



Siempelkamp

Issue 02 | 2012

**OAO Ivatsevichdrev:** Complete particle board plant sets milestones **Siempelkamp cast components:** An intergenerational contract **New process for fiber blending:** Ecoresinator – cost terminator **Material inspection for the Soyuz 29 landing capsule:** Historic moment for Siempelkamp **Truck side member press:** Acceptance test at KLT/India

# 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:

The reports in this "Bulletin" edition are a reflection of the diverse projects which the Siempelkamp Group carries out worldwide. 24 companies and ten representative offices together form a strong network providing products and services more diversified than ever.

This diversification applies to all levels: Not only our range of products, but also the expertise and the global coverage of the Siempelkamp Group have become more versatile and complete than ever.

The result is an extraordinary level of manufacturing depth, for example, in the wood-based materials industry. This opens up immense advantages for plant operators ranging from the project management, to the business aspect, to excellent product quality.

This competence motivates an increasing number of customers to award us with their complete orders. Customers that have done so include Ivatsevichdrev in Belarus and Metro in Thailand. We report on these projects inside this "Bulletin". The radius of action of our foundry and nuclear technology business units is also positioned well.

During times of cooling markets, this versatility is the best insurance to remain successful in a wide variety of industries.

Last but not least, the circle closes when we profit from the synergies within our Group of companies. Please take a look at our report on the new double-girder bridge crane supplied by Siempelkamp Krantechnik (crane technology) to Siempelkamp Maschinenfabrik (machine factory).

We hope that with the help of our "Bulletin" you as a reader will gain exciting insights into our world and also into yours! We wish you a good start to a successful and healthy 2013!

With best regards from Krefeld

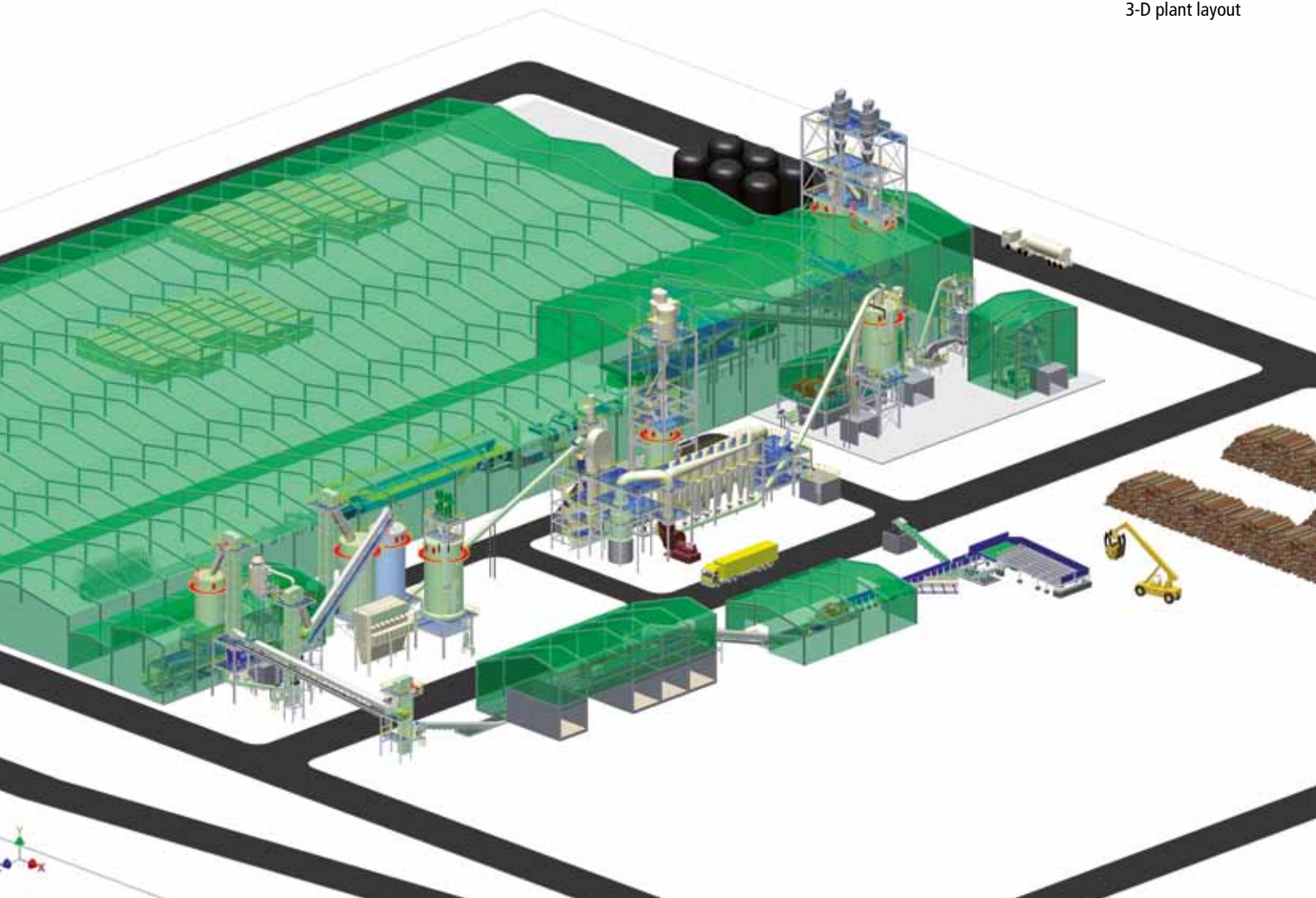
A handwritten signature in blue ink, appearing to read 'H. Fechner', written in a cursive style.

Dr.-Ing. Hans W. Fechner



# Start-up at Ivatsevichdrev: Complete particleboard plant sets

3-D plant layout



Start-ups are pleasing culminations to plant projects celebrated alike by plant manufacturers and operators. A special start-up took place at OAO Ivatsevichdrev in Belarus in October: the start-up of Siempelkamp's first particleboard production plant supplied completely according to the "single-source" principle!

By Ralf Griesche

# milestones

The state-owned Ivatsevichdrev company ordered the plant with the special scope of supply in September 2008 (see box). Siempelkamp excelled over strong competition in the public tender procedure.

All divisions for wood-based products of the companies of Siempelkamp Maschinen- und Anlagenbau are involved in this order: The Belgium subsidiary Sicoplan was responsible for the overall planning, Hombak supplied the machines for the particle production, Büttner the energy plant and the particle dryer. The Italian subsidiary CMC provided the screens, silos, the blending system, and the matformers. Siempelkamp in Krefeld supplied the forming and press line, the finishing line as well as two short-cycle presses and the storage technology. The electrical switch-gear cabinets by ATR as well as the measurement, automation, and control technology systems also came from Krefeld. The technological start-up was carried out by Siempelkamp specialists.

Ivatsevichdrev, one of the largest wood-processing companies in Belarus, is part of the "Belarusian Production and Trade Concern of Forestry" and the "Woodworking and Pulp-and-Paper Industry". With more than 1,000 employees the company is also one of the most important employers in the region.

The high-performance plant was built at the company's location in Ivatsevichy, a district town near the city of Brest between the Belarusian and Polish border and the Belarusian capital Minsk. An old Russian particleboard plant is operating at the same location.

To comply with the strict environmental requirements, wet electric filters clean emissions from the dryer and the press. This represents just one more feature turning this plant into the most modern and best-performing one in Belarus.

After the Belarusian city gave the green light for the buyer to obtain a loan in the form of a government guarantee, construction of the plant started in spring of 2010. The new Siempelkamp plant guarantees the customer a daily capacity of 800 m<sup>3</sup>. Even more is possible because the plant was designed with a reserve of 30+ percent. With a yearly capacity of approx. 330,000 m<sup>3</sup>, the country's production of particleboard will almost double!

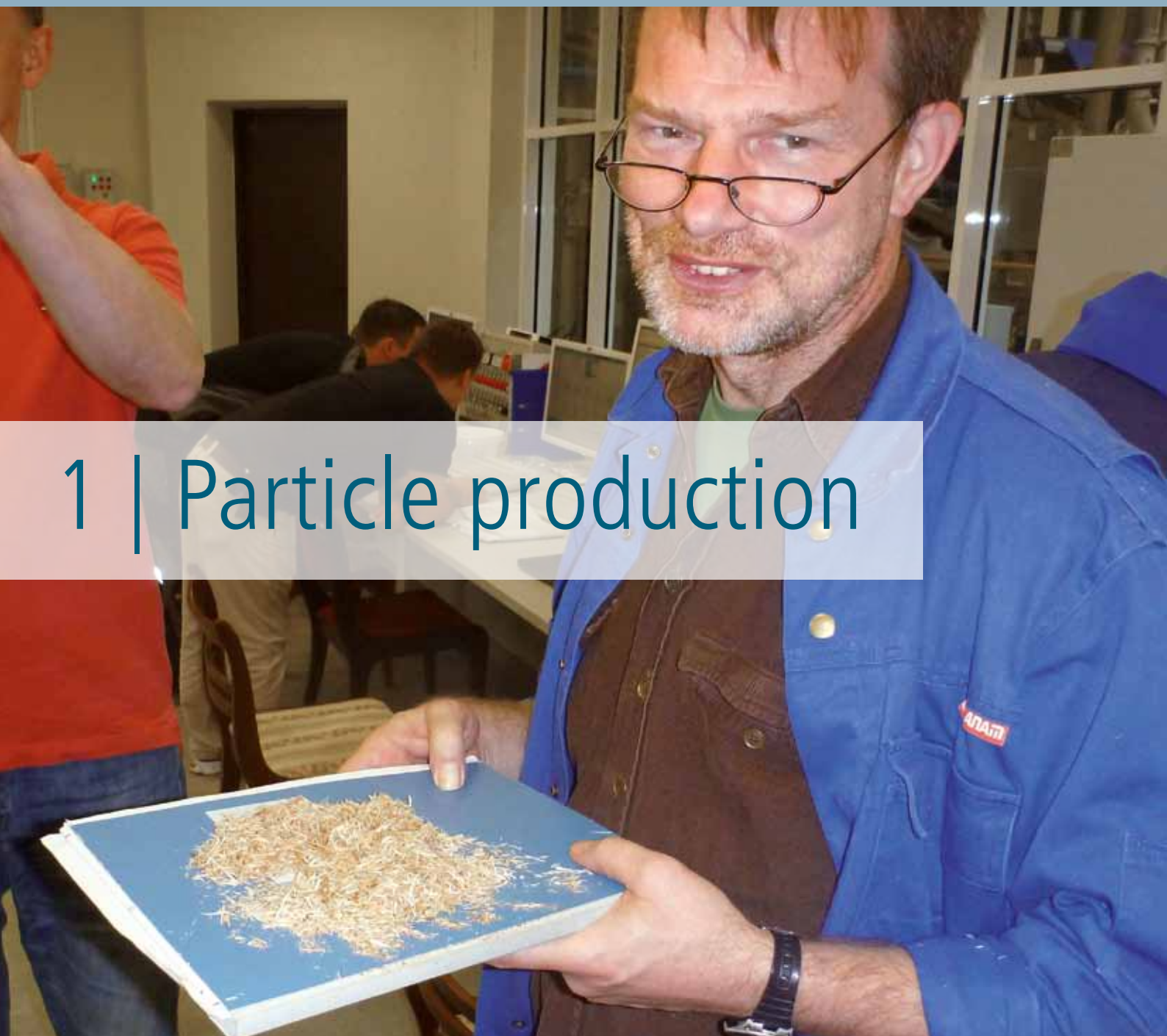
## Particleboard plant for Ivatsevichdrev: complete spectrum

- Planning, engineering, technical start-up
- Debarking equipment primarily for the processing of aspen trees, but also wood from pine, spruce, birch and alder trees, with the removed bark used as fuel
- Wood feeder
- Complete chipping line primarily for the processing of logs but also for saw mill trim
- Chip storage
- Particle preparation
- Screening
- Re-chipping
- Dry particle silos for surface and core layer material
- Resin preparation and dosing system
- Blender for surface and core layers
- Energy plant (31 MW capacity, see interview)
- Dryer with downstream wet electric filters
- Matformers for surface layer and core layer chips
- Forming and pressing line with 7' x 28.8 m ContiRoll®
- Cooling and stacking line
- Automatic intermediate storage for raw boards
- Sanding line
- Automatic intermediate storage for sanded boards (connection to short-cycle presses)
- Stacking boxes
- Strapping line
- Two short-cycle press lines for the laminating of particleboards with automatic feeding system, in addition, an automatic paper pallet storage system and a strapping line
- Automation technology
- Mechanical and pneumatic material handling equipment for the inside and outside areas of the plant
- Complete shipping of machines to the construction site
- Installation supervision
- Start-up

With just under ten million inhabitants, the per capita consumption of wood-based materials is not very high compared to Western Europe and offers considerable room for growth. These are optimal conditions for this new particleboard line, which has been operating at full capacity since October 2012!



# 1 | Particle production



The first particles



Debarker



Log feed



Feeding of the chipper





Chipper



Chip silo



Flaker



Gravimetric separator



Energy plant



Dryer



Dryer and energy plant



Roller separator



Oscillating screens



Silo for surface layer and core layer particles



Glue kitchen



Dosing bin



Blender

Interview with general manager Boris Mikhailovich Mikhniuk, OAO Ivatsevichdrev:

# From sawmill to a performance-strong particleboard manufacturer

**For Bulletin general manager Boris M. Mikhniuk outlines the ambitious objectives that OAO Ivatsevichdrev has set for itself with the new Siempelkamp complete plant.**

**Mr Mikhniuk, please tell us about the history of Ivatsevichdrev.**

**Boris M. Mikhniuk:** Our plant started operating in 1922. Back then we concentrated on the production of sawn lumber as the only product. The beginning for today's modern operative structure was marked by the construction of a particleboard plant and a short-cycle press line as a result of a directive from the Ministry of Wood Industry of the former Byelorussian Soviet Socialist Republic (BSSR). These machines started operating in 1971.

The Ministry of Wood Industry of the former USSR bought complete plants for the production of laminated particleboard from Germany and Finland in the 1970s in order to develop furniture production. One of these plants was intended for the former

\* BSSR = Belarussische Sozialistische Sowjetrepublik

Signing of the contract on September 26, 2008  
from left to right: U. Kaiser, J. Phillips, M. Mikhniuk, N. Paplauski



BSSR and handed over to the wood-processing association of Ivatsevichy. The start-up of one plant for the production of laminated particleboard took place in 1976.

**In the 1990s the conversion into a joint stock company took place ...**

**Boris M. Mikhniuk:** In August 1993 the business association was first converted into a closed joint stock company "Ivatsevichdrev" (limited liability company); then later, in December 1993, into a public joint stock company.

**What market position does your company hold in Belarus?**

**Boris M. Mikhniuk:** For several decades Ivatsevichdrev has satisfied the customers' demands with a broad selection of products as well as supplier parts, for example, for the furniture industry. Our manufacturing program includes a wide range of goods for the furniture industry ranging from sawn timber to decorative films.

With its activities in local and international markets, Ivatsevichdrev has a reputation as a reliable partner. Customers from Belarus as well as many other countries trust in our company.

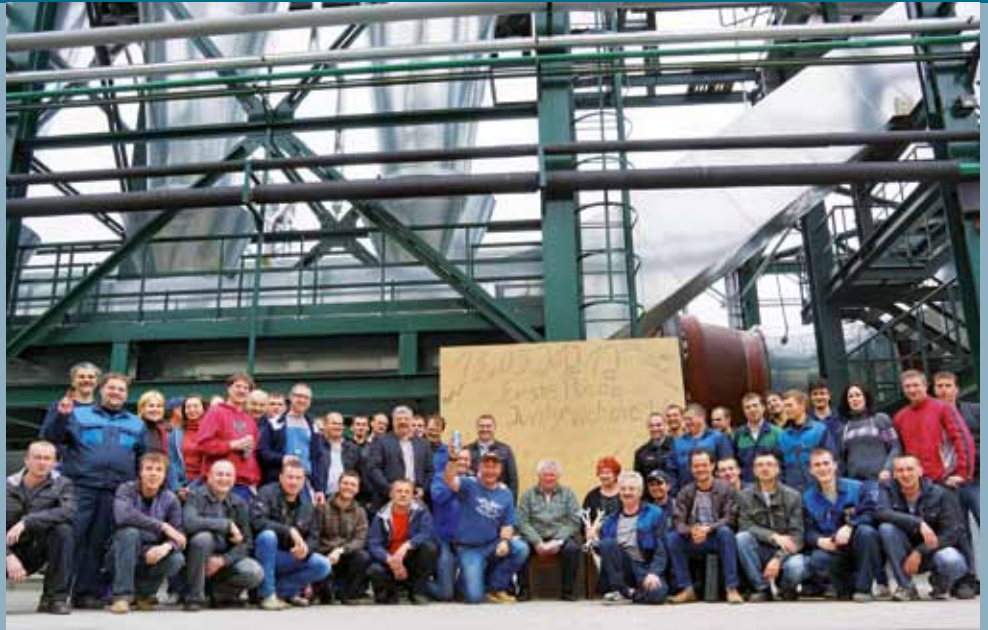
**For how long has Ivatsevichdrev been involved in the production of particleboard / furniture panels?**

**Boris M. Mikhniuk:** Since 1971.

**Who made the decision to invest in a new plant – and how did Siempelkamp get involved?**



First board on May 13, 2012



**Boris M. Mikhniuk:** In July 2006 Alexander Lukaschenko, President of the Republic of Belarus, visited our company. It was then that the decision for the upgrading of the Belarusian wood-based material production plants was made, one of which was Ivatsevichdrev. As a result of this decision a presidential decree was enacted in October 2007 which meant the go-ahead for the project "Technical Retrofit Ivatsevichdrev".

Our relationship to Siempelkamp has had a professional and reliable development. For such a large and comprehensive project, however, some friction losses were unavoidable, for example, in the time and delivery schedules.

#### What expectations have been set for the new high-tech plant?

**Boris M. Mikhniuk:** The main priority is to produce a product with high quality at low production costs. This will allow Ivatsevichdrev to further strengthen its position in the market and to penetrate new markets.

#### The new plant is completely made by Siempelkamp including the energy plant and short-cycle presses. Why did you decide to obtain everything from a single source?

**Boris M. Mikhniuk:** We are convinced that this concept will allow us to react instantly to possible operational difficulties. Furthermore, it was important to us that our supplier can provide us with machines and equipment that are absolutely compatible with one another.

#### Where does the supply of raw wood for the plant come from?

**Boris M. Mikhniuk:** The wood and resin is supplied completely from within the Republic of Belarus. Our main supplier for the chemical components is the Russian Federation.

#### What assortments of particleboards do you manufacture?

**Boris M. Mikhniuk:** We are guided completely by our customers' needs. The portfolio is very comprehensive. Whatever the market demands takes priority in our production.

#### What do you currently focus on?

**Boris M. Mikhniuk:** Currently, our experts dedicate their time to the complete wood processing cycle and the production of our end products. At the moment though, all forces are focused on the completion of our current project – our complete plant.

#### Will there be a big opening ceremony?

**Boris M. Mikhniuk:** It is planned that leading personalities of the state will visit our plant and be present for a symbolic production start.

#### Thank you, Mr Mikhniuk. We wish you future success for the production with the new and complete plant!

# 2 | Forming and press line

Forming and press line



Forming line



Press line



SicoScan Moisture analyser



SicoScan



Double diagonal saw



Fresh air supply for the hall



Siempelkamp energy system for Ivatsevichdrev:

# More independence, lower costs, higher integration

One plant component Ivatsevichdrev purchased in the latter part of 2010 was the energy system from Siempelkamp Energy Systems, today part of the Siempelkamp subsidiary Büttner. With this energy system, our customer benefits in two ways: from the optimal concept thanks to Siempelkamp's single-source principle and from being independent from expensive gas imports. Ines Veckenstedt, Managing Director at Büttner, and Dr. Hans-Günther Schwarz, Senior Sales Manager, explain the details.

**What role does the energy system play for your company?**

**Ines Veckenstedt:** Büttner Energie- und Trocknungstechnik supplies energy systems with a broad capacity spectrum ranging from 10 to 88 MW. With 31 MW the firing capacity of the system for Ivatsevichdrev is at the lower end of our spectrum. However, regardless how big or small, each concept is equally important to us. Our energy systems are always custom-designed and exactly tailored to such factors as outside temperature, climate, and any kind of scrap or waste wood.

**Was there anything special about this order?**

**Dr. Hans-Günther Schwarz:** Of particular importance was that significant amounts of bark are supplied from the debarking equipment as fuel. The joint planning of the plant by the companies of the Siempelkamp Group resulted in an optimal arrange-

from left to right: Dr. Hans-Günther Schwarz and Ines Veckenstedt



ment of the equipment with short transport distances. In close cooperation with the Belgium Siempelkamp subsidiary Sicoplan we furthermore developed a concept that allows us to use the contaminated exhaust vapors from the press as combustion air for the energy system.

#### How large is the grate, the core component of the energy plant?

**Dr. Hans-Günther Schwarz:** The energy plant for Ivatsevichdrev has a grate that is 41 m<sup>2</sup>, is able to heat 10.5 MW of thermal oil and to generate 20 MW of flue gases for the dryer.

#### How is the thermal oil used?

**Dr. Hans-Günther Schwarz:** The thermal oil is used to heat the ContiRoll®, the short-cycle press lines and the building.

#### Which plant features are also important?

**Ines Veckenstedt:** Our advanced and matured process automation technology provides for a safe and stable production. Our equipment requires low maintenance and cleaning efforts. The hot flue gases for the Ivatsevichdrev project are pre-cleaned by a cyclone dust collector before they are fed to the dryer.

#### Plant operators that decide to install their own energy plants gain significant independence from external energy sources ...

**Ines Veckenstedt:** Indeed, the advantage of becoming independent from external gas supplies by installing an energy plant was the decisive reason for awarding us this contract. Instead of burning imported natural gas, Ivatsevichdrev uses bark, fine particles, material from board trimming, and sanding dust.

#### To what extent is the need of the market met by having an energy system specialist included in the group of companies of a manufacturer for wood-based material production plants?

**Ines Veckenstedt:** A look at our reference list demonstrates that the number of plants for the combustion of biomass has significantly increased over the last few years. The reasons are obvious: Expensive fossil fuels are replaced by inexpensive waste materials from renewable resources or by production waste which accrues anyway. The fact that a manufacturer for wood-based material production plants includes an energy system specialist in its group of companies has the advantage of optimizing critical interfaces. After all, regarding the process technology and the engineering, energy plant and dryer belong together.

**Dr. Hans-Günther Schwarz:** The integration of an energy system into the engineering of the entire plant provides the customer additional reliability. Last but not least, the plant operator saves time and money through joint purchasing of plant components and an installation and start-up that is coordinated in the overall project.



Energy plant





# 3 | Finishing line

Cooling and stacking



Stacking



Intermediate storage



Sander



Stacking boxes with unfinished board storage for the feeding of the short-cycle press

Handling of complete orders at Siempelkamp:

# A concentrated and integrated process

How is a complete order according to the single-source principle processed by Siempelkamp? What advantages does the concept provide for the customer? "Bulletin" talked to project manager Kurt Sommer, who has worked for Siempelkamp for 23 years

**Mr Sommer, to process a complete order in a dimension as the one for our customer Ivatsevichdrev is a big challenge. What is necessary to turn a project like this one into a success?**

**Kurt Sommer:** Transparency, meaning a concentrated project and process management. The particleboard plant for Ivatsevichdrev was the first plant that Siempelkamp supplied completely from a single source. The benefits of our full-service principle became clear during the course of this project. The more outside companies are involved, the greater the risk of friction losses even when dealing with valued partners. A group such as ours, which is able to design and manufacture each plant part on its own, supplies optimum assurance. It is just as they say: "The left hand knows exactly what the right hand is doing."

**How do you coordinate this objective?**

**Kurt Sommer:** This is done through the regular dialog with all involved parties. And also with the help of a firm project structure plan used by all involved employees. As soon as an order is received, a project plan is developed which documents each process step from the engineering to the shipping and makes each individual step traceable. This plan does not only include Siempelkamp services but also components supplied by the customer and the suppliers at the location. Thus, the plan provides a "big picture" in the form of optimal project monitoring and project control. It ensures our customers best possible reliability.

**The interface management for such a large order requires concentrated coordination. Who is involved at this point?**

**Kurt Sommer:** All involved Siempelkamp parties and the customer contacts are well networked. In some countries certain business rules require that this circle is expanded. In Eastern Europe, for example, each customer is obligated to involve a planning office. These offices become additional important interfaces accompanying the process from planning to shipping continuously. Partly, we communicate with these offices indirectly via the customer; partly, the communication takes place directly, for example, in the early design stages of the plant.

**What are the usual communication channels?**

**Kurt Sommer:** Internally, order books and project structure plans are an important written foundation. Otherwise, the communication mode during both the large project phases "development and design" and "installation" differs. During the first phase meetings with the customer and other involved parties, for example, the planning offices, take place regularly. These meetings are held at either the customer's location or at Siempelkamp. During the installation phase, the site manager and assemblers are permanently at the customer's location. The project manager, usually pulling all the strings in the background, may sometimes also travel to the customer's site for ongoing coordination.

**What is the core qualification of a project manager?**

**Kurt Sommer:** Most of our project managers are engineers. They find solutions for technical issues together with all involved parties. However, during such a project, commercial skills also play a decisive role for the project's implementation.

**Is there an ideal process for Siempelkamp projects?**

**Kurt Sommer:** As a rule, we work according to clearly structured project plans. Nevertheless, no project is like another. The before mentioned different regulations make it necessary to find a different approach for each individual project. In Eastern Europe the planning offices require a precisely tailored layout of our work. Other countries have very specific laws for product protections, customs regulations, and other details. Different cultural habits also contribute to the fact that no project proceeds like another!

**What is the objective of the "big picture"?**

**Kurt Sommer:** We aim at providing our customers with a smooth and quick project completion. In the end our objective is to start up a plant which will manufacture excellent products.





# 4 | Short-cycle press

Short-cycle press



One of two short-cycle presses



Unfinished board feed



Inline paper lay-up



Plate changing equipment



Paper storage



# Siempelkamp Maschinenfabrik GmbH: Company-own heat and power combinatio unit for energy and environmental benefits



Generator with motor

Location development at Siempelkamp does not only aim at more, larger, and more innovative production means. Energy efficiency and environment-friendly power supply are also part of the agenda. A current project of Siempelkamp Maschinenfabrik GmbH is the construction of a gas-powered combined heat and power unit. The main benefits include: maximum use of the fuel via combined heat and power as well as climate protection!

By Dipl.-Ing. Klaus Gartz

At Siempelkamp's Krefeld location the machine and plant engineering business unit, including the machine factory and subsidiaries, such as Büttner, use up to 2.4 MW of power and during the winter up to 5 MW of heat. Currently, electricity is fed from the public electrical power network into the medium-voltage power network of the company. All office and production buildings as well as the test facility are heated with individual natural-gas-operated boilers or radiators.

"These systems have proven themselves over decades, however, under current efficiency criteria they are out of date. In June 2011 the board of directors therefore gave the green light for the construction of a gas-operated combined heat and



power unit with associated electricity and heat recovery systems. Thus, we achieve higher energy efficiency and power supply security," says Klaus Gartz, as Manager Electrics responsible for the energy management at the machine factory. This project was made possible by an investment of approx. 2.4 million Euros at the Krefeld location.

It is planned to generate up to 2.0 MW of power for in-house use as well as heat for the production halls and office buildings. Natural gas will be used as fuel for now. Alternatively, the system can be converted to bio gas according to the Renewable Energy Sources Act later on. The main component of the new Siempelkamp combined heat and power unit is a gas-operated gasoline engine (Otto engine), which drives a generator to produce power.

**Isolated operation ensures energy autonomy**

The electrical energy is directly fed to the on-site medium-voltage switching facility at a 10 kV level and supplies, via a medium-voltage power network, a total

Motor



Generator



**Combined heat and power units, cogeneration of heat and electricity & co.: Mini-Lexicon**

- Combined heat and power units:** are used in Germany for decentralized power generation while simultaneously using exhaust heat. They are predestined to lower the primary energy demand and CO<sub>2</sub> emissions. A gas-operated combined heat and power unit generates heat and electricity at the same time (cogeneration of heat and electricity). Its capacity is designed for use in businesses and housing areas.
- Cogeneration of heat and electricity:** kills two birds with one stone: On the one hand, mechanical energy is generated which, most of the time, is directly converted into electrical power. On the other hand, useful heat for heating purposes or for production processes (process heat) is produced. This concept utilizes the used primary energy with significantly higher efficiency than the separate generation of electricity and heat.
- Combined heat and power generation act:** effective since 2002. By promoting the combined generation of electricity and heat in order to save energy, the legislative body aims to contribute to environmental protection and climate protection objectives. It is planned to increase the share of combined heat and power generation to 25 percent until 2020.
- Otto engine:** ivery common in combined heat and power units; the four-stroke engine from automotive engineering was modified for this application. The gas engine presents a special option: While traditional Otto engines are operated with liquid fuel, the gas engine for combined heat and power units is operated with natural or bio gas.



Generator during installation inside the building



Motor



Work at the location

of 15 transformers: Twelve large transformers supply the energy for the machines in the production buildings and three smaller ones are responsible for the energy supply to the office buildings. The electrical equipment of the combined heat and power unit is capable of isolated operation: During a power outage affecting the public power grid, Siempelkamp stays operable – that means all important consumers and the large machines keep working.

The entire system is “flowing”: Different heat exchanger systems use almost all of the heat generated by the motor and its exhaust gas to heat water to temperatures between 90 and 105°C. A maximum of 2 MW in electricity and 1.6 to 1.9 MW of heat can be generated this way. The heated water is distributed via pumps through a well insulated local heating network and via heat exchangers into the heating networks of the buildings at the location.





Building fans



Combined heat and power unit

The result is impressive: At maximum heat utilization between fall and spring, a total efficiency of up to 87 percent, regarding the burned natural gas, is achieved. During the summer when heating energy consumption is at a minimum, the heat is released into the environment, consequently, the degree of efficiency is decreased. "Altogether, we expect savings of 15 to 20 percent in the primary energy consumption compared to today's supply situation," says Klaus Gartz.

#### Prepared for winter

Big events have cast their shadows ahead since fall of 2011. Back then the large-scale excavation and installation work for the gas and local heating pipelines and for the electrical control for the heat distribution started on Siempelkamp premises. At the same time the company-own medium-voltage grid was upgraded, the new Büttner building integrated into the

electricity network and a significantly stronger power supply line was installed between the public power grid and the factory building.

After completing the startup and acceptance phase in mid-December 2012, the combined heat and power unit is expected to supply almost the entire amount of electricity and approximately half of the required heat for the company. The production buildings take precedence, however, other companies of the Siempelkamp Group at the location can benefit from surplus electricity. It is also planned to feed additional electricity into the public power grid.

Rising energy costs demand good energy management: It is forecast that energy costs will further increase in the future. In order to be prepared, Siempelkamp will introduce an energy management system in addition to the combined heat and power

unit for the efficient use of electricity and heat. Both systems will be managed by Klaus Gartz, just as the photovoltaic system, which was installed in 2011. The self-sufficient operation will be ensured, the maintenance and inspection of the operating parameters guaranteed.

Furthermore, within the meaning of an integrated energy concept, we will continue to improve the use of the heat generated by the combined heat and power unit. We are already planning an absorption-type refrigeration system for room air conditioning. This system will use heating water at 105° C for cooling. "If the energy consumption in our factory should sustainably increase in the future, for example, due to additional large machine tools, the installation of another combined heat and power unit could be worthwhile. For this case, we have already designated a location and heating network capacity," says Klaus Gartz thinking about the future.

Futuristically appearing machine bed for the machine tool DMU 125 by DMG





Machine beds for the third generation of DMG machine tools:

# Siempelkamp cast components: an intergenerational contract

In the Allgäu region of Germany, Siempelkamp cast components are already going into a third generation of machinery: Deckel Maho Gildemeister (DMG) consistently relies on foundry technology from Krefeld for its machine beds.

By Mathias Weil

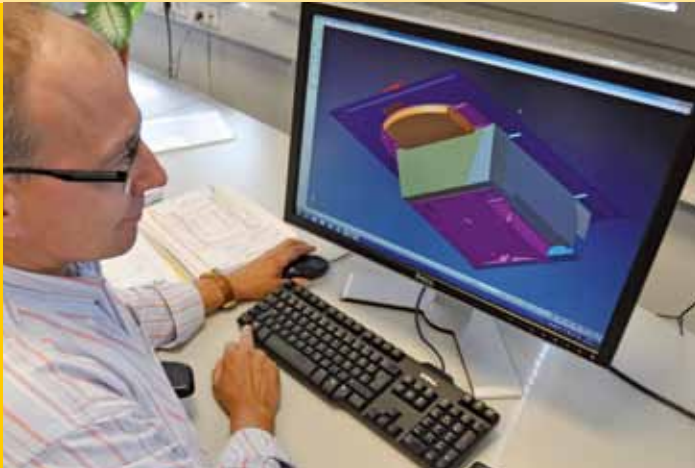
The complex component is created on the basis of more than ten years of successful cooperation between the machine tools manufacturer from Pfronten/Germany and Siempelkamp Giesserei. DMG has been relying on quality products from Krefeld since 2001. "After we supplied the second generation of machine beds for the large DMC 340 U 5-axis portal machine, this great cooperation with DMG opened up a new and ambitious casting concept. A cast iron part is currently being worked on for the third generation of machine tools," says Dirk Howe, Head of Sales at Siempelkamp Giesserei. It is easy to draw parallels to other gigantic archetypes. "When you see the finished, futuristic-looking cast iron part for the DMU 125 machine support, you could almost think you were looking at the Starship Enterprise."

DMG ordered not just one, but five prototypes from Krefeld, weighing 11 t each. Size does not exclude the possibility of speed. The new machines, complete with their new cast iron parts, should be ready for use quickly. At the AMB in Stuttgart in September 2012, the new display piece was already part of the standard equipment.

Siempelkamp keeps pace. "Under enormous time pressure, the first prototype left our plant on time, after twelve weeks. This was only possible thanks to the combined effort of all participants, both at our plant in Krefeld and at DMG in Allgäu – starting from the model planning and design, the model-makers, our mold-makers and fettlers, the quality control centers at both companies, and the order-processing staff," says Dirk Howe.

Première even for Siempelkamp: presentation of DMU 125 at the international exhibition for metal working 2012 (AMB 2012) in Stuttgart, Germany

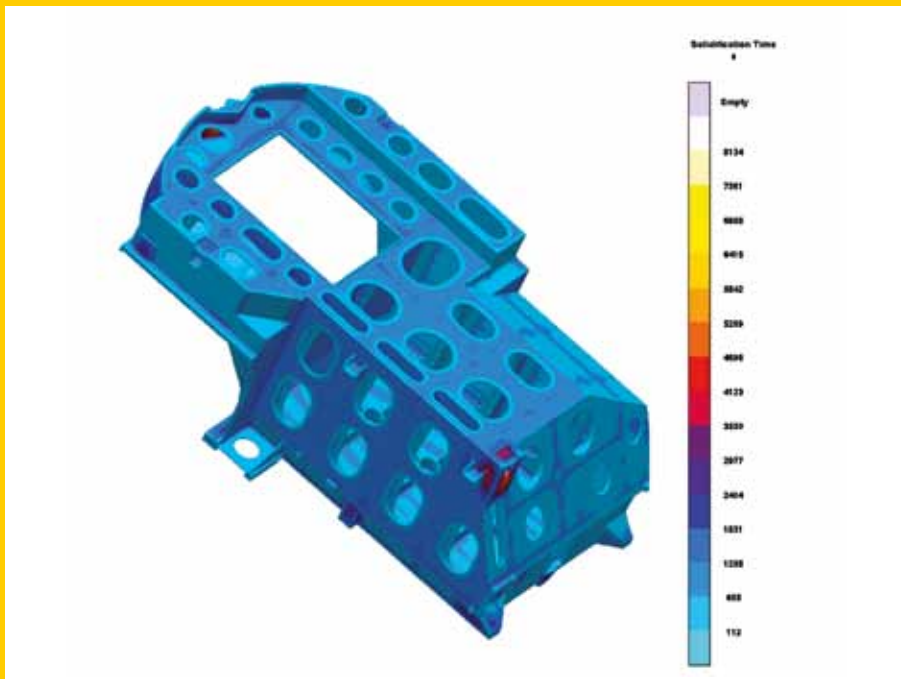




Model planning machine bed for the 3rd generation in DMG machine tools



(left to right) Udo Oepen and Mathias Weil in the engineering department of Siempelkamp Giesserei



Solidification simulation of the machine bed

### Teamwork à la Rhineland + Allgäu

The intensive cooperation began at the model-planning stage; suggestions and improvements for the cast part structure were discussed and developed. The highly geometric form, which is an ambitious foundry product with its many crossovers, small recesses and precast drillholes, was the result of carefully coordinated joint planning processes.

The component is shaped and cast in the molding box; with this optimally suited

## Tools – practical helpers, from the Stone Age to Siempelkamp

The word “tool” makes us think of handy objects that we all have stored in our cellar, garage or car. Something that our ancestors were using back in the Stone Age to make their lives easier.

Since the advent of industrialization, we have been thinking in larger dimensions, i.e. machines in a larger format. In the 15<sup>th</sup> and 16<sup>th</sup> centuries, the technical devices created by Galileo Galilei became a source of general interest; and since the French Revolution and the Enlightenment, large machines have been simplifying and accelerating many work processes.

Today, even the giant presses manufactured by Siempelkamp fall under the heading of “tools”. The customers of Siempelkamp Giesserei develop large machine tools – and we supply the necessary cast components.

Some of these cast products come full circle, when they are used by the Siempelkamp Group. This is the case, for example, with our Schiess machining centers – or the milling machines from Deckel Maho Gildemeister, which enrich the machine inventory at Krefeld.





Storage of the machine bed master pattern



Molding works for the prototypes

method, nothing now stands in the way of the impending start of series production. After cooling to below 300°C in the mold and then cooling to room temperature, the fettlers remove the excess fleet and head cuts. During the joint acceptance testing, the quality control centers performed non-destructive testing by superficial cracking and checked the geometric accuracy of the dimensions. Finally the titanium-grey coating was transferred to the property, and the first machine supports went for machining.

The installation of the machine support in the DMG plant at Pfronten is now on the agenda. From there, the product then begins its journey into the factory halls of DMG customers around the world!



"Fine-tuning" of the machine bed in the fettling shop



Ready for loading





## How does a milling machine work?

A milling machine brings workpieces into shape, by means of rotating cutting tools which remove chips of material. Milling is derived from drilling, but one major difference lies in the fact that at least three axial feed directions are available for milling. This allows the manufacture of complex bodies in space.

The cutting speed for metal covers a wide range, depending on its type: brittle or tough. On the type of machines typically found in workshops and training facilities, speeds of between 20–300 rpm are used. In series manufacturing, or for workpieces that require very intensive milling, e.g. aircraft frames, all parameters are optimally coordinated with each other in the interests of economy. Speeds of up to 10,000 rpm are possible here.

Milling machines can be used to manufacture complex parts such as engine blocks or cogwheels. In the classification of production techniques under the German standard DIN 8580, milling is classified as a cutting process.



On the way to DMG in the Allgäu, Germany



# “Big calibers need strong partners!”

## Interview with head of purchasing Konrad Guggemos and project manager Karl Lechleiter, Deckel Maho Gildemeister, Pfronten

The DMU 125 is a new processing center with a new design. What was the deciding factor in your choice of Siempelkamp again as cast component supplier for this reference project?

**Konrad Guggemos:** In the weight range of the DMU 125, suppliers are thin on the ground. And during the period of our cooperation, which has been on-going since 2001, our company has developed great confidence in Siempelkamp's capabilities in terms of what is technically feasible. The price was also right.

What is so special about the DMU 125 – and which advantages does the concept offer customers?

**Konrad Guggemos:** The designation “125” relates to the travelling distance, and is the next logical step in the series 65 – 85 – 105. The 125 is designed to be particularly rigid, and is hence a very dynamic machine.

What was the challenge in this project?

**Karl Lechleiter:** Our primary focus was on expanding the series, which would provide our customers with a new, high-performance machine.

Which feature of Siempelkamp's service did you find particularly convincing?

**Konrad Guggemos:** Despite the demanding geometry of the workpiece, we were able to receive an optimal and economical component. The rapid production handling for complex cast components is what convinced us.

With our components, it is not always immediately obvious which products they are used to make. Which customers use your machines, and which products do they manufacture?

**Karl Lechleiter:** Our customer base is very diverse. They include mold manufacturers, tool-makers – small and medium-sized enterprises with 20 to 100 employees who use the machines.

Are new projects already underway?

**Konrad Guggemos:** There is a new type of machine, the 270 series. The plans for the fourth generation of DMG machines are already in the files, however.

Can we close with a look to the future? What is the trend in the machine tool market?

**Konrad Guggemos:** The trend for Pfronten is towards larger machines with growing numbers of sales. It is difficult to generalize, as the market is currently very volatile, but our milling machines are going against the trend and making a lot of sales.

Casting of an 11 t cast component



Ecoresinator during testing



Ecoresinator – cost terminator:

# New process for fiber blending pays off

With its "Cut your cost!" campaign Siempelkamp literally puts money in customers' bank accounts. The innovative MDF method for fiber blending with the "Ecoresinator" saves up to 20 percent in resin and relieves the budget of the plant operator. A good 18 months after the new technology was introduced to the market, we are taking a look at its market position and application results.

By Ralf Griesche

Siempelkamp presented its new blending system for the first time at LIGNA 2011. The system promised resin savings of up to 15 percent, better surface quality and capacity increases.

A few Siempelkamp customers could already convince themselves of this promise. More than ten sold systems a year and a



half after market introduction, with three systems having started operation, speak for the high demand of resin-saving machine concepts. This comes as no surprise – low resin costs present a competitive advantage for plant operators.

### Material savings: the key to production success

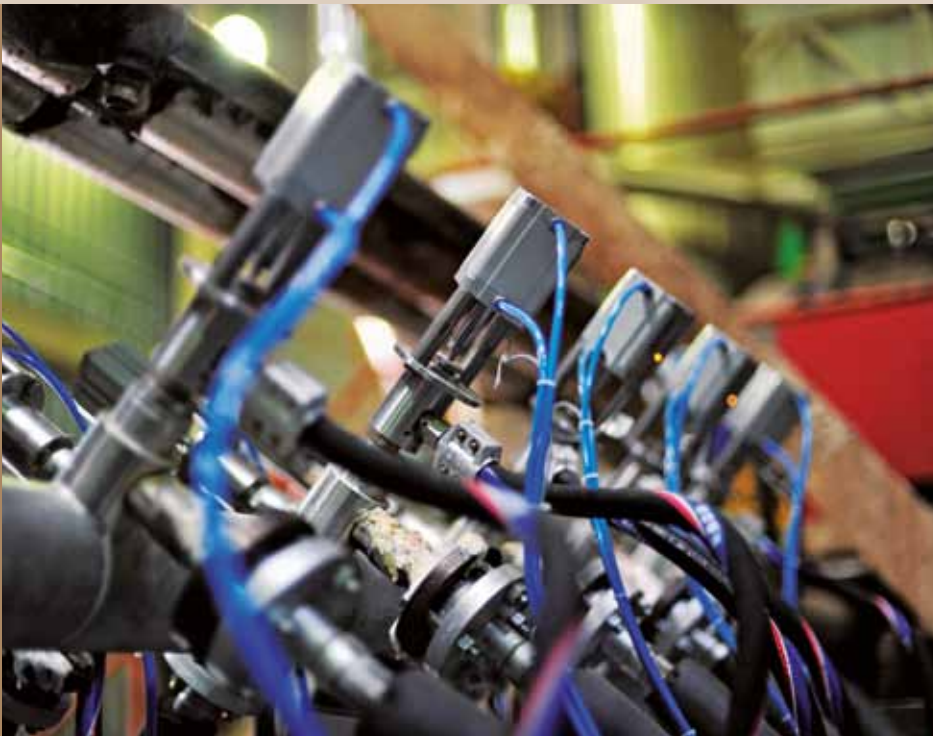
During MDF production many different factors play a role when it comes to improving and maintaining the efficiency of a plant which is especially important during times of intensive competition, high consumer demands, and increasing material costs. Therefore, the objective is to achieve a resource-saving production and high board quality in regard to mechanical and optical properties. "This presents a special challenge for wood-based panel manufacturers and plant builders because the MDF production process, compared to particleboard produc-

tion, is relatively expensive. Due to the system, larger amounts of raw material and energy are used; resin, wood, and energy represent the primary cost units requiring approx. 30 percent each of the total production costs," says Günter Staub, MDF process technology.

Innovative technologies and machines can contribute to resource savings during different stages of the production. Next to the fiber production process and the forming and press line, the blending process is a keystone for which the use of innovative technology pays off. With the Ecoresinator Siempelkamp provides a new blending system for MDF production which lowers material consumption as well as optimizes the quality of the blending process. The spray technology as well as the correct setting of the energy needed for the blending process in the blowline are of great importance. With the Ecoresinator powered by Schlick,

Siempelkamp supplies state-of-the-art blending technology which, compared to traditional systems, guarantees high-quality MDF on the one hand and tremendous resin savings on the other.

Siempelkamp customers know the value of this innovative technology: Hüseyin Yildiz of Starwood was the first plant operator who ordered an Ecoresinator as a retrofit for his thin MDF production line. "Because we are operating a thin board line, the savings are especially impressive and reach 24 percent at best. On average we are able to save 15 percent across all board thicknesses and densities!" says Yildiz. The potential savings offered by the Ecoresinator have also convinced many other Siempelkamp customers.



Ecoresinator at Starwood

## Ecoresinator: modular design

- Module 1: steam supply+
- Module 2: blowline including nozzle technology by Schlick
- Module 3: resin and water distribution

### Advantages:

- The Siempelkamp blending process can be tailored exactly to a customer's plant and the conditions on site.
- Simple transport of the pre-assembled and tested system
- Preliminary work of the customer is minimized: only water, resin, and power connections are needed; the connection elements are supplied by Siempelkamp.

### Successful market position

To date, three of ten sold Ecoresinator blending systems have started operation for satisfied customers. Many long-term Siempelkamp customers use the opportunity to upgrade their traditional old blowline with the Ecoresinator. Other plant operators are expressing their trust in Siempelkamp expertise by ordering the Ecoresinator as a component of a complete new plant. Where are the trust and successful market position of the Ecoresinator coming from? A glance at the blending technology of the system explains it.

Siempelkamp developed this new optimized blending process based on the two-component nozzle technology by Schlick. The controlled injection of steam results in the optimized swirling of the fibers in the blowline. A fine resin mist coats practically every fiber and avoids resin spots on the board. Using the same amounts of resin and wood, the new blending technology results in a product with improved technical properties. This effect can alternatively be used to reduce the resin and fiber consumption. Depending on the plant configuration and product application, potential resin savings of 10 to 20 percent

are possible with the Ecoresinator. This makes this system recommendable for all MDF plants, especially for the production of thin MDF and HDF.

### Der Ecoresinator – eine lohnende The Ecoresinator – a profitable investment

The Ecoresinator also offers advantages regarding its investment, assembly, operation, and maintenance. The system requires comparatively lower investment costs and is installed and operable in a matter of a few days. Compared to other mechanical blending systems, the operating costs are extremely low because no additional electrical energy is consumed. This is confirmed by Starwood Managing Director Hüseyin Yildiz: "There are practically no additional operating costs. We need approx. 75 kg of additional steam per metric ton of fibers – and that is it. We need no vast amounts of circulating air, no additional power, and no additional cleaning shifts. The Ecoresinator was simply attached to our existing blowline system – that is all!"





Plant shutdowns and associated costs as well as maintenance costs do not apply with the Ecoresinator. The nozzles, installed on the outside of the blowline, also correspond to the motto "Cut your costs": The abrasion inside the traditional blowline caused by the fibers no longer takes place, and thus the lifetime of the nozzles is increased. To sum it up, the Ecoresinator stands for low investment costs, short assembly times and negligible operating costs on one side and enormous resin savings and optimal surface quality on the other. This concept has recently convinced another large European HDF manufacturer and long-term Siempelkamp customer.

#### **Ecoresinator retrofit: a progress report**

For its HDF plant made by Siempelkamp this plant operator ordered the new Ecoresinator back in the beginning of 2012. A year and a half prior to this investment, the company had carried out a different optimization to its eight-year-old blowline. This optimization, however, did not bring the desired results so that the customer turned to Siempelkamp for help.

With the experience gained by assemblies and start-ups from prior orders at Starwood in Turkey and Jianfeng in China, Siempelkamp experts started the installation of the system at this European HDF manufacturer in July 2012. In only a short time the system was installed – long shutdown times and unnecessary costs were avoided for the customer. These time savings are a result of the modular design of the Ecoresinator.

The Ecoresinator is supplied as a ready-to-install complete blending system including switchgear cabinet and automation software. The experiences collected from prior installations of the Ecoresinator led to the decision to sell the system as a modular design concept.

Siempelkamp has optimized its ProdiQ® system. Production data is easily monitored; optimization measures of the production process can be administered in a targeted manner if needed. The self-sufficiently operating ProdiQ® system monitors the functionality of the blending system as well as the distribution of the steam, water, and resin. For the customer

this results in additional personnel savings: No operator is needed to start or stop the system or for possible throughput malfunctions – the monitoring takes place automatically. Thus, the system guarantees high plant safety, availability, low maintenance, and an optimal, always monitored, resin distribution.

The plant operator whose plant was recently equipped with the innovative system is convinced of the Ecoresinator because the results speak for themselves: The manufactured boards are spot-free and possess high rigidity. At the same time, the HDF manufacturer records resin savings in a double-digit percentage range and even predicts further optimization potential.

Due to its excellent ability to reproduce results and its ease of maintenance, the Ecoresinator simplifies the daily work of the production teams. Furthermore, the system opens up the opportunity to increase the production capacity for the customer. The optimized resin distribution shortens the required exposure time of the mat inside the press and minimizes scrap.

First-class performance – the operators conferring

## **Benefits of the Ecoresinator**

- High material savings
- Quick return on investment
- Relatively low investment costs
- Quick assembly and ramp-up times
- Minimal downtimes during installation
- Self-controlling system = high repeatability, minimal wear results in low need for maintenance, low spare parts investments
- Available as retrofit or as a component of a new plant

Installation of the crane bridge



Load-bearing synergy:

# New double-girder bridge crane by Siempelkamp for Siempelkamp

Even within the Siempelkamp Group, products from one company are in demand by another. A synergy that is literally load-bearing was implemented by Siempelkamp's Crane Technology (SKT) and Machine Factory: Since mid-July a double-girder bridge crane from SKT has been operating at the Krefeld manufacturing location. A load bearing capacity of 240 t (265 US tons) on tracks!

By Michael Kubbe



Siempelkamp's Crane Technology supplied a double-girder bridge crane with a total load-bearing capacity of 240 t, consisting of two main hoisting devices with a 160 and 80 t load-bearing capacity, respectively and an auxiliary hoisting device with a load-bearing capacity of 10 t, at the end of June 2012.

This SKT crane is the third of its kind at the machine factory, however, it is the first one from within the organization: "We have been using two cranes of the same design and with the same load-bearing capacity since 2008 and 2010. After the integration of E & W Anlagenbau into the Siempelkamp Group it only made sense to use company-own competence for future projects which is now provided by Siempelkamp Crane Technology. Thus, it was obvious that our third double-girder bridge crane would be our own brand and in line with our very own high-quality claims," says Michael Kubbe, Head of Maintenance at Siempelkamp Machine Factory. After five slewing jib cranes, one suspension crane, and a 50 t double-girder bridge crane, the latest double-girder bridge crane is the eighth crane that SKT supplied to the Machine Factory in Krefeld. Other cranes for the Krefeld location were supplied to Siempelkamp Foundry: an 80 t/80 t double-girder bridge crane as casting crane with two 80 t hoisting units as well as a 16 t double-girder bridge crane.

#### In good shape: Siempelkamp Machine Factory

With the new crane Siempelkamp expands its crane capacity, and thus adds an important and desired component: The specialization of the machine factory for large workpieces is in high demand in the market and provides a unique selling point. This requires corresponding equipment. Siempelkamp operates eight large-scale machines, five of which are located

## Siempelkamp Crane Technology

- Crane specialist at the Moormerland location, founded as E & W Anlagenbau in 1987
- Part of Siempelkamp Group since 2008
- 73 employees
- Special crane systems tailored to customer requirements
- Services:
  - Single-girder and double-girder bridge cranes
  - Ceiling and suspension cranes
  - Wall-bracket cranes
  - Gantry cranes
  - Cranes for power plants and nuclear power plants
  - Wall and pillar slewing cranes
  - Special cranes
  - Load suspension devices
  - Components



Transport ...



... and installation phase



Preparations are under way



The factory hall with the other cranes

## Siempelkamp Machine Factory

- Siempelkamp production facility at Krefeld location
- Operating as independent company under the name Siempelkamp Maschinenfabrik GmbH since January 2012
- 470 employees
- 480,000 production hours
- Unique feature: machining of very large workpieces (up to 450 t)
- Services:
  - Flame cutting
  - Welding
  - Straightening
  - Machining
  - Deep hole drilling
  - Hydraulics assembly
  - Pipeline construction
  - Painting
  - Final assembly

in the same hall in which both double-girder bridge cranes are used.

The most important among all large-scale machines is the vertical lathe and milling machine which was designed and built for Siempelkamp by Schiess GmbH in Aschersleben. This large machining center is one of the most extraordinary of the past decades: The Vertimaster VME 10 single-column machine machines mill heads, grinding plates, and grinding tables as well as components for the wind power industry. Component parts with weights of up to 400 t (441 US tons) and heights of up to 6 m (20 ft) can fit on the faceplate, which can be extended with the help of beams mounted to the faceplate in a star-shaped arrangement, thus resulting in a machining diameter of up to 16 m (52 ft).

The production capacity in Krefeld was expanded by 3,000 m<sup>2</sup> in order to accommodate the vertical lathe and milling machine. A third double-girder bridge crane became urgently necessary. "With the new crane we are able to operate the turning lathe, and thus minimize expensive waiting periods for a crane. The parallel setting up of large parts results in a clear efficiency increase during production," describes Michael Kubbe.





Process step on the floor of the factory hall



### Siempelkamp-Siempelkamp = win-win

After the new crane passed the acceptance test at SKT's location in Moormerland on May 30, the installation of the crane started at the end of June with the delivery of both bridges for the crane. The crane has a width of 28 m (92 ft) and a lifting height of 15.5 m (51 ft). With dimensions like these, it can be presumed that a logistical challenge was imminent.

The delivery, the clearing of the hall, the relocation of all existing cranes in the hall, the pre-assembly, followed by the setting up of the box girders and trolleys and the assembly took two weeks. "The work of the three SKT assemblers and crane operators was exemplary. They assembled the bridges, which have a total weight of 140 t (154 US tons), in a safe and timely manner," says Michael Kubbe.

Following the testing and acceptance by a crane expert, the new crane has been operating since mid-July. The first work-piece that was mounted onto the face-plate with the help of the crane was a mill head segment manufactured at Siempelkamp Foundry – one more good example supporting Siempelkamp's strategy of not just making use of synergies but of opening up new ones!



The crane is put into position



Up in the air – finished!



A dusty business – a clean result:

# Siempelkamp crane for SGL

SKT double girder bridge crane in operation at SGL Group  
Business Area Performance Products



Not all cranes are alike. At wharfs and in copper foundries, in steel mills, mines and compost plants, paper mills and hot-dip galvanizing lines, the special cranes manufactured by Siempelkamp Krantechnik (SKT) are in use. The requirements, boundary conditions and processes are as wide-ranging as the industries in which the cranes are used. The unusual features are often in the details, as was the case with the crane project that SKT implemented for its new customer SGL Group. The objective here was to adapt the crane to cope with the undesirable side-effects of high levels of graphite dust formation.

By Ute de Vries



# Carbon stays "clean"!



Dr. Hans-Jürgen Kalz, Plant Manager BA "Performance Products", holds a car door made of carbon with only one finger

## SGL Group – The Carbon Company

- One of the leading manufacturers of carbon products, with its premises at Wiesbaden
- Over 6,400 employees at 47 production sites in Europe, North America and Asia
- Portfolio: carbon and graphite products, carbon fiber, composite materials
- Customer spectrum and fields of use: steel, aluminum, automotive, chemicals and glass/ceramic industries, companies in the fields of semi-conductors, solar and wind energy, as well as aerospace and the defence industries



SGL Group showroom at Meitingen, Germany



SGL Group Forum at Meitingen (photo: 2010 ©SGL Group)

It was back in 2011 that SKT gained SGL Group as a new and unusual customer. The leading manufacturer of graphite and carbon products is the only European manufacturer of carbon fiber, and one of only eight worldwide.

The partnership started with the modification and structural modernization of two existing crane systems at the Frankfurt plant. After this project had been successfully completed, SKT received an order at the start of 2012 to supply the SGL Group with a new crane for the Meitingen site. This site has approx. 1,300 employees

working for the three companies SGL Carbon GmbH, SGL Technologies GmbH and Brema SGL Carbon Ceramic Brakes GmbH. The largest SGL Group site in the world combines the entire global research and development competence of the company.

One of the business units at the Meitingen site, "Graphite & Carbon Electrodes," manufactures connecting elements, the so-called graphite nipples, centrally for all electrode works of the SGL Group. This is not without relevance to the crane concept, the key data for which suggest nothing unusual at first glance.



Glowing graphite electrodes after graphitization  
(photo: 2010 ©SGL Group)



Graphite electrode with pre-assembled nipple  
(photo: 2010 ©SGL Group)

Graphite bars are processed to nipples at SGL Group at Meitingen, Germany. A connecting piece of two electrodes for subsequent melting in steel industry

## SGL Group: Broad Base. Best Solutions.

Graphite alone does not do it: SGL Group supplies an impressively diverse portfolio for application areas in a broad range of markets. In the presentation room of SGL, this can be seen live and in color. By the time you have lifted a carbon-material car door with two fingers, you cannot fail to appreciate the potential hidden in SGL products!

- Graphite electrodes for recycling steel in electric arc furnaces: SGL supplies everything here, from individual products to complete systems
- Graphite specialities for mechanical, electrical, electronic, process engineering and high temperature applications
- Composite material components – used by renowned companies, including many from the wind power, aerospace and automotive industries
- Carbon-ceramic brake discs – a high-tech material that has revolutionized brake technology. Compared to conventional grey cast iron brake discs, the carbon-ceramic disc weighs considerably less, which reduces the unsprung mass of the vehicle by up to 20 kg. The results are significantly improved responsiveness, high thermal strength, excellent control, improved directional stability, corrosion resistance, high wear resistance, and hence very high service life, as well as almost total avoidance of brake dust. First used by Porsche (2001), but now also in use by other premium brands
- Anodes for manufacturing uranium hexafluoride – a crucial intermediate product for producing uranium for nuclear power plants.

A double girder bridge crane with a lifting capacity of 15 t and a span of 23.60 m, equipped with a two-rail trolley bearing the main hoisting gear (15 t) and additional auxiliary hoisting gear (6.3 t).

### High availability despite the “dust alert”

The most distinctive feature lies in the environmental conditions of the crane. “It is used in areas where there are extremely high levels of carbon and graphite dust formation. From an extraction perspective, graphite dust is one of the most difficult dust types as it is greasy and results in significant contamination of all mechanical components. This can result in high failure rates.

Acceptance test for a crane by SGL Group at Siempelkamp in Moormerland, Germany







East Frisia – Upper Swabia: a crane of 24 m length starts its 850 km journey

Transport of a suction device by the Siempelkamp crane system





Transport and assembly of the graphite bar blanks into ring kiln chambers

Our greatest challenge was therefore to sufficiently protect the control system and components of the crane, and despite the graphite dust, guarantee the high availability SGL requires from the crane," Thies Steffen explains, sales engineer at SKT.

The process of planning the crane was based on the generally applicable design specifications of the SGL Group. Over and above these, the SKT team were presented with a series of special measures, designed to take account of the special situation. All components were fitted with removable protective hoods and housings to prevent dust fouling. The crane and trolley running gear were fitted with rail-cleaning brushes. These additional precautions included the stipulation of higher electrical IP protection classes (IP = ingress protection) for all components (IP55), as well as for all control cabinets and terminal boxes (IP66). SKT protected interfaces such as cable openings, inlet and outlet filters etc. with corresponding special designs.

All control cabinets were additionally fitted with air-conditioning units; all drive systems were equipped with double temperature monitoring systems, including alarm systems to provide warnings or shut down in the event of overheating.

A further special feature was that "due to the dark and dusty environment, we designed the crane lighting system to provide optimal illumination of the work area under the crane, using 140 W LED spotlights mounted both under the trolley and on the crane bridge," explains Thies Steffen.

#### Less space, more crane

A further boundary condition that likewise required a special solution was that the new SKT crane had to match numerous key data of the predecessor crane in order to continue servicing all of the production sites as before. These included the special start-up





A strong team for SGL Group: Karl Utz, Markus Lipp, Reinhard Dirr, Thies Steffen (SKT) and Christian Stuchly

dimensions, maximum hook heights, and the arrangement of the crane hooks relative to each other in the travel directions of the crane and trolley.

As the regulations for safety distances between cranes and the prescribed dimensions for accessible craneways have changed over the years, there was overall less space available in which to install "more crane". This task proved to be tricky, but it was able to be resolved as was the problem of ensuring acceptable accessibility for maintenance work, while retaining the minimal space conditions.

After the successful installation and commissioning of the new crane, the SKT decommissioned the old crane, disassembled it, and delivered the new Siempelkamp crane in April 2012, after acceptance testing by a crane expert. Since then, it has been in continuous 24-hour use at the Meitingen plant, at ring kiln 2.



SGL Group, Meitingen, ring kiln area: SKT double girder bridge crane with view to the crab trolleys and load pick-up

www.siempelkamp.com

# Fresh look, new languages, even better service

Siempekkamp's website has had a new look since July: The re-launch of our German and English company website went online in the summer; versions in other languages followed until September. The following is a list of the most important features and advantages of our newly designed Internet presence.

By Ralf Griesche

Siempekkamp Group – Siempekkamp

www.siempekkamp.com/index.php?id=657&L=0

Siempekkamp

Siempekkamp Group

Machine and Plant Engineering Foundry Technology Nuclear Technology

DE EN FR RU CN

Home

The companies of the Siempekkamp Group Organization History Facts & Figures

Traditionally a leader in innovations  
– three business units, one Group.

Siempekkamp

Siempekkamp Group

G. Siempekkamp GmbH & Co. KG is the holding company of a group of affiliated companies consisting of the business units machine and plant engineering, foundry technology, and nuclear technology.

The relationship with our customers, suppliers, and the community is based on our following fundamental values:

Customer satisfaction

Career

Press releases/News

Annual Report

Siempekkamp-Magazine

Locations

Contact us

Downloads

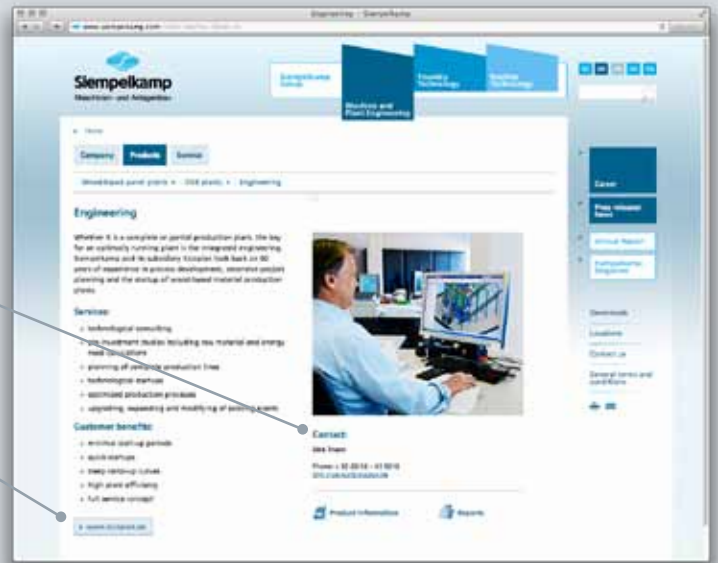


**Products in a nutshell**

In the last years Siempelkamp's product range has become increasingly more complex. This was reason enough to present this versatility more concisely online. Each individual product of our business units is represented and can be selected. Services and customer benefits are summarized at a glance. Also new: A direct contact is given on each product's pag.

**Higher information depth**

The individual product pages have a link to Siempelkamp's subsidiaries. This allows the customer to obtain additional and more detailed information on a product if desired.



**Language moves us closer to our customers**

www.siempelkamp.com is represented in German, English, Russian, and Chinese. Certain areas of the web page are also published in French. Thus, we are even closer to our customers and markets.

**Career booster**

Siempelkamp Recruiting has been given new and higher importance with the website relaunch. Applicants ranging from high-school graduates to students to professionally experienced people can get informed about Siempelkamp as an employer of choice in a targeted manner.

**Direct link to locations**

The international Siempelkamp locations have been given a new and more prominent place on the sidebar.

**Extended download services**

The download area containing product information, Siempelkamp publications and other data is organized in a clearer and more structured manner. Thus, the user is able to conduct quicker searches.

**Gimmicks for greater clarity**

Machine and plant engineering is no dull affair – the image libraries and gimmicks on our new website are proof. On each individual page reports and videos demonstrate how exciting our business is.

**Stringent corporate design**



Our company colors are used more consistently in our new on-line representation. Each business unit is represented by a shade of the characteristic Siempelkamp blue. Through this color scheme the users know, at any given time, what business unit they are browsing.

**Everything at a glance**

Individual service areas are quicker and easier to find. The new sidebar allows the switch between languages, business units, products, and services at any time. Each individual page offers all links and allows quick navigation through the homepage in a targeted manner.

**More targeted media relations**

Even the media and press release area is presented in a new way: The press release area was structured according to business units and product groups – and now includes a ticker!



Historic moment for Siempelkamp:

# Material inspection for the Soyuz creates that astronaut feeling

photo: www.fotolia.com

Museum of Military History of the German Federal Armed Forces at Dresden, Germany



Soyuz 29 landing capsule hanging on its suspension at the ceiling in the Museum of Military History



The background was as follows: In the summer of 2011, Siempelkamp Prüf- und Gutachter-Gesellschaft (SPG) in Dresden received an order to perform ultrasonic testing and wall-thickness measurements on the "Geschosshagel" installation (Geschosshagel = hail of bullets) in the Dresden Museum of Military History. The job was to perform non-destructive materials testing on 23 different rockets and shells.

This project was expanded during the work relating to the material inspection on the Soyuz 29 space capsule. It was to be suspended from the ceiling of the museum as an eye-catcher. Initially the TÜV (technical inspection association) refused its approval, as there was no certification of strength and integrity.

For this reason, Siempelkamp was brought on board (or actually the capsule) to perform the material inspection over the course of 14 days. This narrow timeframe represented a special challenge, as the material being examined was unknown – a consequence of the secrecy previously surrounding this project.

For the materials testers, this then became a highly unusual order, bringing back childhood memories of space travel and distant galaxies!



# 29 landing capsule

Sometimes the stars are within reach, even for inspectors and expert consultants. The order to perform a material inspection on the famous Soyuz 29 capsule fulfills a childhood dream for the team at Siempelkamp Prüf- und Gutachter-Gesellschaft in Dresden, Germany: getting a taste of that cosmonaut feeling!

By Dr. Peter Seliger and Johannes Seichter

## Safe with SPG: a space capsule as a museum exhibit

Exhibition pieces in museums are subject to specific safety regulations – just like other structures, stages, or mechanical facilities in theaters and other public venues. The requirements for such facilities in terms of quality and safety are governed by regulation BGV C1 “Event and production facilities for scenic presentations”.

Our task was to produce a survey of the integrity of the Soyuz 29 space capsule, and of its proposed “hanging” suspension in the museum.

The presentation concept created by a Berlin architects’ office proposed hanging the capsule from a ceiling crane using ropes, and displaying it in suspension. The suspension structure would involve using bolts to attach welded angle brackets (load-bearing points) to the existing flanged threaded holes in the Soyuz capsule.

In advance, the architects’ office had prepared a static concept for the museum’s Soyuz capsule suspension system (i.e. the crane system and gross load coefficients for the static design). The SPG survey was particularly required in terms of the strength of the space capsule’s flanges, which would be used for receiving the load fastening devices.



Creating a scene of rocket and grenade volley on the ground floor of the museum



Ten years after their historical flight into space the cosmonauts Sigmund Jähn and Valery Bykovsky immortalized on the Soyuz capsule

Two boundary conditions significantly limited the SPG experts' freedom. On the one hand, there was no documentation available on the design, material selection and material loading – on the other hand, only non-destructive testing processes could be used, as it was not permitted to take material samples.

Due to the complexity of the task, this job required the interdisciplinary expertise of inspection services and strength calculations: a decisive competitive advantage for SPG!

#### Inspection + calculation = safety

In detail, there were many individual tasks that had to be solved: visual inspection of the interior and exterior, spectral analysis to determine the material of the attachment flanges, ultrasound wall thickness measurements, hardness testing for purposes of estimating hardness, and load-bearing tests on the flanges and the threads provided.

The pull-out testing was intended to ensure that the screw-holes in the flanges made of an unknown metallic material were capable of bearing the necessary forces. On the basis of these test results, the SPG team also derived design alterations for the suspension system.

It was then possible to continue with the newly drafted static design calculations for the improved design. The final result was that through a combination of calculational and experimental measures, it was possible to demonstrate that adequate safety precautions were present to prevent the failure of the capsule attachment points and the suspension structure fixed to it.

Mission accomplished, and with a great deal of enthusiasm! Since the middle of January 2012, the space capsule has been marvelled at by visitors to the museum, without their safety being compromised.

Pulling test at stud bolts for fixing the suspension construction



Ultrasonic wall thickness gauging







Top:  
Dr. Peter Seliger during visual inspection inside of the landing capsule  
Bottom:  
Inspection under rather confined space conditions

### Soyuz 29: Historical flight into space

On August 26, 1978 Sigmund Jähn, the first German in space, and the Russian Commander Valery Bykovsky flew the spaceship Soyuz 31 to the Soviet orbital space station Salyut 6. The cosmonauts orbited the Earth for nine days, seven of them filled with scientific experiments. On September 3, the crew returned to Earth in the 6.8 t Soyuz 29 capsule, landing safely in the steppes of Kazakhstan even if the landing was a little bumpy.

After the flight, the Soviet Union presented the landing capsule to East Germany. There it was placed in what was then the Army Museum in Dresden. As a result of the Unification Treaty of 1990, the exhibit became the property of the German armed forces, and was for many years on loan to the German Museum in Munich. Since 2011, it has been a highlight of the permanent exhibition at the Dresden Museum of Military History.

Even today, the ingenious design and robustness of the Soyuz spaceship are being used intensively. Since the end of the American shuttle program in July 2011 it has been the only means of supplying the ISS international space station, and replacing its crew members.

While his American colleague Neil Armstrong recently passed away, Sigmund Jähn is still active. Since 1990 he has been working at the Russian cosmonaut training center as an independent consultant from the DLR German Aerospace Center, and since 1993 has also been working for the ESA (European Space Agency).

The exhibit at the depot of the museum



Front ceiling suspension at the entry flange



Interview:

# The Soyuz project – a high-flying engineering achievement with its feet on the ground



(left to right) Johannes Seichter and Dr. Peter Seliger have experienced cosmonaut feeling

**Dr. Seliger, Mr Seichter – How did it feel to investigate a historic space capsule?**

**Dr. Peter Seliger:** When we inspected this technically fascinating development, we were given the opportunity to be a part of an exciting and unique project. Now the capsule is hanging from the ceiling of the museum, and no one is going to get it down again anytime soon.

**Johannes Seichter:** After seeing the capsule, the idea that Sigmund Jähn and Valery Bykovsky had to endure two days in that tiny space, without being able to move, was rather spooky and nightmarish. But overall the project was a brilliant experience!

**Did you use to wish – like so many young men in East Germany after the historic space-flight of Sigmund Jähn – you could become a cosmonaut?**

**Johannes Seichter:** It certainly was tempting. Particularly as I saw Sigmund Jähn personally in 1978, during a speech after his historic flight into space. Back then, I was just finishing my national service in the military. I was already too old to choose the “cosmonaut” career path, but I very much admired it.

**Dr. Peter Seliger:** It was much the same for me. I found this task unimaginably interesting, but my personal aim had always been to become an engineer. Three weeks after Jähn’s space flight, I started my engineering studies.

**How did the space capsule really feel?**

**Dr. Peter Seliger:** You really come to respect what Sigmund Jähn did, entrusting himself to this capsule and taking that massive risk. I was excited at all they managed to achieve with the technology they had back then. All of the controls were analog. You truly felt the long development time that went into this capsule.

**What made it so technically challenging for Siempelkamp Prüf- und Gutachter-Gesellschaft?**

**Johannes Seichter:** The challenge was the material ...

**Dr. Peter Seliger:** ... we mean, our lack of knowledge about the material used ...

**Johannes Seichter:** ... and of course the fact that we did not know the details of the design. “How much strain can we put on the unknown material?” was a key question. This was because it was important not to endanger the visitors to the museum. On the one hand, we have the load; on the other hand, the material needs to be able to take this load. To answer the question reliably, we used almost the entire range of non-destructive tests.

**How many SPG employees took part in the project?**

**Dr. Peter Seliger:** In total, four of us were involved. It was an exceptional event for all of us, even though the famous Soyuz space flight took place 33 years ago.





SPG in Dresden – the specialist for extraordinary inspections

**Dresden Museum of Military History**

After seven years of restoration and rebuilding work, the Dresden Museum of Military History was ceremonially reopened on October 14, 2011 by the Minister of Defence, Dr. Thomas de Maizière. With over 10,500 exhibits in the permanent exhibition, over a total area of 19,000 m², the museum is one of the largest and most modern military history museums in Europe.

Of particular note is the newly designed façade of the museum, created by star architect Daniel Libeskind. A giant, V-shaped wedge made from reinforced concrete and stainless steel cuts through the symmetrical old structure of the Royal Saxon Army's arsenal, which was built in the classical style between 1873 and 1877. A successful union of history and the modern era.

Amongst the top exhibits, also much sought-after by other museums, is without a doubt the Soyuz 29 landing capsule. Since 2011 it has been on display in the Libeskind wedge, at a height of about 10 m. It hangs there at precisely the same angle as it re-entered the Earth's atmosphere.

**Has SPG done any other exceptional tests?**

**Dr. Peter Seliger:** We have dedicated ourselves to a whole series of similarly illustrious projects. Particularly impressive, for example, was the endoscopic investigation of the sarcophagus of King John of Saxony (1801–1873). The X-ray examination of gold found in archaeological digs in Central Asia was also an exciting task.

**Johannes Seichter:** Another exceptional job was attaching resistance strain gauges to the teeth and tooth implants of military pilots, to measure the involuntary biting forces, e.g. during nose dives.

**Dr. Peter Seliger:** Not forgetting the non-destructive material testing on the wheel steamer “Diesbar,” which went on its virgin voyage down the Elbe in 1884. The Saxon Elbe wheel steamer fleet is the oldest and largest still in service anywhere in the world!

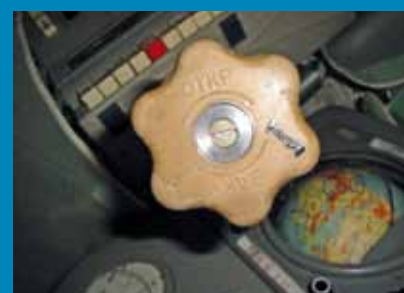
**So there is no shortage of extravagant projects for you to work on. Do you still have a “dream investigation” you would like to add to this collection?**

**Dr. Peter Seliger:** Absolutely! Right at the top of my list is the “Blue Wonder” of Dresden, one of the oldest riveted, self-supporting bridges. It was built between 1891 and 1893, so in terms of age, it is hard on the heels of the Eiffel Tower (Paris), which started construction in 1887.

**What would the challenge be there?**

**Dr. Peter Seliger:** The steel grades used in this bridge come from the tail end of the 19<sup>th</sup> century. From an engineering perspective, the interesting thing is that the entire bridge is riveted, and supports itself over the entire breadth of the Elbe river. It certainly would be exciting to test the materials ...

**Then we hope you get commissioned to do so, and thank you very much for the interview!**



In the cockpit of the Soyuz: steering units of the capsule, breathing air system etc – in most confined space, operated analogically



Siempelkamp particleboard production line for Metro, Thailand:

# Official inauguration puts the finishing touch on the complete line from one source!



A lucky elephant for the inauguration





The Thai Princess Maha Chakri Sirindhorn in the control room of the Metro plant

An official opening with a royal guest took place in Thailand in June: Metro Particle Co., Ltd. inaugurated its new line – the first complete Siempelkamp production line for particleboard! Even a member of the Thai Royal Family, Princess Maha Chakri Sirindhorn, was present at the festivities

By Henning Gloede

At Metro's location Nonthaburi near Bangkok the complete production line manufactures particleboard with a yearly capacity of more than 500,000 m<sup>3</sup>. The company signed the contract in July 2009; the installation started in May 2010.

The June inauguration was not only a major milestone for Thailand's leading wood-based panel manufacturer. For the Siempelkamp delegation from Germany, Italy

and Singapore, this event was an honor. This ceremony was dedicated to a particleboard production line that was exclusively manufactured within the companies of the Siempelkamp Group. Among the invited guests were Dr. Dieter Siempelkamp and Managing Director Dr.-Ing. Hans W. Fechner from Krefeld, Dr. Mario Zoppetti (for CMC as Italian Siempelkamp subsidiary) and Henning Gloede (Siempelkamp Singapore).

Dr. Dieter Siempelkamp with the First Board



Dr.-Ing. Hans W. Fechner and Dr. Dieter Siempelkamp with customers



Chatchai Piyasombatkul with family





Impressions ...



... of a ceremonial inauguration ...



... at Metro Thailand







Tour of the outside facilities

Mat-forming machine



## Turnkey competence for Thailand: the Metro plant

The venue was a festival pavilion in front of Metro's production facilities in Non-thaburi. A red carpet was unrolled for the arrival of Princess Sirindhorn. Next to press and television, numerous officials and business partners were among the invited guests adding their good wishes for Metro on a framed piece of particleboard.

Since the start-up in the beginning of 2011, Metro has made significant progress in achieving its objective, which is to successfully and reliably supply the growing domestic market with particleboard products. With its complete production line by Siempelkamp, Metro achieves an impressive total particleboard output of 850,000 m<sup>3</sup>. Metro persistently pursues its objective – even during the opening ceremony production was not put on hold!

Chatchai Piyasombatkul, President of Metro-Ply, thanked the German partner for its services: "Our trusting cooperation with Siempelkamp has continued with this second particleboard line. We manufacture marketable products on one of the most modern lines of its kind worldwide," read the Metro statement.

**The absolute special feature of the Metro project: The turnkey plant is a complete Siempelkamp product. Plant components that were formerly outsourced are now manufactured by the Group! The highlight of the plant is not only its capacity but particularly remarkable was the completeness of the scope of supply:**

- Forming and press line including 8' x 40.4 m ContiRoll® press
  - Front-end equipment such as chipper, flaker, oscillating screens as well as roller screens for chip and particle production
  - Flaking technology such as drum chipper, knife-ring flaker, and secondary wood shredder
  - Bunker, discharging devices, round silos with hydraulic discharge systems and rotor or discharging screws respectively, silos with discharge floor systems as well as gravimetric separators
  - Dryer system
  - Gluing system with resin preparation and dosing system, and glue blender
  - Energy system with an output of 48 MW
  - After the press: double-diagonal saw, cooling and stacking line, intermediate storage, inline book saw, sanding line, and reject station
  - Automation
  - Planning
- 
- Production speed: 950 mm/s
  - Produced widths: 2,460 to 2,500 mm
  - Produced lengths: 4,620 to 5,520 mm
  - Thickness range: 6 to 40 mm

How the NIS tool CFD tops real tests:

# Faster and more complex knowledge about flow patterns and heat

**In 2010, NIS Ingenieurgesellschaft added flow and heat propagation calculations to the range of services they provide. This is a forward-looking service, since the significance of flow patterns and temperature distribution of liquids is of increasing importance in power plants and industrial facilities. NIS uses high-performance computers to calculate the highly complex answers to customer-specific questions and is able to do so in an ever faster, more complex and more detailed manner!**

By Dr. Benjamin Fabian

We routinely encounter the laws of fluid mechanics and thermal dynamics in our daily lives. When we are vacuuming cleaning with a new device, which produces more suction power through its carefully calculated air-flow design. Or in a new car, whose streamlining optimization allows it to consume less fuel than its predecessor; or the chimney that works as efficiently as we want it to, thanks to the optimized interplay of the combustion process, thermal processes and air-flow dynamics.

Similar questions relating to fluid mechanics and heat transfer can be found in industrial contexts, particularly in plant construction. When designing plant components, it is normal practice to use simplified descriptions or values based on experience, which then allow safe operation of the components.

However, many of these designs include large safety margins if the complex interactions are not fully understood. This has disadvantages – e.g. concessions in the efficiency of the plant, or higher costs.

This can be avoided through using detailed design calculations using CFD (= Computation Fluid Dynamics)!

**CFD calculation programs for reducing cost-intensive tests**

NIS has decades of experience and knowledge in the field of fluid mechanics and thermal dynamics calculations. Special modern programs for CFD calculation methods allow very detailed investigations of fluid mechanics and heat transfer.



Dr. Benjamin Fabian explains the flow calculation of a filter system



Staff training for flow and thermal calculation



## Thermal and flow calculations for power plants and industrial facilities



Using this calculation method, it is now possible to determine in detail the complex interaction of flow patterns and heat in any given system. "The advantage for our customers is that estimates and excessive safety margins are no longer necessary, as we are able to calculate the important variables for specific products and applications," says Dr Benjamin Fabian, project manager for physics at NIS. The tool also reduces the product development process and brings it to market maturity sooner than would normally be the case.

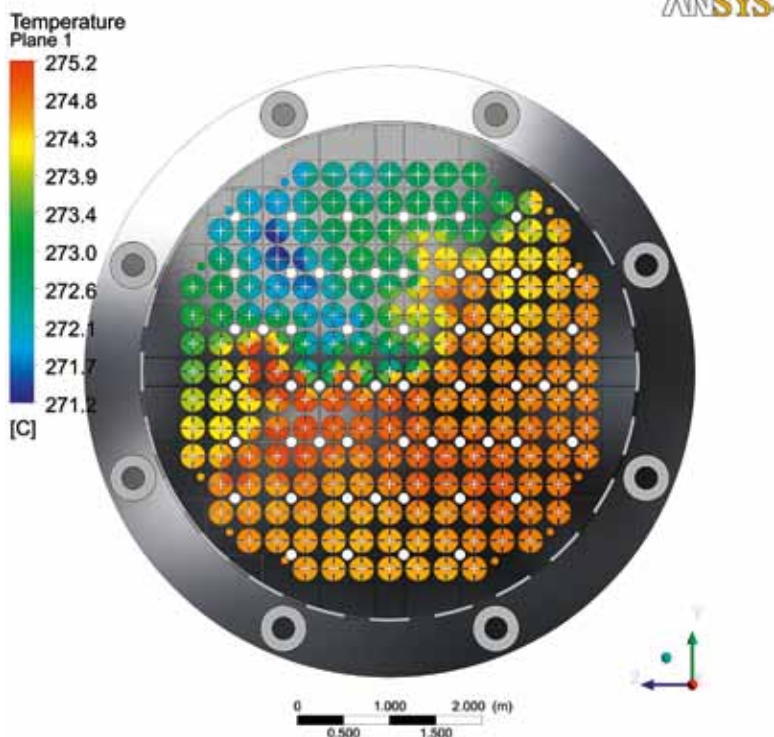
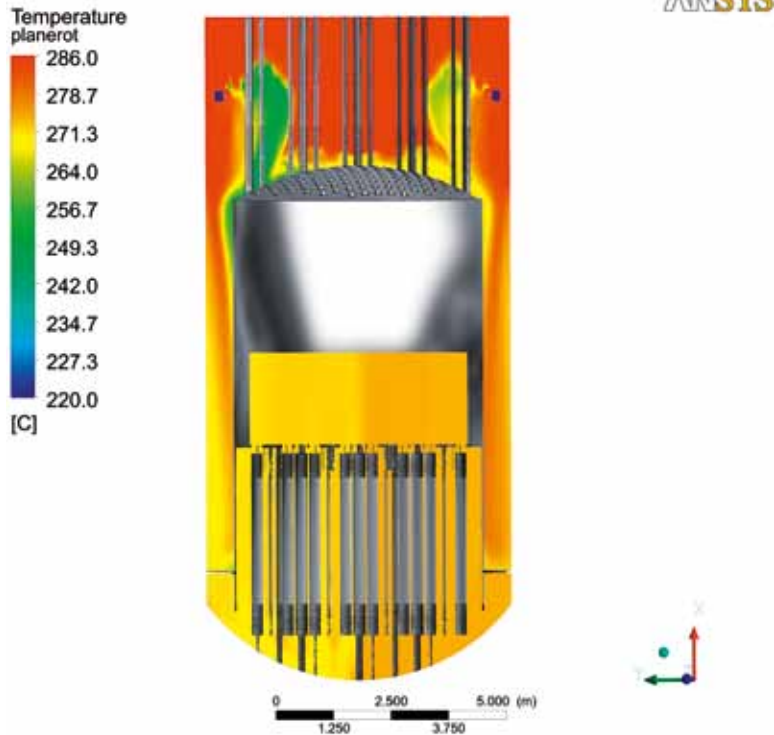
The magic word here is "virtual prototyping". Tests that are time-consuming and

cost-intensive in reality can be reduced to a minimum on the computer. It is also possible to investigate the performance of unconventional optimization ideas or prototypes on the computer in advance, without the need for expensive manufacturing.

A further benefit of the computer over reality is that "some tests are potentially very hazardous, meaning it is only seldom feasible to perform them in reality, or may even be impossible. Simulating the components is then the only practical path. Last but not least, the results of the simulation provide important information on the detailed processes taking place within the

device. This significantly increases our knowledge, accelerating the development process," concludes physicist Dr Fabian.

But sometimes you just cannot get around tests. Not just for verifying calculation results, and for the fine adjustment of the boundary conditions for the calculations, but also in order to visualize complex flow situations. In conjunction with the testing facilities of Siempelkamp Prüf- und Gutachter-Gesellschaft Dresden, Germany, we can simulate flow patterns in technical systems, in either original or model scale. Simulation and visualization thus go hand in hand.



CFD software for nuclear technology:  
special benefits!

CFD has already proven its value in the field of nuclear power plants. Upon request from the German Gundremmingen power plant, NIS investigated a local short term cold water feed. This resulted in a non-uniform mixing of the water in the reactor. This in turn could lead to minor mechanical load of the spent fuel.

A case for NIS and the CFD software, since the latest calculation applications for nuclear reactors are not tailored to such special cases. In order to calculate the mixing process of the cold fed-in water, the Siempelkamp experts built a complete 3-D model of the reactor pressure vessel and simulated the incident.

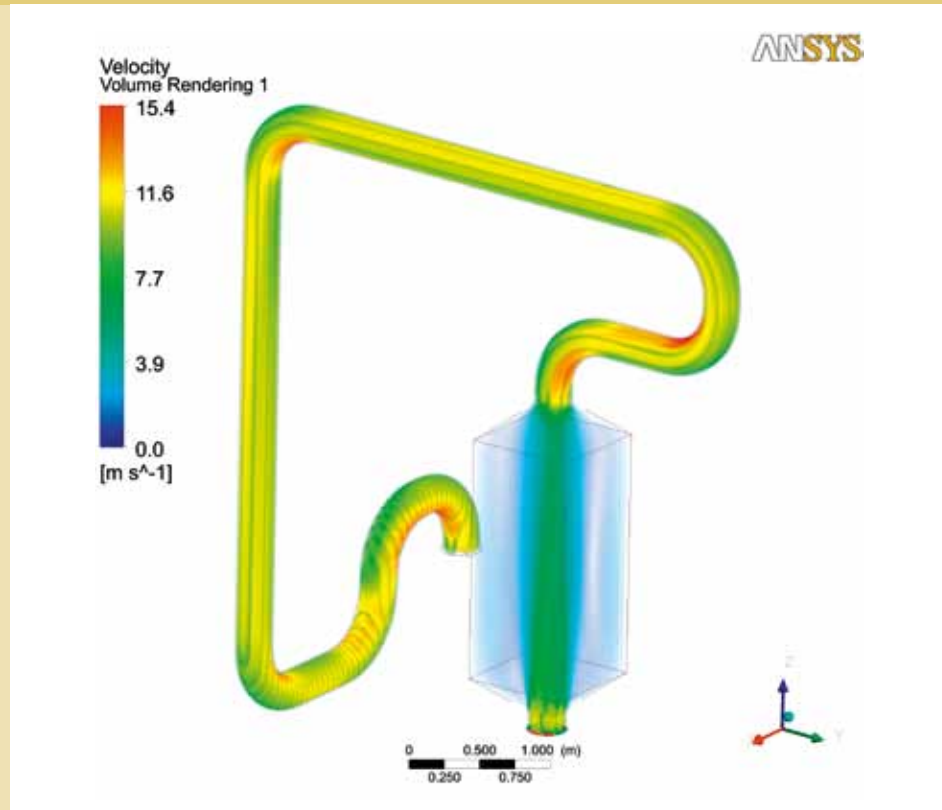
The pleasing result showed that the fuel elements were at no time exposed to inappropriate loading. A compliment for NIS: as a result of the successful application of CFD methods, the power plant commissioned further investigations in connection with unequal mixture inside the reactor pressure vessel, like the

Top:  
Cross-section of a reactor pressure vessel: temperature  
distribution of the coolant with feed of cold water

Bottom:  
Fuel elements inside the reactor pressure vessel:  
temperature calculation of the coolant



accidental closure of feed water pipes, and theoretical incident simulations. "All of these investigations and their effects, in particular performance in the event of a failure, would be experimentally too expensive, too time-consuming, or even impossible. We were able to support the power plant operator here in an efficient and cost-optimized manner," says Dr Benjamin Fabian.



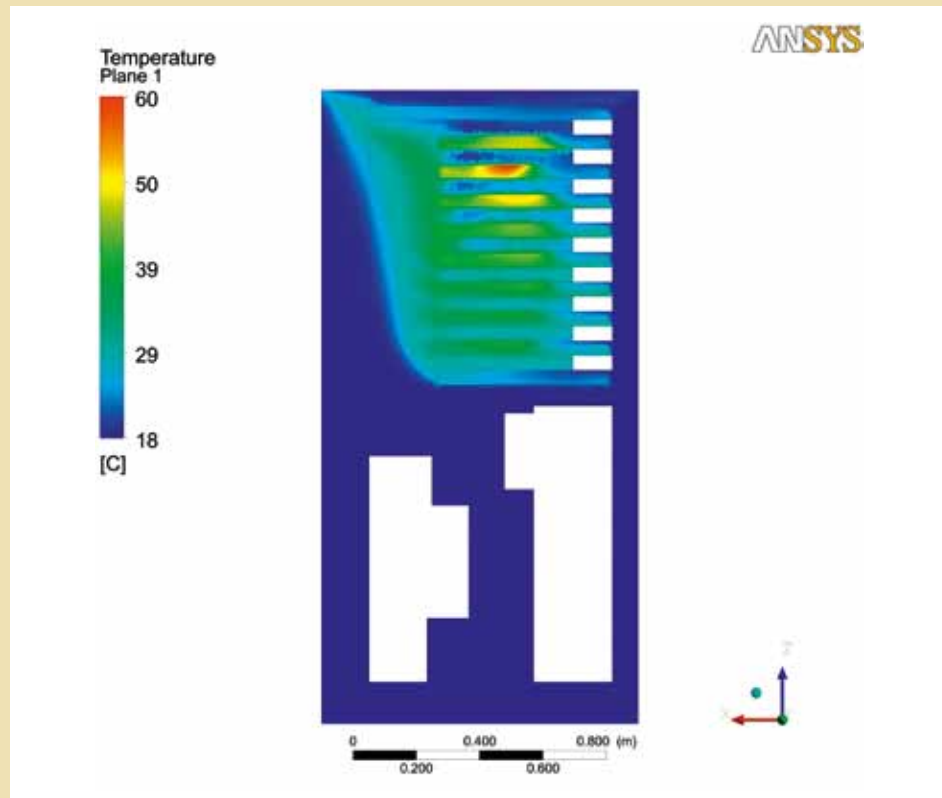
Velocity distribution in an exhaust pipe

**CFD: clear insight into flow phenomena**

CFD (= computational fluid dynamics) is a method for using computers to calculate flows. This simulates the real geometry in which fluids flow as a 3-D object on the computer.

The complex whole is then subdivided into the many smaller elements that are required for the calculation. Material properties and boundary conditions are determined, and then the calculation starts: the flow is then developed step by step throughout the entire geometry, with the progress of the flow being considered on a cell-by-cell basis. This allows even the most complex flow phenomena to be visualized.

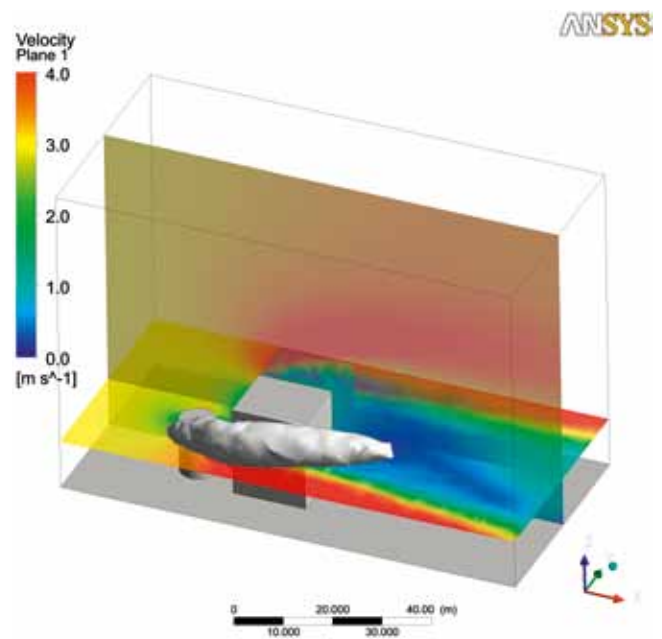
Due to the frequent interaction of flow and heat phenomena, all of the programs used by NIS include the entire reaction process between flow and heat.



Temperature distribution in a server rack taking into account the external cooling and the fan trays

## What does CFD do?

- Flow and heat transfer calculations for any given geometries
- Thermal conduction, convection and radiation
- Reactive fluid flows (e.g. combustion, or reactions between acids and alkalis)
- Pump calculations (e.g. cavitation or reduction of pressure drops)
- Mixing and flow behavior of high and low-viscosity liquids and gases
- Flow behavior of Non-Newtonian fluids (liquid polymers, varnishes etc.)

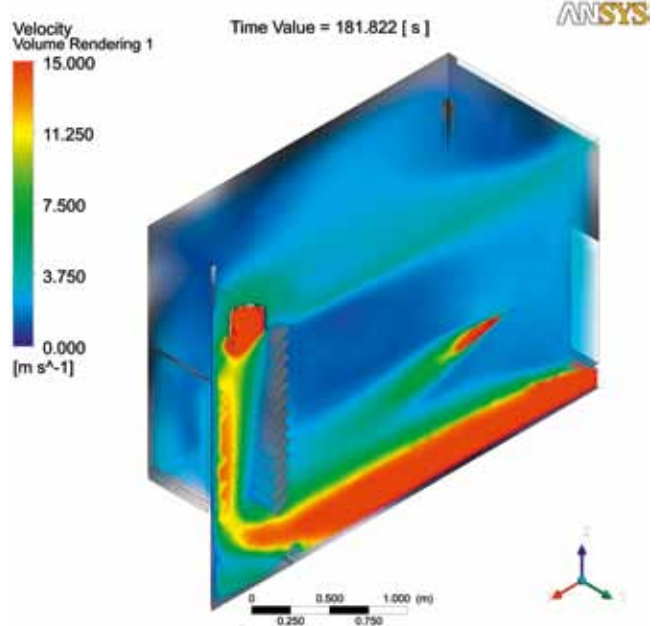


Representation of gas dispersion on a complex of buildings, in consideration of wind speeds

from left to right:  
Velocity distribution inside a room that is designed for thermal cutting of plant components

Visualization of the transport routes of individual air particles by streamlines

Visualization of hotspots in a thermal cutting room to determine optimal design of the exhaust system





**CFD software saves wasteful excess in plant construction!**

Due to many processes running in parallel, NIS and its CFD concept are in high demand as a partner, not only in the nuclear sector, but also in conventional plant construction. A current project revolves around the calculation of the optimal hole diameter for a gas distributor plate which is used in a new electrostatic filter in an industrial facility belonging to EVONIK.

As the customer has no empirical data or values for the corresponding work range of the gas distributor plate, and rough estimates would have led to significant uncertainties in both designs, the flow patterns through the gas distributor plate were calculated using CFD, and the interaction with other plant components (such as a compressor) was optimized. Without the prompt and competent assistance of NIS, the customer would not have saved the considerable expense of complex testing.

Before the work was even completed, the customer was so satisfied that they

requested a further quotation for a subsequent project. This new project is likewise concerned with the question of optimizing the flow control in a large electrostatic filter.

Further inquiries from the field of plant construction illustrate the large scope of application for CFD – e.g. optimizing the flow mechanics of industrial filters, condensers and heat exchangers, all the way to the mixing processes of various substances in boilers (liquid-solid) – or even the spread of hazardous materials on industrial premises.

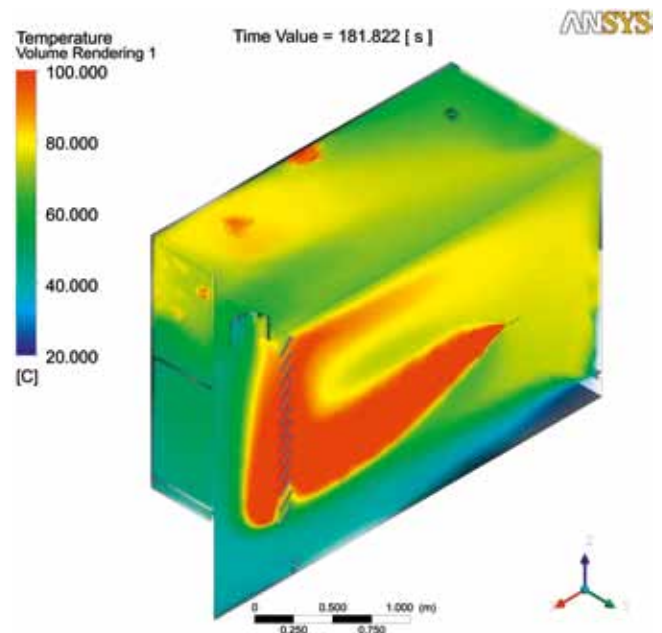
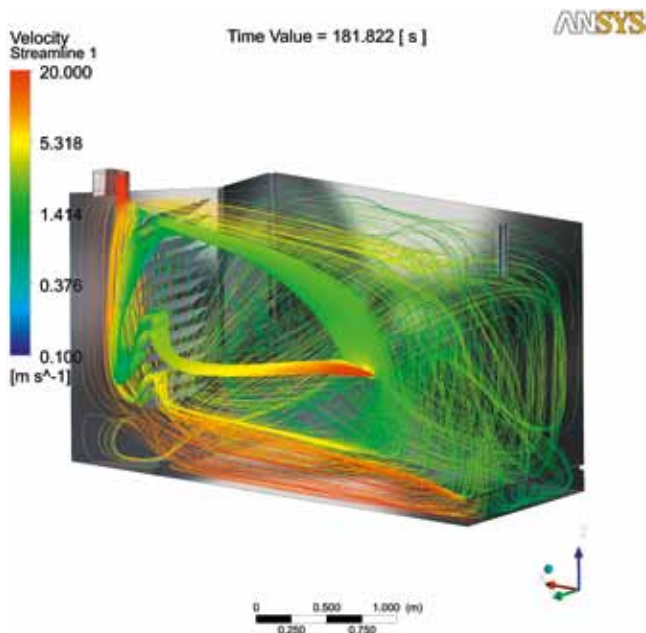
NIS has already used CFD successfully for calculating complex experimental fire tests for hazardous material containers. The knowledge gained here was used in the development of new design approaches, in order to develop an optimized cask. Further internal projects are concerned with calculating the spread of hydrogen in buildings, and investigating a passive cooling system for fuel pools. These processes include detailed consideration of various plant components such as heat

**Advantages of CFD**

- Shorter development times, and hence
- Cost savings
- Gain of knowledge, and hence insight into the future potential of the device
- Insight into processes for which measurements cannot be performed

exchangers, natural circulation in piping, and natural draught cooling towers.

NIS is currently opening up new paths and applications, by transferring the benefits of CFD to indoor server cooling systems, and efficient air-flow systems in buildings and cleanrooms. Here, too, we can see the advantages of performing computer simulation in advance of the real tests, saving the users money, uncertainty, and scheduling delays!



# Siempelkamp short-cycle presses: Standard, high-end, and Eco:

No room can do without them or win anyone over with individual flair: directly laminated panels made of particleboard, MDF or HDF enhance the living space. As a press specialist Siempelkamp concentrates on providing suitable press concepts which will laminate panels quickly, accurately, and economically. This only works with focus on the customer, product, and general conditions. Thus, short-cycle laminating presses made in Krefeld are increasingly more diversified to meet customer requirements. Three different concepts are offered and demonstrate what is important: the right amount of pressure!

By Ulrich Bens



# three sophisticated concepts

During the short-cycle process, decorative papers impregnated with melamine or urea resins respectively are pressed onto a board. Hard chromium-plated press plates, press pads, and hot-platens are used to do so. The correct pressure and temperature are the essential factors leading to optimal results.

How can a manufacturer of short-cycle presses position itself ideally in the market? "On the one hand with excellent pressure distribution inside the press. Siempelkamp scores in this area because we have effectively transferred our ContiRoll® expertise over to our short-cycle press technology. On the other hand, the focus is on reducing pressing and charging times to achieve maximum efficiency. With our latest short-cycle press generation we are faster than ever. Last but not least, the more diversified the press spectrum, the better customer requirements can be met. With three different short-cycle press concepts we provide our customers with custom solutions depending on their product spectrum and requirements," explains Ulrich Bens, Product Manager Laminating at Siempelkamp.

## 1. Multi-piston press – the standard line: used as a benchmark since 2010

Siempelkamp's multi-piston press is firmly established in the market. This concept demonstrates its strengths when different board sizes have to be laminated. Boards with thickness ranging from 3 to 50 mm represent a considerable spectrum. Additionally, width (infinitely from 1830 mm to 2100 mm) and length (infinitely from 3660 mm to 5610 mm) are variable.

The features of this multi-piston press have been demonstrating the special advantages over common short-cycle presses since 2000. This includes a higher number of press cylinders (up to 40) arranged with shorter distances between them in length and cross direction – thus ensuring optimal pressure distribution. Instead of the traditional rows of two cylinders, the cylinders are arranged in rows of three or more inside the frame opening.

### Three short-cycle press concepts: pure diversification!

	Multi-piston press: the standard line	KT 700: the new high-end line	Sophisticated concept: the Eco line
Press	made by Siempelkamp, proven and tested for twelve years	made by Siempelkamp, newly defined in 2011	made by Hapco with Siempelkamp components, under way since 2011
Pressing pressure	400 N/cm <sup>2</sup>	600 + 100 N/cm <sup>2</sup>	400 N/cm <sup>2</sup>
Press cycles per hour	180	200	120
Charging time/ Pressureless exposure time	8/1.2 sec.	8/0.8 sec.	10/1.5 sec.
Optimally suited for customers	wanting to manufacture high-end products according to European standards	manufacturing sophisticated special products, for example, with deep embossing, metal decors, sensitive films and special coloring	wanting to manufacture simple furniture and flooring panels in an economical way and with Siempelkamp guarantee!



Feeding of boards from storage



Inline paper laying system



KT 400

## Charging time: shorter is possible!

The efficiency of a short-cycle press is based on two factors: press time and charging time. The latter is the phase between two pressing cycles. To increase the efficiency of a press these two decisive factors would have to be optimized. The charging time could tip the balance when it comes to further efficiency increases! Below is a look at these two "hot phases".

### Performance

Press time

+

Charging time

time between two pressing cycles

Reduce pressure

Open press

Discharge product

Bring in charge

Place Charge

Close press

Increase pressure

= pressureless exposure time:  
the phase from when the charge makes the first full contact with the lower press plate to the time when the pressure starts to rise. The decisive factor here is in what time the pressure reaches  $120 \text{ N/cm}^2$ . With only 0.8 seconds, the KT 700 achieves enormous speeds!

Furthermore, the concept benefits from press cylinders that can be controlled individually and from custom-designed hotplaten. Another special feature is the automatic size change: Necessary adjustments to individual machines and equipment are carried out automatically after the user inputs the data into the control interface.

The drifting away of the charges, which is common when thin boards are pressed, has become obsolete. A specially designed lifting function of the loading system prevents this from happening and allows the controlled placement of the charge in the press.

This type of short-cycle press is optimally suited for manufacturers looking to produce a reliable product according to European standards.

Two of these multi-piston short-cycle presses for particleboard including an automatic loading system have recently started operation in the Republic of Belarus for Ivatsevichdrev: This wood-based panel manufacturer ordered both presses as part of a complete line. With an annual capacity of  $330,000 \text{ m}^3$  of particleboard, these presses almost double the entire manufacturing capacity of the country.

These short-cycle presses are designed for a maximum of 180 press cycles per hour. The best mechanically possible charging time at maximum board width is eight seconds; the best mechanically possible pressureless exposure time amounts to 1.2 seconds. The duration from when the product makes full contact with the lower press plate to the point when the correct pressure is reached is particularly short, and thus increases the efficiency of this type of short-cycle press!





Paper lay-up



Placing of the board on the backing



The finished panel is leaving the press

## 2. KT 700: the new high-end line

According to the motto "More pressure equals more profile" Siempelkamp developed its multi-piston press concept 2011 into a new high-end model: Thanks to the increased pressure of up to 700 N, the KT 700 opens up the prospect to produce high-quality and new products in the area of lamination.

"With the KT 700 sophisticated special products which account for high-quality eye-catchers can be produced. With this new press there are hardly any limits for the creativity of the producers and the demand of the consumers. For example, metal decors which exhibit an especially noble appearance are in demand. Deep dramatic 3-D embossing and special colorings are also very popular. All this is doable with the KT 700," says Ulrich Bens. Thus, the KT 700 provides the best equipment for those wood-based panel manufacturers that want to offer products for a sophisticated living environment to their customers, for example, in the form of embossed tiles, wall or ceiling panels.

The special characteristic of the KT 700 is its multi-piston design and the new cylinder design. The main benefit, however, is the considerably increased pressure: This short-cycle press applies up to 700 N/cm<sup>2</sup> and is thus able to produce sophisticated products. Siempelkamp also reduced the pressureless exposure time to 0.8 seconds as part of this concept.

The removal of cylinders is now easily possible. The hydraulic tank which was formerly installed in the center has been replaced with two left and right mounted hydraulic tanks in the KT 700. The innovative mounting of the upper hotplaten results in precise parallelism of both hotplaten.

The new KT concept made by Siempelkamp also allows flexible board width adjustment: The customer has control over several press systems which can be adjusted independently from one another, and thus receives an especially flexible concept. This high-end model of a Siempelkamp short-cycle press has been operating for Egger in France at its Rambervillers location.

## 3. The smart Eco line – built in cooperation with HAPCO

The customer requirements that are met by Siempelkamp's third short-cycle press concept are different from those by the KT 700. Here the noble appearance of the finished product is of less importance. The manufacturers that decide to buy the Eco line focus on the solid production of simple furniture and flooring panels instead.

Siempelkamp did not start production of this model on its own: Since 2011 Siempelkamp has cooperated with the Chinese machine and plant builder HAPCO. According to the motto "Technological know-how meets state-of-the-art production," both partners use their individual strengths in the production of short-cycle press lines.

The result is the Eco line, a performance-strong short-cycle press at a competitive price. HAPCO manufactures the concept based on the proven multi-piston design. Siempelkamp provides the key components such as the inline paper lay-up, hydraulics, control system, cylinders, and electronics as well as the service and warranty. Panel Plus in Thailand is convinced of this combination of German expertise and Chinese production strength. The company ordered a 1,950 mm x 2,600 mm short-cycle press of this model. With a pressure of 400 N/cm<sup>2</sup>, this press performs 120 press cycles per hour.



HAPCO: short-cycle press plants

### Material handling and logistics – the extra for the press process

With the correct pressure, the three short-cycle press concepts turn wood-based panels into various end products, and thus allow manufacturers to select a suitable solution for them. Beyond the diversified core element, the pressing process, the focus on the rest of the line is not neglected. All short-cycle press models are part of a complete concept, from the material handling to the storage and packing system.

“The decor papers that are bonded to the panels require special storage systems. Resin-treated paper or film has to be handled with care. Special attention needs to be paid to the climatic conditions such as the humidity inside the production facility,” describes Ulrich Bens.

Siempelkamp's storage concepts are designed to meet these conditions. They include customized systems ranging from a simple paper storage to air-conditioned high-bay storage units for sensitive goods.

Different concepts for paper lay-up are also available. The inline paper laying system separates the paper from two stacks automatically and includes a device for quick pallet changeovers. This system is designed for high outputs and is particularly suitable for the production of furniture panels. For the manufacture of laminate flooring Siempelkamp developed the precision paper lay-up system. This patented system features a high-precision paper laying and aligning device which achieves laying tolerances of +/- 1 mm in length and width.

High precision and repeat accuracy is achieved with Siempelkamp's in-register embossing for tile products and synchronized pore

structures. Decor papers and charges have to be aligned accurately to achieve high-quality patterns. The solution: With the help of print marks, the charge is precisely aligned to the decor paper and then placed into the press with a repeat accuracy of +/- 1 mm.

Siempelkamp's material handling systems carry out the feeding of a board from storage reliably and as needed. After the press process and finished board removal, the board stacking and storing, packaging and shipping processes ensure that the finished product reaches each remaining process step or use area with the same high quality level it had after leaving the Siempelkamp short-cycle press!

HAPCO press





# Interview with Mr Bernard Retureau, Plant Manager at Egger Rambervillers S.A., France.



What made Egger buy the top product among Siempelkamp's short-cycle presses?

**Bernard Retureau:** Egger and Siempelkamp have had a relationship that goes back a long time! I only need to remind you that practically all wood-based panel production plants of the Egger Group operate with Siempelkamp technology. This also includes our short-cycle laminating lines.

19 Siempelkamp short-cycle presses operate in our plants. This shows just how familiar we are with Siempelkamp technology.

But now there seems to have been a quantum leap with the new KT 700. We decided to buy this press because its technical parameters were convincing: The bottom line is that the press is precise, quick and flexible and, due to the increased pressure, can be used for the production of special products.

What does that mean?

**Bernard Retureau:** Because of the multi-piston design (40 pistons distributed over a hotplaten area of 2,200 x 5,700 mm) an optimal pressure distribution can be achieved for many different board sizes. This means very high quality can be obtained for practically all board sizes.

This press is quick: The minimal pressing cycle is 11.0 seconds, the mechanically possible charging time amounts to 8.0 seconds,

including a pressureless exposure time of only 0.8 seconds. These figures result in high performance!

The press operates flexibly due to its increased pressure of up to 700 N/cm<sup>2</sup>.

This opens up the possibility for the production of a wide spectrum of products ranging from common daily products to specialty products with 3-D structures.

This opens up completely new application areas. Is that what Egger is aiming to achieve?

**Bernard Retureau:** At Egger we always regard a new plant as an investment in the future. Under high competitive pressure we want to have the best plant concept as the basic prerequisite to manufacture optimal products efficiently. We want to be prepared, or even better, we want to be the forerunner when it comes to new design ideas because we do not see the possibilities for short-cycle laminating as being fully exploited. Just take a look at this relief decor panel; it is perfectly suited for applications in exterior and interior construction. We can now manufacture these panels without difficulty with the KT 700.

Mr Retureau, thank you very much for the interview.

The interview was conducted by Ralf Griesche.

The image shows a vast industrial interior, likely a steel mill, featuring a complex network of green-painted machinery and blue metal railings. The perspective is from a low angle, looking down a long aisle of equipment. The ceiling is high with industrial lighting fixtures. A semi-transparent white box containing text is overlaid on the upper portion of the image.

# ContiRoll® reloaded: Successful modernization at FunderMax





A ContiRoll® designed by Siempelkamp always guarantees long-term success. The Siempelkamp service specialists contribute their part by maintaining or increasing the productivity of a press even after many years of operation. After a recent modernization, the 1989 ContiRoll® of the wood-based panel manufacturer FunderMax, Austria, is now operating with increased efficiency.

By Ralf Griesche

FunderMax, a well-known Austrian wood-based panel manufacturer, is operating two forming and press lines including ContiRoll® presses in Neudörfel near Vienna for the production of particleboard. This location has an annual capacity of approx. 500,000 m<sup>3</sup> of particleboard.

In January 2011 Siempelkamp received the order for the modernization of the older of both continuous forming and press lines. The centerpiece is a 7' x 23 m ContiRoll® press which started operating in 1989. The scope of supply includes the design, production, and assembly supervision for the complete modernization which was carried out between early August and early September 2011.

A closer look at the details: A continuous forming belt from the forming station to the press infeed conveyor was installed as part of the modernization. "Thus, the transfer points on the forming belt are omitted. This helps the plant operator to avoid damages on the surfaces of the produced particleboard," says Michael Willemen, Manager Sales for Modification and Modernization at Siempelkamp. The pre-press was upgraded to today's common pressure and position control.

#### Upgrades in the infeed area: setting the right course from the beginning!

Numerous modernizations concentrated on the press infeed area. Because the complete press infeed area of the second generation ContiRoll® press was modified, the press infeed conveyor and the existing mat reject were adapted. The important innovations at a glance: an infeed drum support, new press infeed heads, four additional press frames in the infeed section as well as a 3.5 m long power hot-plate with integrated secondary heating circuit.

"Through these modifications the hot-plate length in the press infeed was extended. The pressureless exposure time of the product is decreased which in turn results in increased capacity for our customer," explains Michael Willemen. Furthermore, Siempelkamp's service staff installed belt tracking cages of the latest design as well as steel belt cleaning devices for the upper and lower steel belts.

The existing mechanical product width adjustment was replaced with a modern position control via proportional valves. To accomplish this, a completely new press hydraulic system, including hydraulic unit, functional beams with valve blocks and the associated pipelines were supplied and installed.

## FunderMax at a glance

- 1830: Karl Funder founded the first sawmill
- 1939: first Funder plant in St. Veit/Glan
- 1969: acquisition of Österreichische Homogenholz (Neudörfel plant)
- 2005: merger of Funder and Isomax to FunderMax
- 2012: five locations worldwide including Austria (five plants in St. Veit/Glan, Wiener Neudorf, and Neudörfel), France (Lyon) and India (Bengaluru)
- Claim: "For people we create"
- Products: interior applications such as kitchen fronts, wall panelling, residential furniture; exterior applications such as panels for cladding balconies and building façades as well as for playground or sports field facilities



Administrative building at FunderMax



Infeed head



Installation



Proportional valve hydraulics

In order to ease maintainability, the new functional beam was placed on the outside of the upper platform that is used to inspect the press.

The control technology of all drives of the forming and press line was also part of the modernization concept, as was the electrical control of the line which was upgraded to the latest state-of-the-art technology.

The four weeks of downtime due to the retrofit was by no means wasted. During this time period the modernization team replaced all wear parts – a useful side effect to the advantage of the customer.

After the line was successfully re-commissioned in the beginning of September, the "new" ContiRoll® started operating with an efficiency higher than ever: Gradually, the expected production increases were achieved and have even been exceeded to date.

FunderMax profits from a successful combination of existing components and newly supplied technology. "Especially the problem-free re-commissioning at the push of a button after this extensive modification has impressed us," says Martin Krutzler, Project Manager at FunderMax.



## Press infeed

**Good cooperation – problem-free implementation!**

The success of such a comprehensive modification project strongly depends on the constructive dialog between customer and service provider. This experience has once again been confirmed with this project. "From the project planning to the acceptance test, this modification project was characterized by the exceptionally good cooperation of the project team made up of FunderMax and Siempelkamp employees," says Horst Weiss, Chief Designer for wood-based panel production presses at Siempelkamp. "Once again it was confirmed that things which are carefully planned during the project planning phase will operate smoothly later on!"

The pleasing result: "Our Austrian customer was impressed with our competence in the area of modernizations and retrofits to such an extent that we have meanwhile started a new project at the customer's location in Neudörfel," says Michael Willemen happily. This new project involves the modernization and enlargement of the raw material processing!



## Project team

**Siempelkamp service: three pillars**

1. A team of specialists in Krefeld, responsible for technical advice and retrofits
  2. Since 2010: service company Siempelkamp Logistics & Service in Bad Kreuznach, Germany, responsible for the standard spare parts business
  3. Service subsidiaries in ten countries
- Motto: "We are where our customers need us"
  - Services: spare parts service, modernizations and retrofits, technical consulting and engineering, teleservice, training

SNT supplies waste treatment plant for the Chinese nuclear market:

# “Nine Million Bicycles in Beijing” – two SNT projects in China

Since 2011, Siempelkamp Nukleartechnik GmbH has been at work in the Chinese nuclear power plant in Qinshan. In February, the company secured the project entitled “Qinshan two-drum drying plant, phase II”. Thanks to a Siempelkamp “reference Chinese,” the team saw eye-to-eye while working on this order. SNT is also active on the Chinese wedding island of Hainan.

By Miriam Hupf



In 2011, SNT followed the coordinates 330° 26' 9,5" N, 120° 57' 29,2" E, and found itself in the People's Republic of China, specifically at the Qinshan nuclear power plant, approx. 100 km southwest of Shanghai in Zhejiang Province.

Here the Nuclear Power Qinshan Joint Venture Company (NPQJVC) operates units 2-1 to 2-4 of the Qinshan power plant, which currently has six blocks. Together with the China Nuclear Energy Industry Corporation, NPQJVC issued an invitation to tender for the project “Qinshan two-drum drying plant, phase II”. This plant was planned for the units Qinshan 2-1 and 2-2.

The main task of the two-drum drying plant is drying compactable but non-combustible waste. This prevents subsequent chemical or biochemical reactions from taking place in the storage tanks.

Major components of the drying plant include the drying chamber, the heating and cooling system, the trolley and the electrical and control equipment. This two-drum dryer is designed for 200 liters, with a maximum weight of 500 kg per drum. The system is loaded manually using a trolley.

## Two-drum drying system

Main components	Drying chamber Heating system Cooling system Trolley
Material	Stainless steel
Total weight	2,900 kg





Two units of the Qinshan NPP site



Two-drum drying plant for Qinshan nuclear power plant, phase II



### SNT meets China: two cultures see eye-to-eye

In order to ensure that the project handling was on the right track from the very start, SNT invited its new customers to Germany for a progress meeting. There are plenty of reports about differences in business between Chinese and Germans, much of which relates to etiquette and negotiation techniques. During the meetings, however, another more tangible difference became apparent: in terms of body size and dimensions, Western Europeans are built rather taller than the Asians. A factor that was not taken into consideration when planning the system, and which could lead to difficulties for the Chinese personnel during the commissioning process.

Miriam Hupf, responsible for the two-drum drying plant at SNT plant construction, was a major help in illustrating this height difference between Europeans and Asians. At just 160 cm, she was more at eye-level with the Chinese than her colleagues. The "reference Chinese" at SNT plant construction had been found.

As a result of this discovery, for example, SNT adapted the operating panel for the drying plant to the height of the Chinese, in order to supply the customer with a user-friendly drying plant. After a project runtime of around 16 months, including all additional components subsequently installed, the plant was put on board a ship for its journey to Asia. The final act for SNT will later be supporting the customer in assembling and then commissioning the plant.

### Follow-up order: waste treatment plant for the Chinese Hawaii

In April 2012, SNT received a further order for a Chinese nuclear power plant: "C2 Facility Package" is the name of the project, in which a drying, sorting and compacting system package for units 1 & 2 of the Hainan ChangJiang nuclear power plant was requested. This is a conditioning system, whose main components are a drying plant, sorting station, press, barrel inspection station, and barrel transportation system.

The Hainan ChangJiang power plant is located on the Chinese wedding island of Hainan, which is considered the "Hawaii of China". The waste treatment plant will handle and condition various dry low-level radioactive waste – e.g. gloves, paper, cleaning cloths, plastics and repair waste from auxiliary systems such as gas piping. The Hainan power plant has four units, is currently under construction, and is located in the island province of Hainan, in the south of the People's Republic of China.

Here, too, the kick-off meeting in Beijing confronted the SNT engineers with a number of typically Chinese challenges. Getting to the customer's company building took time, and for Germans it required particularly strong nerves.

The song, "Nine Million Bicycles in Beijing" by Katie Melua is no longer an entirely up-to-date description of the tense traffic situation. Today, cars and motorized rickshaws are out all over the city. It often seems as if there is only one traffic rule: when you overtake, whether on the left or the right, use your horn as loudly as possible – that's it!

Arriving safely at the customer's offices, the first thing to do was to find an appropriate conference room. From time to time during the meeting, it was necessary to move to another room, always calmly and without stress, but always on the move. And the SNT projects for the Chinese market also remain in constant motion!



Two-drum drying plant: left side – control panel of the drying chamber door and drum conveyor, right side – switchgear of the fire-extinguishing system



Trolley and drum conveyor of the drying chamber



Left: vacuum system of the drying plant, right: cold water system for condensate separation



Interview:



# China experience, between business and “Lunchi Lunchi”

Nǐ hǎo – Peter Reinsdorff  
in talk with “Bulletin”

SNT engineer Peter Reinsdorff has been working for more than ten years as an expert for nuclear waste treatment in the Chinese market. In his interview with “Bulletin,” the 52-year-old talked about the special cultural features of Chinese construction sites.

Nǐ hǎo, Mr Reinsdorff. We would love to hear about the differences in business behavior between the Germans and Chinese...

**Peter Reinsdorff:** I’d be glad to! Many modes of conduct between both partners are adapting as a result of globalization, and as a result of the new generation of Chinese, who are adopting more European conventions. Nevertheless, there are a number of significant differences.

For example?

**Peter Reinsdorff:** Chinese partners like to follow clear formal processes, an exact procedure. By contrast, making decisions often takes far longer.

With most processes, we benefitted from our experience with French partners and their conventions. Our many years of cooperation with AREVA form a good basis here. There, too, very clear structures are a major characteristic of their business practices, which forms a conceptual bridge to China.

How exactly would you characterize the nuclear market for waste treatment in China?

**Peter Reinsdorff:** There is an enormous demand for our services. The way Siempelkamp is set up, this market represents an immense opportunity for us. For every nuclear power plant that is built in China, the concept includes a waste treatment plant.

Do you actually speak Chinese?

**Peter Reinsdorff:** I originally intended to learn Chinese, but I never got beyond *gān bēi, nǐ hǎo* and *xiè xiè* (see box).

Business meals in China are a popular topic amongst our engineers. What has been your impression?

**Peter Reinsdorff:** Some dishes really take a lot of getting used to for a European stomach. Over time, you just learn to say “no” politely, for example when sea urchin gets brought to the table.

Lunchtime without lunch never happens in China. At 11:45 a.m. on the dot, it’s time for “lunchi lunchi” on the Chinese nuclear power plant construction site. There are 15,000 Chinese working there in three shifts. Feeding this entire mega-team is a true logistical masterpiece. The employees are transported to lunch in buses, with the Chinese personnel and the “long-noses”

## Chinese for beginners: the construction site starter kit

Hello!	你好！	nǐ hǎo!
Goodbye!	再见！	zài jiàn!
Yes	是	shì
No	不是	bù shì
Thanks!	谢谢！	xiè xiè!
Cheers!	干杯！	gān bēi! (= down your drink, whatever it is. And you'll always get a refill.)



Top:  
Control panel sees at eye-level – thanks to SNT's "reference Chinese"

Bottom:  
Miriam Hupf checks the waste treatment plant to assure a successful acceptance test by the Chinese customer

(= Europeans) strictly separated. We long-noses benefit from special buses deployed specially for us, with air conditioning, which make our lives more comfortable.

Are there language barriers?

**Peter Reinsdorff:** Definitely. Finding the right bus, or even general orientation on the construction site, is not easy for us. The only signage is in Chinese characters, or Russian cyrillic translations.

What else is very different from over here?

**Peter Reinsdorff:** The Chinese workers' habit of taking an afternoon nap after lunch. They use any corner of the construction site, and with the poor state of the lighting, you have to be careful not to trip over a sleeping worker.

And your overall conclusion on everyday life on German-Chinese construction sites?

**Peter Reinsdorff:** A lot of things take getting used to for us Germans; a lot of things are very different from here. But it's a very exciting experience!

Thank you very much, Mr Reinsdorff, for the discussion.  
And for your insights!





Acceptance test in Germany



NPP construction site in China



3-D model of the C2 facility package (waste treatment plant) for Hainan NPP:  
left – drying, sorting and compacting system,  
right – drum drying plant



Acceptance of the 16th Siempelkamp side member press for trucks at KLT:

# All according to plan!



5512-US-ton side member press



**In October 2012 the acceptance testing for a side member press for trucks made by Siempelkamp was carried out in Chennai, India. The leading manufacturer for chassis components KLT Automotive & Tubular Products Ltd. had ordered the 50,000 kN press from Siempelkamp. The result: "Everything is working, everything is according to plan – and the press is in full production."**

By Satish Gupta and Costa Kluge



Siempelkamp has been a supplier of side member presses for trucks since the early 1970s. A total of 16 side member presses for trucks have been sold to the most significant national and international truck producers to date.

KLT ordered the 50,000 kN side member press in October 2009. Siempelkamp excelled over strong international competition and convinced with the best concept and first-class references.

Just over a year ago the delivery of the press components began. The scope of supply also included piercing and bending tools for different side member versions, a loading and unloading device for the press as well as a tool turning device. With this scope of supply Siempelkamp provides an important advantage in the market: Customers not only receive the press but also the production tools – and thus a complete solution for the production of side members for trucks.

The press is equipped with modern control and automation technology. The incorporated innovative electronics and hydraulics make this plant especially efficient.

In addition to its pressing capacity of 50,000 kN, in the following some additional figures and facts about the side member press: The ram plate measures 13,000 x 1,300 mm, the clearance between the uprights in the loading direction is 2,300 mm. The stroke of ram measures 800 mm.

The height of the table is 700 mm. The height of the press above the ground is approx. 8,300 mm.

All from a single source – from the coil to the finish-coated side member

Siempelkamp also implements its single-source principle for side member presses. The basic package includes the press as well as the loading and unloading device. However, Siempelkamp also supplies complete manufacturing solutions.

Siempelkamp can supply the four key elements for a complete plant: 1.) the decoiling line which uncoils, straightens, and cuts the coil, 2.) the press and the handling system, 3.) the equipment for finishing, straightening, reaming, and measuring of the side members, 4.) the paint shop.

Siempelkamp's concept for side member presses is characterized by its high productivity: Its strength is demonstrated with high quantities during mass production. For productions requiring smaller quantities, for example in the European market, other benefits of the plant show to their advantage.

Furthermore, Siempelkamp has developed a fully-automatic tool changing device. With this device the customer benefits from shorter downtimes.



Tool inside the press



Press infeed area for plates

KLT press: a heavy caliber

The heavy-weight components, making up the core parts of this press, are a characteristic of Siempelkamp competence. The heaviest parts include the lower press beam weighing 100 t (110 US tons), the upper press beam weighing 85 t (94 US

tons) and the moving beam with 80 t (88 US tons). Siempelkamp is a known specialist regarding the production of components in these weight classes and is well equipped for their manufacture.

The advantages of the overall concept are also impressive: Side member presses made in Krefeld are characterized by an

excellent ram parallelism control at high eccentric loads. Furthermore, these presses feature optimal shock-absorbing properties during piercing resulting in longer tool life cycles and productivity increases. The focus is on supplying a high product quality within close tolerance limits. Siempelkamp's equipment turns this requirement into reality.

After the installation, the acceptance testing was scheduled for October. "Everything went well and according to plan – we are very satisfied," was the final statement from KLT after the acceptance test. This is a compliment for the team from Krefeld responsible for this press. "Side members are important components of a vehicle since they can have a positive influence on the crash behavior. It can be assumed that the 'BharatBenz' vehicles will carry heavy loads. Heavy loads and the special road conditions in India put high demands on new trucks and their equipment. That said, we are pleased that with the help of our press our customer can optimally prove itself in the market," says Satish Gupta.

## Side members for trucks: quality in two steps

**First step: Piercing** – blank stacks are put on the table. The starting material for cold-formed side members is sheet metal with a thickness ranging from 3 to 12 mm and a tensile strength from 360 to 800 N/mm<sup>2</sup>.

The metal plates are de-stacked, put on a roller conveyor and transferred into the press. With the help of a notch and piercing tool the contour is cut and holes are punched into the metal plates inside the press in a single operation.

Finally, the pierced plates are removed from the press and stacked together.

**Second step: Forming** – the stacks of pierced plates are put on the table and, piece by piece, loaded into the press. During the next operation the bending and forming tool forms the metal blanks to side members.

After the press the side members run through a straightening device. Finally, the side members are stacked in pallets and transported to subsequent process steps.





Press closed

### Challenges for the future

For Siempelkamp the project begins when the project ends. The company increasingly focuses on the challenging task to process higher-strength materials on its presses. The permissible total weight of trucks is limited by laws. Therefore, everything focuses on reducing the dead weight of the vehicles in order to increase the payload. More than ever high-strength materials are in demand, that is, thin, but high-strength steel which can be processed to precise side members. Siempelkamp takes account of these requirements of the market!

## BharatBenz: custom-made technology for the Indian market

Under the name of "BharatBenz" (= IndianBenz), Daimler makes a mark with its fifth truck brand in India. The trucks that weigh between 6 and 49 t are custom-designed for the Indian market and are manufactured in Oragadam near Chennai – the head office of Daimler India Commercial Vehicles (DICV).

2012 was a key year for the young BharatBenz brand: The new Oragadam plant was inaugurated in April 2012, in June mass production of the first heavy truck (25 t) commenced. In September BharatBenz introduced the first truck models to the market.

Since then the sales offices have received orders for the heavy long-haul trucks as well as for a dump truck and have delivered the vehicles. In October a series of light trucks was introduced. All in all BharatBenz plans to position 17 different truck types in the market by 2014.

For Siempelkamp this new and fifth era of Daimler brands sets an important milestone. With the side member press an important trademark from Krefeld will be used in India by our customer KLT.

Pierced plate



Finished side member



# Pavatex and Kalevala teams on site in Krefeld: Directly at the heart of the equipment!

Siempelkamp support is not only provided at the customer's location: In an effort to effectively prepare for their new equipment, plant operators from all over the world use the opportunity for their teams to receive training where their equipment was designed and produced. Most recently Pavatex from France and Kalevala from Russia received this type of training.

By Dr. Andreas Steffen

From September 25 to 28, 2012 the Siempelkamp Academy provided "operator training" for Pavatex: Together with the project engineer Pascal Ruedin, twelve employees of the leading provider for sustainable insulating materials traveled to Krefeld in order to prepare for their future job – the operation of one of the most modern and efficient production plants for wood-fiber insulation panels currently installed at Golbey in France. Siempelkamp received the order for this complete plant in October 2011.

Inside the new control training room of the Siempelkamp Academy a well-filled agenda was on the program: start-up requirements, automation concept, system operation, recipe management, and visualization were topics of the training curricula included in the "plant automation" module. Together with Thomas Illbruck, responsible for the development of visualization systems at Siempelkamp, 13 Pavatex employees explored the module's sub-area "operation and visualization".

Via lecture, handouts, large-screen projection and, of course, many questions, the team focused on the complex automation of their new equipment. The training provided a coherent approach to get familiarized with the complete concept at an early stage and in the best way possible. After all, the first board is scheduled to be produced in Golbey during the first quarter of 2013.

"Great – direct insight on-site!" – "A complete and clear overview of the individual processes" – "This way of learning is different and better," were some of the remarks the training participants from France left as feedback. The week of training in Krefeld was completed with a visit of the factory and a closing session including a summary of and feedback for the training.

Training proceeded for another Pavatex delegation in mid-November 2012; this time on the topic of "process technology," another training module. After completing the training in

Training in the operator room





## Undivided attention



Krefeld, the teams receive their finishing touches with in-house training at Pavatex's site.

Following in-house training in Germany, Siempelkamp will support its customer with startup training accompanying the start-up process. "This will set the course for reliability and success regarding the handling of our equipment from the beginning on," says Jochen Paul, Project Manager Automation at Siempelkamp.

#### Kalevala: basic training from professionals for professionals

In early October, the Russian Siempelkamp customer OOO DOK Kalevala seized the opportunity to receive training competence from Siempelkamp. 13 Kalevala employees prepared for their future work at a complete OSB plant which is built at the Petrozawodsk location.



The guests from Russia covered a broad range of different professions, from the press operator, to the laboratory manager, to the electrical engineer. As a result, the training content was very diverse and included, for example, an introduction in OSB technology as well as topics regarding plant design, automation, front-end technology, visualization, mat-forming, press and board properties, hydraulics, cooling and stacking line and packing line.

"We are receiving all possible information about our plant which is important for our future work," summarizes one of the participants. Another participant comments: "Everything is very well organized!" Furthermore, to the Kalevala team it seemed meaningful and important to get to know the Siempelkamp professionals personally in Germany. The individual lectures always resulted in a very lively discussion with many questions and answers.

Following the one-week training course in Krefeld, the Kalevala group visited the OSB plant of another Siempelkamp customer where it received several days of practical training – another good prerequisite for a best-possible start of the Kalevala plant! Last but not least, detailed on-site operator training in the course of the start-up of the plant is part of the concept.

The conclusion: "Early birds" optimally prepare themselves ahead of time in Krefeld for the conditions of their future plant so that each step and each action hits the spot!

# At the heart of the equipment: Teamwork with customers and suppliers at the Siempelkamp Academy

The opportunity to build and deepen one's knowledge regarding Siempelkamp lines has existed at Siempelkamp Academy since 2005. To date, 80 training courses have been carried out providing internal training to Siempelkamp employees and providing customer teams from all over the world with the opportunity to make direct contact with their plant manufacturer. Dr. Andreas Steffen is responsible for the concept and idea for the Academy. Together with Rainer Krumbach-Voss, he developed an important building block for the training sessions: the control room. In an interview with "Bulletin" both describe what made the Academy successful and what motivates customers to regularly visit the learning facility.



Dr. Andreas Steffen

**Dr. Steffen, with the Siempelkamp Academy Siempelkamp has created an important opportunity to increase customer benefits and plant expertise. For whom have these training sessions been developed?**

**Dr. Andreas Steffen:** The Academy targets three different groups. First, there are our customers. They want to have their investment in a new plant accompanied with training for their team in order to achieve highest efficiency during the plant start-up and optimization phases.

The second group our Academy targets is our suppliers and their Siempelkamp colleagues which are given the opportunity to further educate themselves in the context of their joint projects. The third target group includes all of us. Within our Group the opportunity for the transfer of know-how is willingly used.

**How many of these training sessions take place at the customer's site and how many here at the headquarters in Krefeld? Are there any combined sessions?**

**Rainer Krumbach-Voss:** The training courses are always a combination product. Our comprehensive startup training always takes place at the customer's site. However, if a new customer wants to get ready for their new equipment ahead of time, the training takes place here in Krefeld. The same goes for customers that intend to prepare larger groups of employees for their new job on our equipment.

**What are the key factors for customers to decide to receive training in Germany?**



**Dr. Andreas Steffen:** They want to deepen their knowledge in two essential areas: They want to receive training on the one hand in the basics and interrelations of process technology and on the other hand in the thematic complex including “plant automation, control, and operation”. Our training supports the plant operator and its teams in learning to use new technology quickly and optimally. The training courses concerning plant automation, control, and operation take place in our realistic control training room and are taught by Rainer Krumbach-Voss and his team.

#### Who and how many people normally take part?

**Rainer Krumbach-Voss:** Normally between ten and 15 people attend the training. Their activity spectrum is very diverse and can range from being the head of process technology to the shift supervisor to the plant operator for individual areas to the control technician and quality manager to the maintenance personnel and laboratory technician.

#### Who within Siempelkamp participates in training sessions?

**Dr. Andreas Steffen:** The diverse range of tasks of the people receiving training is also reflected here. All departments ranging from the process technology to plant planning to automation technology participate in training sessions. Our subsidiaries are also included in our training programs. Our sub-suppliers contribute to the training with their supplied machinery.

#### Currently, Pavatex is completing operator training concentrating on the electrical system and Kalevala a basic training. To what extent does Siempelkamp tailor the training topics to the individual customers and their lines?

**Dr. Andreas Steffen:** To a very high degree. Our training is offered in the form of

modules and tailored exactly to the key aspects relevant for the customer. The extent of the scope of supply also plays a decisive role when we develop the training content and complexity which we use to prepare plant operators for their future equipment.

#### Which modules can the customer order?

**Dr. Andreas Steffen:** For example, plant technology – tailored to the respective type of board production. This area is divided into the essential areas of a plant ranging from wood preparation to board handling. In addition we offer the module “automation technology” which prepares customers for the handling of the control and visualization system. Furthermore, we offer training in our process control technology system Prod-IQ®.

These are the contents for our in-house training sessions at Krefeld. They are usually followed by comprehensive training during plant startups provided by our experts at the customer’s location. We also offer the option to arrange plant visits to different customers, operating a comparable line, in order to present a real-life impression.

**Rainer Krumbach-Voss:** Our training courses in connection with a plant retrofit or upgrade have also proven themselves. They focus especially on the operating systems. The benefit: During the short retrofit, the operators are trained in plant innovations. In this way, after restarting their plant, they will be able to safely handle their system.

#### What is the time frame for the training courses in Krefeld?

**Dr. Andreas Steffen:** A basic training course for a complete plant will take approximately one week.

#### Which training course order has been the largest to date?

**Dr. Andreas Steffen:** Most of the time, the training courses are similar as far as their complexity goes. A combined lecture and control room training course in Krefeld and the corresponding on-site visit at the customer’s location will mostly take more than two weeks.

#### Not only our customers gain knowledge at the Siempelkamp Academy. We also benefit by finding out more about the operator and its needs. What was the most exciting experience you had involving your work at the Siempelkamp Academy?

**Dr. Andreas Steffen:** Again and again, it is fascinating to see how the dialog between the customer team and the Siempelkamp team is strengthened and intensified as a result of the training. We make our first efforts in building a relationship with the customer during our teaching and training time in Krefeld. Then, later on, at the customer’s site we work on deepening this relationship. As different as our customers are, our customer relationships have grown stronger due to the Siempelkamp Academy concept; the mutual appreciation for one another has increased. As developers and manufacturer we profit from this personal contact to a large extent because we get to know our customers thoroughly.

#### How has the feedback been after the training courses? To what extent does the time spent at the Siempelkamp Academy pay off for our customers?

**Dr. Andreas Steffen:** The main advantage for the plant operator and its team is that they can find out the basics of their plant in a systematic and concentrated manner without distractions and disturbances. Our customers appreciate to get to know Siempelkamp not only through the product, the production line, but also as an institution and team through our Academy.



# Siempelkamp

## G. Siempelkamp GmbH & Co. KG

### Machinery and Plants



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



Büttner Energie- und Trocknungstechnik GmbH



Maschinenfabrik  
Siempelkamp Maschinenfabrik GmbH



CMC S.r.l.



Logistics & Service  
Siempelkamp Logistics & Service GmbH



Hombak Maschinen- und Anlagenbau GmbH



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



Engineering  
Sicoplan N.V.



Siempelkamp CZ s. r. o.



Ventilatoren – Apparatebau



ATR Industrie-Elektronik GmbH



Machines & Handling  
W. Strothmann GmbH

### Sales companies/Representatives

#### Australia

Siempelkamp Pty Ltd.

#### Russia

Siempelkamp Moscow

#### Brazil

Siempelkamp do Brasil Ltda.

#### Singapore

Siempelkamp Pte Ltd.

#### China

Siempelkamp (Wuxi) Machinery Manufacturing Ltd., Beijing

#### Spain

Siempelkamp Barcelona

#### France

Siempelkamp France Sarl

#### Turkey

Siempelkamp Istanbul

#### India

Siempelkamp India Pvt. Ltd.

#### USA

Siempelkamp L.P.

### Nuclear Technology



Nukleartechnik  
Siempelkamp Nukleartechnik GmbH



NIS Ingenieurgesellschaft mbH  
NIS Ingenieurgesellschaft mbH



Tensioning Systems  
Siempelkamp Tensioning Systems GmbH



Krantechnik  
Siempelkamp Krantechnik GmbH



Prüf- und Gutachter-Gesellschaft  
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Assistance Nucléaire S.A.



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### Foundry



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Giesserei Service  
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