially developed very reactive bonding agent cures within a short time after heating the board. This curing time is independent from the board thickness, once heated a 240 mm board cures just as quickly as a 20 mm board. This is a significant advantage during the production of insulating boards that are increasingly needed in larger thicknesses. After calibration and curing the board is cooled by suctioning ambient air from top to bottom through the board. Finally, the endless board is cut by a diagonal saw to the required length, if necessary, provided with a tongue and a groove, stacked and packaged.

#### Thick fiber insulation boards produced for the first time with a continuous dry-process

Back in 2004, the insulating board manufacturer Gutex decided to buy the first plant of the new type. The family-run company located in Waldshut-Tiengen sets standards in regard to innovative and environmentally-friendly production technology.

The decision to buy this plant was not least made due to the fact that the new principle

was demonstrated to the customer at the Siempelkamp test facility. On a 4' (1200 mm) pilot plant, the newly developed dry-process was simulated for Gutex. The new method of spraying dry fibers with resin was also tested. For the first time the dried fibers were sprayed with resin inside a chute. The flow conditions inside the chute prevent caking of the blended fibers. The calibration and curing of the mat inside an adapted preheater is an innovation in the industry.

Numerous test runs under real conditions finally led to a breakthrough. The resin chute from the research and development center in Krefeld and a second identical chute were integrated into the new Gutex plant. For the Gutex team the handling of the new technology was a challenge that was gladly taken upon. "In many areas we have broken new ground, such as when adjusting the moisture content of the fibers, the dew point inside the preheater or the pressure. Our people understand the product very well and the cooperation with Siempelkamp was and still is very good," summarizes Claudio Thoma, Managing Director for Gutex.

In February 2006 the plant started operation and has been producing at full capacity ever since. "The plant has the agreed capacity; board thickness and

strength can be controlled and the quality is considered as very high by our customers. Below the line I can say that the new method kept the promise that Siempelkamp made," says Claudio Thoma. The bottom line is that Siempelkamp has made the industrial production of thick fiber insulating boards in a continuous dry-process possible with this plant and has set a milestone in regard to board quality and process costs. Attention is also paid to the environmental tolerance when using the new method. All wood-fiber insulating boards produced by Gutex with the innovative dry-process pass the strict requirements of the natureplus®-certification. The natureplus® marking, an international quality designation for ecological home and construction products, indicates products that have been tested for potential health hazards, environmental impact and function!

#### Flexible wood-fiber insulating boards with two-component fibers

Next to rigid wood-fiber insulating boards based on a PU resin-based binding agent, flexible boards are increasingly offered which are especially used as insulation between rafters in loft conversions and between wooden posts. They offer the advantage of being flexible enough to accommodate normal construction



Chip feed



Blending system for dry fibers





Test set-up in the technical center, Krefeld



Mat forming machine



View of the forming belt with ContiTherm®



ContiTherm® calibrating press



In the control room

tolerances. Furthermore, they have a sufficient clamping effect in order to avoid falling out during the installation process.

Flexible wood-fiber insulating boards are produced without resin by using two-component binding fibers. These consist of a high-temperature melting core and a low-temperature melting shell. A mixture of dry wood fibers and binding fibers is formed into a mat and heated. The shell of the binding fibers starts melting and thus becomes the binding agent. Finally, the product is cooled to secure the bonding. A matrix of synthetic fibers and their high-melting cores respectively provide the necessary flexibility in the finished board.

Conventionally binding fibers with a shell melting point of approx. 130°C are used. The mat is heated by means of hot air (approx. 160°C). As known, hot air is a relatively bad heat carrier. The necessary amounts of air are large, so are the heat losses through radiation. When using wood fibers the fact that they have to be dry before a temperature of 100°C can be reached makes this process more difficult.

### **Faster and more energy-efficient due to two-component fibers and ContiTherm®**

In order to meet this challenge, Siempelkamp has taken the dry-process another step forward. Together with EMS-Chemie AG, Switzerland, Siempelkamp has developed a two-component fiber that will melt under the conditions provided by ContiTherm® – that is, under 100°C! The advantage is that the mat can be heated with hot air considerably faster and therefore more energy-efficient. At the same time the wood fibers will not be dried during this process. Another side effect: The necessary cooling by sucking ambient air through the mat takes place considerably quicker. This is due to the fact that the water which condensates during the heating process evaporates at least partially and in this way contributes considerably to the cooling.

Siempelkamp has developed a method that mixes the two-component fibers evenly with the wood fibers. As a result, the required amount of the special fibers can be considerably reduced compared to

previously used methods. This development was successfully tested on the 4' (1200 mm) pilot plant for small scale production at the Siempelkamp testing area prior to using it in the field.

### **From rigid to flexible: Insulation board plant for Mozyr DOK**

The special highlight of a recently ordered Siempelkamp plant for insulation boards is its variability: The plant commissioned by Mozyr DOK in the Republic of Belarus is planned to produce rigid, polyurethane boards as well as flexible boards with two-component fibers. Both variants can be produced in different thicknesses, densities, and sizes.

Siempelkamp will supply the complete plant including an energy plant for the heating of the dryer and the process steam supply. The scope of supply also includes the complete machinery for the front-end area including the machines for debarking and chip generation, the silo/bunker with discharge technology, and the conveyors. Furthermore, Siempelkamp will supply the refiner, fiber dryer, blending system for dry



Wood-fiber insulation board manufactured according to the Siempelkamp dry-process



Stack formation of finished boards

fibers, forming line with ContiTherm®, finishing line with profiling section, and the stacking and packing line (from Wolfratshausen). The engineering will be done by Sicoplan. This plant type will be planned completely in 3-D.

The gross board width will amount to a maximum of 2,620 mm so that all popular board sizes can be produced. A width adjustment in the ContiTherm® also contributes to the production of different board sizes. Mozyr DOK, manufacturer of doors, floor coverings, and furniture, will process coniferous woods such as fir and spruce on the new plant. The start-up for the insulation board plant designed for a material throughput of 7 t/h, resulting in a yearly capacity of 380,000 m<sup>3</sup> at an average density, is planned for spring 2012.

## Wood-fiber insulating boards: benefits for producers and customers

- Energy-efficient production
- Green product made of renewable resources
- CO<sub>2</sub>-storage capacity
- Medium term: significant advantages from environmental product declaration
- Wide-ranging usability:
  - Wall paneling
  - Roof insulation
  - Impact sound insulation
- Many application-technological advantages:
  - Protection against heat in the summer
  - Ideal as thermal insulation and for soundproofing applications
  - Moisture resistant
  - Diffusion-permeable construction without moisture barrier
- Trouble-free disposal (thermal recycling)
- Low proportion of additives during dry-process



Homogeneous mixture of two-component binding fibers and wood fibers



3-D rendering of insulation board plant Mozyr DOK

# Special lifting devices for nuclear technology – completely by Siempelkamp: Siempelkamp utilizes synergy potentials

The cross-divisional collaboration offers many advantages: For SNT customers the concept pays off in high-quality production. The cooperation avoids friction losses thanks to an effective interface management and provides direct control. "Furthermore, it ensures to protect the technical production skills and the SNT know-how regarding lifting devices stays in-house," summarizes Michael Szukala, Managing Director of SNT.

## **Nuclear technology + machine and plant engineering = bridging two sectors**

The existing infrastructure provided the best conditions to approach the lifting device business together under the Siempelkamp umbrella. In 2006/2007 the machine and engineering business unit invested largely in its production facility to produce ever higher quality products. This includes the mechanical machining of rollers for ContiRoll® presses and large components from Siempelkamp Foundry, but also components for the nuclear technology unit to meet the highly technical requirements for this sector.

For customers in China and Germany, both Siempelkamp business units are currently providing proof of their bundled competence. For the current new building projects Taishan I and II, Siempelkamp manufactures and supplies reactor pressure vessel (RPV) lifting devices for the RPV closure head. The German nuclear power plants Grafenrheinfeld and Unterweser will each receive a multi-purpose lifting device which will be used for the handling of pressure vessel internals.

## **Lifting devices for the reactor pressure vessel closure heads at Taishan I + II**

In 2009 Siempelkamp Nukleartechnik received the order for the supply of two lifting devices for the new nuclear power plant units I + II in Taishan, China. These lifting devices will carry out the lifting and lowering of the reactor pressure vessel closure head

and represent a protection system for the control rod drives against outside impacts. The lifting devices incorporate the complete cabling for the instrumentation, the control system and the control of the control rod drives. For the removing of the head, the bolted connections in the flange and then plug connections have to be loosened first. Afterwards, the polar crane can transport the head to the storage location. The head weighs about 180t (198 US tons).

Another task of the lifting devices involves the support of the 89 control rod drives sticking out from the pressure vessel head. In the case of an outside impact, a bending or snapping off of the control rod drives has to be prevented because only fully functional control rods allow the shutting down of the reactor. This support becomes possible with four restraint systems connecting the lifting device with the building and a complex honeycomb structure in the central ring of the lifting device supporting the 89 control rod drives. The upper lifting rig, which is part of the lifting device for the closure head, also transports and handles the tensioning device and insulation materials.

## **One multi-purpose lifting device each for the nuclear power plants Grafenrheinfeld and Unterweser**

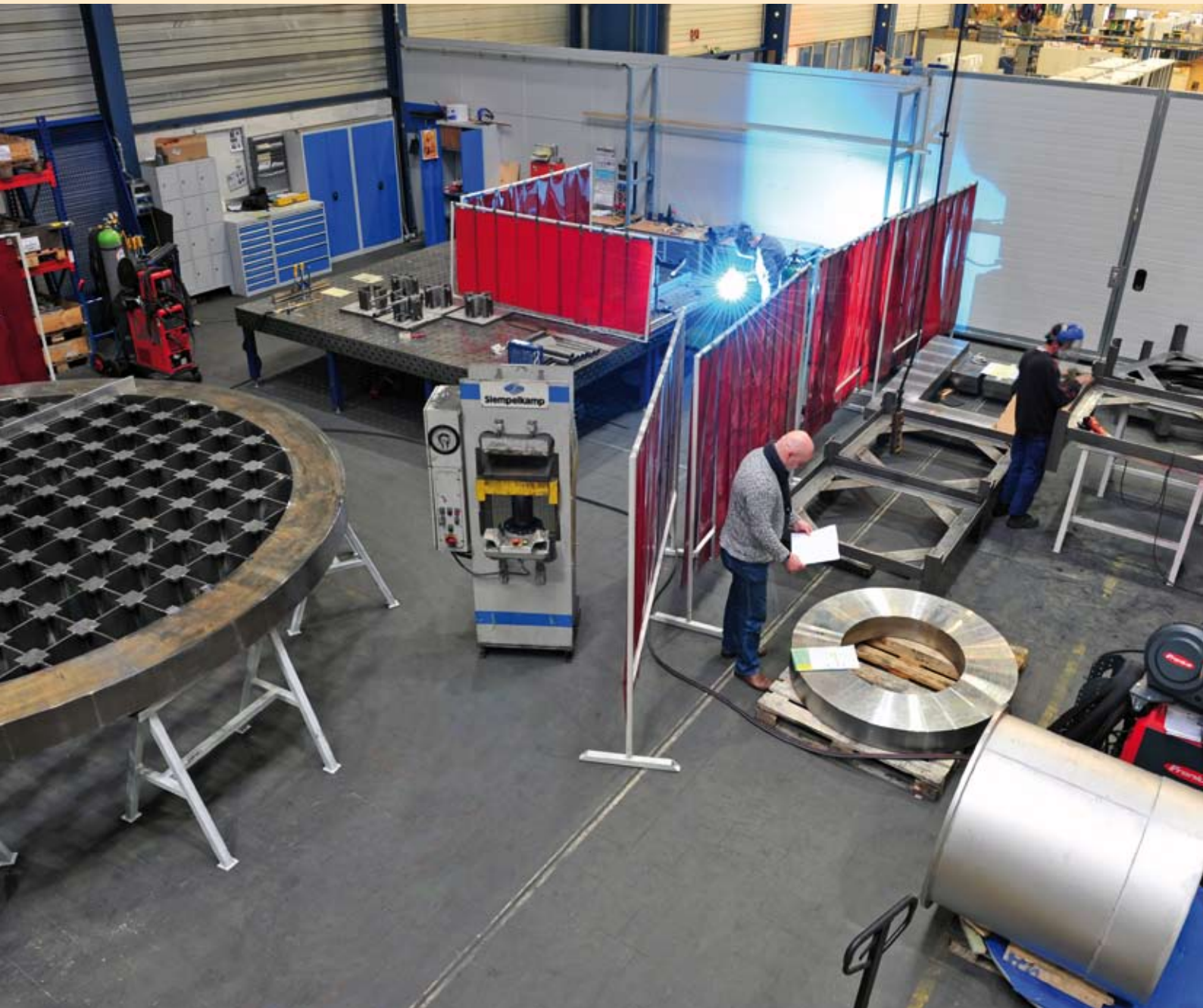
The multi-purpose lifting devices for the nuclear power plants Grafenrheinfeld and Unterweser, which were ordered from Siempelkamp Nukleartechnik in 2010, are lifting devices for the handling of pressure vessel internals. This includes the upper and lower core grid with and without the rods of the control rod drive.

The weight lifting capacity of the lifting device amounts to 50,000 kg (55 US tons) on the suspension bolts raising the upper core grid. 152,000 kg (167 US tons) is the estimated lifting capacity for the gripping tongs for raising the upper and lower core grid.

The multi-purpose lifting device also makes it possible to place the shielding or sealing head on the reactor pressure vessel.

Where and how can synergy effects be best used in order to generate higher added value and to provide customers with integrated competence? The Siempelkamp Group has been asking this question during cross-divisional technology conferences. A recently established collaboration: Siempelkamp Maschinen- und Anlagenbau has been producing lifting devices for Siempelkamp Nukleartechnik (SNT) since October 2010. Projects have already started in Germany and China.

By Jörg Grittmann



View of the production area for lifting devices according to nuclear design rules;  
left: lifting device for the RPV closure head: weldment of the supporting ring



Multi-purpose lifting device during transport of the shielding device

The new multi-purpose lifting devices for the nuclear power plants represent a further development of the generation that was delivered to Biblis in 2000 and to Brokdorf in 2008. The relevant innovation is that these devices are completely made of austenitic steel. In this way, during the reloading process of the fuel elements, these multi-purpose lifting devices can remain in the flooded reactor pool on the storage location for the lifted upper core grid.

The advantage includes significant time savings for the operator during the inspection because complex handling processes become indispensable. For example, the repeated attaching of the upper and lower core grid is omitted, as well as the repeated transport of the reactor internals from the reactor pool to a storage location outside the pool. The fuel element reloading process is once more shortened resulting in cost savings.

#### New collaboration strengthens market position of SNT

Implementing the cross-divisional collaboration between the business units 'machinery and plant engineering' and 'nuclear technology' took place within only a few months. The new production area for lifting devices began its sophisticated work according to the highly technical requirements of the nuclear technology field within only a short time. "Especially the quality of the welded construction for the support ring of the reactor pressure vessel lifting device, which we supply to Taishan, is impressive," says Michael Szukala. "Only a few manufacturers in Europe have the know-how to perform like this!" The delivery of the first lifting device is scheduled for June 2011, the second one will follow eleven months later.

With the new production area for lifting devices, Siempelkamp has expanded and strengthened its market position as a producer and supplier of highly sophisticated components for the nuclear technology.



Lifting device specification FA 3



View from below the welded construction of the support ring for the lifting device for FA 3

Lifting device for reactor pressure vessel closure head for Flamanville 3 on the test bench

### What is a lifting device?

A lifting device is a mechanical support system which can be used for different applications, for stabilization, for mounting or connecting parts. It is used in constructions or as a load suspension device for attaching loads. The lifting devices have manual or automatic coupling systems for the loads that require lifting, some of them even come with an emergency operation system.

### SNT: the specialist for handling nuclear loads

Siempelkamp Nukleartechnik designs, manufactures, and delivers lifting devices for all common reactor types of the latest EPR™ generation as well as for the predecessor types.

For over ten years the company has placed these products successfully in the nuclear technology field. In the beginning of 2011 a lifting device for the reactor pressure vessel closure head and an internal lifting device (for the handling of pressure vessel internals) were delivered for the new building Flamanville 3 in France. With the current orders in China and Germany, SNT together with Siempelkamp Maschinen- und Anlagenbau have started the "Generation Joint Product".

The extensive range of products consists of lifting devices for pressure vessel internals, the pressure vessel closure head and test load systems.

### Services:

- Engineering in-house and third-party design
- Supervision and management of approval processes, i.e., working with surveyors and authorities
- Quality-assured production including material procurement according to the nuclear safety regulations
- Production of all individual components including all inspection steps by the surveyor and customer
- Assembly of components
- Static and dynamic load tests
- Acceptance test, i.e., the joint documentation with the customer and surveyors
- High quality – highest safety



# Titanium forging press for Hunan Goldsky: Speed and precision in

**The acceptance test for a complete Siempelkamp forging press for titanium took place in the Chinese Hunan province in January 2011. Goldsky Titanium Industry Technology Co. ordered the 40/45 MN press in 2008 in order to produce preliminary products for the production of thin titanium sheets. As a plant supplier, Siempelkamp had the best references to play a part in this sophisticated production process!**

By Martin Werner

Siempelkamp supplied the complete open-die forging press including the hydraulics and the electric system, two forging manipulators working synchronously with the press, as well as the tool magazine. This unusually large order volume for the Chinese market demonstrates the trust that Goldsky has in the German plant engineering company. Goldsky will mainly manufacture preliminary products for the production of thin titanium sheets with the new press. These products will be used in the chemical industry, for example, as pipelines and highly-stressed heat exchangers.

Goldsky, led by president Xing Li Xin, is a relatively young company. With the new open-die forging press, the customer completed its plant which, among other machines, already includes a titanium sponge compacting press. The Chinese consortium has positioned itself well in its home country, one of the booming

markets for metal forming. A large potential for corresponding products can be found in the expanding high-tech aircraft and aerospace industries.

**Forging frequency: quick, precise – and with high repeat accuracy**

The main reason Siempelkamp received the order was Siempelkamp's high expertise with titanium forging presses. Because of the tight temperature range, which is necessary when forging titanium, presses with a very short processing time are required.

To stay within the borders of this tight temperature range, the Siempelkamp design engineers increased the forging frequency to up to 100 strokes per minute with an optimized press design and optimized control concept for the hydraulics and the electrical engineering. The high forging frequency not only results in shorter pro-



Manipulator holding the blank

cessing times but it also applies thermal energy to the workpiece which remains longer in the correct temperature range. The result are near-net-shape and almost tension-free parts with very uniform properties.

The forging frequency was also increased by positioning the forge valve and the pre-filling tank on top of the press. This results in considerably shorter distances of the hydraulic oil into the press and consequently, in less oil volume to be compressed and decompressed with each stroke within the system.

Next to speed, high precision and repeat accuracy are on top of the requirement list: "Titanium is a very expensive material that has to be handled with care. It is especially beneficial to the customer when the product requires as little machining as possible after the press. The repeat accuracy of our press is +/-1 mm and thus meets



# harmony



湖南湘投金天钛业科技有限公司  
HUNAN XIANGTOU GOLD SKY TITANIUM INDUSTRY TECHNOLOGY CO.,LTD



Loading of the transport trolley



The complete unit: press, 2 manipulators, and the transport trolley

the requirement of the plant operator to a large degree," describes the project manager Dirk Lessner. This precision is supported by the CAF-forging program Forge Master (CAF = computer aided forging), which was also supplied by Siempelkamp. The different forging programs are stored in a database which makes it convenient to handle the application.

## From Baosteel to Goldsky: Success speaks for itself!

With Goldsky, Siempelkamp is supporting a new consortium which puts high demands on the technical know-how as well as the corresponding consulting and engineering services of the plant supplier. The 45 MN open-die forging press that Shanghai Baosteel International has operated since 2004 was a decisive reference for Goldsky. With its 2-column open-die forging press by Siempelkamp,

Baosteel, the largest steel producer in China, has the most up-to-date press of this kind in China.

The magnitude and success of this project emphasize the high quality of Siempelkamp press systems and document the large experience of the Krefeld company in the areas of design, engineering, and installation. "We are the only press manufacturer of which the product spectrum includes the entire process chain of metal forming. Due to our extensive experience with titanium and the individual process steps, Siempelkamp has constantly developed new press concepts which make it possible to optimally use the potentials of the material. Thus, customers not only achieve reliably reproducible material properties but also near net-shape component parts that need little or no subsequent machining," says Samiron Mondal, Director Sales Siempelkamp Maschinen- und Anlagenbau, Metal Forming.

"Praise in advance" in the form of a satisfied customer is not everything. We constantly strive to meet specific customer needs with best solutions. There were three quality factors that Goldsky found especially convincing during the work on the project "open-die forging press": the comprehensive know-how involving the processing and forging of titanium, the adherence to deadlines, and the reliable equipment. Regarding the Goldsky order, Siempelkamp asserted itself against the strong local and international competitors with these quality factors.

## Many tools for an optimal product

The Krefeld teams provided targeted support in many details during the project. A general problem in the Chinese market concerns the supply of assembly tools. "The tools required for the assembly of such a large plant are outside of the normal range," describes Dirk Lessner.



The press during assembly



Forging process



Top: Annealing  
Bottom: Hydraulics

“The high pressure inside the lines requires very thick pipes and therefore special equipment.” Siempelkamp acquired such specific assembly tools for the order. Another benefit resulting from the equipment acquisition: The Siempelkamp production location in Wuxi now stores several containers including tools which can be used for comparable assignments in China.

Siempelkamp’s start-up team also performed reliable work. On the grounds of a complete new development without infrastructure the team provided for a smooth course of action during the assembly of several months and during the production start. The cooperation with the Chinese

customer contributed a great deal to the success of the project. Especially pleasant was the cooperation and communication with Goldsky’s vice general manager Liu Jian Hui and project manager Huang Ming Yan, who were always open for constructive dialog.

Goldsky can not only supply the chemical industry with the high-tech titanium product. Additional potential can develop in future markets such as the medical industry, which can make use of the acid-resistant properties of the material. This could be a future prospect for the Hunan region, which will economically profit from the development of these new branches of industry



Forging area in the press



Forming process with special tools

## Titanium – an element with many properties

- **Discovery:** at the end of the 18<sup>th</sup> century
- **Properties:** Titanium is light and strong at the same time, ductile, corrosion and temperature resistant
- **Occurrences:** Pure titanium is rare. The main source materials for the manufacture of titanium are ilmenite and rutile.
- **Value:** The extensive manufacturing process is reflected in the high price: Titanium is approx. ten times more expensive than conventional steel.
- **Requirements for the forging process:** At higher temperatures titanium becomes brittle quickly due to the absorption of oxygen, nitrogen, and hydrogen. This high reactivity of the metal at increased temperatures or at increased pressure requires a highly precise adjustment of these physical properties during the forging process.
- **Fields of application:** Due to its high corrosion resistance, titanium is, for example, used as biomaterial for implants in the medical industry as well as in the fields of dentistry and surgical orthopedy. In aircrafts and space ships titanium is used in parts that are highly stressed but yet have to be light, for example, engine parts.



Blanks inside the furnace

First complete particleboard plant:

# Metro in Thailand trusts in Siempelkamp's turn-key competence

**The first complete Siempelkamp production line for particleboard started operation at Metro in Thailand in January 2011. The highlight of the project: This turn-key plant operates with Siempelkamp products only. Products that Metro formerly had to purchase from other suppliers the company can now produce itself. According to the customer, it is the goal to operate a productive plant without interfaces and with as few people as possible. In this regard, Siempelkamp equipment provides the appropriate support. "We trust in Siempelkamp as a renowned manufacturer of wood-based material plants. The start-up took place in due time and we are producing marketable products on possibly the most modern equipment worldwide," was the statement made by Metro.**

By Ralf Griesche

At Metro's location in Nonthaburi, in the suburbs of Bangkok, where the first Siempelkamp plant has been operating since 2004, the new complete plant now produces particleboard. In July 2009 the leading Thai manufacturer for wood-based materials signed the contract for this plant, the installation started in May of 2010. With the recent start-up of the plant, Metro takes a big step toward achieving its goal of successfully and reliably supplying particleboard products to the growing domestic market.

The heart of this particleboard plant is a forming and press line including an 8'x40.4m ContiRoll® press. With speeds of 950 mm/sec, the plant produces particleboard with a width ranging from 2,460 to 2,500mm and a length ranging from 4,620 to 5,520mm. The produced boards will have a thickness ranging from 6 to 40mm. With a yearly capacity of more than 500,000 m<sup>3</sup>, this Metro plant will increase the total production of particleboard to 850,000m<sup>3</sup>, which more than doubles the capacity.

The highlight of this plant is not just its capacity. Mainly the fact that the whole scope of supply is based on the "all from one source" concept is remarkable. The delivery of the entire equipment for the front-end by Siempelkamp is new. In the overall concept of a plant, from the wood-yard to the packaging, the equipment for the front-end represents a vital link. This interface was systematically renewed and refined by Siempelkamp in recent years, which becomes fully apparent in its complete range as part of the Metro project.

For the particleboard plant Metro receives front-end equipment made by Siempelkamp, which no longer has to be purchased elsewhere, including chippers, flakers, oscillating screens as well as roller screens for chips and flakes and the entire chip and flake production. The shredding technology for the Thai plant includes drum chippers, knife-ring flakers and secondary wood shredders. Furthermore, the scope of supply included bunkers, discharging



Chipper



Log feed to the chipper



Stocker feeder with discharge system

devices, round silos with hydraulic discharge systems and rotor or discharging screws respectively, silos with discharge floor systems as well as gravimetric separators. For the drying of fuel, Metro uses dryers by Büttner.

The gluing system is also completely made by Siempelkamp including the resin preparation and dosing system and the glue blender. For the stable process heat Siempelkamp supplied an energy plant with an output of 48 MW.

Subsequent to the press, additional Siempelkamp products allow for smooth operation of the plant: Siempelkamp supplied the double-diagonal saw, a cooling and stacking line, the intermediate storage, an inline book saw, the sanding line and a reject station.

Two additional competence areas ensure that this complete system is consistently available for the customer. For perfectly

coordinated machine and process execution, Siempelkamp developed complete automation solutions. The result is the combining of control processes, controlling tasks, operation and visualization to complete automation technology which is individually tailored to the plant. The individual parts of the Metro plant from the chip preparation to the handling system benefit from this automation system.

The planning keeps track of the entire project. The Siempelkamp planning experts contributed a decisive part to the high technical level of the particleboard plant for the Thai customer.

The objectives of Metro, a company that has been a player in the wood-based products industry for 60 years, include state-of-the-art technology and world class quality products. A compliment goes out to Siempelkamp for helping Metro achieve its high demand for product quality and customer satisfaction with this plant.



## Siempelkamp support for a “hot market”

Interview with Chatchai Piyasombatkul, President of Metro-Ply

**The first complete Siempelkamp plant for particleboard supports an ambitious provider in sustainably conquering a “hot market” for itself. Metro president Chatchai Piyasombatkul explains to Bulletin how the new plant will open up expansion potentials for the Thai domestic market as well as for the export.**

**What is the history behind Metro?**

My father founded Metro in the 1950s. Back then it was a saw mill for teak wood. This was followed by the production of plywood. Later on we produced hardboard using a wet-manufacturing process. In the '90s we invested with three Küsters presses in MDF production. In 2003 we installed the first Siempelkamp plant for particleboard. The good relationship to Siempelkamp presently manifests itself with the start-up of the new complete particleboard plant at our location close to Bangkok.

**What does Metro presently manu-facture?**

Metro's range of products consists of a total of three areas. The group “Wood

Based Manufacturing” produces a yearly capacity of approx. 750,000m<sup>3</sup> of MDF as well as 350,000m<sup>3</sup> of particleboard. With the new Siempelkamp plant we are increasing our particleboard production by another 500,000 m<sup>3</sup> to approx. 850,000 m<sup>3</sup>! Our product range also includes approx. 6,500,000 m<sup>2</sup> of melamine-faced chipboard, as well as hardboard and plywood. Furthermore, we are also producing laminate flooring, doors, and veneer plywood as added value products.

In connection with our “Special Units” group, we have to mention our own rubber tree and eucalyptus plantations. In the future we will increasingly invest in contract farming of plantation wood in order to avoid and absorb respectively bottlenecks regarding the wood supply. Furthermore, we are operating the group “Real Estates” including the divisions service apartments, office buildings, land development and hotel & resort. From the profits of the wood industry we have made investments which will secure our group in times of crisis.

**Where are Metro's production locations?**

Our particleboard production is located in the Nonthaburi province, outside of Bang-

kok. Our MDF location Kanchanaburi is approx. 100 km away from Bangkok. Both locations are very close to our capital, a megacity with a growing demand for furniture.

**Regarding the demand – where do you distribute your products?**

In the domestic market we supply the furniture industry and the retail market. An even stronger growth than our domestic business has presently the export which is due to the exchange rate. Exports go everywhere – of course, excluding raw boards.

**What is your strategy by expanding the particleboard production with a new plant?**

As a key supplier of the region, Metro has the trust and demand of an existing customer base. We want to keep it that way. Since Metro was so far only operating one particleboard plant, we were always facing the risk of bottlenecks arising from unpredictable production stops. The new plant supports us in avoiding just that and ensures that we can be a reliable supplier to our customers.

**What are the advantages of the new plant?**

Due to its size, the new Siempelkamp plant utilizes important economies of scale. It produces cheaper which means a considerable competitive advantage at increasing costs for wood and glue. Since the demand for wood-based materials will continue to grow, we are boosting our chances to maintain and expand respectively market shares. Currently, several plants are built and planned respectively. Metro wants to and will keep up. We comprehend our growth as organic; our last purchased plant has been operating for eight years. Furthermore, it is an advantage that Metro, as a privately-owned company, is run according to conservative guidelines.

**How does the resource issue present itself in terms of wood, the raw materia?**

Indeed, wood has become a popular raw material. Currently, there are two trends that are evident. First, Thailand's supply of raw wood depends on the rubber tree. Presently, the price for natural rubber extracted from these trees has tripled over the last two years. The result: The plantations use even old trees in production so that wood from the rubber trees is becoming more scarce. Second, ever bigger areas are planted with plants for the production of ethanol for gasoline production and are thus taken away from tree farming. There is some consolation, however: The Thai government intends to enlarge the rubber tree plantations by 25 percent. By

doing so we can expect larger amounts of wood for our industry again in later years.

**How does Metro responds to this situation?**

In the future, we will invest in contract farming for supplying wood in order to ensure our base of raw material. To do so, long-term contracts with farmers that do not want to follow each new trend, for example, bio-fuel production, have to be closed.

**... and then a turn-key plant from Siempelkamp?**

We are happy that Siempelkamp is offering such a plant for the first time! After we had bought our first plant from

Knife-ring flaker



Left: Gravimetric separator  
Right: Sifter

Oscillating screens



Roller screen



Silos



Glue kitchen with dosing system



Dry particle silo and resin blender

Siempelkamp in 2002, which started operation in 2003, we were able to experience first-hand the quality and high reliability of the plant. The new turn-key offer accommodated us. We wanted to be running quickly, and operate a productive plant without interfaces with as few, but highly skilled, people as possible. Time played a big role because the market is hot! We trust in Siempelkamp as a renowned manufacturer of wood-based materials production plants. And, from today's perspective, our commitment will bear fruit: The start-up took place in time and

we are producing marketable products on one of the most modern particleboard plants in the world!

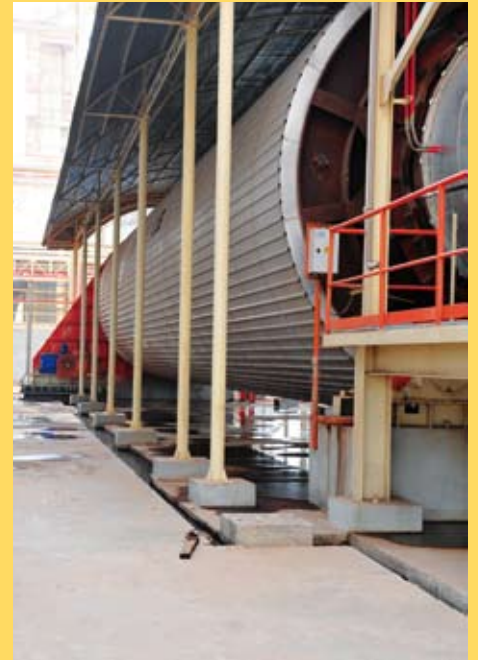
**Will the market accommodate all these products ?**

We will more than double our particleboard production. Some of it will be exported, but our main objective is to supply the growing domestic market. Here we are counting on the following factors: a growing gross domestic product, an increasing population, a growing housing





From left to right:  
Resin blender  
Energy system  
Dryer



market, an increasing number of people moving into urban areas, and the equipping of all new apartments with furniture directly from the developer. An increasing number of furniture is made of wood-based materials, the traditional use of solid wood for furniture is declining. The industry wants high quality boards which can only be produced with advanced technology. All these factors prove that the demand for furniture will grow strongly. With our increased production of particle-board we will be able to appropriately participate in the market.

**How do you see the market developing over the next three to five years?**

I am not a psychic but the facts that I have specified earlier will probably last for a while. Therefore, we here at Metro are confident that the growth will continue, especially since a large part of the population still has a backlog demand.

**Let's take another look into the future: What is your next coup?**

We will increasingly invest in MDF. That means we will bring our three existing plants up to date. Furthermore, we are planning on building up new MDF production. The existing plants are up to 20 years old and have to undergo a major retrofit. The last Küsters' plant is also getting old. With these plants, since they are written off, we make good money. After a retrofit we would also be able to produce special products, such as very thin MDF.

**We wish you every success in your work and thank you for the interview!**



From top to bottom:  
ContiRoll®  
Forming station  
SicoScan at press outfeed area  
Finishing line

Siempelkamp cooperates with Hapco:

# German know-how meets Chinese production efficiency

By Ulrich Bens

In October 2010 Siempelkamp and the Chinese short-cycle press manufacturer Hapco signed a collaboration agreement. This partnership combines excellent technological know-how in machine and plant engineering for the wood-based materials industry with even more efficiency and controlled production costs!

Is it real or not?

To be optimally positioned for the future, Siempelkamp Maschinen- und Anlagenbau GmbH & Co. KG and Hapco, top manufacturer for machinery and plants for the wood-based materials industry in China, signed in October 2010 a cooperation agreement. The objective of this partnership: From now on both partners want to combine their specific strengths for the production of short-cycle press lines.

Siempelkamp has supplied short-cycle presses since their introduction to the market – always in a dialogue with resin and paper manufacturers in order to advance the corresponding technology. The remarkable performance of Siempelkamp short-cycle presses meets the need of the market for high quality laminated wood panels.

The production process is based on precise technology that laminates decorative foils to particleboard, MDF and HDF. The laminated products are difficult to distinguish from genuine wood in terms of appearance and feel. Further advantages include that laminates are very durable and easier to clean than genuine wood. Moreover, laminated wood panels preserve the environment because they conserve natural resources.

The product range for laminated wood panels is becoming increasingly comprehensive. It is hard to imagine any room that does not include a laminated wood panel of some sort – either as laminate flooring, wall paneling or laminated wood furniture panels. The demands that manufacturers and customers put on the surface lamination and the performance requirements of



Inline paper lay-up system



The short-cycle press from Hapco, powered by Siempelkamp

short-cycle presses that manufacture these products are high. The production process is expected to be quick, precise and economical at the same time.

**Siempelkamp plus Hapco: “First class high quality”**

Siempelkamp and Hapco will from now on face the market together. This new synergy can be summarized as follows: Technological know-how meets state-of-the-art production. In detail the agreement intends the following division of tasks: Under licence Hapco will manufacture presses based on the proven Siempelkamp multi-piston design. Siempelkamp will provide the cylinders as well as the hydraulic and electrical controls for the presses. Other than the Siempelkamp-made lay-up systems for

the charges, the components used for the handling technology will essentially be made by Hapco.

Hapco will be responsible for the sale of short-cycle presses in the Chinese market. The company, that has been in the market since 1996, has an excellent reputation especially in Southeast Asia. International sales will be handled and coordinated by Siempelkamp. Furthermore, Siempelkamp will be in charge of maintaining quality standards.

“First class high quality” according to Siempelkamp style, combined with an attractive price is the bottom line targeted by the new collaboration agreement.

“Through our agreement we combine German know-how with Chinese production strength. The result is an excellent product from which all involved parties benefit. Our customers receive a high-capacity short-cycle press according to Siempelkamp’s high quality standard at a competitive price. Siempelkamp and Hapco are also benefitting from a very good reputation in their respective markets which we will effectively strengthen and extend with the collaboration,” says Dr.-Ing. Hans W. Fechner, CEO Siempelkamp Maschinen- und Anlagenbau GmbH & Co. KG. Service as well as spare parts service for all countries other than China is also handled by Siempelkamp at the proven high standard.

#### Systems engineering: quality with the competence of two partners

Two strong manufacturers of short-cycle presses will produce, each adding its particular strengths, a combined product. What do both companies have in common? Dr.-Ing. Hans W. Fechner: “Definitely our common philosophy with regard to ongoing innovation as well as respecting the value of the customer. The cooperative production of complete short-cycle press lines opens up two essential advantages for us and our customers: first, the

potentials that arise from joint purchasing and second, the opportunity to expand our production, performance and service in China to its full extent.”

Next to press lines for standard sizes, e.g., 2x4’x8’, which have been adapted to the market, 1x7’x10’ (9’) presses tailored to the markets of China and South America are produced. The lines allow for a width adjustment and thus make a flexible production of different panel sizes possible.

The multi-piston press manufactured by Hapco according to Siempelkamp specifications features best pressure distribution (Siempelkamp standard!) and is designed for one to two-panel operation with up to 150 press cycles per hour. Charging times will amount to ten seconds, the pressureless exposure time is 1.5 seconds.

Latest technology plus cost advantage plus quality control by Siempelkamp: According to this recipe for success, Siempelkamp and Hapco will optimally complement one another. There are also plenty of future prospects. Both partners plan to expand the distribution network in order to sell products and services in an even larger area and closer to the customers.

#### Inspection



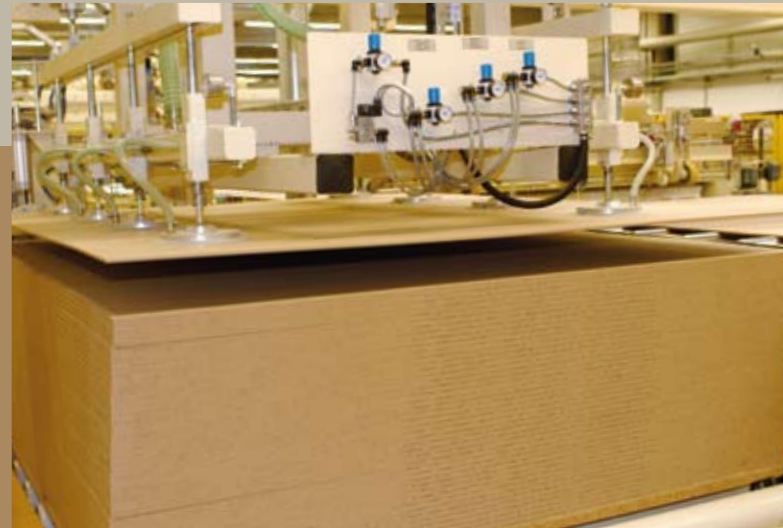
## 2010: short-cycle press from Siempelkamp for Panel Plus

The Thai wood-based materials manufacturer Panel Plus ordered in July 2010 the entire Siempelkamp product spectrum for the processing of wood from the rubber tree. The scope of supply ranges from the complete planning of the plant, to the wood-yard, the debarking system, the chipper, the bunker discharge system, the screening system, refiners, dryers, to a fiber screen which is custom-built for the use of wood from the rubber tree. The energy for generating the process heat is provided by a Siempelkamp energy system with a capacity of 63 MW.

As part of this scope of supply, Panel Plus ordered an additional short-cycle press made by Hapco powered by Siempelkamp. The largest provider of laminated wood panels in Thailand thus puts its trust in the joint product made by Siempelkamp and Hapco.

The plant, which is scheduled to start operation at the end of 2011, will open up the South of Thailand close to the border to Malaysia as the future market. China, Malaysia and India are also intended to be future customers.

Top: Stack formation  
Bottom: Separating of boards





Casting of a cast iron plate

# Nodular cast iron gets plastics into shape

Who thinks of Siempelkamp Foundry when buying a crate of mineral water? Probably nobody because primarily one is only pleased about the light plastic bottles inside the handy crates. Who has ever wondered how the interior trim for a car is made? Here, not only the design is important but also the functionality, for example, in regard to the sound insulation. This, by the way, goes for many everyday necessities. Rarely are we aware how something is made, especially when the product is only a means to an end. Just as the bottle which to most only serves as a transport and storage means for water or the door trim panel inside a car which minimizes driving noises.



Assembly of a plastics injection molding machine  
(Source: KraussMaffei)



Production of iron housings (Source: KraussMaffei)

These two consumer goods are only examples for a number of products made of plastics. Whether it is the housing for a hair-dryer or a blank for a DVD, whether it is the complete roof of a car or the syringes used in the medical field, they all have one thing in common. They all are made of thermoplastics. The advantages including light weight and high rigidity result in an increasing application range for plastics.

As different as both materials are, nodular cast iron and plastic, as similar are their methods of production.

Plastics are molded in injection molding machines of which the heart is a clamping unit. This unit consists of two face plates made of nodular cast iron. According to the size of the machine, these plates can be up to 4,000 mm x 4,000 mm x 1,200 mm in dimension and up to 70,000 kg in weight. The molds that are fastened to these platens represent the future outer contour of the plastic part as the negative mold.

## What are plastics?

Plastics are organic chemical materials which are made by chemically altering natural materials or are produced artificially of inorganic and organic raw materials. Compared to natural materials, almost all plastics can be easily shaped because they pass through a plastic state during their making or processing. Thermoplastic materials can be melted and solidified with the correct temperature as often as needed. They consist of linear or branched chain molecules which are not cross-linked. These materials include, for example, polyamide, polyester, and polyethylene.



Plastics injection molding machine  
(Source: KraussMaffei)



Frank Gerst and Dirk Howe inside the blasting shop  
in front of a plastics injection molding machine plate



Preparatory measures in the molding area



Molding of a plastics injection molding machine plate  
– to the left in the background the finished cope flask



Prior to the casting process: combining of the cope  
and drag flask

The movable face plate moves on the machine bed horizontally against the stationary platen. Large guide pins guarantee a precise closing process of these plates. High clamping forces of up to 5,000 KN act on the plates. These forces keep the molds closed tightly during the injection process.

The melted plastic is injected into the mold cavity through a feeding screw inside an injection unit. The plastic material quickly solidifies inside the mold and achieves rigidity. Then the movable face plate moves back to the starting position and the mold opens. The plastic part is ejected from the mold. The next injection molding process starts with the closing of the movable platen. In this way, this process is a classic example for mass production.

During this production it is imperative that the finished product has high net shape accuracy. Costly finish work is not acceptable.

To achieve high net shape accuracy, it is necessary that the face plates optimally distribute the applied forces to the molds without bending them. This ensures an absolute form fit.

For this reason the face plates are optimally constructed according to the finite element method. Next to the correct dimensioning of the platens, the choice of material is important. Here, the designer needs to consider the requirements imposed by the mechanical loads during the closing process as well as the cost-effective procurement of the platens. For these reasons the manufacturers of injection molding machines use nodular cast iron.

Just as with plastics, when casting with nodular cast iron the base material has to be melted first. The main ingredients of nodular cast iron are steel scrap and pig iron which are heated inside a furnace to approx. 1350 °C. At this temperature the materials are



melted and can be poured into the molds made of furan resin bonded molding sand. By adding alloying elements such as silicon, copper and nickel, the engineers and metallurgists of Siempelkamp Foundry determine the mechanical properties of the future part. The properties have to meet the requirements of the injection molding machine.

The thick-walled and compact face plates especially require the experience of the caster. Siempelkamp Foundry provides the necessary expert knowledge to ensure the production of large castings. The irregular wall thickness within a component part leads to different cooling rates which are, next to the analysis of the material, the most important indicator for the future mechani-

cal characteristics of the component part. Only if the structure of the face plate is uniform and flawless, the forces of the injection molding machine can be optimally supported and a secure production of the plastic parts can be ensured. Nodular cast iron provides these advantages and has become indispensable for the production of plastic products for this reason.

For many years Siempelkamp Foundry has been a reliable partner for the injection molding machine industry. Injection molding machines worldwide operate with machine tool face plates that have a special quality feature: They are "Made by Siempelkamp".

Machining of the cast iron plate inside the blasting shop



Finished cast iron plate prior to sand blasting



Final polishing before coating



Casting of a cast iron plate

## Facts and figures about plastics production

In 2007, 260 million tons of plastics were produced worldwide. 8 % of this amount was produced in Germany, 25 % in Europe. Current forecasts predict a worldwide rise of plastic consumption. A yearly increase of 5 % for the per capita consumption is predicted until 2015. Important growth markets are Eastern Europe and Southeast Asia.

Mickey Mouse meets Siempelkamp:

# Special crane systems by Siempelkamp Krantechnik GmbH get cruise ships going

Crane systems, LEGO blocks, and Walt Disney's Mickey Mouse – how are they associated? When one of the most up-to-date and most innovative shipyards in the world builds ships with the help of crane systems by Siempelkamp Krantechnik GmbH (SKT), then we can say: "Mickey Mouse meets Siempelkamp"!

By Ute de Vries

On November 12, 2010 the "Disney Dream" cruise ship departed MEYER WERFT shipyard on its conveyance down the River Ems, traveling from the ship's inland birthplace in Papenburg, Germany to the North Sea at the port of Eemshaven in the Netherlands – one of the ship's first steps on its way to the future home port, Port Canaveral, Florida. Prior to the conveyance and test drives, complex production processes have to be completed in which Siempelkamp Krantechnik is involved: Since 1990 SKT has been supporting the production of MEYER WERFT with services, repairs and the supply of different crane systems in special designs which are tailored to the requirements of the shipyard.

In order to compete with other shipyards on an international scale, the family-owned business from the Emsland region in Germany has permanently improved its production engineering. By 1987 one of the world's largest covered building docks

was built in Papenburg. This building was extended by 100m in the early 1990s. Here, the shipyard builds sophisticated passenger and cruise ships. In 2001 a second covered building dock was added. It was followed by new pre-fabrication halls and a new state-of-the-art laser welding system for serial production. Meanwhile the second building dock was also extended. After adding another 120m, the total length of the hall amounted to 504m. The construction was completed in late 2008. Nowadays, MEYER WERFT's production premises count among the most modern ones in the shipbuilding industry.

## Shipbuilding according to the module principle

Certainly many remember their childhood, when they built daring constructions with Lego blocks. What works in the hands of children is applied in shipbuilding by MEYER WERFT. Ships are built according

to the "block building principle," which means that smaller parts are pre-fabricated and then assembled to ever bigger units.

In the first step steel plates are coated for corrosion protection, then they are cut to size in a plasma torch system and welded up to form panels. Panels are assembled to form sections, which are pre-outfitted with electric installations and pipes and conduits. Approx. seven sections become a block. Finally, the blocks are welded together and wired. Some 65 to 75 blocks, the heaviest of which may weigh 600 to 800 t, become a cruise ship.





Captain Mickey, together with Disney Cruise Line President Karl Holz (left) and MEYER WERFT CEO Bernard Meyer (right), pushes the start button to commence the construction of the Disney Dream (Photo: Disney Cruise Line)



MEYER WERFT in Papenburg  
(Photo: MEYER WERFT)



Assembly of the last ship segments for the Disney Dream (Photo: Disney Cruise Line)

### SKT supplies "Chickadee" and "Robin"

No shipyard panorama is complete without cranes on the skyline. On the large premises of the MEYER WERFT numerous lifting systems can be seen. Depending on the lifting capacity, each crane is traditionally named after a bird. There is the "Condor," a 600 t crane; an impressive 800 t crane for lifting of whole segments is called "Imperial Eagle".

In 2007 SKT supplied "Chickadee" and "Robin," two double-girder bridge cranes with a load capacity of 40t and a span of 28,635m. An important task was to implement the customer requirement by adjusting the approach dimensions and maximum hook heights to the conditions in the existing production hall.

### New ships – new SKT crane concepts for the laser center

In the beginning of 2009, construction of a new and innovative MEYER WERFT pro-

ject started – the first ship for Disney Cruise Line (DCL). Together with representatives of Disney Cruises as well as shipyard owner Meyer, Mickey Mouse pushed the start button of the computer-controlled plasma torch and commenced the building of a new ship. These two custom ships for Disney Cruise Line (DCL) are scheduled for delivery by the end of 2012. Each ship will have a gross weight of 130,000 gt, an overall length of 340m and a width of 37 m.

In September 2008, Siempelkamp Kran-technik received orders for a total of twelve crane systems with special designs which were installed in the new pre-fabrication halls of the laser center from April to July 2009. Names like Silver Gull, Andean Gull, Dusky Gull, and White-eyed Gull stand for a double-girder bridge crane with a load capacity of 64 t and a span of 38.9 m as well as an 18 t crane system with a rotatable double-rail trolley equipped with a vacuum lifting beam. A full gantry crane equipped with two 2 t double-rail trolleys is also part of the supply. The double-rail

trolleys are each equipped with a slewing gear and a fixed lifting load guide in the form of telescopic jibs. Attached to these lift poles are magnetic cross beams for the precise handling of sheet metal blanks.

361 m long, 45 m wide and 20 m high: These are the dimensions for the expansion of the laser center which primarily manufactures deck panels. Different size plate segments are joined together and automatically equipped with reinforcement profiles. Finally, walls and other building components are welded together.

The laser center was equipped with a crane system that was tailored to the shipyard. This system consists of eight custom overhead cranes covering the entire work area of the hall. These cranes are custom single-girder bridge cranes with a span of 37.8 m. Each of the eight cranes is equipped with six swivel arms with articulated jibs as well as a on the bottom belt movable plunger construction. Each swivel arm can be adjusted individually.



Full gantry crane on floor tracks with lifting load guide for the transport of sheet metal



Mechanical load guide for the quick and stable transport of sheet metal parts



Double-girder bridge crane with rotatable trolley for loading the laser center

### Crane system with efficiency effect

With the help of the swivel arms, the employees can use the required welding technology in different manual work areas which ensures MEYER WERFT the necessary flexibility and availability. In the past the employees had to transport the welding machines with hose set and media a distance of up to 40m from the side areas to the site of operation. Now overhead cranes provide efficiency: At every welding workstation, welding sets tailored to the station's requirements are readily available and equipped with the welding wire feed, the supply with welding gases as well as compressed air and an exhaust system. Travel and set-up times are optimized by the cranes.

The work areas of the eight overhead cranes overlap so that several cranes can be available for one subarea if needed. The power supply of the system was implemented with a system of concurrent and non-concurrent energy chains.

We continue to accompany the impressive development of MEYER WERFT. Currently, SKT is developing innovative concepts for new crane systems together with the ship-builder and is looking forward to the maiden voyages of the projects in which SKT technology has a share.



Overhead cranes for the production of ship segments



Vacuum lifting device with individually controllable suction cups



## MEYER WERFT (shipyard) in Papenburg, Germany: Crossing the high seas for more than 200 years

MEYER WERFT is a company with tradition, which started operations in Papenburg on the Ems in 1795. The company is owned by the sixth generation of the Meyer family. For more than 200 years ships of most different types have been built by the experts working for this family-owned company.

After the era of timber ship construction, the company showed early pioneering spirit, starting to build iron ships with steam machines in 1872 and thus laying the foundations for the steady continuous development of the shipyard.

In 1860, Papenburg was home to 20 shipyards – but only MEYER WERFT has survived into the 21<sup>st</sup> century. Up to 400 seagoing ships were registered in Papenburg in the 19<sup>th</sup> century.

Between the two world wars, the shipyard concentrated on building fishing vessels, pilot boats and lightships together with coastal passenger ships. This was followed in 1960 by the first gas tankers to be produced by the company, and in 1964 the "MALMÖ" was the first RoRo ferry to be delivered from Papenburg.

In the last decades of the 20<sup>th</sup> century, MEYER WERFT has acquired an excellent international reputation for building car and passenger ferries, RoRo and passenger ships, gas tankers, livestock carriers and, above all, luxurious cruise ships.

In 1975 the yard moved its premises to a location on the periphery of Papenburg. Here, cruise ships were built for the first time. As early as in 1986 the "Homerik" was completed, the first and at the same time the last cruise ship that was literally launched, in this case sideways.

To date the shipyard has built 30 luxury liners for customers from all over the world.

MEYER WERFT employs a staff of some 2,500 and is one of the largest employers in the region.

Siempelkamp's OSB benchmarks:

# From multi-daylight press to continuous production

ContiRoll® OSB



**Presses as high as eight-story buildings, with capacities that could cover 17 soccer fields daily – there are practically no limits when it comes to Siempelkamp’s press concepts for OSB production. In the last 30 years the Krefeld company achieved numerous milestones which impressed OSB manufacturers from North America to Asia. Our history demonstrates: Often, we were the equipment provider supporting plant operators with their first OSB production run. Just as many times, the dimensions of our press lines were record breaking. And even more often, Siempelkamp technology was the first to be used.**

By Andreas Woestheinrich

**OSB multi-daylight press for Weyerhaeuser: innovations for orienting and separating processes**

In 1980 Siempelkamp supplied one of its first OSB plants in America to Weyerhaeuser, a big player in international forestry enterprises. The company owns and manages enormous forests, especially in the USA and Canada. These resources are made into such products as construction timber, pulp, paper and packaging.

The 8x16’ press with 16 daylights was installed at the Grayling location in Michigan to process aspen wood. It is one of the first OSB plants that Siempelkamp supplied. The highlight of this project was the mat-forming machine which was developed by Siempelkamp in the beginning of the 1980s as a pioneering achievement. Thus, the Krefeld company met the increasing demand for oriented strand board. The production of such panels had only recently started replacing plywood in America and in Scandinavia for use as construction panels. The main reason for this development was increasing costs for peelable logs.

The advantage: For panels made of oriented strands, lower quality logs with smaller diameters can be used. The maximum wood usage reaches up to 85 percent. In contrast, with veneer plywood, wood utilization amounts to about only 50 percent. A significant advantage of oriented strand

board is that its product strength can be tailored to the intended end use and that it is dimensionally more stable than natural wood.

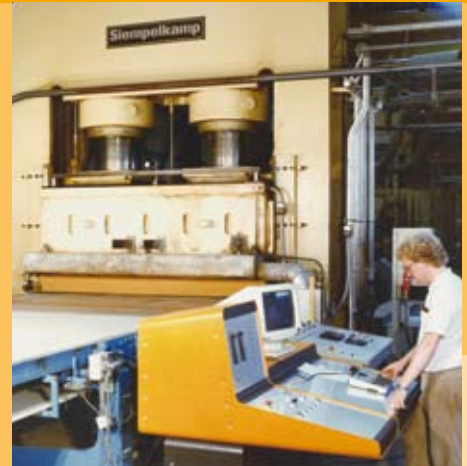
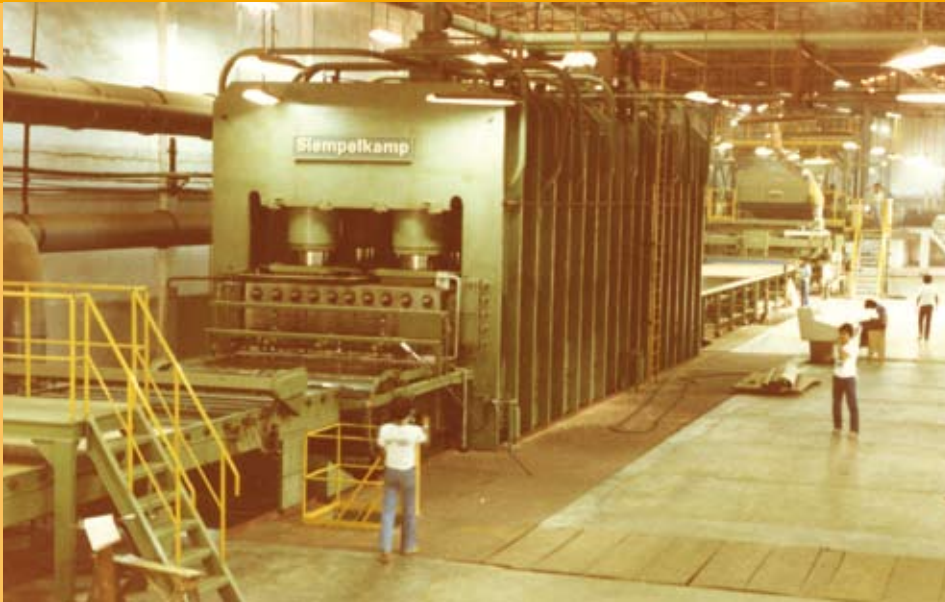
With the strand transport across a disc roller orienter head with discs set at various gap widths, Siempelkamp achieved an innovation. Strands could not only be oriented but also separated. Thus, long strands were arranged on the surface while fines made up the core layer of the new oriented strand board. This resulted in optimal bending strength.



Weyerhaeuser, 16-daylight press

OSB mat-forming





Top: steam press in the test field, Krefeld  
 Left: Pamplona Redwood OSB

1983: OSB plant for Asia

Three years later Asia was ready for OSB production. In 1983 Pamplona Redwood in the Philippines ordered the first OSB plant for Asia from Siempelkamp. An 8x48' single-daylight press was built to process red Lauan wood.

Multi-daylight press for Norbord Ltd.:  
 Siempelkamp sells OSB plant in Europe

In 1984 Siempelkamp set another milestone in OSB history by supplying an 8x16' press with eight daylight. This order from Norbord Ltd. for the location in Inverness,

Scotland, represented the first order of an eight-daylight OSB plant for Europe. The Toronto, Canada, based company is one of the worldwide leading manufacturers of wood-based materials specializing in OSB. The company's products are mainly used for modern timber house construction, in the areas of renovation and restoration, the packaging industry and in the do-it-yourself sector.

Kronopol, Zary, Poland



Steam injection press for Weyerhaeuser LSL – second generation of OSB competence

In 1990 Weyerhaeuser LSL in Deerwood, Minnesota, ordered the second generation in OSB know-how. Following the multi-daylight press, Siempelkamp introduced the steam injection press to the market which would apply steam and heat to the mat. Due to its moisture content and temperature, the injected steam causes the bonding agent to cure. The 8x35' single-daylight press for Weyerhaeuser was built for processing aspen wood. In the United States, the OSB panels produced on these steam injection presses are typically used for frames and framework in house construction.



## Siempelkamp OSB press lines: Statistics

Total plants sold:	50
thereof North America:	35
Europe:	11
Asia:	2
New Zealand:	2

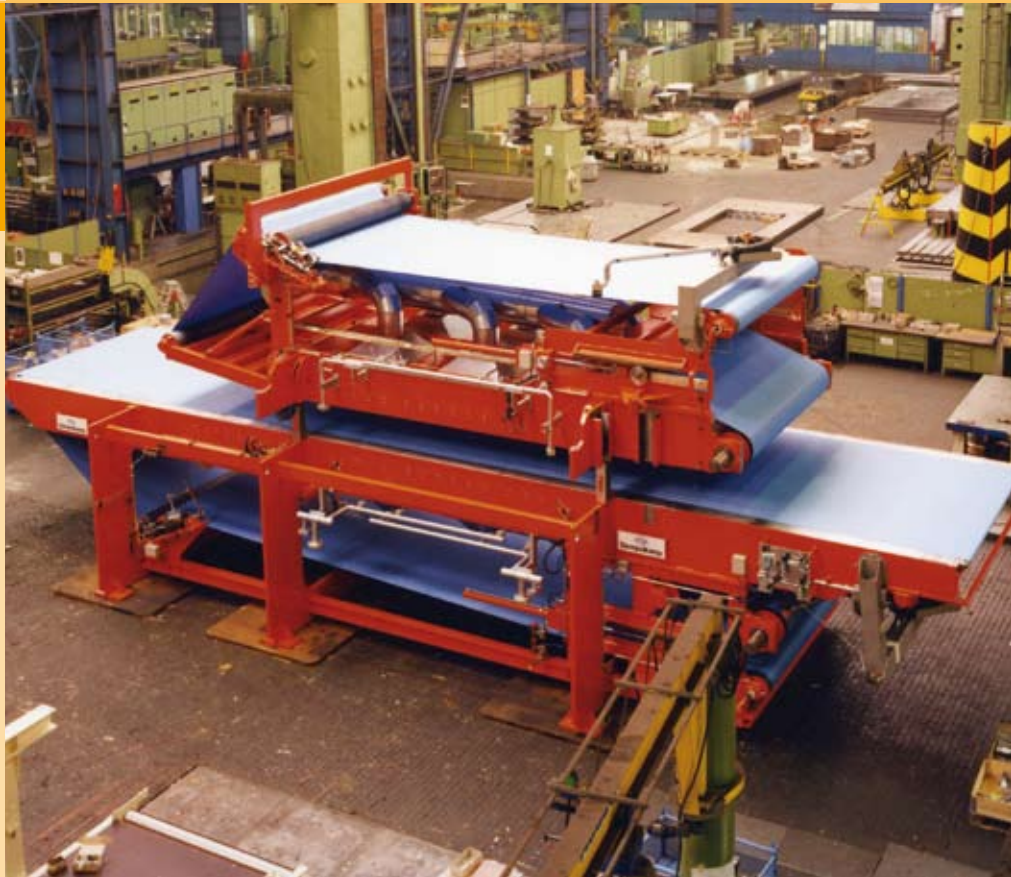
### A first: Kronopol uses first OSB-ContiRoll®

Following daylight and steam injection presses, Siempelkamp started in 1996 to establish the third generation of OSB presses, a ContiRoll press for the continuous production of OSB. The first customer to incorporate the new technology was Kronopol Sp. Z.O.O. The company that belongs to the Swiss Krono holding, a leader in the wood-based material industry, took over the state-run particleboard plant in Zary in 1994.

With a budget in the millions, the investor changed the entire technology and completely modernized the machinery. Siempelkamp was involved as the driver of innovation in three instances. In 1996 a particleboard production line including the first ContiRoll press in Poland was installed at the Zary plant. An investment on a global scale was made according to Kronopol in 1997: The first of its kind, a ContiRoll line for the production of OSB was put into operation. Thus, Kronopol entered the market for building materials. One year later, a ContiRoll line for the production of MDF started operation.

### First OSB ContiRoll® with preheater for Huber Spring City

Also in 1996 Siempelkamp installed an OSB ContiRoll at Huber Engineered Woods in Spring City, Tennessee. The enterprise's product spectrum ranges from the raw



Preheater for Huber during production at Krefeld

## Production capacity at top levels

For the last 20 years Oriented Strand Board (OSB) has experienced a triumphal march just as particleboard has since the 1960s and MDF since the 1980s. The USA and Canada are regarded as the OSB domains: Between 1990 and 2006 the production capacity of OSB in North America has more than tripled from 6.8 million m<sup>3</sup> to 23.3 million m<sup>3</sup>. After, in the course of the financial and mortgage crisis, OSB production dropped to 13.7 million m<sup>3</sup>, the production has been gaining momentum again and is anticipated to increase to 21 million m<sup>3</sup> in 2015.

In Europe a record high OSB production capacity of more than 3.8 million m<sup>3</sup> was recorded in 2010. Since the 1990s, OSB has become increasingly accepted on the German market\*

\*Source: BIS Shrapnel Pty Ltd-Study "Plywood and Oriented Strand Board In the Pacific Rim and Europe: 2011–2015", North Sydney NSW 2010



Huber ContiRoll® and preheater during assembly



OSB forming and press line, Egger, Wismar

material production to paper and forest products to plastics and building materials as well as associated services. With its head office in Charlotte, North Carolina, this Group has developed into one of the most innovative OSB producers in North America.

At the company's Spring City location, the patented ContiTherm® method, a process recommended for the production of thicker OSB, was used for the first time. A mixture of hot air and steam is applied to the mat directly before it enters the press. Pre-heating the mat in this way results in an increase in press capacity. By means of adjusting the ratio between hot air and steam, the target temperature of the mat is precisely set. The mat is plastified in the pre-heater reducing the specific pressure needed in the ContiRoll® press. In addition, the moisture content of the mat is raised resulting in lower thickness swell of the board and better board properties.

#### Huber Broken Bow receives "Complete Package" with screen imprint system

In 2003 Siempelkamp set a next record in the OSB business with its customer Huber Engineered Woods in Broken Bow, Oklahoma. With a total investment of more than \$130 million, construction of an OSB plant on a greenfield site started in 2002. Next to the 8'x60.3 m ContiRoll® for OSB, Huber ordered the dryer system, the mat-forming station, a cooling and stacking line, a finishing line and the automation from Krefeld. A yearly capacity of 550,000m<sup>3</sup> was intended with this complete package.

According to the typical Siempelkamp design, the strand mat is formed in such way that the largest strands are placed in the outer face of the mat, where they contribute most to the properties of the board.

Some products require the typical screen imprint on one side of the board. Therefore, Siempelkamp equipped the Broken Bow press with the patented screen imprint system. If needed an endless screen is running simultaneously with the top steel belt through the press. This produces a perfect screen imprint, which is identical to what customers are used to seeing from boards made on multi-daylight presses.

#### World's largest OSB multi-daylight press for Slocan(Canfor)-LP

In 2005 another record was set: Siempelkamp equipped the world's largest producer of OSB panels with an OSB multi-daylight press which was the largest of its kind at this time. The Joint Venture of the companies LP and Slocan (was sold to Canfor in 2004) ordered for the Fort Saint John, British Columbia, location a 12x34' multi-daylight press. With twelve daylight this press produces OSB panels with a

## OSB: Slim is beautiful

OSB is characterized by its long, slender and flat strands. They give the panel a significantly higher bending strength than in regular flat-pressed panels. These relatively large strands are arranged by special mat forming machines in cross-oriented layers. The strands of the surface layers are generally oriented in the longitudinal direction of the panel while the strands in the core layers are arranged crosswise.

Even though OSB is made up of relatively large strands, the surface is relatively smooth which makes OSB interesting for decorative uses. For the production of OSB, softwood as well as hardwood can be used.

thickness ranging from 6 to 32 mm and board sizes of 12x32 to 34'. The scope of supply also included the dryers, mat-forming machines, the finishing line and the automation.

A technical challenge for the production of these large volumes of OSB is the drying of the strands. To meet the demands at Fort Saint John, three single-path drum dryers were required. With this order Siempelkamp implemented, once more, the proven CombiLine, which had been supplied to North America 16 times already in 2005.

A comparison to visualize the enormous dimensions of this press: With its twelve (12) daylight, the press is as tall as an eight-story building. Eight hydraulic press cylinders, each with a piston diameter of more than one meter (3.3 feet), generate a force of 210 MN. In one day this press can produce more than 2000 m<sup>3</sup> of OSB. This is equal to the size of 17 soccer fields combined and covered with 19 mm thick panels.

These press dimensions require a design with a very high fatigue strength. The high fatigue strength is ensured by a number of design innovations as well as the use of nodular graphite cast iron. The press was built using a new design. Heavy and robust, the press stands for reliability. Siempelkamp Foundry cast the



Canfor-LP, 12-daylight press during assembly

Canfor-LP multi-daylight press after completion





Clarke County assembly of multi daylight press

upper and lower cross beams as well as the vertical tensile members of the frame from nodular graphite cast iron. These beams were designed to absorb the entire press forces.

The economic efficiency of this plant is demonstrated by its high production volume. Another advantage: Due to the fact that the press has few movable parts, the customer benefits from ease of maintenance. Furthermore, the modular design of the press frames allows for simple and quick transport and assembly processes.

**OSB competence for Norbord: most important OSB location in Southern USA**

In 2005 Norbord once more decided to go with Siempelkamp's OSB competence and signed a contract for the supply of an OSB plant including an 8x24' 16-daylight press. This plant was integrated into an existing plant in Cordele, Georgia, which had been equipped with another Siempelkamp line in 1991. With a yearly capacity of almost 900,000 m<sup>3</sup>, Cordele advanced to one of the largest OSB locations in the Southeast USA.



Norbord mat forming machine

**2007: Tolko receives record-size ContiRoll press**

In 2007 the Canadian Tolko Industries Ltd. ordered a forming and press line with a ContiRoll® for a new OSB plant in Slave Lake, Alberta. With a length of 70.3 m at a width of 8.5', this was the longest installed ContiRoll® press up to this point in time.

The extraordinary length of this press and the preheating system make a feed rate of up to 1,300 mm/sec possible which results in a yearly capacity of approx. 730,000 m<sup>3</sup> of OSB. The scope of supply also included two particle dryers, a cooling and stacking line, a storage system and packing lines. The triple diagonal saw downstream from the press represented a highlight of this order. Even at full speed, it can produce eight-foot panels.

**Kalevala: first OSB plant for Russia**

A good 30 years after the sale of the first OSB presses and many records later, Siempelkamp achieved another highlight: In 2010 OOO DOK Kalevala signed a contract for the first OSB plant in Russia, which will be built at the Petrozavodsk location in the Karelia province.



Norbord Inverness, Scotland

Here, Siempelkamp positioned itself as a single-source provider. Next to a 9'x50.4 m ContiRoll press, the large order for our new Russian customer, headquartered in St. Petersburg, incorporates a comprehensive Siempelkamp product range. The scope of supply includes the complete equipment for the front-end area ranging from the wood-yard, to the de-barker, to the chipper, to the dryer, to the screens, to the gluing system to the green and dry material storage bins. Downstream of the forming and press line with the ContiRoll press are two double-diagonal saws, a cooling and stacking line, a high-stack storage system, a cut-to-size line as well as a packing line. Siempelkamp's "all from

one source" concept for this order also includes a complete energy plant from Siempelkamp Energy Systems (SES) and a dryer from Büttner. Sicoplan will be responsible for the planning, engineering, and start-up for this project.

The Kalevala plant will produce OSB in different sizes. Board thickness will range from six to 40 mm. A tongue and groove board line, which will also be installed, will produce flooring boards. These boards will be used within the group. As a part of the building group Kompakt, OOO DOK Kalevala has a high demand of OSB, which it uses in the construction of large industrial buildings.



Norbord, 16-daylight press

## My home is my OSB

OSB as building material is widely used and especially popular in the USA. The largest share of OSB is used as building material in wall, roof, and ceiling constructions. Simple to manufacture, OSB is characterized by its good technical properties, for example, high bending strength and low thickness swelling.

Because of good mechanical properties, OSB is especially well suited for load bearing structures. In North America, OSB is used in the area of wood-frame construction as wall reinforcement, roof sheathing, and sub-flooring. High volumes of OSB are also used in I-Joists.

OSB plant, design by Sicoplan





Siempelkamp:

# A successful German-French partnership

The ten-year anniversary of the French Siempelkamp MSDG and the largest single order since the founding of the French company set a milestone for Siempelkamp in the French nuclear industry field. The expertise of Siempelkamp Tensioning Systems GmbH (STS) and its French subsidiary Siempelkamp MSDG SARL makes both companies frontline players: 16 of 21 stud tensioners in French nuclear power plants are serviced by Siempelkamp; 13 of these machines were supplied by STS. Herman Vervliet, Managing Director of MSDG, and Bernd-Dieter Wessolowski, Managing Director of STS, tell Bulletin what factors Siempelkamp uses to convince customers.

By Ralf Griesche



The nuclear power plant Cattenom in France

In 2009 Siempelkamp Tensioning Systems GmbH and its French subsidiary Siempelkamp MSDG SARL received the order for the modernization of eight stud tensioners (MST) as well as one new delivery for the nuclear power plant Gravelines. The operator for all nuclear power plants in France is the association Électricité de France (EDF).

The modernization package for the eight stud tensioners operating in different French nuclear power plants includes an effective update consisting of new controls and hydraulics, double turning units and elongation measuring systems.

At the same time Siempelkamp signed a contract for a ten-year service package that includes all stud tensioners that were supplied, upgraded or are serviced by STS/MSDG. This is currently the largest order in the history of STS and MSDG and, at the

same time, both companies will be the first in the Siempelkamp Group in France that have received such a long-term service order. Siempelkamp has an established name in France. From 19 French nuclear power plants with a total of 58 reactors 75 % have been serviced by STS and MSDG during the last 20 years.

#### **The status quo:**

Three stud tensioners (MST) are already upgraded. Three more tensioners will be upgraded starting in 2012. Next to the six stud tensioners made by STS, the large order also includes the upgrading of two tensioners of a different make. The installation of the new stud tensioners including many new detailed solutions for the nuclear power plant Gravelines is expected to be completed in mid 2013.

German-French understanding: from left to right Bernd Wessolowski, (Managing Director STS), Thomas Otto and Herman Vervliet, (Managing Directors MSDG)

## Interview with the managing directors Herman Vervliet, MSDG and Bernd-Dieter Wessolowski, STS



How did you manage to enter the French market with such success?

**Herman Vervliet:** We have positioned ourselves with our expertise in a niche market. Our technical concept as well as our services fit right in. Another convincing factor: Most effective stud tensioners are the flagships of STS (see box "From mining to nuclear technology") and therefore also of MSDG. This is how we beat the competition.

What are the characteristics of a good stud tensioner?

**Bernd-Dieter Wessolowski:** Short and to the point, the four highlights include: speed, high degree of automation, reliability and low personnel and maintenance costs.

The opening of a pressure vessel is a challenge and long downtimes are to be avoided. How often is a pressure vessel opened?

**Bernd-Dieter Wessolowski:** Most of the time a pressure vessel is opened after an interval of 12 to 18 months when the reactor core has to be tested and depending on the test results spent fuel elements have to be replaced or repositioned inside the reactor pressure vessel. By the way, for these tests the Siempelkamp subsidiary NIS Ingenieurgesellschaft provides the appropriate service, that is, the in-core fuel management.

What exactly happens during this process?

**Herman Vervliet:** To open the reactor, first, the studs are simultaneously tensioned. These studs have an impressive size. With a length between 1,700 and 1,900 mm they correspond to the body height of a person. Their diameter ranges from 150 to 210 mm and their weight from 300 to 600 kg. To tension such large studs, hydraulic pressures of 800 to 1,000 t are applied to each stud. This process is carried out under controlled conditions which have a positive effect on the vessel cover and sealing materials. Here we achieve precision of 1/100 mm. Thereafter, the studs, up to 72 depending on the reactor type, are simultaneously screwed out in sets of four. The proof of residual elongation, which we will furnish last, is crucial for the tightness of the cover.

One of the core competences of STS and MSDG is service – a convincing performance which the order for the ten-year service contract confirms. Which services are covered in the contract?

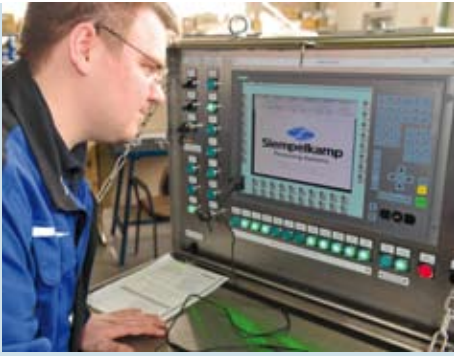
**Herman Vervliet:** During the duration of the ten-year contract, our personnel will operate the stud tensioners and is responsible for their maintenance. The decision of what kind of and when a process has to be initiated is made by STS. Furthermore, we will supply spare parts which are stored

### From mining to nuclear technology: 40 years of multiple tensioning systems.

In the 1960s Klöckner-Ferromatik, the predecessor of STS, developed the first hydraulic stud tensioner. The concept of the machine was based on experience gathered by our precursor company in the field of hydraulics for mining equipment. The first hydraulic stud tensioner, commissioned in 1964, was capable of simultaneously tensioning 36 reactor pressure vessel studs in the nuclear power plant Obrigheim on the Neckar river, in Germany. The nuclear power plant opted for this tensioning system because special equipment complying with the highest safety standards was required for opening and closing the reactor pressure vessel.

Retaining the original product idea, more than 40 years of intensive development work and the exchange of experiences with customers led to the new generation of stud tensioners, with which the simultaneous hydraulic elongation of the reactor studs is only one of many functions. Remote controlled and automated turning of reactor studs and cover nuts, as well as functions such as measuring, acquisition and registering relevant operating conditions and parameters, are integrated features today. With today's stud tensioners it is also possible to handle and transport reactor pressure vessel studs and nuts for shortening the maintenance overhaul times!





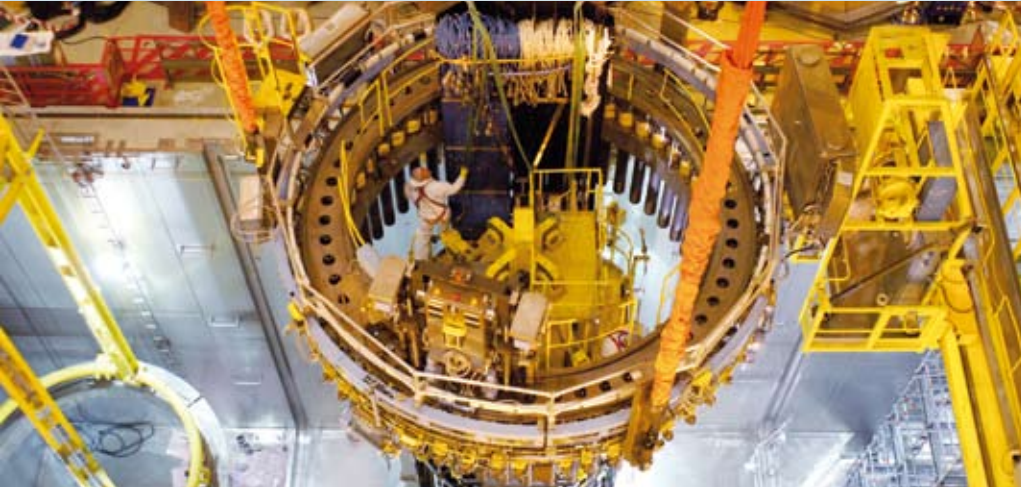
New controls on the test bench



Employees of the STS service team in Lünen



Transport of reactor pressure vessel studs with the stud tensioner



Stud tensioner at the nuclear power plant Cattenom



Stud tensioner at the nuclear power plant Cattenom

## STS and MSDG: a successful German-French partnership

### Siempelkamp Tensioning Systems GmbH

... formerly Wenutec GmbH, was founded as Klöckner-Ferromatik in 1962. STS works with 70 employees at the Lünen location. The company is a specialist for the design, construction, delivery, and maintenance of highly automated stud tensioners.

The scope of supply includes the production and delivery of stud tensioning technology, including stud tensioners or single stud and small tensioners, for the opening and closing of pressurized and boiling water reactors as well as for primary and secondary circuit components in nuclear power plants. Versatile auxiliary equipment and accessories complement the product spectrum around the STS tensioning technology. Calculations according to the finite element method, programming tasks, comprehensive spare parts storage and the assembly as well as start-up of components are also part of our range of services. We also have a documentation department for the creation of operating manuals, a quality control team for consistent production control,

and we carry out the final acceptance test for our equipment. Our range of products is completed with a comprehensive after-sales service package.

### Siempelkamp MSDG SARL

... was founded in Forbach in 2001 as the French sales and service company of the parent company Siempelkamp Tensioning Systems GmbH. The MSDG part of the name is derived from "Machines de Serrage et Desserage des Goujons," which is a synonym for stud tensioning technology in French nuclear power plants.

The company currently employs 14 people. The service department with eleven service employees is, together with 25 German service employees, a supporting pillar of the business.

Next to the sale of stud tensioners, modernization projects, small tensioners, product-related applications such as turning devices, transportation devices and thread cleaning units, MSDG is the most important spare parts supplier and, together with STS, the largest service provider for stud tensioning technology in France.

at the STS location in Lünen, Germany. These parts include seals, electrical and hydraulic components.

Do you need specially trained personnel to perform the service?

**Bernd-Dieter Wessolowski:** We have mechanics and electronic technicians working in service. The team consists of eleven employees from MSDG and 25 employees from STS. For the opening and closing of a reactor pressure vessel four people are deployed. An important element for service work in a nuclear power plant is the documentation. Each individual procedure is written down. In France alone, we are able to carry out five deployments simultaneously!

Which factors were most convincing to the customer within the frame of this project?

**Herman Vervliet:** Our price-performance ratio which ranges from new deliveries of stud tensioners to modernizations as well as service. Furthermore, we stand for absolute adherence to schedules, providing the operator with qualified personnel, and customer service tailored to French procedures. We also possess all the relevant certifications necessary to perform our tasks.

Let's take this a step further: Are there other STS products in connection with stud tensioners which could be of interest to the French nuclear market in the future?

**Bernd-Dieter Wessolowski:** Yes, the development of cleaning devices for reactor pressure vessel studs, nuts, and blind holes as a supplement to our service package. The concept: a stand-alone machine for the dry-cleaning of studs and nuts which

degreases, cleans and re-greases. The prototype of such a cleaning device is currently being tested in one of our shops. Because of the trust in our proven and reliable quality of many years, we have already received an order for six of these cleaning devices from EDF. After completion of the test period, our customer will receive an optimized version of the product which is tailored to the customer's application in its nuclear power plants.

Thank you for the interview. We wish you continued success for the German-French partnership!

### Siempelkamp MST in France:

#### 900 MW pressurized water reactors:

- ① Bugey
- ② Cruas
- ③ Dampierre
- ④ Gravelines (two stud tensioning machines)
- ⑤ Fessenheim
- ⑥ Tricastin

#### 1300 MW pressurized water reactors:

- ⑦ Cattenom
- ⑧ Golfech
- ⑨ Flamanville (1+2)
- ⑩ Nogent
- ⑪ St. Alban

#### 1400 MW pressurized water reactors type N4:

- ⑫ Civaux
- ⑬ Chooz

#### EPR™ reactor:

- ⑭ Flamanville 3



How does a stud tensioners work?

The reactor pressure vessels in nuclear power plants are opened at intervals of approximately twelve to 18 months for replacing spent fuel elements with new ones and to carry out the tests stipulated by the government authorities. The reactor consists of the bottom part, the reactor pressure vessel, and the top part, the cover. These two parts are pressed against each other by up to 72 studs and nuts distributed at equal intervals on the circumference of the vessel.

To open the reactor, the up to 2 m long studs are simultaneously extended in length by 4 mm, with hydraulic pressures of approximately 1,000 t applied to each stud and pressures of up to 3,000 bar; the specialist calls this procedure stud tensioning. By this means the nuts can be released without requiring large forces. Thereafter, the studs are screwed out and transported separately or with the stud tensioner to a storage location in the reactor building. The reactor pressure vessel closure head is then lifted off the bottom part, and the pressure vessel is in the opened state.

In the latest generation of the stud tensioners, the simultaneous hydraulic elongation and turning of the studs is only one of many available functions. The transport of the reactor studs and cover nuts, as well as the measurement, acquisition and recording of all relevant operating conditions and parameters, are integrated in the system. For example, during a tensioning process, the actual stud elongation is electronically recorded, displayed on a screen on the control panel of the tensioning device and stored via a PC. Thus, after completing a tensioning process a confirmation of the proper closing of the reactor vessel can be retrieved.



Lowering of the stud tensioner into the reactor cavity

Mounting of coupling mechanisms to the MST



Inserting of cables into the cable duct of the MST



Electrical inspection of the rotary drive for the nuts

Maintenance of the double turning device





Foto: fotolia.com

Drinking water source

# Siempelkamp supports drinking water quality in the German state Rhineland-Palatinate

Drinking water has a special meaning for human existence. Contaminated water can lead to far-reaching health problems. Therefore, it is imperative and required by law that our water is constantly tested and to make sure it stays clean. The potable water information system TWISTweb, developed by the Siempelkamp subsidiary NIS Ingenieurgesellschaft mbH, collects, prepares, and provides important data to support water supply companies, laboratories, and authorities with the monitoring of water quality.

By Stefan Schwab

### Drinking water quality: a valuable asset

In the history of mankind, contaminants in the water were often the basis for causing serious diseases such as the plague, leprosy, cholera and typhus to spread. In the course of the 19th century and during the industrialization the population density in the cities increased. Consequently, the need for clean water in relatively confined areas rose as well. The problems arising from this situation finally led to the development of extensive water supply and waste water disposal systems.

The fact that clean and safe drinking water is readily available from our taps is taken for granted by many people. In order to ensure this availability, our water is constantly monitored and inspected on its way from the water raising and preparation systems to the consumer. In Germany, public health authorities and water supply companies together with certified laboratories are responsible for this task.

There are different reasons that can impair drinking water quality. Next to geogenic influences, which can lead to increased sulfate levels, our drinking water is contaminated by pesticides that seep into the groundwater. Materials, such as lead, copper, nickel and plastic, used in water mains and pipelines can also contribute to contamination. Furthermore, the development of legionella or other germs in warm stagnant water can lead to an alarming decline in the water quality posing health risks.

If, during an inspection, the experts recognize a deviation from the norm, the responsible agency determines, according to substance, severity and duration of the

contamination, the necessary corrective measures. These measures range from disinfecting the water all the way to the closing of a well, if no improvement of the situation can be expected in the near future. The legal basis for these inspections in Germany is the drinking water ordinance.

### The guarantee for healthy drinking water: TWISTweb

The potable water information system by NIS, TWIST for short, was developed in the mid 1990s in the scope of the pilot project "drinking water monitoring and documentation" in cooperation with the Ministry for the Environment, Forestry, and Consumer Protection of the German state Rhineland-Palatinate. The objective of the project was to make the daily task of implementing the drinking water ordinance more effective with the help of EDP. In doing so a regional and nationwide collection and evaluation of drinking water parameters should be made possible.

TWIST was first based on local databases, established in individual district administrations, and could be accessed via locally installed software. As a further development the local TWIST was replaced with TWISTweb which is accessible via the Internet. The water supply companies, laboratories and district administrations as well as the superordinate offices all the way to the Federal State authorities are connected to TWISTweb. Here, they can electronically create and pass on forms, reports, and permits that arise as a result of the drinking water examinations. In regular training sessions and information events, NIS and the Ministry of the Environment, Forests and Consumer

Protection inform the users about the latest legal changes and the corresponding program adjustments.

### TWISTweb operates successfully

TWISTweb was obligatory introduced in Rhineland-Palatinate in 2005. Currently, 24 district administrations as well as 200 water supply companies and 50 laboratories are using the concept for the planning, setting up, managing, and controlling of drinking water analyses and the frequencies in which these are carried out. They manage and take samples in 900 coverage areas with more than 20,000 active monitoring stations. The combining of all the collected data avoids unnecessary paperwork. The complete processing of an analysis from the commissioning to the clearance and archiving takes place entirely electronically via TWISTweb. At the same time the system makes it possible for authorities to create reports, permits and evaluations quickly and easily without having to work through a number of file folders containing analyses.

The program makes a fundamental distinction between authorities, water supply companies and laboratories and provides different users with different functions. The district administrations can see all completed analyses of the water supply companies they are responsible for, while laboratories have access to all analyses that were either carried out or commissioned by them.

### Integrated user support

Comprehensive online help, which is constantly updated, supports the users of TWISTweb. The help offers explanations to

## Drinking water monitoring: analyses in the laboratory



## Clean and safe drinking water



all functions and forms as well as interfaces. Different functions help users with their daily tasks. This includes, for example, a connection to Outlook which makes the transfer of the scheduled dates for sampling into the Outlook calendar possible as well as the contact management which includes all institutions registered in TWISTweb.

Via a connection to an external geographical information system, the exact location of the monitoring stations can be displayed on a map.

The flexible and comprehensive analysis options in TWISTweb offer the user the opportunity to illustrate temporal and local changes of substance concentrations in the drinking water.

### Quick reaction to deviations in the drinking water

One of the most important forms in TWISTweb is the analysis form. Among other things, this form gives information about dates, contracting body, the site where samples are to be taken, the sampler, and the number of substances the water is to

be tested for. Once an analysis is declared complete, TWISTweb automatically checks all analysis results with the help of predetermined limit values against deviations. TWISTweb features a control screen that provides an overview of all instances when the limit values were exceeded in completed analyses. This helps public health departments and water supply companies to react quickly to exceeded limits. If the drinking water ordinance demands a permit or a special report for the exceeded limit values, the user is directed to the correct form. After releasing the form, it becomes viewable to the next authority. In the case the limit values are exceeded, several measures become effective, for example, by identifying the causes and developing corrective actions for the affected population. Furthermore, an estimate is given regarding the time it will take to eliminate the cause.

### Tool for the quality management

With the 2009 introduction of the so-called sampling-scheme for the advance planning of monitoring drinking water, NIS reacted to the demand of the EU directive for representativeness of drinking

water examinations. The planning provides improved coordination between laboratories and water supply companies, for example, in regard to the sampling points as well as the number of, the dates for and the extent of the examinations. The planning gives water supply companies and offices the control to find out whether the scheduled samplings will be in accordance with legal requirements. In connection with the different functions for the control, monitoring, and detailed analysis of the progress of the drinking water quality, TWISTweb is indispensable in Rhineland-Palatinate and the key tool for the quality control of the drinking water quality.

Reporting is also up to date with TWISTweb and in accordance to the requirements of the European Commission.

The reporting of the federal states to the Federal Ministry of Health as well as the European Union is completely paperless and is distributed via a nationwide web portal.

The reports primarily include information about the coverage areas for which a uniform water quality is assumed. According to the size of these areas, the data is summarized either for the Federal Government or the European Union. A coverage area is currently considered as relevant for the European Union when more than 5,000 people are supplied with drinking water in this area or, as a yearly average, the use of 1,000 m<sup>3</sup> water per day is exceeded.

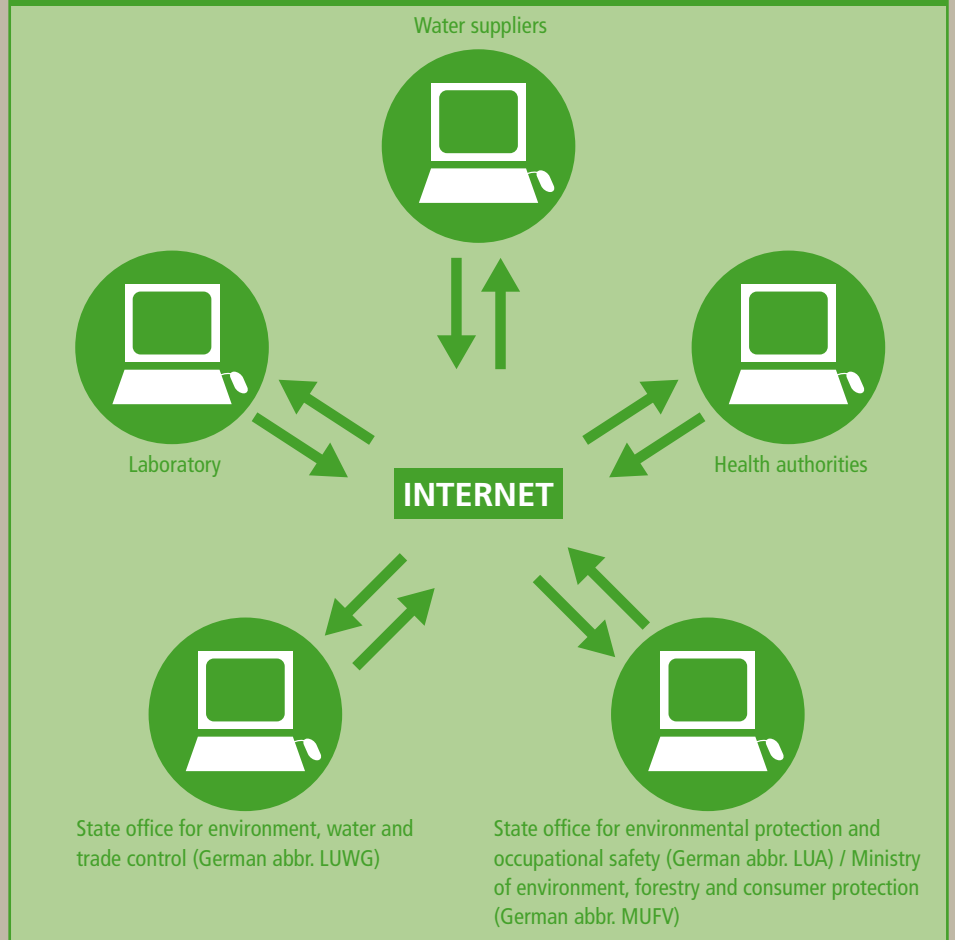
In over 15 years of developing TWISTweb, NIS, together with the Federal State of Rhineland Palatinate, succeeded in creating a powerful and comprehensive program for the management and control of data collected through drinking water monitoring according to German and European requirements. TWISTweb manages more than 21,600 drinking water monitoring stations, approx. 2,000 water supply companies, 4,000 operators of domestic water supply installations and 1,000 self-

suppliers. Approx. 910 water supply areas are monitored by TWISTweb and the analyses of more than 110,000 water examinations are stored in the system. TWISTweb ensures good drinking water quality and is a successful product for NIS.

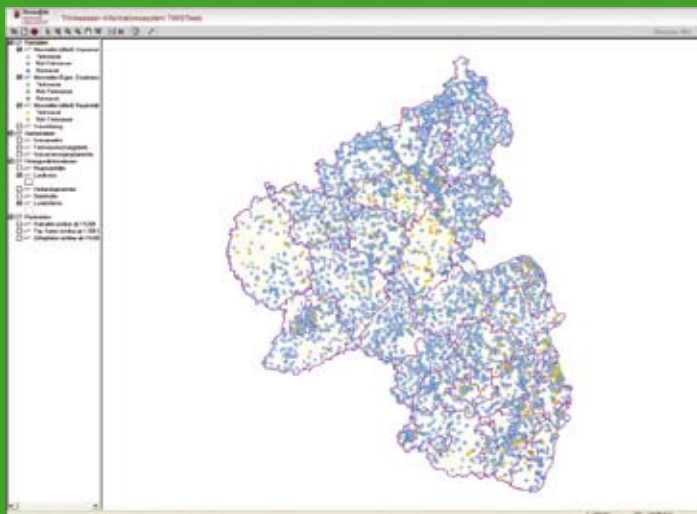
### The German Drinking Water Ordinance (TrinkwV)

The purpose of the ordinance is "to protect human health from the detrimental impact resulting from the contamination of water which is intended for human use [...] by ensuring it is fit for consumption and pure" [TrinkwV 2001]. By means of the drinking water ordinance TrinkwV 2001, which came into force on January 1, 2003 and is due for another adjustment in mid 2011, the Germany-wide implementation of EU-directive 98/83/EG is achieved. This EU-directive defines, among other things, a minimum requirement regarding the number and extent of drinking water examinations.

### Connecting the institutions in charge of monitoring the drinking water via TWISTweb



Monitoring stations of public drinking water suppliers in Rhineland-Palatinate



Analysis data sheet for the support of the drinking water and raw water monitoring

Nr.	Parameter Nr.	Parameter	Einheit	Status	Gehalt	Grenze
1	40004	Arsen	µg/l	n.g.		0,0500
2	11028	Arten	µg/l	n.g.		0,0000
3	11027	Arsen	µg/l	n.g.		13,0000
4	40008	Bleisch	µg/l	n.g.		0,1000
5	40103	Bleisch	µg/l	n.g.		0,1000
6	40125	Bleisch	µg/l	n.g.		0,0100
7	40122	Bleisch	µg/l	n.g.		0,1000
8	40124	Bleisch	µg/l	n.g.		0,1000
9	40123	Bleisch	µg/l	n.g.		0,1000
10	40134	Bleisch	µg/l	n.g.		1,0000
11	11024	Elekt	µg/l	n.g.		29,0000
12	11010	Eur	µg/l	n.g.		1,0000

EUROPIPE's crimping press proves itself in continuous operation:

# High dimensional accuracy at short cycle times for EUROPIPE press

Forming presses for large, thick-walled pipes with diameters up to 1.5 m (4.9 ft) are extremely rare. World-wide only a handful of these presses exist and each one of them is unique. One of these presses is the new crimping press at EUROPIPE in Mülheim which is part of a UOE press line. After two and a half years of continuous operation and almost one million press strokes, this report details the design, start-up, and experiences with the operation of the new press.

By Hans-Heinrich Meier and Heinz-Ulrich Lücke



Four cranes are required to lift 218 t

## The plant

The EUROPIPE GmbH pipe mill located in Mülheim on the Ruhr River has the world's largest capacity and highest productivity for the production of large pipes with longitudinal weld seams. The plant produces pipes with a length up to 18 m (59 ft), with diameters up to 1,524 mm (5 ft) and wall thicknesses up to 45 mm (1.8 in). The pipes can be used for the extreme applications in the oil and gas industry. They withstand the extreme heat of the desert, the lowest temperatures in arctic environments or the extreme pressure of the deep sea. EUROPIPE supplies high-strength pipes (steel grades X80 to X100), HIC-resistant pipes (all steel grades up to X70), collapse-resistant pipes (optimized geometry and steel grade) as well as arctic grades (application to  $-50^{\circ}\text{C}$ ). As the main supplier for the Baltic Sea pipeline Nord Stream I and II, the Mülheim plant produces a total of 1,574,000 t (1,735,038 US

tons) of pipes. For the production of pipes, the plant in Mülheim has a crimping press, a U-forming press, and an O-forming press. The heavy plates for pipe production EUROPIPE procures from Salzgitter Mannesmann Grobblech GmbH and Dillinger Hüttenwerke AG.

## Reasons for the investment

Since 1976 EUROPIPE used a press with an open C-frame design for the initial bending of plates. The market, however, started demanding pipes with wall thicknesses for which this press had not been designed. While ten years ago the average weight of the pipes still amounted to 400 kg/m, today it amounts to approx. 800 kg/m. Furthermore, the customer demands regarding the ovality and reproducibility of the geometry have increased. The efficient bending in the area of the weld seam plays a decisive role for the exact geometry of the finished pipe.





Pipeline through difficult terrain

To continue to meet the customer requirements, EUROPIPE modernized the existing crimping press in ten-year intervals. In 2008, due to its design, the press reached its performance limits. On top of that, after more than 30 years, the number of repairs increased and in the end, they were no longer feasible. The risk of a shutdown and quality problems could not be overlooked.

In order to permanently satisfy the company's own demand of being the technology leader in its industry, EUROPIPE wants to keep the plant in Mülheim up-to-date and wants to be ready for future demands regarding continuous quality improvement and modernization. Key topics include higher precision, larger wall thicknesses and higher strengths.

In 2006 the management of EUROPIPE decided to replace the existing crimping press with a new and stronger one which could process the heavier weights and higher

strengths as well as provide better geometric properties at higher throughputs. Another argument for the investment was that the press had developed into a bottleneck due to its limited capacity.

### Special challenges

During the preliminary considerations on the replacement of the press, it became clear quickly that a new construction would be an ambitious project. A significantly stronger press would have to fit into the existing space on the foundation even though it would have significantly higher press forces and a weight that would be several times as much as the old unit. Furthermore, the press would have to be operational within only a few weeks after disassembling the old one.

The least delay would have resulted in a shutdown of the entire plant and would have caused for a significant part of the worldwide production of large pipes with

longitudinal weld seams to be canceled. Reliability during the project progression therefore had to have highest priority.

If possible, the existing press foundation was supposed to be used. To build a new foundation, then assemble and start up the new press would not have been possible during a regular summer shutdown.

Early on it was decided to use the summer break of 2008 for the press replacement. That meant a very tight timeline. From the placement of the order to the crimping of the first plate only one year was available. To not interfere with the ability to deliver, EUROPIPE had to insist on a pre-assembly of the press in the factory of the manufacturer. The risk that it would come to delays between the disassembly of the old press and the start-up of the new press would otherwise have been too high. EUROPIPE had to be absolutely sure that the press would function at the first go. The disassembly of the old press could not start until

the new press was assembled and successfully tested at the press manufacturer's site. Even after these tests, the time schedule would remain tight. For the disassembly of the old and assembly of the new press only five weeks were available during the summer shutdown.

### Project

With these limiting conditions EUROPIPE put in a preliminary inquiry with three well-known manufacturers. EUROPIPE's own demand for continuous high quality also had to be met by the supplier. The specification sheet that was received by three machine manufacturers included, other than the already mentioned ones, comparatively few demands.

Siempelkamp's concept convinced EUROPIPE: Compared to the C-frame design, the closed-frame design, suggested by Krefeld, is torsion-resistant which signifi-

cantly improves the crimping quality. Furthermore, the closed-frame design absorbs the press forces without transferring them into the foundation.

Siempelkamp also scored with a new tooling concept which allows the quick and precise adjustment to different plate sizes and ensures shorter shutdown times. Next to the technology, other aspects were also important in the decision-making: Siempelkamp assured a short delivery time and guaranteed, as the only supplier, the completion date. The good experiences that EUROPIPE has made with a Siempelkamp O-forming press since 1976 as well as the reputation of the Krefeld company were also crucial for the selection of the supplier.

### Technology

Siempelkamp designed a press with a closed-frame design. This design withstands the high forming pressures of up to

11,000 t (12,125 US tons) without transferring any additional forces into the foundation during the initial bending process. Furthermore, with dimensions of 9 x 13 x 16 m (width x length x height), the press is so compact that it fits in the available space.

A special feature of the press are the movable tools which press the plate against a fixed counter piece. This is a new and patented method which Siempelkamp used for the first time in this project. Twelve position-controlled horizontal cylinders stabilize the movable tools with an accuracy of 0.1 mm up to 6 m.

Next to the press, the scope of supply also included the hydraulic control, electric and electronic control units as well as the control and the modification of the existing roller conveyors. The disassembly of the old press, the assembly and start-up of the new press also became the sole responsibility of Siempelkamp.

Placement of the frame elements



Machining of the beam at Siempelkamp



## Design phase

During the eleven-month development-time, the project participants of both companies worked closely together. Siempelkamp contributed the know-how from a number of similar projects and EUROPIPE contributed with its experience from operating pipeline manufacturing lines. Because of the large technical experience of the Siempelkamp engineers, EUROPIPE gave them a lot of freedom during the design process. During routine meetings, mainly the integration of the new press in the available space and the transport of components with weights up to 216t (238 US tons) all the way into the production hall were discussed.

The blueprints of the old foundation could be provided by EUROPIPE so that structural engineers only had to check whether the existing foundation would be suitable for the new press.

The new press, just as the old one, is expected to operate for many decades. Siempelkamp used the finite element method to prove the fatigue strength of the main components including the frame, the moving beam, and the foundation stands.

Both parties will confirm that the partnership at eye level was the base for the project's success. This success would not have been possible without the high qualification and the experiences in dealing with extraordinary large presses on both sides as well as realistic demands.

## Exactly on schedule

After the castings, made in Siempelkamp's own foundry, were completed and the press was assembled by Siempelkamp in Krefeld, the functional test and performance tests were carried out. They progressed successfully so that EUROPIPE was

able to commence with the disassembly of the old press as scheduled. The disassembly of the old machine took almost two weeks. In only five weeks, Siempelkamp assembled and started up the new press. The edges of the first plate were bent on August 18, 2008 – on the scheduled date. Already the first plate was according to specifications and was made into a saleable pipe. Since August 2008 the press produced continuously in two-shift operation.

Siempelkamp specialists monitored the start-up on site for three months. One employee stayed until January 2009, but did not have to get involved anymore at the end of his time.

The first plates were bent by manual operation. Already after three days the press was operating in automatic mode for individual plates, after a week for several plates in series. Regular material flow was achieved after two to three

Press at Siempelkamp ready for acceptance test by customer

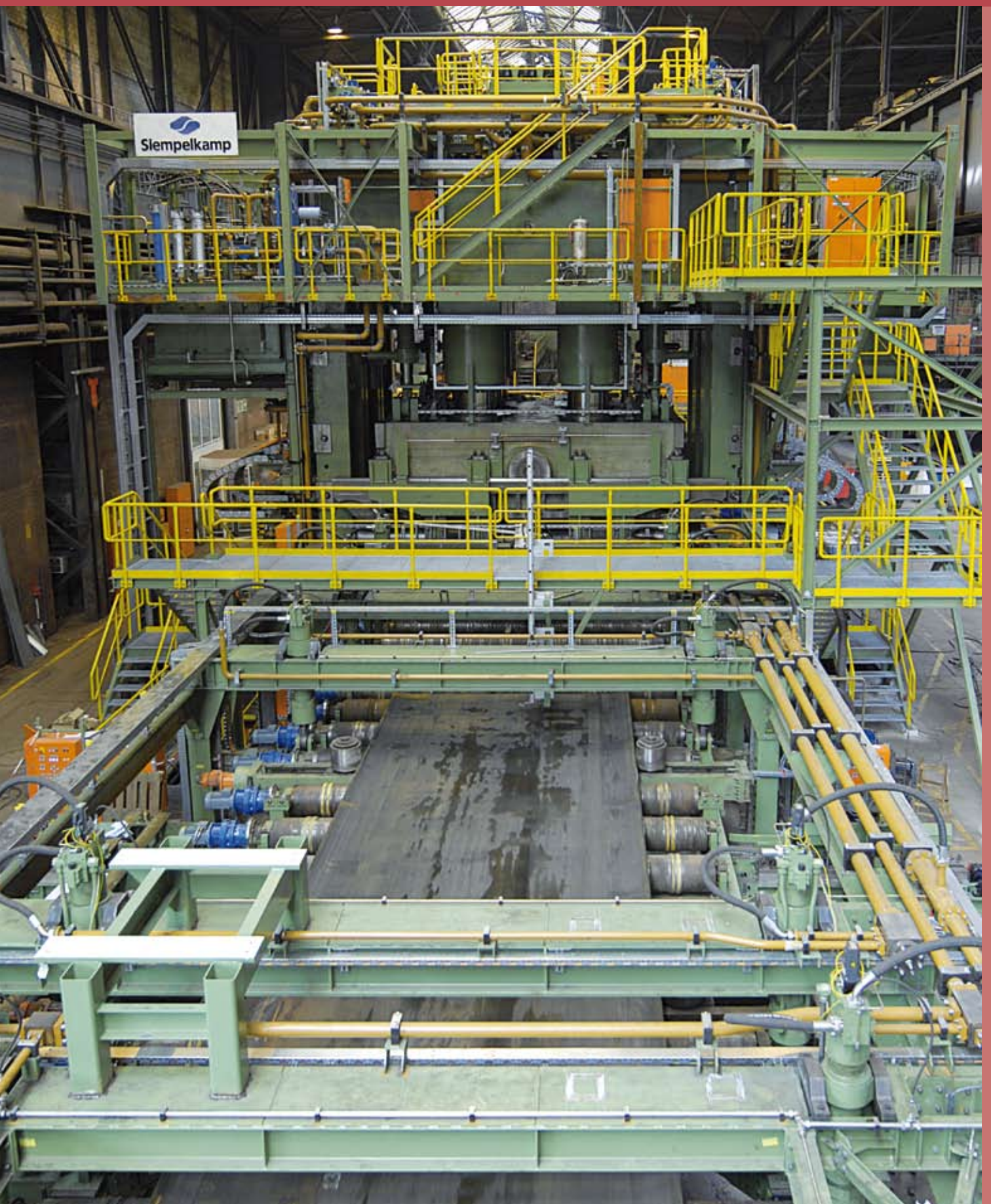


Einsetzen des Pressstisches



Bent plate for acceptance at Siempelkamp

The press at EUROPIPE



weeks. Afterwards, the cycle time was further optimized. By November even smaller weak points, which did not influence the production directly, were eliminated.

The replacement of the tool groups took five to six hours in the beginning. This time was reduced to one hour in the course of the first few months. One year after start-up, the entire EUROPIPE team was able to diagnose and correct malfunctions on their own.

### Experiences

After two and a half years of continuous operation and almost one million forming processes it is confirmed that the right decision was made. The concept has proven itself in every detail. The new press has achieved the requested quality as well as quantity for the initial bending of plate edges. Furthermore, the new machine is no longer a bottleneck.

The forming takes place gradually in 4.5 m long sections. Consequently, less cycles are necessary per plate, an effect that further increases the material throughput. Furthermore, the transport inside the press is quicker. The press operates quickly enough for all sizes and carries out the initial bending for 32 to 40 plates per hour. Plates with a length of 12 m are processed in 89 seconds, plates with a length of 18 m in 112 seconds. For two years EUROPIPE has run large-scale and heavy programs. This would have been impossible with the old press due to the long cycle times and the malfunctions that often occurred.

An essential element is the high accuracy of the control. To keep the moving beam with a weight of 300 t (331 US tons) parallel in a millimeter range is not an easy task. The position of the moving beam is constantly measured, and already at the slightest inclined position, the con-

rol turns the machine off. This function serves to protect the press because an inclined position results in undesired transversal forces.

Together with EUROPIPE, Siempelkamp has developed a special philosophy with the new control. It may be a bit exaggerated to turn off the press at the slightest inclined position. However, experience has shown that every inclined position has a reason. Foreign particles that have beforehand damaged the surface, for example fallen butt weld ends, are now immediately noticed and eliminated. This way, EUROPIPE has already saved many plates from scrapping. The result: Each processed plate is impeccable, one is as precise as the next one.

Now it is only necessary to calibrate the first plate of each production lot. The workpieces that are passed on to the U-forming and O-forming press have a significantly higher quality. The pipes are evenly formed throughout the edges after passing through the U-forming and O-forming press.

In 2010 the press has processed approx. 100,000 plates. At three to four bending processes needed per plate, this amounts to a total of 350,000 bending processes. Throughout its entire operating life, the press has performed almost one million forming processes. Each plate was usable for further processing.

**On pipelay vessels EUROPIPE pipes are appreciated because they simplify the placing in the automatic systems and thus result in increased efficiency.**

### Outlook

Another improvement is planned for the future. Together with Salzgitter Mannesmann Forschung GmbH (SZMF), EUROPIPE



A bent plate

has developed a new, patented tooling concept for which the crimping press has already been prepared.

The new concept only contains one forming tool which is moved under load. Thus, crushing of the outer plate edges is avoided and an increased accuracy is achieved.

### Summary

The new crimping press at the Mülheim plant of the EUROPIPE GmbH has been operating for two and a half years and has performed almost one million forming processes since then. Despite difficult basic conditions – the new but significantly stronger press had to fit into the available space and an extremely tight time schedule – Siempelkamp managed to design, manufacture and start up the entire equipment within a short time.

At a higher throughput, the new press achieves a significantly higher dimension accuracy than the old one. Already the first formed plate completely satisfied the specifications, as well as all plates that have been produced since.

## Hombak in an overview

- Founded in 1924 as a family business in Bad Kreuznach – focus on: woodworking machines for joineries and handicraft businesses
- 1956 production of the first flakers for the particleboard industry
- Long-term core competence: specializing in wood-reduction technology, expansion and further development of individual machines, complete flake and chip preparation and processing
- June 2009: integration into Siempelkamp Maschinen- und Anlagenbau GmbH & Co. KG
- 65 employees
- Sales target 2011: approx. € 12 million



Traditional, clever, innovative:

# Hombak is Group-compatible!



Werner Schweinsberg

Since 2009 Hombak Maschinen- und Anlagenbau GmbH has been part of Siempelkamp. As the youngest member of the Group, the company from Bad Kreuznach has all the talents that a suitable partner of the Siempelkamp winning team should have. This includes a strong commitment for the company's philosophy, a coherent portfolio which enriches the overall strategy, and the cleverness to incorporate traditional products in innovative concepts time and time again!

By Ralf Griesche

## Infeed drum chipper



**H**ombak enriches the product spectrum of the Siempelkamp Group with sophisticated and versatile wood-reduction technology. An even broader portfolio for the front-end is an important contribution to the Group's entire range of supply, which makes the machine and plant engineering specialist even more attractive as a single-source supplier.

From the wood feed to the drum screen, everything is included. For flake and chip production Hombak supplies the wood feed to the rotor debarker, the chipper with discharge screw to the knife-ring flaker as well as the surface layer mills.

For the production of OSB strands Hombak offers stranders as well as wet and dry storage bunkers and drum screens. This represents the complete range of machines for the production of chips, flakes and strands.

The beginning of Hombak in the 1950s is marked by the cutter-head (see below). Today Hombak is represented on the market

with a complete series of universal drum flakers and knife-ring flakers. Furthermore, the company offers a complete series of drum chippers which produce chips for many different applications, for example, micro-woodchips, TMP wood chips, chips for all applications in the particleboard industry, as well as chips used for energy production. The range of applications refers to shredding, cutting, and chipping logs with a diameter up to approx. 820 mm at a machine intake width of up to 1,450 mm.

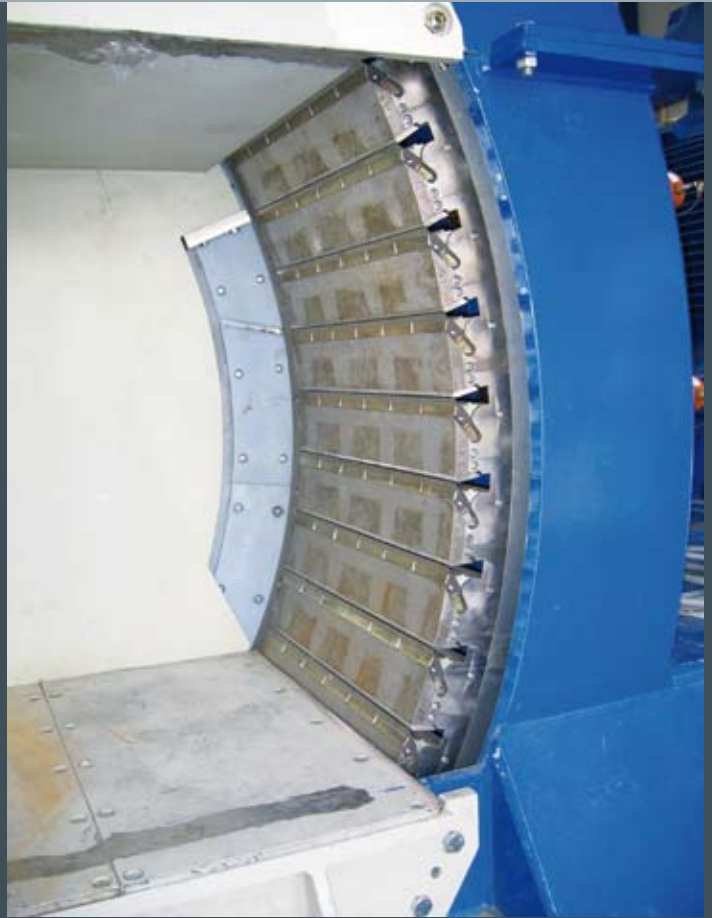
Furthermore, Hombak offers a machine portfolio for the reduction of wood waste and residual wood, such as bark and tree stumps. The rotors of drum chippers have diameters of up to 2,300 mm (standard) – a maximum size which, for example, the Siempelkamp customer Russian Laminate ordered for its complete MDF line in the Smolensk region.

The objective of the company is to position itself, according to the Siempelkamp overall strategy, as a single-source provider in the wood-based materials industry. At the same time Hombak

Rotor



OSB strander, view of the chipping area



Metering bin

Knife-ring flaker



will not lose sight of its single machine business because an order for an individual chipper is as welcome as an order for a complete line. Likewise, new business is just as important for Hombak as spare parts business. Plant operators have a choice when buying, for example, a new knife-ring flaker or refurbishing an existing one.

**With innovative strength and synergy awareness  
"genuine Siempelkamp"!**

Not only in regard to the product spectrum but also in regard to our company's philosophy, Hombak is fully integrated into the Siempelkamp Group. "Consciousness of tradition, stability of value, and reliability are the three main features that we incorporate in our company and our products. In this way, we are fully integrated in the overall strategy," outlines Werner Schweinsberg, Executive at Hombak since April 2011 and an expert in the area of wood-size reduction technology for 17 years.



Synergies with other Siempelkamp companies are actively formed and advanced, for example, with the planning specialists from Sicoplan, the automation experts from ATR or the dryer specialists from Büttner. Planning, project planning, design, production, and sales are supported by the constructive dialogs within the Group. This results in products that are perfectly tailored to the customer's requirement, something that can only be achieved through team work of all involved partners.

Another Hombak characteristic also fits in the overall Siempelkamp picture: "We meet market expectations and needs which are still unknown today with new concepts tomorrow, something that would not be possible without an intensive exchange of ideas with our customers. We promote and value the open and conscious communication, which is a vital part of our Group, also in the cooperation with our customers. This behavior advances our innovative strength decisively," says Werner Schweinsberg.

After the cutterhead also means before the next cutterhead – an ongoing development!

The cutterhead has emerged as the current driver of innovation. While in 1956 it was used for the first time in smaller machines, today the cutterhead is Hombak's traditional reference product. Its special feature includes: The knife is not positioned horizontally as usual but peripherally around the cutterhead – hence the curved shape. The highlight at the product introduction and still today is that the wood shavings from a log can be immediately used in the core layer of particleboard after their production.



De-barker



Drum chipper



De-barker



Universal drum flaker



Cutter head

The two-phase process, drum chipper and knife-ring flaker, is also used in current projects by Hombak to accommodate increasingly changing wood types and bent wood. "With little design effort, however, we would also be able to reduce bent wood with a cutterhead," says Werner Schweinsberg.

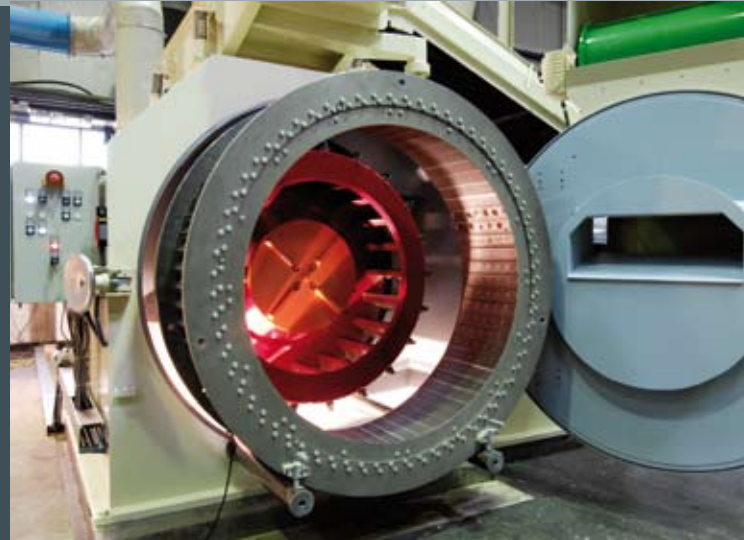
The advantages of the Hombak cutterhead are evident: Due to the fact that the knives are pulled through the wood there is a much better flake quality being generated in comparison to the regular chipping. With such a knife it is possible to cut perpendicular as well as parallel to the fibers' direction. This technology pays off due to its low energy demand which, next to quality and production speed, is an argument that may convince plant operators most.

Just the mere centrifugal force will hold the knife in place, i.e., the knife is clamped and not – as usual – screwed onto the knife holder. This represents two more advantages: less wear on parts and quicker knife replacements. With so many benefits it is not amazing that the cutterhead has always received the recognition of the market that is necessary for such long-term success.

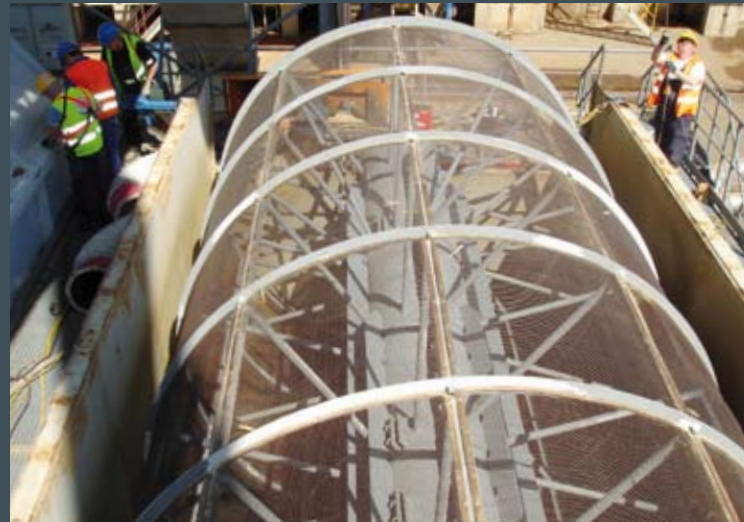
The application fields of the cutterhead are not limited to the wood-based materials industry, as Hombak has known for a long time. The traditional concept is well on its way to set new benchmarks as an innovative product. In the 21st century the Bad Kreuznach company will put a large part of its development work into finding ways to use the special advantages of the innovative cutterhead in other application fields, for example, in paper and plastic reduction.

Basic tests with the perpendicular cut show that this effective chipping technology represents a clear advantage especially when cutting young materials, such as carbon fiber reinforced polymers. Among others, the aircraft industry benefits here (source: a Master Thesis on the WWW). "Our research and development currently concentrates on developing modified cutterhead concepts. In this respect, one cutterhead will always follow behind the next one!" says Werner Schweinsberg.

In order to achieve the objectives, Hombak not only focuses on research and development but also on the expansion of its equipment and process efficiency. A new boring machine allows the machining of larger parts with a component weight of up to three tons. Furthermore, the material flow is being optimized; production processes are becoming increasingly more efficient. For the representation of business processes and for the continuous integration into the Siempelkamp Group, Hombak is investing in a connection to the ERP system used by the Group. This also opens up the advantage of communicating with the other Siempelkamp team players in a more intensive and effective manner!



Cutter head in extended position



Drum screen



Drum chipper during assembly

Büttner Gesellschaft für Trocknungs- und Umwelttechnik mbH:

# The new BÜTTNER combination burner



With over 135 years of history and more than 2000 dryer systems installed, Büttner is the worldwide leading supplier of industrial dryer technology. The activities are heavily concentrated on the wood, energy and sugar industry, Büttner dryers however are utilized more and more in other industrial applications.

By Carsten Otto

3-D rendering of the Büttner burner housing during development

# type BCB



Büttner combination burner for a chip dryer for the panel industry

The drying of wet materials such as wood chips, wood strands, biomass, sugar beet shavings to the required final moisture content always requires specific thermal energy. In direct heated dryer applications the required thermal energy is generated by the combustion of production waste materials such as bark and primary fuels such as gas and oil. Next to grate fired energy systems, single fuel, multi-fuel or combination fuel suspension burners are utilized the most for heat generation.

The customization of heat generators to the special requirements of the dryer has been the leading effort by Büttner for decades. Büttner has established numerous standards during the development of various combustion chamber types for individual operating conditions and customer requirements. The design of such combustion chambers was based on in-house technology know-how and practical experience, and was continuously optimized over the years.

The idea developed to also have Büttner build and supply the burner as a key component of the energy system. Büttner's engineers have the entire know-how of the combustion process available and have influenced the design and controls of third-party burners in the past. At the beginning of last year, Büttner dedicated experienced experts specializing in the areas of burner design, technology and start-up, to a new department for burner technology.

Due to a considerable order backlog Büttner started to equip their installations in the sugar industry with their own gas burners, in a fast and successful way. The dust-/gas-/oil-combination burner was developed parallel to that effort. For this purpose the collective experience from numerous dryer systems was gathered and evaluated. During a very time-consuming effort, a team of engineers developed an entirely new burner with significant advantages to current products.

## The right burner for the right job

Büttner's combination burner type BCB is utilized to generate the heat energy for various processes and is offered for applications such as flue gas generation, grate firing systems, heat source for boilers and thermal oil generators. The burners are offered for a wide range of firing capacities and are practically deployed in all dryer systems for various materials not limited to asphalt mixing.

Burners are currently offered for maximum firing capacities of up to 100 MW in different capacity classes, but are also customizable for individual concepts.

The systems are designed for burning solid, liquid and gaseous fuels such as sander and screen dust, different kinds of carbon dust, heavy oil, light oil, natural gas and liquid gas (LPG). These fuels can be burned separately or in combination with each other, though still maintaining reliable and economic operation.



Top: Büttner dosing bin and conveying system for solid dust fuels

Left: Büttner natural gas burner for a dryer system for sugar beet shavings

The turn-down ratio of the burner systems is dependent on the system capacity and the fuel type. For gaseous fuels the ration is 1:10, liquid fuels 1:7 and solid fuels 1:5.

The burner basically consists of the burner housing with a graduated combustion air system, the cooled and refractoried burner muffle including dust nozzle, gas and/or oil lance. With such a design even cool combustion chambers with or without gas or oil support flame can be fired with dust right from the beginning.

Büttner's combination burner type BCB can be operated with 300°C pre-heated air. The graduated combustion air reduces NO<sub>x</sub>-emissions. Together with swirl and core air, the flame geometry can be adjusted. The robust design, the exchangeable wear protection at the dust intake and sufficient, easy to access maintenance and control hatches greatly ease the operation and maintenance of the burner.

#### Control know-how meets first-class service

Operation of the system, including the adjustment of the optimal fuel/combustion air ratio is done fully automatic and dependent on the firing demand. The complete system, including all main and

auxiliary equipment with all components for fuel supply, controls and dosing, is designed according to the latest safety requirements. This relates particularly to flame monitoring performed by component tested UV and/or IR flame sensors. The ignition utilizes a gas-electric operated gas ignition burner.

#### Büttner pump and dosing system for fluid fuels



## Büttner combination burner for a chip dryer for the panel industry

Next to the burner, a complete gas train for gaseous fuels including pilot flame, an oil pump and dosing system for heavy or light oil fuel, or a fuel handling and dosing system for solid dust fuels will be part of Büttner's scope of supplies. For its burners, Büttner solely uses high quality and proven components. The burners are controlled by a failure safe PLC including Büttner's own, for years proven, software. Installation and start-up of the burner system as well as the training of the customer's personnel is always performed by experienced Büttner personnel. The customer-oriented service is of course not only focusing on new installations, but also retrofits and modernizations to existing systems of various suppliers. The Büttner customer service offers the advantage that the burner and the dryer can be inspected during one site visit by the same Büttner service technician.

By now, Büttner's reference list includes more than 40 lines and more and more successful operating companies from different industries order Büttner burners.

At this year's LIGNA 2011 Büttner will show a combination burner for wood dust and gas with a capacity of 30 MW at their booth in exhibit hall 27. This burner is already sold to one of the leading European panel producers.





# Siempelkamp

G. Siempelkamp GmbH & Co. KG

## Machinery and Plants



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Maschinen- und Anlagenbau  
Siempelkamp Maschinen- und Anlagenbau GmbH & Co. KG



Büttner Gesellschaft für Trocknungs- und Umwelttechnik mbH



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Siempelkamp Logistics & Service GmbH



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



**STROTHMANN**  
Machines & Handling  
W. Strothmann GmbH



**Siempelkamp**  
Siempelkamp CZ s. r. o.



**CMC TEXPAN**  
CMC S.r.l.



Hombak Maschinen- und Anlagenbau GmbH

## Sales companies/Representatives

### Australia

Siempelkamp Pty Ltd.

### Brazil

Siempelkamp do Brasil Ltda.

### China

Siempelkamp (Wuxi) Machinery Manufacturing Ltd., Beijing

### France

Siempelkamp France Sarl

### India

Siempelkamp India Pvt. Ltd.

### Russia

Siempelkamp Moscow

### Singapore

Siempelkamp Pte Ltd.

### Spain

Siempelkamp Barcelona

### Turkey

Siempelkamp Istanbul

### USA

Siempelkamp L.P.

## Nuclear Technology



**Siempelkamp**  
Nukleartechnik

Siempelkamp Nukleartechnik GmbH



**Siempelkamp**  
NIS Ingenieurgesellschaft mbH

NIS Ingenieurgesellschaft



**Siempelkamp**  
Tensioning Systems

Siempelkamp Tensioning Systems GmbH



**Siempelkamp**  
Kranteknik

Siempelkamp Kranteknik GmbH



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Assistance Nucléaire S.A.



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Siempelkamp MSDG SARL



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Siempelkamp Nuclear Technology UK LTD.



**Siempelkamp**  
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Siempelkamp Nuclear Technology Inc.



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## Foundry



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