Siempelkamp

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South America: New Siempelkamp projects in the "land of opportunity" **Synergy effects à la Siempelkamp:** Carefree package deal for EUROPIPE **50 years of CMC:** With Siempelkamp from "Partecipazione" to "Fusione" **Up and running after Siempelkamp redesign:** Alcoa's closed-die forging press reloaded

bulletin

The Siempelkamp Magazine

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Dr.-Ing. Hans W. Fechner
Chairman of the Executive Board
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Dear Readers:

"Change Management" is the current buzz word for almost all management consultants. Siempelkamp, however, has long realized and internalized: Change – and, prior to change, the ability to change – is the main driver for a company's success.

Despite the size of our company, we are able to approach change proactively and strategically improve our position in the market. As a family business we have the strength to act quickly and flexibly. This provides you with the assurance to receive top concepts from each of our business units.

Almost all articles in this Bulletin report about change. Five of these articles I would like to particularly emphasize:

- New technologies in the area of composite production. The latest milestone is our 4-cylinder high-tech press which received a lot of feedback at JEC in Paris.
- Two Siempelkamp companies become one. The specialist for dryer systems and the specialist for energy plants within our Group take their know-how to new heights.
- For many years, CMC has been a part of Siempelkamp. Starting June 2012 the expert for front-end machinery will become a solely owned part of our Group.
- According to the motto "Think big" we have increasingly focused on the production of heavy parts and expanded our machinery accordingly. Furthermore, we opened up additional synergy effects between our machine shop and our foundry. Thus, we have a unique selling point in the area of precision-machined and pre-finished heavy castings with weights of up to 300 t made of ductile graphite iron.
- The manufacturing center of Siempelkamp's Nuclear Technology business unit in Mülheim has more than 40 years of experience in the manufacturing center of the CASTOR® high-tech product. In order to secure production at this location in the long-term and expand its product range, we have also made investments in this area.

Five very special projects – five times change. Find out more in this magazine.

With kind regards and best wishes from Krefeld,

Dr.-Ing. Hans W. Fechner

South America:

New Siempelkamp projects in the "land of opportunity"

Numerous factors make South America a land of opportunity for the wood-based materials industry: The timber resources are nearly inexhaustible, the domestic demand is big and thanks to the demand for raw materials from China and other countries, most of the Latin American countries are experiencing strong economic growth since 2010. This gave our South American customers, from Brazil and Chile for example, reason to position themselves with new ambitious projects. From a greenfield plant development to retrofitting projects, Siempelkamp is a highly appreciated partner in this part of the world.

By Ralf Griesche

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Wood-based materials production in South America: Go for Gold!

Large, stable, and focused on growth: these attributes aptly describe the market for wood-based materials in South America.

In Brazil the relevance of this industry can be traced back to the country's name. The country Brazil got its name from the native "Pau-brazil" tree, the national tree of Brazil. This type of wood, which has become rare today, was an important export product for the Brazilian Atlantic Coast in times of the early colonization.

While there currently is a surplus of Medium Density Fiberboard (MDF) in Brazil, there is a relative shortage for Medium Density Particleboard (MDP). For this reason several MDF projects have been timely postponed.

The growth trend for Brazil will receive new impetus from two mega sporting events: In 2014 the 20th Soccer World Cup will take place in Brazil, in 2016 the Summer Olympic Games will be held in Rio de Janeiro. The demand for venues and the corresponding infrastructure will result in a big push for the wood-based products market. The economy also demands new capacities: The find of enormous gas and oil deposits off the coast of Brazil will result in several construction projects.

"The market for wood-based materials will continue to grow and additional capacities can be absorbed more easily in the future," forecasts Bernd Hauers, Sales Manager for Siempelkamp in Curitiba and responsible for South America. This is confirmed by the figures provided by the Cambridge Forest Products Associates (CFPA): A 6% growth in the production of wood-based panels was recorded for 2010, another 4% for 2011. According to these numbers, the Brazilian wood-based materials manufacturers produced a total of 8.21 million m³ this year. Regarding the quantity of produced panels, they take first place in South America with a big lead over Chile.

Another important and promising Siempelkamp market is Chile. According to experts of the CFPA, board production increased by 4% in 2009 after a loss of 8% was recorded in 2008. Even the devastating earthquake off the coast of the Maule region in February of 2010 did not weaken the long-term production. In 2010 the national wood-based materials production increased by 7% compared to the prior year. For 2011 the CFPA recorded another plus of 11%. In 2011 the total volume of the Chilean board production amounted to 2.33 million m³. These are best prerequisites for new investments!

Wood-based materials in South America: figures and key data

- 13.8 million m³ of MDF and MDP are expected to be produced in South America in 2012
- With 7.158 million m³ MDF exceeds MDP (6.705 million m³)
- 1.78 million m³ are added in 2012 due to newly built capacities – an increase of 14%

Ranking of the production countries according to cubic meters:

1. Brazil (9.045 million m³) = 66% of the total production of wood-based materials in South America. 4.920 million m³ of it is MDF
2. Chile (1.950 million m³, of which 1.080 million m³ is MDF)
3. Argentina (1.456 million m³, of which 590,000 m³ is MDF)

Manufacturers:

- 86% of the MDF and 73% of the MDP is produced by five large South American manufacturers: Arauco, Berneck, Duratex, Fibraplac, and Masisa
- These five big players primarily operate continuous presses and large plants and produce high quality products

Siempelkamp in South America: a top position in the market – thanks to tradition and customer orientation for over 50 years

Duratex, one of the top five manufacturers in the South American wood-based materials industry, ordered its first Siempelkamp product – a fiberboard plant – in 1951. Siempelkamp's current track record in South America:

- Siempelkamp holds a market share of 64% of all continuous presses
- Siempelkamp services the largest installed base with 86% (including presses by Küsters)
- Siempelkamp's market share in Brazil, the largest market in South America, amounts to 85% – here we service 90% of the installed base
- Siempelkamp supplied the world's largest press (a ContiRoll® for Duratex with a length of 77 m)

On site with customers in Brazil and Chile:

Impressive expertise in the production of wood-based materials

Siempelkamp's commitment in South America is based on relationships that grew over a long time and the close dialog with plant operators. In February of 2012 Siempelkamp's Marketing Director Ralf Griesche and Sales Manager Bernd Hauers went on a customer tour in Brazil and Chile. Four of the large wood-based materials manufacturers – Masisa Cabrero, Arauco Teno, Berneck Curitibanos, and Arauco Jaguariaíva – gave exciting insights into ambitious projects.

Masisa Chile

- **Profile:** In the market since 1961, the company specializes in the production and sales of MDF and particleboard for the furniture industry. The company is the leading manufacturer of wooden boards for this industrial sector in Chile. Masisa's Forestry Business Unit operates plantations with a total area of 238,000 ha, primarily softwood (pine) and eucalyptus. Furthermore, the company focuses on sustainability and the environment with a natural forest reserve of 59,000 ha and conservation areas.

- **Installed Base:** Masisa operates a total of nine plants for MDF and particleboard in Chile, Argentina, Brazil, Mexico, and Venezuela – among these plants the first MDF plant in Chile. The total yearly capacity of all plants together amounts to 2,383,000 m³. All plants are certified according to ISO and OHSAS; even the European E-1 certification for low formaldehyde emissions has been issued to all Masisa products.

– The first project with Siempelkamp involved an MDF plant for Cabrero, Chile, which was supplied in 2006. The scope of supply included the mat forming machine and the forming and press line with a 9'/8' x 38.7 m ContiRoll® press. This plant has a yearly output of 300,000 m³.
– A new project for Siempelkamp involves the retrofitting of the first Chilean MDF plant in Cabrero to accommodate a new product. The plant including a Küsters press which started operating in 1992 was decommissioned in 2009. Siempelkamp received the order to retrofit the production from MDF to particleboard (MDP).
– Additional Siempelkamp plants in the overall spectrum of Masisa include: a single daylight press in Valdivia, Chile, and a particleboard line in Guadiana/Mexico. Another MDF plant in Puerto Ordaz, Venezuela. This plant includes a 9' x 38.5 m ContiRoll®. An MDP plant in Puerto Ordaz as well produces a yearly output of 110,000 m³ on a Siempelkamp ContiRoll®.

Masisa Cabrero: Particleboard replaces MDF – the challenge lies in the front-end area

In the beginning of 2011 Masisa Cabrero started operating a particleboard plant which has undergone a challenging metamorphosis: In order to diversify its product spectrum, the Chilean wood-based products manufacturer decided to change over an MDF plant from 1992 to a particleboard production plant. What does this mean in plain language? The finishing line did not undergo any modification, the front-end area, however, went through a complete redesign adjusted to the new MDP product!

The advantage for the plant operator: The Siempelkamp Group represents all service providers that can implement such ambitious projects: "Our planning and engineering, front-end, and dryer specialists, combined with our complete control system, provided a gapless service chain for this project without frictional losses in the product and process flow," explains Bernd Hauers.

The scope of supply included, for example, wet and dry particle silos as well as all screens, separators, dryers, surface layer mills, the resin blending system, mechanical conveyors, the extraction system, and the complete engineering. Additional front-end components such as conveyors, mills, and mixing chambers were also supplied. The energy system had to be adjusted to the new product as well. Sicoplan carried out the complete engineering for the project.

An important part of the project was the modernization of the existing Küsters press. Siempelkamp supplied new infeed hot platens, chains, and wear parts as well as a new press control.

Modifications were also carried out in the area of the press. The hot platens are new. Because of the new product, the hot platens now have to meet new requirements: "The hot platens of the retrofitted plant are thicker (70 mm) in order to generate more heat in the product. The heat pipe cross section was adjusted and three secondary heating circuits were added," explains Bernd Hauers.

Further updates are regarding the upper and lower steel belt control (belt tracking cages), the chain guides, and the control system. The lower infeed was equipped with a Duroflex chain. Furthermore, the Siempelkamp team integrated a new control.

The new plant produced its first board in July 2011. At speeds of 640 mm/s (for 16 mm boards), 1,000 m³ of particleboard is produced daily. Boards with a thickness ranging from 6 to 40 mm can be made!

The wood for particleboard production is primarily taken from Masisa's own plantations. Thus, the company is largely unaffected by the market prices for wood. 60% of the manufactured boards are further refined and sold as decorative panels.

65% of the particleboard production is intended for export, mainly for countries in South America and in Asia. "Our principal customers are from the furniture industry. Furthermore, we are selling our products in our own 336 'Placacentro' stores in South America. Thus, we own an important distribution center within our own company," says Luciano Tuburzi, Operations Manager at Masisa.

Energy plant

Dryer

Silo

Particle separation into fractions

Forming line

Infeed of the MDP mat into the Küsters press

Luciano Tiburzi, Operation Manager

Cabrero plant managers

Arauco Chile

- **Profile:** In the market for over 40 years, pulp and paper manufacturer, largest forest owner in Chile, largest plywood manufacturer in South America

- **Installed Base:** Arauco operates a total of ten plants in Chile, Argentina, and Brazil; an 11th project is currently implemented with Siempelkamp's support.
  - Chile: Two MDF plants and a wet-fiber board plant in Yungai; a new project involving a greenfield plant for particleboard is implemented in Teno.
  - Brazil: Arauco operates two MDF plants in Pien, both were supplied by Siempelkamp. These plants generate a yearly combined total output of 245,000 m³ of MDF. A Siempelkamp particleboard plant with a yearly production output of 250,000 m³ is also operating in Pien. Next to an existing plant in Jaguariaíva, a new MDF project is currently being installed (see below, Arauco Jaguariaíva).
  - Argentina: At the Puerto Piray location Arauco operates an MDF plant with a yearly capacity of 290,000 m³. A particleboard plant in Zarate (province of Buenos Aires) generates a yearly production output of 240,000 m³.
  - Furthermore, the company took over an MDF plant in Moncure/USA.

Arauco Teno: New particleboard plant is a greenfield development

The business connection between Arauco in Chile and Siempelkamp has existed for a long time. Both partners have implemented several projects together. With a project for a greenfield particleboard production plant in Teno (Chile), the first direct order from Arauco was placed in 2010. In March 2012 this plant produced its first board. The order contains several highlights.

For the first time, Arauco decided to also order the finishing equipment from Siempelkamp. This includes the cooling and stacking line, the sanding line with board cutting, a high stack storage system for stacks with a height of up to 4 m as well as packing lines.

Sicoplan with its outstanding know-how in the engineering of greenfield plant projects carried out the complete planning of the plant. This plant, in close proximity to the parent company in Santiago de Chile, is designed as a showcase. Presentable office buildings in wooden construction, covered walkways to the factory building and a glassed-in stand above the forming and press line will fascinate future visitors from all over the world.

The entire engineering is also part of Siempelkamp's scope of supply. Further Siempelkamp components for this plant include the forming and press line with a 8' x 20.5 m ContiRoll® press as the key component. The plant will have a yearly particleboard output of approx. 300,000 m³. A used Siempelkamp short-cycle press will also be integrated into the plant and will provide for adequate laminating of the particleboards.

"For Siempelkamp this order is a special compliment. Arauco is experienced with all plant suppliers that are working in our market segment. The fact that Arauco decided to buy from us demonstrates this customer's trust in us," says Bernd Hauers. We enjoy supporting Arauco's promise to provide a diverse range of high-quality products to its customers!

View of press

View of finishing line

Stack storage vehicle

Arauco Teno: modern, presentable architecture

ContiRoll®

ContiRoll®
Frame packages

Energy plant

Arauco Jaguariaíva: new MDF plant in an optimal location

Plant Manager Alex Ferreira Alves

For a second MDF plant at the Brazilian Arauco location in Jaguariaíva, Siempelkamp supplies numerous components starting with the forming and press line as well as its largest boiler plant to date!

Parallel to an existing MDF plant, a second MDF plant will start operating in July 2012. At the end of 2010 Arauco signed a contract with Siempelkamp for the supply of a 9' x 54.4 m ContiRoll® press, a forming and press line, an energy plant, a cooling and stacking line as well as a finishing line. Siempelkamp also received the order for the engineering of the entire project.

A highlight of this project: This plant incorporates the largest boiler plant to date installed by Siempelkamp. The grate size amounts to 90 m², the furnace capacity to 76.5 MW.

Arauco decided to invest in this second MDF plant in order to make full use of its location advantages. "In Jaguariaíva we profit from rich wood resources; our company owns plantations in Brazil with a total area of over 120,000 ha," explains Plant Manager Alex Ferreira Alves. The distribution structure is also convenient: "The furniture industry relevant to us can be found within a 300 km radius. These customers benefit from the cost advantage that opens up when the factory is close to the raw material. For one cubic meter of board approx. three cubic meters of raw material is necessary. Wood transports, however, are expensive," explains Alex Ferreira Alves.

The MDF lines in Jaguariaíva manufacture high-quality furniture boards which are exclusively sold in Brazil. The increased capacity at the location is Arauco's answer to an increased domestic demand for MDF.

During installation

ContiRoll® infeed section

ContiRoll® outfeed section

Berneck Brasilien

- **Profile:** In the market since 1952, manufacturer of a diverse portfolio of wood-based products ranging from MDP to MDF to HDF to pine lumber and plantation teak.
- **Installed Base:** Berneck currently operates two plants, both were supplied by Siempelkamp.
  - The first plant at the Araucária location replaced in 2000 two multi-daylight presses from Siempelkamp: This MDP plant now produces a total of 625,000 m³ per year with a 7' x 42.1m ContiRoll® press.
  - In 2008 Berneck also started operating an MDF plant at the plant in Araucária. The Siempelkamp scope of supply for this plant was diverse ranging from the mat forming machine to the packing line. The key component is a 9' x 27.1 m ContiRoll® press which generates a yearly production output of 270,000 m³.
  - A new MDF greenfield plant is currently being built in Curitibanos in the Federal State of Santa Catarina. Siempelkamp contributes to this project by supplying components from the mat forming machine to the packing line including a 9' x 40.4 m ContiRoll® press.

Greenfield plant for Berneck Curitibanos – a unique project

The Brazilian city Curitibanos in the Federal State of Santa Catarina is an El Dorado for wood-based materials manufacturers. Because of its large wood resources it offers an optimal starting situation. Berneck purchased an area of 350 ha here in order to build a completely new cluster of wood-based material production plants. This ambitious project is supported by Siempelkamp!

Berneck, a family-owned business, is building an integrated wood-based materials center in Curitibanos which will have a daily capacity of 3,500 m³.The starting position for this project is perfect. Located between Curitiba in the East and Porto Alegre in the South, Curitibanos is both close to furniture manufacturers and consumers. The standard of living in the area is also considered one of the highest in Latin America. These are optimal prospects for a greenfield plant investment!

The first plant of the wood-based materials center is an MDF plant which was completely planned and engineered by Siempelkamp. The scope of supply also includes a 9' x 40.4 m ContiRoll®, a forming and press line with vapor exhaust, a cooling and stacking line, a storage system, and a finishing line.

After the contract was signed in March 2011, the production of the first board was scheduled for the beginning of March 2012. The daily capacity of the MDF plant amounts to 1,200 m³ for boards with a thickness of 15 mm. "By concentrating on a medium board thickness, the customer benefits from economical production costs," says Bernd Hauers. Berneck's strategy to focus on the production of furniture panels will pay off even more since the plant can operate more economically without any changeovers to different products. Berneck now manufactures thin MDF exclusively at the MDF plant in Araucária.

The MDF plant in Curitibanos marks the first step toward the complete development of the 350 ha area. It will be followed by a saw mill and an MDP plant. Short-cycle presses and impregnation technology will

The new factory building – gigantic!

The giant building from the inside

Operator's Room

also be integrated. The complete concept of the new Berneck location is efficient and cost-saving. These are ideal prerequisites for a sustainable and promising development! After its completion the new plant is forecast to employ up to 500 people.

For the surrounding area Berneck's wood-based materials center also represents a gain in regard to the quality of life. 40 ha of the site are needed for the factory, 60 ha benefitted the local infrastructure. In addition to the wood-based material production plants, Berneck plans to include lakes, forests, and untouched nature as part of the new location.

Forming and press line, ContiRoll® with vapor exhaust

Cooling and stacking line

Packing line

Enclosed double diagonal saw

ContiRoll® press

Siempelkamp Maschinenfabrik GmbH:

Thinking big leads to big benefits

With 470 employees and 480,000 production hours Siempelkamp's production facility at the Krefeld location is a significant performance factor in the Group. Since January 1, 2012 this business area has become an independent company with the name Siempelkamp Maschinenfabrik GmbH (machine factory). According to the motto "Think big," the new company not only supplies important component parts for Siempelkamp projects but also provides expertise in the area of external job order production which is unique in the market. For our customers, we focus on the big benefits.

By Robert Kraemer

Pre-assembly of a crimping press for large pipes

1. All from a single source

Most important benefit: The Maschinenfabrik has taken the motto of the Siempelkamp Group, "All from a single source!", to heart. From purchasing the material to flame cutting, welding, and straightening, mechanical machining, deep hole drilling, hydraulic assembly, pipe construction and painting to the final assembly of large presses including the wiring and start-up, the machine factory covers all possible areas. "These core competences can be offered as a complete package or individually according to customer requirements," says Robert Kraemer.

2. A broad range of competences

As part of Siempelkamp's machine and plant engineering business unit, the machine factory is expanding the added value within its own group with important competences. Whether it is hot platens for the machine and plant engineering business unit, lifting devices for the nuclear technology business unit or dryer drum tires for Büttner, the drying specialist, the machine factory provides important support within the entire Group. The production of hydraulic components is a challenge, but even large cylinders with a diameter of up to 2 m (6.6 ft) can be manufactured here!

Machining of hot platens with a length of up to 18 m

Vertical turning lathe type VME 10 by Schiess with grinding table

Faceplate for the VME 10 during machining in the siempelkamp workshop

The close cooperation with Siempelkamp Foundry adds an important advantage. This cooperation leads to large pre-finished castings with weights of up to 300 t (331 US tons) made of ductile cast iron with spheroidal graphite. These castings provide the Krefeld location with a unique selling proposition. Furthermore, the company is also attractive to external customers when it comes to job order production. The well-equipped manufacturing shop and the excellently-trained Siempelkamp personnel are the foundation for timely production for third parties.

3. Large-scale chipping processes – undisputed in the market

Siempelkamp Maschinenfabrik GmbH holds the pole position in the market in the area of chipping: "We can handle large work-pieces with weights of up to 450 t (496 US tons) and machine them with precision of up to 0.03 mm/m," explains Robert Kraemer. With machinery that is tailored to such large parts and their precise machining, the Krefeld company is unique in the market. This feature is becoming more attractive to an increasing number of customers.

Machining of a frame for a titanium compacting press

The 2nd portal milling machine for large-scale machining

Recently our manufacturing shop was extended by 3,000 m² in order to accommodate a large-scale vertical turning lathe type VME 10 by Schiess. Supported by Siempelkamp engineers, the long-term machine supplier Schiess was responsible for the planning and designing of the lathe and milling machine. The large components for the three-part faceplate as well as the extension arm were cast at Siempelkamp Foundry and afterwards machined at Siempelkamp Maschinenfabrik.

The intense cooperation between Schiess, Siempelkamp Foundry, and Siempelkamp Maschinenfabrik resulted in the world's largest single-column vertical lathe by Schiess. The faceplate with a diameter of 10,000 mm (33 ft) also set a world record. With a machining width of 16,000 mm (52 ft) and a travel of 8,500 mm (28 ft) along the y-axis, the large-scale vertical lathe can machine cast components with diameters up to 16 m (52 ft) and weights up to 400 t (441 US tons). Among other products, the lathe machines large grinding tables and plates as well as components for the wind power industry.

"For our Group the vertical lathe is another step towards closing our service chain and plays an important role in our job order production. For Siempelkamp Maschinenfabrik GmbH the lathe provides another unique selling proposition in the machining of castings and is a true customer advantage when it comes to a high product quality at very competitive prices," emphasizes Dr.- Ing. Hans W. Fechner.

The gantry-type VMG 6 PS milling machine by Schiess is also designed for high-precision machining of very large and heavy parts. Furthermore, a plate boring mill and milling machine type PAMA Speedram 2000 started operation at the Krefeld location in 2011. This machine opens up a number of possible application areas, for example, the machining of components for energy plants, earth-moving machines, diesel engines as well as for the aerospace industry. The machine operates with the smallest production tolerances of a few hundredths of a millimeter and achieves a high surface quality at the same time. Its turntable is designed to allow the machining of very heavy parts with piece weights up to 100 t (110 US tons).

Location development including the continuous expansion of our machinery plays an important role in Siempelkamp's business strategy. From the vertical/horizontal machining center, to the gantry-type CNC milling and drilling machine, to the CNC turning lathe and milling machine, to the straightening press, Siempelkamp equipment is set up for even the most demanding project. This secures competitive advantages not only for Siempelkamp but especially for our customers!

4. Welding processes – all around good

According to the project, customers benefit from the fact that Siempelkamp can carry out all common welding procedures (see box). The equipment can handle sheet thickness ranges from 10 to 800 mm. UP-narrow gap welding is new in the portfolio.

Welding procedures at Siempelkamp:

- Wolfram Inert Gas Welding (WIG)
- Metal Inert Gas Welding (MIG)
- Metal Active Gas Welding (MAG)
- UP Welding procedures
- **New:** UP Narrow-Gap Welding

5. Reference project Alcoa

Not only does the enormous potential of the equipment speak for Siempelkamp but also the finished projects. One of such reference projects involves the machining of castings for one of the world's largest closed-die forging presses for Alcoa Forgings & Extrusions in Cleveland, USA. For the modernization of the press, Alcoa ordered from Siempelkamp the engineering and the manufacturing of 14 castings for the upper, moving, and lower beams as well as the foundation beams. Very heavy parts with a maximum radius had to be machined. Within the scope of this project, unfinished parts with weights of 270 to 300 t (298 to 331 US tons) were machined.

One of 14 parts for Alcoa's 50,000 t press

PAMA boring machine with part for Elektrostal's closed-die forging press

6. Cost efficiency

The synergies within the Siempelkamp Group, in which the machine factory plays an essential role, pay off for the customer not only in the form of a closed service chain. The cost factor is also highly attractive. "Many projects require us to work hand in hand with the Siempelkamp Foundry. After all, the casting process is followed by the machining process. Thanks to the proximity to the foundry, we can save numerous clients transport costs for their parts which often are very large. For our customers this can add up to savings in the five-digit range," explains Robert Kraemer.

The proximity of our machine shop to the foundry eases many coordination processes: design specifications such as allowance calculations can be communicated in a timely and direct manner. Another important factor regarding cost efficiency: complex painting jobs can be carried out directly at the Krefeld location.

7. Objectives: even more fields of expertise

Despite its complex portfolio, the machine factory has set itself new objectives. An important area for further development includes the surface treatment. The portfolio will be topped off with hardening, tempering, and coating processes in the future. Robert Kraemer: "We already cover a broad range of services. We will continue to expand our fields of expertise in the future. Thus, we will maintain and expand our competitive advantage as part of the Siempelkamp Group as well as in regard to customers which trust in our services as a contract manufacturer."

Opening up new markets:

Foundry and machine factory work hand in hand

Two years ago the Siempelkamp Group made a groundbreaking decision: The Siempelkamp manufacturing shop was strategically equipped for the production of heavy parts. In this way, important synergy effects with Siempelkamp Foundry were opened up. Today, this strategy provides Siempelkamp with a unique selling proposition for precision-machined and pre-finished heavy castings made of ductile cast iron with spheroidal graphite. This has been a starting position which not only opens up new markets but also provides customers with significant benefits.

This combination of casting technology and production technology at the Krefeld location cannot be found anywhere else in Europe at this time. Siempelkamp has combined its forces and created a strong bond between the foundry and machine and plant engineering business units: The Siempelkamp Giesserei GmbH and the Siempelkamp Maschinenfabrik GmbH, a spin-off subsidiary of Siempelkamp Maschinen- und Anlagenbau GmbH & Co. KG established in 2012, work hand in hand when it comes to bringing heavy machined castings to the market.

"This cooperation creates numerous advantages: On the one hand our customers profit from high quality products at a fair price. On the other hand the individual production processes are more efficient for us. Furthermore, the cooperation ensures us with clear competitive advantages. As the only supplier we can provide large finish-machined castings with weights of up to 300 t (331 US tons) made of cast iron with spheroidal graphite," emphasizes Dr.-Ing. Hans W. Fechner, Chairman of the Executive Board.

The foundry – a world record holder takes the lead

Siempelkamp Foundry is one of the worldwide leading manufacturers of hand-molded castings made of spheroidal graphite cast iron. The mechanical properties of ductile cast iron used for the production of cast components are similar to those of steel. The entire production process from the design, to the engineering, to the pattern making, to the casting process, to the fettling shop is centrally monitored and controlled. At this point, first synergy effects between foundry and machine shop are becoming clear: The proximity of the machine shop to the foundry and the strong bond between both companies allow for close coordination regarding the material allowance calculation and additional design specifications. The resulting material savings lead to obvious advantages for the subsequent machining in the machine shop.

Following casting, cooling, and fettling in the Siempelkamp fettling shop, which was expanded in 2011, the heavy casting components with weights ranging from 10 to 300 t (11 to 331 US tons) are transported into the production halls of the Siempelkamp machine shop, located on the same premises. The proximity of the machine shop to the foundry reduces the logistical effort and therefore saves customers a lot of money.

The machine factory – machining at the highest level

The Siempelkamp Maschinenfabrik GmbH, established in the beginning of 2012, features an excellently-equipped machine shop for the machining of heavy parts. From CNC gantry-type portal milling machines, to the new CNC vertical turning lathe, to different drilling machines, to CNC turning-drilling-milling centers and turning lathes, this manufacturing shop has everything that

Complete solutions from a single source

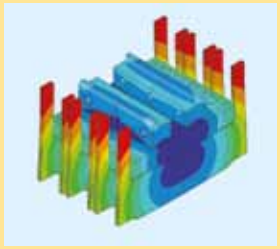
Siempelkamp offers a combination of machine design and process engineering know-how that is unique.

Design tailored to your needs

3-D animation of a press

FEM calculations create transparency

Values calculated by FEM



Heavy weight casts from Siempelkamp's own foundry

Casting of a 270 t beam – world record

Finishing in the own workshop guarantees high quality

Portal milling machine machining a press beam

Assembly and commissioning

Ready for commissioning

is needed for the machining of large cast components (please also read the article: "Thinking big leads to big benefits" on page 12. Next to the close cooperation with the foundry, job order production and the production share for Siempelkamp's machine and plant engineering business unit are additional sources of income for the machine factory.

Our know-how and machine technology provide for the optimal processing of the castings produced at the foundry. The finished products are sold in many different markets. The proximity to the inland ports of Krefeld and Duisburg complete the logistical picture. The foundry and machine factory are thus able to deliver even the largest components worldwide.

Siempelkamp castings are in demand across many different areas including energy conversion, machine and plant engineering, tool making and machine tool manufacture as well as large engine production. In order to offer customers a central point of contact and to achieve stronger market penetration, sales efforts will also be carried out jointly in the future. "By bundling the sales activities between the foundry and machine factory we further expand our cooperation. The close cooperation of the Siempelkamp Group companies will remain a key element for us in the future and further expand our 'all from a single source' principle," says Dr.-Ing. Hans W. Fechner.

Casting

Fettling shop

Mechanical machining of a mainframe at Siempelkamp

Portal milling machines

Long-distance district heating transport pipe

Customer-specific development, optimization of cast components, all in close coordination with the choice of material – the fields of work of the Siempelkamp Giesserei (Siempelkamp Foundry) are complex. Taken all together, the result is a genuine chain of services whose links are stabilized within the entire Siempelkamp Group. How it works is shown by a project for EUROPIPE in Dunkirk, France. Here, the assignment was to change a crossbeam for a pipe-forming press over from cast steel to ductile cast iron.

Synergy effects à la Siempelkamp:

Carefree package deal for EUROPIPE

By Helmut Rieck

The prelude to the "chain reaction": on 30 March 2010, a telephone call is received from Dunkirk at the Siempelkamp office in Paris. The crossbeam of the large O-press used for EUROPIPE production has got cracks in it. The press is being operated at reduced power in order to prevent a short-term failure. The transfer of orders to other EUROPIPE works has already been planned.

The Siempelkamp Giesserei (SGK) supported by Siempelkamp Paris, is on site just a few days later. In a discussion with the plant management it quickly becomes clear: the crossbeam has to be replaced. The customer's requirement is a 30% increase in the performance of the plant; the hydraulic capacity is sufficient for this – a challenge for Siempelkamp.

Further steps are quickly specified: EUROPIPE commissions Siempelkamp with a concept study and the design as well as calculation. Both of these are to be checked and released in collaboration with the calculation team at Salzgitter Mannesmann Forschung GmbH. The production and delivery of the ready-to-install part is planned for July 2011. The modification will be carried out by our customer itself during the factory holidays.

The existing crossbeam is made of cast steel. With the new ductile cast iron design, we give the customer an assurance that the required increase in performance will be achieved while maintaining the external geometries and connecting dimensions. Any additional weight of up to 12 t (10%) is not a problem. In case a delivery of heavy load proves to be too complicated in terms of obtaining road transport approvals, delivery by means of an inland waterway vessel is possible.

Concept study and design: team building and a "shock effect"

Next step: The Siempelkamp engineering team is called upon to carry out a major task: in addition to design and verification in accordance with current regula-

EUROPIPE: A success thanks to King Louis

The oldest factory of today's EUROPIPE shareholders owes its existence to Louis XIV: In 1685, His Majesty granted permission to erect a steelworks in Dillingen on the River Saar, Germany. In 1804, engineers rolled the first sheet metal here in Europe.

Five years later, the company was converted – this time with the imperial approval of Napoleon I – into the first public limited company in Germany.

Since that time, Dillingen has always been a pioneer in technological fields: in 1897, the first electric fine sheet rolling plant in Europe was started up; in 1961, the world's first steel slab continuous casting plant.

In the Ruhr area – today's location of the corporate headquarters – they were just as inventive. A company of the subsequent Mannesmannröhren-Werk (Mannesmann Tube Works) produced the first welded steel pipe in continental Europe in 1845.

A good 40 years later, the brothers Mannesmann succeeded in producing steel pipes without a seam simply by rolling. In 1890, using these pipes, the world's first pipeline was laid in the Caucasus. A second oil pipeline, completed in 1907, was the longest pipeline in the world for several decades.

In 1970, Mannesmann was the first company to use exclusively continuous casting in steel production for large-diameter pipes. And that's the way things still work today: the name Mannesmann is a synonym worldwide for all types of high-quality steel pipes.

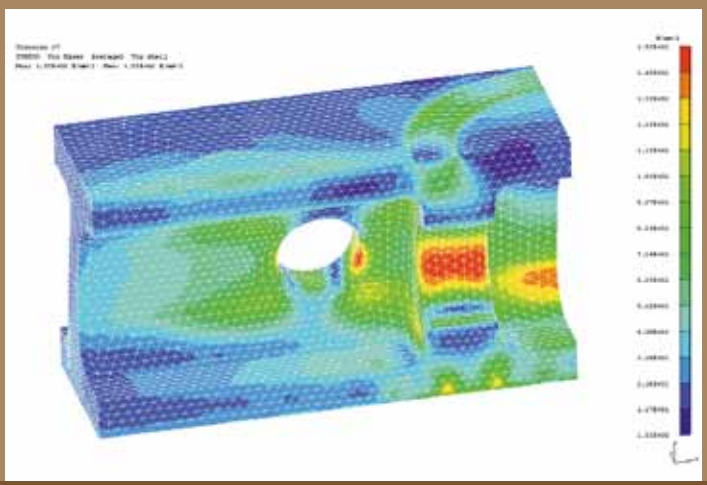
The two pioneers of the steel industry – the limited company of the Dillinger Hüttenwerke and Mannesmannröhren-Werke – amalgamated their experience and skills in the large pipe sector in 1991: EUROPIPE was founded.

tions for the component, EUROPIPE transfers to us the entire responsibility for detailed construction design, including the compilation of the working drawings for machining and appraisal drawings.

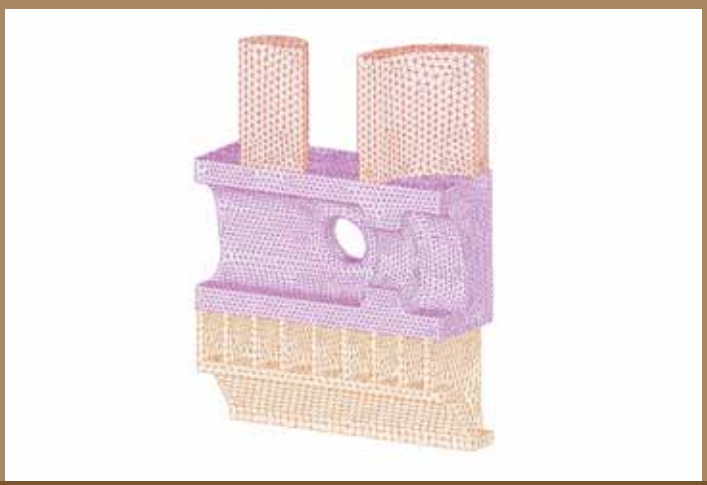
In a first step, the "Siempelkamp-Team" and "Salzgitter Mannesmann Forschung calculating team" coordinate the concept study. Within three months, the design can be submitted and approved.

With a cross-check and approval by Salzgitter Mannesmann Forschung, the following is confirmed: although its weight – 121,000 kg – is the same as that of the previous crossbeam, the new ductile cast iron crossbeam of the press provides an increase in performance from currently 24,000 t of pressing force to 32,000 t. Our compliments to the engineering team! "The close integration of design, calculation, construction and material expertise represents the highly appreciated Siempelkamp engineering skills. With this range of services, we are supplying a genuine 'all-round carefree package'", explains the engineering manager of the foundry, Dr Georg Geier. "Blank, processing and appraisal drawings, as well as the specification, are taken over by production without any difficulties."

Simulated solidification to monitor the cooling behavior



Finite element view of a cross beam section for optimal design



Press beam after the fettling shop

In accordance with Murphy's law, a "shock effect" follows the initiation of the in-house casting plans: the internal geometry of the component can be produced – but the values are borderline in terms of health and safety. In other words: our fettlers have no room for manoeuvre when producing the required surface qualities.

The result: The feasibility of the planned and approved version is called into question. An alternative solution is conceivable if the pouring position is turned through 180°. A decision is taken together with the engineering team of Salzgitter Mannesmann Forschung: an alternative version will be produced in the reverse pouring position; the promised delivery date can still be complied with. There is a leeway of eight weeks for this task – because the home straight is still the company's factory holidays.

The decision is taken in favor of this solution. But there is one downside: the review of the revised concept, including adherence to the delivery date, requires an extra six weeks of working time.

The calculation work begins immediately, with the customer being informed simultaneously – with the result that the reversal of the pouring position is justified. Now the fettlers have good accessibility to the interior of the cast part even though the crossbeam has the same final weight.

As a result of the good cooperation with our external partner, it is possible to complete the job within the six weeks without any extra time being required. After final release by the customer, production release for the foundry is issued.

Production planning and production of the cross beam: a precision landing!

IIn the next step, production plays their part – initially without any room for manoeuvre with respect to the promised delivery date. The model planning department succeeds in providing their colleagues with a two-week cushion after a good deal of thought – and the casting forms part of the normal production flow. Result: the raw casting will be available on time.

Siempelkamp builds the cross beam pattern

Cross beam during molding

Drawing the casting from the molding pit

But there is another Murphy effect at short notice: the promised large-scale processing is postponed by the supplier due to an excessive workload. In order to meet the deadline promise given to the customer, the manufacturing center of Siempelkamp Nukleartechnik jumps in at short notice.

Delivery to the works: handover!

The manufacturing center in Mülheim/ Germany processes the unfinished part without any deviation whatsoever. The high demands placed on processing accuracy and the large numbers of threaded holes that have to be introduced into the casting component are not a problem for our professionals – after all, the sophisticated machining of components from the field of nuclear technology is part of our everyday business.

The acceptance test before dispatch by the customer also went off without any complaints and to the customer's complete satisfaction. Finally, the last hurdle: combined transport by inland waterway vessel, delivery to Dunkirk harbor/France – this is where handover to the customer is planned, from this time on EUROPIPE assumes responsibility. The calculated time for the route of the inland waterway vessel is 60 hours, plus a possible waiting time of twelve hours for leaving the locks of the River Westerschelde, depending

Machining at the manufacturing facility of SNT Mülheim

Casting: three pouring ladles of 150 t liquid iron forming a cross beam of 14 m length

Ultrasonic inspection

Finishing of the bore holes

on the tide and traffic. Another precision landing: delivery right on time at the agreed date – transport time: 60 hours!

From the customer's point of view, the precision landing agreed 14 months ago has been achieved. This is where the teamwork within the Siempelkamp Group has paid off; consistent performance and quality are the characteristics of the service chain.

Siempelkamp synergies: to precision

This project shows: sometimes things turn out differently than expected – because EUROPIPE makes use of the services of Siempelkamp as a professional supplier in the field of pipe-forming presses. In this respect, the plant management in Dunkirk was well aware of the last major project – a sheet metal crimping press for the works at EUROPIPE Mülheim/Germany and the high performance of the plant used there.

So the service chain was put into action – as is standard procedure in France through the Siempelkamp office that has been located in Paris for decades. The Siempelkamp Giesserei sales team, engineering, planning, production as well as the Siempelkamp Nukleartechnik manufacturing center proved: "Together we are strong!"

After the modification by EUROPIPE, the pipe-forming press has now been in continuous use for the last six months. The customer's conclusion: a top performance by Siempelkamp tailor-made to the customer's requirements!

The decisive factor in EUROPIPE putting all their eggs in one basket, i.e. in Siempelkamp, was the quality of previous projects and the all-inclusive quotation, from the design of the new component, through casting and machining to the on-time delivery of the finished component to the EUROPIPE plant in Dunkirk.

Franck Brunquet, plant maintenance manager at EUROPIPE in Dunkirk, sums up: "Our trust in Siempelkamp has again been confirmed. Customized services of the highest quality from a single source exceeded our expectations. In August 2011, we installed the crossbeam – and since September the pipe-forming press has been exceeding the required performance levels!"

Together for EUROPIPE: Links in a service chain

A new design of the crossbeam to be replaced by SGK engineering

After appropriate verification, release by Salzgitter Mannesmann Forschung engineering team

Fine planning of the casting by the foundry, including test planning after customer release

Production plan and logistics concept

Pattern making

Loading for the voyage to EUROPIPE, Dunkirk/France

Products of a pipe press (source: EUROPIPE)

August 2011: The cross beam is installed and the pipe press is performing with the required level of power

(from left to right) Philippe Leite and Franck Brunquet, maintenance manager at EUROPIPE Dunkirk agree that Siempelkamp has persuaded

Delivery of the ready-to-install crossbeam just in time three days before the start of installation during the factory holidays

Machining

Casting of the component

Pipelines: A long history

A pipeline is a long-distance line for the transport of liquids or gases, and sludge in rarer cases, through pipes. It is used for the transport of oil and gas over long distances – sometimes over several thousand kilometers. Its advantage: in spite of the high construction costs, it is more economical than transport by tanker lorry.

Gas pipelines, for example, allow the transport of more than 20 mill. m^3 of gas per day. A crude oil pipeline – such as that from Wilhelmshaven to Wesseling – transports 15.5 mill. m^3 of oil per year in spite of its diameter of just 710 mm.

80% of all of the crude oil transported in Germany is carried out via long-distance pipelines, with the entire network having a total length of 2,400 km.

The first oil pipeline in history – the so-called Tidewater Pipeline – was put into operation in 1879. The 255 km long pipeline with a diameter of 15 cm connected the US cities of Pittsburgh and Williamsport.

Investments for the manufacturing center in Mülheim, Germany:

SNT location in Mülheim – a breath of fresh air

If high-quality machining is required, the Siempelkamp Nukleartechnik (SNT) manufacturing center in Mülheim is the top address. More than 40 years' experience in machining of the high-tech product CASTOR®, the MOSAIK® casks and cast-iron containers represent machining at the highest levels of quality and safety in accordance with the current nuclear technology regulations. In order to expand the range of products and secure this standard over the long term, investments are being made – in two traveling column boring mills and the expansion of a production line for casks and containers.

By Karl-Heinz Kramm

What is an absolute necessity in the field of nuclear technology can also be made use of in other industrial fields. And this is where the synergy effects of the Siempelkamp Group come into their own again. The conclusion of a framework agreement by the Siempelkamp Giesserei in 2010 for the supply of components for 5 MW offshore wind energy systems is associated with extensive and sophisticated processing work.

Reason enough for Siempelkamp to consider how to strengthen its in-house value-added chain and supply the highest levels of quality from a single source. The decision of the German government in 2011 to exit from the field of nuclear energy earlier than planned also made it clear that at the Mülheim location, new tasks have to be established and new business units developed in the medium term. Securing the machining of the current and future cask body requirements for the German market required the expansion of the existing machining capacities. This was only possible with even more modern and efficient high-tech machines and equipment.

Against this background, besides the expansion of a production line for cask bodies, approval was given for investments in two traveling column boring mills at the end of 2010 and in the current year of 2011. Here, the products of the firm Bimatec, a German partner of the Spanish machine tool manufacturer Soraluce, made the right impression.

The company belongs to the Spanish Danobat Group and is part of the world's largest cooperative, the Mondragón Corporación Cooperativa, which with over 90,000 employees and a turnover of more than 15 billion euros p. a. is in turn the seventh largest company in Spain. Besides the production of state-of-the-art traveling column milling and boring centers, as well as its own milling head production, the company's own machines are also used in conjunction with field research for the production of complex components at the Spanish company.

Mülheim location: from the steel framework hall to the high-tech production hall

Since the late 1970s, Siempelkamp has been producing casks and containers for the disposal of nuclear wastes. In addition to the casting of these components, we have also established their machining, coating, installation and quality assurance, as well as raising these services to a high quality level that is internationally acclaimed.

With the reorganization of the Siempelkamp Group at the beginning of 2000, these tasks were bundled – seeing the creation of the SNT manufacturing center at the Siemens Technopark in Mülheim an der Ruhr.

On 15 October 2004, everything was ready: the topping-out ceremony was held, and the Manufacturing Division of Siempelkamp Nuclear Technology began production. Over an area of more than 10,000 m², and equipped with modern processing technology, components were produced for nuclear technology and for the conventional sector. This is now followed by the next step: The storage area used parallel to the production area – a steel framework hall built in 1912 – is now being converted exactly 100 years later into the new high-tech production hall!

New perspectives for 2011 and 2012

One of the challenges was to convert the building, which had up to now been used as a well-stocked warehouse, for the new task from May 2011 on. Here, the task was to optimize the existing storage areas,

Initial situation: full storage facilities

Foundations works

Assembly of the first traveling column drill

28.12.11: turning – the first chip is falling

March 2012: The components machining is in full swing and the second machine is being erected

relocate the casks and containers and deliver them to the customers – a logistical challenge.

A further requirement was to carry out extensive refurbishment work in the individual aisles: Amongst other things, the modernization of the double girder bridge crane to increase its load-bearing capacity to 125 t was also necessary. This is where our colleagues, the experts from Siempelkamp Krantechnik GmbH, came in, who were now able to use their expertise within our own group.

Furthermore, special devices and tools had to be developed for the production of the wind energy components, which weigh up to 70 t. For example, cooled bridge tools for flange and borehole processing were built for diameters of up to 3,200 mm and a processing depth of up to 2,700 mm. The special tools that were constructed also include a 900 mm side milling cutter with integrated cooling. Similarly, the development and construction of a device for "rotating the components in the air" were a technical challenge.

Since the end of 2011, the second machine has been under construction, whose completion and commissioning is planned for April 2012.

The side aisle is also being converted for new uses by the summer of 2012: Here, we are installing a production line for the large-scale production of cast iron containers and casks. The aim is to create a logistics system by means of optimized processes so that in this area at least four cast iron containers per week can be produced. The primary task is to increase the crane capacity in the hall to 20 t. Here too, Siempelkamp teamwork is of the essence – because Siempelkamp Krantechnik is again included in the planning process and construction project.

Today, with the new aisles there is an additional new production space of 2,700 m² available.

Interview: "Together we are strong!"

The construction project at the Mülheim location is a forward-looking strategy that has to be supported and implemented by a strong team. In an interview with Karl-Heinz Kramm, Nebojsa Babic and Markus Domian it becomes clear: here everyone is acting in concert in order to perform top-quality work!

In Mülheim you have been executing an ambitious project since 2011. What was the greatest challenge for you as far as conversion of the hall was concerned?

Karl-Heinz Kramm: In the truest sense of the word the chiselling work – we have worked on this for two months in three shifts around the clock. Also the excavation work, casting the foundations in several working steps, and painting the foundations in particular in accordance with the provisions of the Water Resources Act had to be carried out within very strict deadlines. The rehabilitation of the surrounding ground surfaces was then carried out at the same time as the delivery of the machine components.

The new equipment will result in a significant performance advantage. What are the advantages of the new traveling column boring mills?

Karl-Heinz Kramm: The two boring mills offer a very flexible machine concept in order to precisely meet even the most demanding requirements of Siempelkamp's customers in the processing of large and heavy components. The high level of accuracy of the machines in combination with the automatic head-changing system makes it possible when using orthogonal or even horizontal milling heads, as well as interchangeable tail spindles, to process even narrow passages and complicated geometries with a high degree of precision. Here, the linear guide mechanisms in combination with hydrostatic damping carriages offer a maximum degree of dynamics, as demonstrated in particular by the interpolation lathe process, with which complex lathe and milling contours can be produced on one machine.

Nebojsa Babic: With the new equipment, we are able to machine much larger formats. The traveling distance of the machines, which is 16 m in each case with a working height of up to 7 m, gives you an idea of the components which can be processed. At the same time, RAMs and tail spindles can be extended up to a total of 2,900 mm, thereby penetrating deeply into the machining area.

Furthermore, a large number of different boreholes can be machined for each component; currently over 600 boreholes per housing in the diameter range between 6 and 3,200 mm.

Working with such machines is generally filigree work.

Markus Domian: The difficulty is: It is hardly possible to measure anything, as there are almost no parallel surfaces. Using a laser tracker, a preliminary measurement is carried out in order to subsequently align the component geometrically

Our interviewees

Karl-Heinz Kramm, production manager SNT Mülheim
Nebojsa Babic, manufacturing foreman/training officer SNT Mülheim
Markus Domian, chipping mechanic at SNT Mülheim with more than 20 years of professional experience

Travelling column boring mills FXR 16.000: the highlights

- 4,000 x 3,500 mm rotary tables (lifting capacity: 120 t, with up to 10° tilt function)
- Interpolation lathe operation: lathing and milling on one machine
- High spindle speeds (up to 3,750 rpm)
- 3-D thermal expansion compensation
- Radio-controlled workpiece measuring probes
- Hydromechanical damping carriages in the Y and Z axes
- Vertical machining can be extended to 7,000 mm thanks to the swivelling milling head
- Patented electromechanical compensation of the transverse axis
- Exchangeable tail spindle system (depending on the component: use of different tail spindle diameters)
- Pendulum machining between floor plate and rotary table possible
- High-performance orthogonal milling head with 1° gradation and speeds of up to 3,750 rpm
- D'Andrea flat boring head UT5-630 S

with the machine. The milling head is also a challenge: it is possible to approach any angle, so that the traveling distances are always changing. Here, we work with the greatest of care so that we do not damage the workpiece or milling head.

Nebojsa Babic: With investment costs for a milling head amounting to hundreds of thousands of euros, the entire commitment of our team is required. A high level of confidence in the machines and operators is important, as the machine and tool cannot be seen directly. Our employees are very well prepared for this task, work together well and do a great job!

The Siempelkamp manufacturing center in Mülheim is therefore well equipped to meet the increasing demand for cast iron containers and the high demand for offshore wind energy components. What are the requirements you encounter here?

Karl-Heinz Kramm: The special aspect, for example in the machining of the wind energy system machine housings, is the size of the boreholes. These involve diameters of 3,200 mm! For these, we require new special tools at the Mülheim location, for example boring tools for drill-finishing the large boreholes. Our advantage: we perform the entire process on one machine! The benefits to our customers are the time savings and cost-saving effects with respect to the number of hours worked.

The clamping devices also have to be aligned precisely to the specific requirements for the processing of cast components used in wind energy systems.

Nebojsa Babic: Here we focus on the topic of "complexity": The cast components are extremely demanding. By the way, also as part of project work for our technical training (see box).

Karl-Heinz Kramm: The possibility of clamping on 3,500 x 4,000 mm rotating sliding tables with tilt function up to 120 t at an angle of up to 10° rounds off our machining work – also in the truest sense of the word. In the commissioning phase at the beginning of 2012, it was already possible to successfully machine both casks for nuclear technology and housings for wind energy systems at the same time in parallel on one and the same machine. That is a successful "energy mix" at Siempelkamp in Mülheim!

Promotion of young talent!

As part of the major investment, the promotion of young talent also came into its own: project and thesis work for the next generation of technicians and engineers was offered and successfully supervised.

Paul Schellenberg, Alexander Paal, Egor Wagner and Willi Walter dedicated themselves to the theme of "Clamping devices for wind energy system machine housings" as part of project work for training as technicians. Between May and December 2011, the team performed important analyses and basic research concerning the question: "How do I clamp the component so that it lies securely on the machine?". For our manufacturing center, it was essential to design and construct new clamping devices – many of them special productions for our application requirements.

A thesis was also produced as a result: Eugen Rapoport, the son of an SNT employee in Mülheim, devoted himself to the topic of "Implementation of a tool magazine in the production process". The objectives of this work:

- Structural recording of the tools for targeted use
- Overview of the tools in stock
- New procurement
- Frequency of use and condition of the actual inventory
- Archive implementation of the manufacturing process

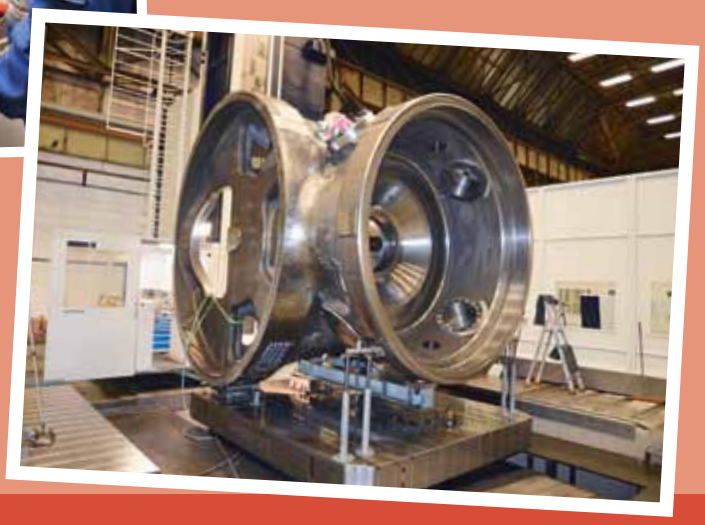
Promotion of young talent, part three: the training department at SNT Mülheim is moving into the new hall in order to train and involve the next generation as future operators of the new machines. Currently, six employees of the next generation are being trained as chipping mechanics.

SNT manufacturing center at Mülheim/Germany

Chipper Markus Domian, programming the components machining

Complex geometries of mechanical processing

Ready to rotate in the air: machine housing equipped with lifting means



Positioning of the turning tool inside the machine carrier

Machine carrier on the new traveling column drill

Highly demanding turning of the fit for an accurate assembly of the wind energy plant

A new challenge for the SNT chippers: turning tool with 3,200 mm in diameter

"Yes, we can – composite!"

Fiber-reinforced composite production with Siempelkamp press technology

Fiber-reinforced composites – from the RTM process or as Organosheets – are in high demand in all high-end industries where lightness and at the same time high fatigue strength during dynamic loads ensure decisive competitive advantage. Siempelkamp has played an important role in the market for composite materials since 1993: Back then we supplied the first multi-daylight sandwich press to Elbe Flugzeugwerke GmbH. Since then we have achieved additional milestones which we demonstrated at JEC Europe in Paris at the end of March.

By Dr. Michael Schoeler

Special press for the production of RTM structures and Organosheet with loading unit

Whether glass-fiber reinforced plastics or carbon-fiber reinforced plastics, this precious material is used wherever the focus is on saving weight, reducing fuel consumption, good corrosion characteristics as well as high stress on the material.

It's not surprising that many industries are interested in new and improved concepts for the production of RTM structures or Organosheets that are introduced to the market.

"Let's take, for example, the aircraft industry. Each kilogram saved from a sandwich element for aircraft construction saves fuel. And that in enormous dimensions: Experts have calculated that one kilogram less weight will save 3 tons of Kerosene over 20 operating years of an airplane," says Dr. Michael Schöler, Manager Research and Development at Siempelkamp.

Next to the aerospace industry, similar savings can be achieved in the automobile, machine engineering, wind, and bridge construction industries. The market is showing interest in the fact that Siempelkamp produces presses and handling systems for the RTM process or for the production of Organosheets. "Our name stands for solid and precise technologies in all areas in which we do business," says Dr. Michael Schöler.

Composite production: Applications

- Aerospace industry: e.g., floor panels, ceiling panels, cargo compartment linings, landing flaps
- Automobile industry: e.g., chassis parts, supporting component parts in the engine compartment
- Railway vehicle manufacturing: e.g., interior lining components, roof panels, side panels
- Machine engineering: e.g., textile machines, machine tools, paper machines (rollers), robots, feeders
- Bridge construction: e.g., GFK profiles for pedestrian and highway bridges

Customers expect:

- Light weight
- Fuel savings
- Optimized energy and resource conservation
- Payload increase
- High rigidity even under extreme loads

Composite production: three questions for…

Dr.-Ing. Hans W. Fechner, Managing Director of Siempelkamp Maschinen- und Anlagenbau GmbH & Co. KG

Wood-based materials industry, metal forming – and now composite production. Is there still a common denominator for this wide range of Siempelkamp services?

Absolutely. Our common denominator is the first-class reputation that we enjoy in our markets because we are able to provide complete processes. Our customers receive a complete service chain – all machines are developed, designed, and built in-house. This know-how was effectively transferred to the area of composite production.

What factors are decisive in this regard?

The precision of our presses is the common denominator of all our developments. Our in-house research and development department tests processes and perfects complete production lines tailored to these processes. Thus, semi-finished parts can be produced economically and, at the same time, with high quality. Besides, we are no newcomer to composite manufacturing: For almost 20 years we have supported Elbe Flugzeugwerke GmbH with our multi-daylight presses. These presses produce composite products for floors, walls, wings and interior constructions of planes. Our programs that calculate the fatigue strength of our presses under load conditions are very useful and a convincing factor for users from the area of composite manufacturing.

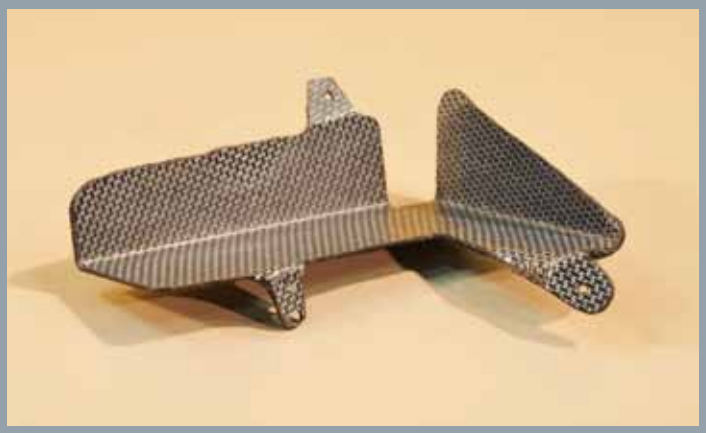
What is the biggest challenge?

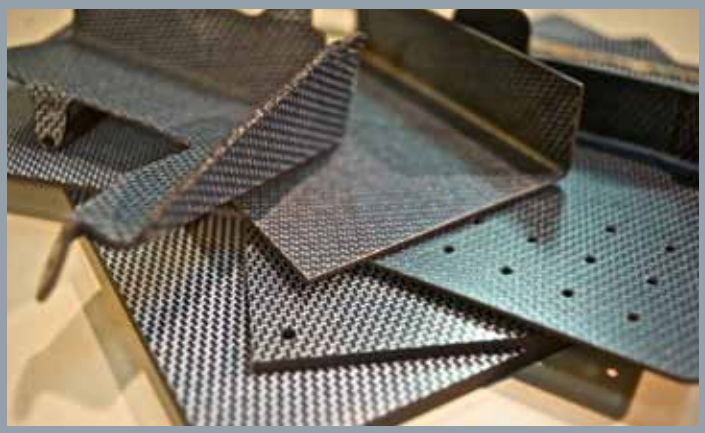
The biggest challenge is to accommodate two difficult demands on the product at the same time. For example, high fatigue strength and light weight. Or high board quality on the one hand and production on an industrial scale on the other. Or a press that can, depending on the forming tool, produce fiber-reinforced composite materials according to the RTM process as well as Organosheets. For all these combinations we have developed the right technology which makes it possible to meet both demands.

Laboratory press for the production and post-forming of Organosheet

Special press for the production of RTM structures and Organosheet with loading unit

Forming of Organosheet





Organosheet

Composite press for RTM processes and Organosheet forming: ultimate precision

In 2011 Siempelkamp achieved a milestone in the area of process technology with a laboratory press suited for all modern high performance plastics. This press operates as a heating/cooling press at temperatures of up to 430°C (806°F) and significantly expands Siempelkamp's competences in composite production.

Based on this laboratory press we completed another concept: a press for Advanced Composite Engineering GmbH (ACE), a worldwide approved specialist in the area of fiber-reinforced composites. According to the forming tool, this press allows the forming of Organosheets as well as the RTM process. "With this press both thermoplastics, which can be re-formed under the influence of heat (Organosheets), as well as thermoset RTM component parts can be produced," explains Dr. Michael Schöler.

The outstanding characteristics of this four-cylinder high-tech press, which started operation in the beginning of 2012, include:

Audi R8

Lamborghini

RTM fender for Audi

Engine hood by RTM process

100% accurate positioning for the forward and backward movement – exact control during shutdown of the press due to precision hydraulics. Another advantage: The press can be operated in open-die as well as closed-die mode. Furthermore, gap impregnation is also possible with this press providing enormous versatility. Because of the table design, this press achieves a very good pressure distribution inside the press.

"We tailored this concept to meet the needs that manufacturers of high-performance composites demand from us. This concept provides plant operators with enormous versatility coupled with an optimal product," says Dr. Michael Schöler.

Speaking of versatility: The press includes a modular tool changing and clamping system for tool dimensions with heights between 200 and 1,550 mm. Furthermore, the heating and cooling of the tools can be done directly or indirectly. A newly developed shuttle system ensures quick and easy tool set changes.

Siempelkamp presses at Elbe Flugzeugwerke

Siempelkamp sandwich presses: The start is clear for the latest generation of flooring boards for the Airbus

One of the most important Siempelkamp references in the area of composite production is flying high: Since 1993 we have supplied multi-daylight sandwich presses for EADS's location Elbe Flugzeugwerke GmbH in Dresden, Germany. At this location it's all about the development and manufacturing of smooth lightweight constructional components for the structure and interior of all Airbus models.

Siempelkamp presses play an important role here because they produce sandwich components such as flooring panels, wall and ceiling panels or cabin components. These products have to meet high requirements: weight and stability have to be carefully balanced; even at high acceleration levels the honeycomb structure has to maintain stability. Another necessity: enormous strength under high-stress conditions. Also, in the event of a fire, the component part cannot produce smoke in order to classify as crash-safe.

The latest milestone of this cooperation: "In close dialogue with our customer we succeeded in further optimizing the production of sandwich flooring panels. The approval for this latest generation of carbon-fiber reinforced composite panels has already been issued," says Dr. Michael Schöler. These panels will be used in Airbus A350 and A380. This is not the end of this success story: "We have applied for several research projects which will further deepen our competence." As an expression of this successful cooperation we received, at the end of March, an order for a fifth press which will further expand the existing press cluster.

Multi-daylight press for composites

JEC Composites 2012: overwhelming response

The introduction of our new composite press at JEC Composites 2012 in Paris at the end of March had overwhelming feedback. The international audience agreed: The debut of our precision press is a milestone in composite processing.

Our booth with different exhibits from the aerospace and automobile industries received a lot of attention. The positive feedback was expressed by numerous requests for our service range concerning the area of composite materials. "We believe that we won several new customers that will approach us with interesting tasks," says Dr. Michael Schöler.

Flooring installation in an airplane

Energy plant and dryer at Egger, St. Johann

Synergy benefits through merger of Büttner and SES:

Henceforth, energy plants and dryers from a single source

Dagmar Bautzmann and
Ines Veckenstedt

Since April 2012 it is official: Büttner Gesellschaft für Trocknungstechnik mbH and Siempelkamp Energy Systems GmbH are merging to one company. At the Krefeld and Hanover locations, the dryer and energy systems specialist will give its expertise new clout. In an interview with Bulletin, Ines Veckenstedt (energy systems) and Carsten Otto (dryer systems) summarize the advantages of this alliance for the customer.

By Ines Veckenstedt and Carsten Otto

BÜTTNER

Büttner Energie- und
Trocknungstechnik GmbH

Henceforth, Büttner and SES will join forces on the market. What strategic goals does Siempelkamp pursue with this step?

Carsten Otto (Sales Manager): Regarding process technology as well as plant engineering competence, energy and dryer systems clearly belong together. For our customers as well as for the further development of the Siempelkamp Group, this merger only provides advantages. For the former Büttner company this decision is both, a strategy for the future and a step toward "returning to our roots". Our company, which was established in 1874, started out by engineering energy plants. We did not start focusing on our core business of today – dryer solutions – until 1928. Therefore, the merger with SES for us means combining past and present fields of specializations.

Ines Veckenstedt (formerly Managing Director of SES, now in dual management position with Dagmar Bautzmann, Büttner Management): This merger will strengthen the plant engineering competence within the Siempelkamp Group. For the former SES this decision will provide further benefits: Due to bundling effects we will profit from optimization potentials in the area of procurement. Furthermore, our location in Hanover offers the opportunity to expand our market shares outside the wood-based materials industry. Büttner offers its services to very diverse industrial sectors (e.g., pellet and sugar industry). With the merger, these sectors also become interesting prospects for our services.

Keyword "bundling effects" – what are the advantages for the mutual customers?

Ines Veckenstedt: One of the most important interfaces within the Siempelkamp Group is now offered from a single source. Our products fit optimally together and the know-how transfer between both service areas can now flow even more directly.

A significant advantage will open up in the area of procuring component parts. Büttner purchases parts globally and always close to the plant operator. From now on we will use this concept for the purchasing of parts for our energy plants. Customers of energy systems will benefit from parts that were purchased close to their final destination and the corresponding lower transport costs.

Carsten Otto: Siempelkamp's motto "all from a single source" is once more strengthened by this new synergy. Customers that buy dryer or energy systems usually opt for a turnkey project. Energy technology, combustion plant, and drying are topics that plant operators treat with a lot of respect. In this respect, we have earned the trust of our customers, which rely on our high competence in this area. Due to the company merger we can not only optimize numerous processes but also streamline them. The engineering effort is reduced and the transport and logistics processes, assembly and start-up become more efficient. For our customers this results in cost savings.

Energy plant (left) and particle dryer (right), Metro Thailand

Energy plant (left) and fibre dryer (right), Panel Plus, Thailand

What will change and what will stay the same?

Carsten Otto: The new company Büttner will be headquartered in Krefeld, Germany, …

Ines Veckenstedt: … and the former SES location in Hanover will become a branch office. The former managing directors of

Büttner and SES – Ms. Dagmar Bautzmann and I – will take on a dual management position in the new company. Important for our customers: All their contacts in Hanover will remain, as well as all the jobs.

Carsten Otto: All customer contacts in Krefeld will also remain. The purchasing of parts for both product divisions as well as sales of both products will be controlled from Krefeld in the future. As far as the engineering goes, the respective competences for dryer systems will remain in Krefeld, for energy systems in Hanover.

You have already proven your combined strength in several mutual sales activities. In 2011 Swedspan, as an example, signed a contract for a complete dryer system as well as an entire energy system. What skills have convinced this customer?

Carsten Otto: The convincing factor was the combined technical competence of our companies and the close cooperation according to the "all from a single source" principle. Due to this investment, our Swedish customer is able to significantly increase the outputs of its particleboard plant. By the way, our mutual strength has not only proven itself optimally for Swedspan. With similar success our both companies worked together on projects for Egger in Austria, Kastamonu in Rumania, and Camsan in Turkey.

Ines Veckenstedt: Camsan signed a contract for an energy plant in 2011, a follow-up order of a very successful former project which we completed for Camsan in 2004. The modification of the existing dryer mixing chambers is carried out by Büttner. Once again, this demonstrates that the close and good cooperation of our teams has proven itself and enjoys an excellent reputation in the market.

How did business in 2011 develop for you?

Ines Veckenstedt: 2011 was a very successful year for SES. With seven new orders we have two more orders for energy systems compared to 2010. A benchmark was set with the project for Duratex: this long-term Brazilian Siempelkamp customer ordered an energy plant with the maximum combustion capacity of 88 MW – our largest energy plant built to date!

Carsten Otto: With five new orders for drum dryers and four additional orders for fiber dryers, we had a very good response to our products. The order from Swedspan was particularly pleasing for us. For this project we will supply the dryer and the energy plant as turnkey solution including the steel construction, the brickwork, the insulation as well as the complete safety engineering and control system including the wiring. The complete installation and start-up of the dryer and energy plant is also part of our services. 2011 has demonstrated that the merger of our two companies will be fruitful. Our teams are perfectly attuned to one another, our customers are convinced of our products, our goals are clearly defined – these are top prerequisites for a successful joint future in the market.

Energy plant (left) and particle dryer (right), Masisa Cabrero

Energy plant Masisa Jaguariaíva

Loading of dryer segments

New Büttner building

Reference order from the Grande Nation:

Flamanville

PARIS

SNT service team installs cooling structure of the core catcher in Flamanville

France remains loyal to us: After the successful completion of the supply contract "Core catcher for the EPR™ new reactor construction Flamanville 3 (FA3)" of the AREVA industrial group, Siempelkamp Nukleartechnik (Siempelkamp Nuclear Technology = SNT) received a follow-up order. The installation contract for this core catcher cooling structure followed on in June 2011. The customer is the French firm QUILLE CONSTRUCTION, a direct subcontractor of Électricité de France (EDF).

By Jörg Grittmann

Reactor building under construction – deep inside, assembly of the core catcher cooling structure

Building site of the new reactor FA3 in Flamanville, France/Atlantic coast

Électricité de France SA:

Électricité de France SA" (EDF) is a state-dominated French electricity company that is quoted on the stock exchange and the market leader in France. The French state currently holds 84.8% of the shares. EDF currently operates 58 nuclear power plants worldwide in 20 locations. The total capacity of all power plants of EDF at the moment is 125,447 MW.

The installation of the core catcher cooling structure in the construction of the new EPR™ reactor in Flamanville is the first direct contract placed by EDF with Siempelkamp Nukleartechnik – "a reference project that will set the course for our future collaboration with the French energy supply company," is how Jörg Grittmann, the person responsible in Flamanville as project manager for the core catcher installation, describes the project.

Core catcher cooling structure Finland versus France: what is different?

It is only natural that comparisons with the successful supply and installation of the Olkiluoto core catcher in Finland will be made with this new, similar project of SNT. A major difference, however, is the enhanced protection against earthquakes included in

from left to right:
SNT construction management with installation plan for the core catcher cast elements

Cast elements waiting for their installation as core catcher cooling structure

Mounting of the steel structure for fixation of the wall elements

the contract from France. This core catcher consists of 861 cast elements with a weight of up to 1,680 kg and a steel structure designed as a welded construction. As a result of the additional protection against earthquakes in FA3, the number of steel parts increased from 1,115 to approximately 3,500 with a weight of up to 170 kg.

A further feature of the contract for Flamanville is the very strict schedule, as the final installation date for the core catcher is very critical. "In other words: The timeframe for the installation of the core catcher corresponds directly to other time-critical part-projects of the new construction. This would result in delays to the overall process – namely the integration of the reactor pressure vessel into the containment," explains Jörg Grittmann.

Core catcher: play it safe!

The core catcher supplements the primary safety systems of the EPR™ reactor, whose task is the reliable prevention, avoidance and management of nuclear incidents.

In the extremely unlikely event that all of these systems fail completely and there is a meltdown of the reactor's core, the core catcher is used to catch and permanently cool the molten material before it can reach the foundation.

In this way, the containment is maintained as the ultimate safety barrier. The core catcher is a complex structure made up of a large number of individual cooling elements consisting of ductile cast iron.

"Parlez-vous français?" – or the particular features of a French construction site

The installation of the core catcher cooling structure is performed by the 20-strong service team of SNT. In addition to the technical qualifications, one thing is required more than anything else: "Parlez-vous français?" is one of the most important skills required by our engineers and technicians on the French construction site. "Additionally, language skills in Arabic, Spanish or Rumanian are certainly also helpful for general communication during the construction of the reactor," explains SNT project engineer Stefan Engelhardt. Up to 3,000 employees of all nationalities work together here at the same time.

Setting in wall elements in the steel structure

Parlez-vous français? –
Philippe Cavel, our head in France

However, not only the construction management that is usual in such projects has been provided by Siempelkamp. Important key positions such as the health and safety manager, quality assurance manager and welding inspectors are also covered by the very highly experienced employees from the recently expanded service team with its project experience. Here too, language barriers have to be taken into account in addition to the technical expertise. The responsible position of health and safety manager in particular means that on every shift a corresponding employee must be present who speaks the national language.

Site access rules versus savoir vivre

Another special feature: For the access authorization of our employees to FA3, the French directive stipulated that forms of an unprecedented complexity had to be completed and drawn up. The leadtime for each employee for site access is up to six weeks. "Although they are absolutely necessary, the strict construction regulations mean that the French way of life is somewhat missing. Because after all, the Siempelkamp service team is working in a region with extremely attractive countryside where others go on holiday," says Stefan Engelhardt.




Welding of the single elements for the floor steel structure



Mounted transition: inlet section between pressure vessel bottom side and core catcher for the conveyance of molten material

One special aspect should be mentioned here: the weekly working time for an employee in Flamanville must not exceed 37 hours on average – otherwise the construction site exit is blocked for the colleagues. Here, the SNT team had to adapt to strict regulations which are otherwise very unusual for construction sites. "Not only the strict construction regulations for the new construction are provided for by the French nuclear regulatory authority ASN (= Autorité de sûreté nucléaire), but also the physical well-being of the employees. For example, when an ASN employee discovered that the SNT employees did not have any bottles of mineral water," reports Stefan Engelhardt, whose experience of France was and is very important for this project. "However, we were able to calm the regulatory authority's fears: German employees do not die of thirst either."

Quality check and logistics

The entire installation is under the strict control of the subsequent operator EDF and the ASN. Strict monitoring is carried out to ensure that all quality assurance measures are complied with and implemented. A great deal of attention is paid to the quality of the welded connections to be provided by Siempelkamp. The highly trained personnel from the SNT Service Department ensure that all requirements are carefully complied with.

It is also worth mentioning the logistical challenges of the project: over 4,000 parts have to be transported 25 km from the external store in Cherbourg to the "spreading area" – the area of the complex intended to accommodate, cool and stabilize the core meltdown over the long term – for the construction of the new EPR™ reactor.

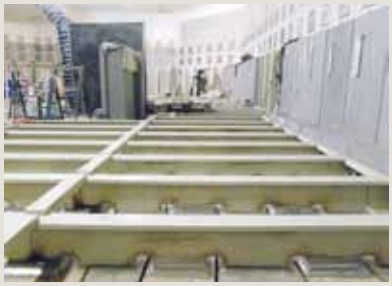
The installation is carried out mostly in two shifts. Installation began in September 2011, and the successful conclusion of the installation is planned for December 2012.

One conclusion of this cooperation with our French customers: through the direct contract with the EDF we have further strengthened our business relationship. "An important basis for our cooperation is the already established business relation with Siempelkamp

Venting hose for dust formation and vapors; ceiling opening of the venting hose: coevally entry for the cast elements, the lift truck etc.


Assembly overview of the core catcher cooling structure


Floor steel structure of the core catcher cooling structure

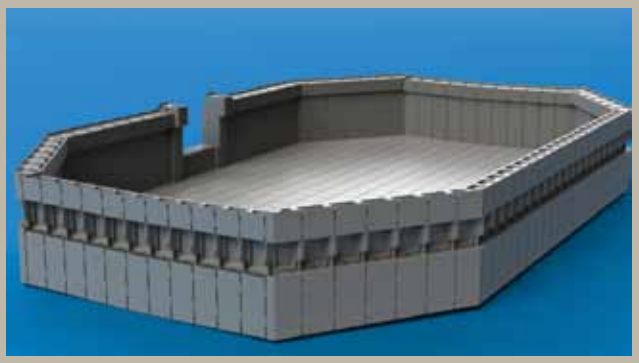


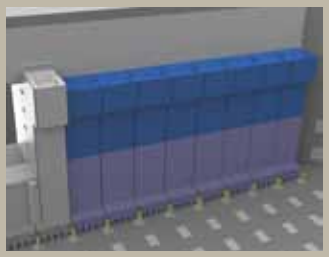
MSDG/Siempelkamp Tensioning Systems: They are supplying and modernizing stud tensioners for the French energy group. This success is also thanks to the development of the SNT location in Tours, represented by Philippe Cavel!" Jörg Grittmann sums up.

New reactor construction in Flamanville

The newly constructed nuclear power plant FA3 is located on the west coast of the French peninsula of Cotentin on the English Channel. The location is close to the municipality of Flamanville in the region of Basse-Normandie in the Département of Manche, approximately 25 km to the west of Cherbourg and 20 km south of the reprocessing plant in La Hague/France.

There are already two pressurized water reactors on the site, which were erected in 1979 and 1980. FA1 and FA2 provide power of 1,330 MW each. The construction of FA3 was begun in December 2007, and after the currently planned commissioning in 2016 will provide 1,600 MW of power.





3-D-design: completely installed core catcher cooling structure, transition, mounted wall elements

Siempelkamp service team on FA3 construction site

2009: ready-assembled cooling structure of the world's first core catcher in Olkiluoto, Finland

50 years of CMC:

With Siempelkamp from "P

A large part of Siempelkamp's success story has been written in Italy: At the company's location in Colzate, CMC develops and manufactures a significant part of Siempelkamp's machinery for the wood-based materials industry. What started with the mat forming machines has developed into highly modern front-end equipment supporting plant operators worldwide. In an interview with Bulletin, Managing Director Dr. Dario Zoppetti describes 50 years of CMC company history and an important recent milestone.

By Ralf Griesche

Dr. Zoppetti, CMC is celebrating a special anniversary this year. Please tell us a few things about the 50-year history of your company.

Dr. Dario Zoppetti: CMC was established in 1962 by my father Mario Zoppetti and three other companions. Prior to this, my father worked in the metal processing industry. He always had the dream of managing his own company. After work he attended evening classes, finished his high school degree and received additional education.

In 1962 he and his three companions were ready to become self-employed and founded CMC – which stands for "Carpenterie Metalliche di Colzate". We have been consistent: we are still processing metal and we are still located in Colzate. In the beginning the company specialized in the manufacture of structural elements for the textile industry.

CMC and Siempelkamp: common focus

How did Siempelkamp come into play in the following years?

Back then Siempelkamp had a branch office in Italy, the ELMAG. In 1976 ELMAG founded the company Texpan which specialized in the engineering of equipment for the wood-based materials industry – especially for fiberboard and particleboard.

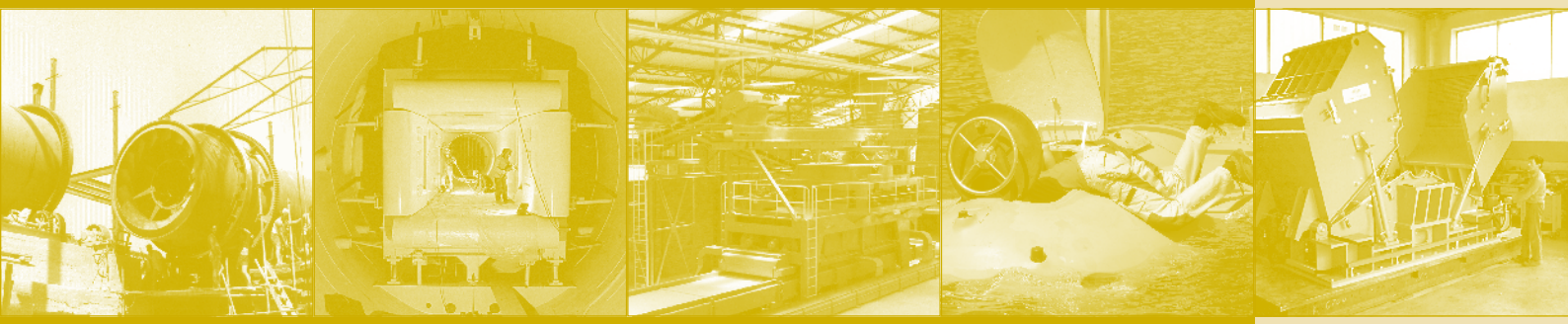
Starting in the mid 1970s CMC also got increasingly involved in the production of machines for the wood-based materials industry. The first movable mat forming machines for particleboard lines were built as well as dryers, screens, discharge systems, bunkers, saws, and other machines. The portfolio was growing; so was the team: our company expanded, new employees were hired.

That was approximately around the time when you joined the company…

At first I had different plans for my life. I focused on a career at the University, received my doctorate in the late 1960s in the field of mechanical engineering. Afterwards, I received a call to become a professor at the University in Milan. 1972 was the turning point. I bought the stocks

artecipazione" to "Fusione"

(from left to right)
Mario Zoppetti, Founder of CMC
The old factory premises in Colzate
Installation of a dryer
Welded construction
Dryer
Dryer construction
Structure of a wind tunnel
Moving mat forming machine
Finishing work on a submarine
Hammer mill



of one of CMC's co-owners and joined the company. For my father this was a great relief. For me there was the prospect of raising the meager salary of a university professor and starting a family.

However, most important for me was the challenge to develop new machines that would meet my expectations for this growing market.

That means there is even more to celebrate in 2012 – 40 years of Dr. Dario Zoppetti at CMC!

Yes, that is correct. It was a good 40 years. We made great progress back then regarding the technology for machines used in the particleboard industry. We started a direct cooperation with Siempelkamp in order to build mat forming machines for MDF and OSB plants. Our manufacturing spectrum also included handling machines, saws, and automatic stacking systems.

Many challenges and many services…

…which at first ran on parallel tracks. In one of my lives I was an employee of CMC – in the other a teacher at the evening school. In 1980 I joined the CMC management team.

Mat forming competence from Italy for Krefeld

How did CMC and Texpan finally merge?

After I became Managing Director at CMC in 1980 we stabilized the fruitful connection. In 1995 CMC and Texpan merged, the employees were brought together and the joined know-how from the areas of engineering and manufacturing of machines was consolidated under the brand name CMC Texpan. The efficiency of the machines grew constantly, so did the machines themselves. This was the time for CMC Texpan to establish another production facility close by.

Why did CMC Texpan specialize in mat forming machines?

The machines were getting bigger, the technology became more sophisticated and perfected. Our product range grew: at first, it was mat forming machines

Dr. Dario Zoppetti,
President of CMC Texpan

Dr. Dario Zoppetti and
F. Brembilla Managing Director

for particleboard only, later mat forming machines for MDF and OSB were added.

Furthermore, Siempelkamp had entered into a business relationship with PAL/IMAL – a company that was specializing in front-end machinery. As a result we limited our range of products and primarily manufactured mat forming machines. In 1995 Siempelkamp purchased 25% of CMC's shares.

In the 1990s you bound yourself strongly to Siempelkamp?

Yes, we strongly benefitted from the Texpan know-how and implemented this knowledge into machine technology. At that time, Siempelkamp was our bulk purchaser. Stronger ties to Siempelkamp were only logical. In the following years I focused strongly on this cooperation. Today, 30 years later, we can see that this endeavor has paid off.

Where do you see the most value of this cooperation?

The cooperation was excellently thriving over the years. CMC was a strong partner for Siempelkamp at construction sites all over the world. For us it was vital to have such a large partner which achieved global leadership in the market for wood-based material plants. For each press that Siempelkamp sold, we supplied the mat forming machines. In that it only made sense that Siempelkamp expanded its shares in CMC.

New opportunities – and back to the roots

When did CMC Texpan start to expand its product range again?

In 2008 the business connection between Siempelkamp and PAL IMAL ended. With it also went our restraint to produce other products – we began to revive the old roots of our front-end know-how. We invested in our research and development, acquired new experts, designed and optimized the machines for storing, screening, cleaning, and applying resin.

On this basis we could fully utilize the potentials that result from the close relationship to Siempelkamp. Together we designed a range of new and improved machines for the front-end. We successfully introduced this new product portfolio to the market in 2010. Furthermore, we also developed and built products for other customers and industries. As an example I would like to mention our involvement in the construction of small submarines of which we have already supplied several.

What are first reference projects?

Important projects include Metro and Panel Plus in Thailand for which we supplied and installed the complete front-end equipment together with the Siempelkamp subsidiary Hombak. In 2011 we were especially successful with new plants which Siempelkamp will supply to Eastern Europe and Turkey. However, our machines for the preparation of and resin application onto chips, strands, and fibers were also in demand in China and South Africa.

How did the workforce develop over the years?

My father started the company with a very small team in 1962. In the 1970s we had a staff of 30, in the 1980s/1990s this number increased to 50 employees. Today we have a workforce of 87 in Colzate. Combined with our location in Rumania, we employ a total of 140 people.

Tool for a press

R&D Department

CMC 1 Colzate

CMC 2 Colzate

CMC Texpan Managers

Milestones and new ways

Looking back, what milestone in your professional career has been the most important?

There are two. First, my decision to end my career at the University and to join CMC. Second, the most important strategic decision was the strong attachment of CMC to Siempelkamp. This bond is once more emphasized in that Siempelkamp is acquiring the last stocks that I own. Starting June 2012 our Krefeld partner will be the sole owner of CMC Texpan. And I will leave my company at the age of 65.

Sale and farewell – why did you decide to take this step?

Most important for me was to create a secure foundation for the future of CMC Texpan and its employees. This would only work with a strong partner. Siempelkamp has recognized the potentials of acquiring our well-positioned company with its talented and well-trained workers. Furthermore, I have no successor in my own family who could take over the business. Therefore, the decision I made is the best for all involved parties.

What will you do with your new life?

I am toying with the idea of returning to my former teaching activities. I have always enjoyed working with young people. Furthermore, I want to dedicate more time to my hobby, that is, collecting and reading old historical books. In this way, my wife and I will also be able to share more common interests. We are looking forward to having more time together. The bottom line, the company is in good hands. It is now up to a young team of managers to face the many challenges.

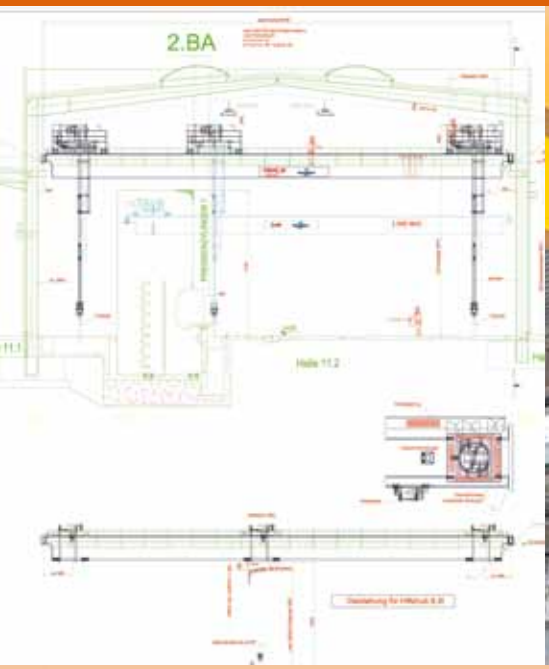
Dr. Zoppetti, we thank you very much for this interview and wish you the very best for the "restless" retirement!

Double anniversary for Siempelkamp Krantechnik:

25 years of company history, ten years as crane supplier for a pipe specialist

In 2012, Siempelkamp Krantechnik (SKT) celebrates two anniversaries: on the one hand its 25th company anniversary – and on the other hand ten successful years as a supplier for the pipe specialist company BUTTING.

By Ute de Vries



Design drawing:
Double-girder bridge crane with telescopic boom lift for picking up sheet metal segments

2011: Assembly of a double-girder bridge crane at BUTTING

The BUTTING Group with headquarter in the Lower Saxon town of Knesebeck in the Gifhorn district is one of the world's leading processors of stainless steel. Founded in 1777 and located in Knesebeck since 1949, the core competences of the family company are forming, welding and materials technology. BUTTING products are used worldwide in a variety of industries.

For more than ten years, Siempelkamp Krantechnik (SKT) has been supplying BUTTING with plant equipment of customized crane systems and load lifting devices.

Special pipes – special crane technology

For many years, BUTTING has been manufacturing pipes with special dimensions for many fields of application – among others for fittings and pump housings or for roll pipes. Depending on the specific requirement, BUTTING can also provide

BUTTING – Profile and Portfolio

Foundation:	1777, present owner Hermann Butting as the seventh generation of the family
Headquarter of the BUTTING Group:	Knesebeck in Lower Saxony/Germany (since 1945)
Employees:	More than 1,700 employees, 90 of them are apprentices, who are continually trained in nine different occupations
Key activities:	Manufacture of longitudinally welded pipes made from coil and plate, processing into ready-to-install piping components as part of comprehensive prefabrication capacities and in pipe technology
Strengths:	Long-standing experience and variety in the production of stainless steel pipes that can be found only with very few other companies in Europe
Production process:	1.) Pipes made from coil 2.) Pipes made from individual sheet panels
Benchmark:	Longitudinally welded pipes having wall thicknesses of up to 70 mm and outside diameters of up to 3,000 mm can be produced and welded from individual plates to obtain manufactured lengths of up to 24 m, without any outsourcing of production steps!

special geometries such as oval, square, rectangle or multi-edged pipes.

A particular innovation in the manifold range of products: the specially designed BuBi® pipe (BUTTING bimetal pipe) for renowned customers of the oil and gas industry consists of a corrosion-resistant pipe which is inserted into a pipe made of high-strength steel and then press-fitted into the external pipe. To ensure prompt availability, a comprehensive range of products and an attractive industrial service, BUTTING offers a correspondingly large stock of products made of stainless steel: on a 20,000 m² open storage space, BUTTING offers a standard pipe stock of approx. 3,000 tons of stainless steel pipes in more than 15 different material grades and nominal diameters from 15 up to 600 mm.

Such a varied and specialized portfolio obviously places high demands on the crane systems and load lifting devices. BUTTING's requirements for special cranes customized to their production plant accordingly led to our "crane entry" in 2002.

Première in 2002: Double-girder crane with scissor lift mechanism

Our first performance was to supply BUTTING with a double-girder bridge crane (2 x 4 t load capacity) with a rigid load guide in the form of a scissor lift mechanism. This mechanism serves to move a vacuum lifting beam for the handling of

Piping specialist BUTTING in Knesebeck/ Germany

Transport of produced pipes with the Siempelkamp crane system

Pipes on their way to finishing

Double-girder bridge crane with load lifting device at the production halls of BUTTING

pipes between various stacking and processing stations. All crane movements are frequency-controlled, while the semi-automatic control of the crane is performed via radio control and a three-axis gantry system.

At the automatic unloading stations, ultrasonic sensors on the load-lifting beam check the pipe lengths, the proper fastening of the load and its lowering and positioning without collision. If a pipe is found to lack proper fastening, the crane will not lower the load – and the operator will have to intervene manually.

"This first project entailed an interesting and challenging customer relationship, which over the years enabled us to handle a variety of projects across the product portfolio of Siempelkamp Krantechnik," says Heinrich Kampen, managing director of Siempelkamp Krantechnik.

2005: Maximum flexibility thanks to ceiling cranes with locking and travelling-over facilities

In 2005 we were asked to supply flexibility: BUTTING ordered eight ceiling traveling cranes of special design. The 4.5 t cranes run on two parallel tracks and are each equipped with a locking and coupling unit. This enables each crane at each point along the crane track to interlock with any crane of the parallel hall. Thus, the trolley travels over from one crane to the other, conveying the load from one half of the hall into the other. "Both for the conveying paths and for the crane utilization, this concept provides maximum flexibility when compared to single cranes with a large span distance. Traveling over from one crane to another can, of course, not be performed by standard trolleys – that's why we have designed special travel gears for this application," explains Heinrich Kampen

2006: Double-girder crane with telescopic boom lift

In addition to various smaller projects, in 2006 another large order was to be delivered: a total of seven bridge cranes with load capacities of 16 t and span distances of 24.8 m. On all cranes, the load hooks were arranged at a distance of 5 m from the crane girder to allow the accommodation of special cross beams.

Another highlight of that order year: a double-girder crane featuring 16 t load capacity and 30 m span distance. This crane has the specific task to place sheet metal segments into a special press. As the segments are to be exactly positioned, in addition to frequency-controlled movements and a positioning system this crane was equipped with a rigid load guide in the form of an extendable lifting mast. Here, we had to reconcile two challenges posed on one crane application: on the one hand the load was to be sufficiently stabilized – on the other hand the design had to be extremely compact to allow driving the crane sufficiently close to the press to be supplied.

2002 to 2012: Load lifting devices

We also supply BUTTING with load lifting devices. One of the various devices ordered by our customer was a 14 t load lifting beam with electrical slewing gear for lifting and turning the pipe precisely observing its desired positions.

In 2011, we delivered three customized lifting beams for pipe conveyance. The design featuring an electrically driven longitudinal extension and a maximum gripper opening width of 14 m facilitates taking up pipes of most diverse lengths. The lifting beams are designed for an application at a radiant heat of 150°C.

Special monorail trolley for latching crane

Heinrich Kampen, SKT managing director – associated from the very beginning

2010 and 2011: Double-rail trolleys with slanted cable tensioning

Further crane packages delivered in 2010 and 2011, and being part of altogether 14 different crane systems, were single-girder bridge cranes and top-boom cranes as well as several double-girder bridge cranes with 2 x 8 t load capacity and a span distance of 23.90 m. The double-rail trolleys are each equipped with cantilever arms on both sides designed as rugged supporting frames for the attachment of hoisting gears, return pulleys and rope anchorage points for a slanted cable tensioning in the traveling direction of the trolley, permitting a low-swing conveyance of the pipes.

2011: Modifications and modernization

In addition to several modifications and modernization measures on crane systems, in 2011 we managed the retrofitting project "old pickling line". We delivered a double girder bridge crane with two 6.25 t hoisting gears and the pertaining crane track. The new crane was equipped with emergency drives via separate microspeed gearboxes. This solution ensures that even if a drive fails, the crane can still be moved to an area outside the pickling baths.

The task was to remove the existing old crane including its track from above the pickling bath and to install and commission the new crane system – performing all required steps without interrupting production. We met this challenge by working on four consecutive weekends.

2012: Outlook – creative solutions for new challenges

The most recently delivered double-girder cranes of our 2011 project have successfully been operating at BUTTING in Knesebeck since spring 2012. We look ahead with confidence to a continued long-term cooperation: the first new projects in our double anniversary year are already envisaged. One thing the projects described above have in common despite all their different characteristics: "Everything we supply is developed in close contact with the customer. All contact persons at BUTTING, especially our direct contacts Friedrich Henneicke, Carsten Bagge and Klaus-Dieter Gaschler, are actively involved in the development of the product design. In the framework of this close and active cooperation, we enjoy the vivid exchange of ideas, thus jointly finding creative solutions for new challenges in hoisting technology," says Heinrich Kampen.

2005: latching cranes with special hoists piled for transport at the SKT production halls

Order processing: BUTTING cranes during the manufacture

Siempelkamp – new blood for the next 25 years

The crane specialist's installation team from Moormerland/Germany

Conveyor belt technology made by Siempelkamp:

At the top "Down under"!

By Steffen Aumüller

Conveyor belt or truck? In the mining industry both transport concepts are racing against one another – with an increasing lead for the conveyor belt technology. Especially regarding the worldwide discussions on climate, the conveyor belt is constantly gaining ground in global markets. Siempelkamp benefits from this: In July 2011 we received an order from Enerka Apex Belting Pty Limited for a complete steel cord line for the production of conveyor belts. This is the fourth time since 2006 that the Fenner Group has decided to buy a complete conveyor belt production line including a multi-piston press (with a length of 18.48 m (60 ft) each).

The new steel cord line will be installed in Kwinana, in an industrial zone near Perth, starting in November. With it the Fenner subsidiary Enerka Apex is operating the second Siempelkamp press for conveyor belts at its location in Western Australia and the fourth multi-piston press worldwide.

The mining industry is experiencing a true boom in the largest federal state of Australia: Several important raw materials are mined in local mines including iron ore, coal, natural gas, gold and other metals. Steffen Aumüller, Sales Manager at Siempelkamp for rubber presses: "The mining capacity especially for iron ore will significantly increase in the next ten years. Industry experts predict a growth of around 100%."

Enerka Apex benefits from this thriving market: The Australian subsidiary of Fenner-Dunlop specializes in the production of conveyor belts which are in demand in the mining industry as well as in the area of industrial applications. Representatives from the coal and ore industry are the primary users of Enerka Apex conveyor belts.

Siempelkamp's support has been used here for many years: in 2007 Enerka Apex ordered a steel cord line made in Krefeld which broke three records at the same time (see box).

Infeed area of the cables into the tensioning device

From the creel to the infeed area of the cable tensioning device

Two-story creel for 520 cables

Outfeed area of cable tensioning device with comb and guide roller

Three steel cord line records made by Siempelkamp

With the sale of a complete steel cord line to Enerka Apex in 2007, Siempelkamp set several records at once: world's largest rubber press – strongest performing press in the plastics and rubber industry – first multi-piston press in Australia!

The subsidiary of Fenner Dunlop ordered this steel cord line for its production plant in Kwinana, south of Perth. The recently ordered steel cord line will also be installed at this location.

The existing line, supplied in 2008, is a state-of-the-art concept. With a press capacity of more than 250,000 kN it is the strongest performing press in the plastics and rubber industry. The centerpiece of the production plant – the vulcanizing press – sets a record regarding its size. With a production width of 3,200 mm (10.5 ft) and a length of 18,480 mm it produces steel-reinforced conveyor belts with a width up to 3.2 m (10.5 ft) and a thickness up to 50 mm (2 in). The capacities are impressive. The yearly production of 330,000 m^2 equals a belt length of 103 km (64 miles) with a belt width of 3.2 m!

Upper creel on compactor lorry

Pre-press with lower creel on compactor lorry

Heating press

The recently ordered steel cord line is intended to further increase capacities in order to meet the growing demand for conveyor belts. The vulcanizing press has a production width of 2,000 mm (6.6 ft). Just as the first delivered Siempelkamp press at this location, the new press also has a length of 18,480 mm. The finished conveyor belts will have a width ranging between 700 (2.3 ft) and 2,000 mm and a thickness ranging from 8 to 50 mm (0.3 to 2 in). Assembly start is scheduled for November of 2012, the acceptance testing for the first half of 2013.

With its excellent reputation in the market, Siempelkamp won the contract as the supplier for this project: "As a technology leader and a trendsetter, we enjoy an excellent reputation among the producers of conveyor belts. Our equipment ensures plant operators best availability and performance," says Steffen Aumüller. Another convincing factor is the one-piece hot platen with a length of 18 m: "Siempelkamp implements this size as the new press length because the efficiency advantages for the plant operator are enormous. Longer and therefore more efficient presses can be manufactured without problems. This is due to the massive investments in Siempelkamp machine technology which we have made in the last five years."

Fenner operates a total of four presses. Back in 2006 Fenner Dunlop North America signed the contracts for two conveyor belt presses which are operated in Port Clinton/ Ohio. One of these presses produces textile belts, the other press steel cord conveyor

Conveyor belt versus truck: lighter, more reliable, sustainable

**What advantages let the conveyor belt move ahead in the mining industry?
The benefits package provides numerous convincing arguments for the conveyor belt.**

- ✓ Small demand for energy – up to 75% less compared to what a truck needs
- ✓ CO_2-fingerprint: clear advantage compared to the CO_2 emissions of a truck
- ✓ Higher reliability of the system
- ✓ Significantly less weight compared to the high self-weight of a truck (empty vehicle weight up to 270 t)
- ✓ Reliable means of transportation in the integrated concept of the In-Pit Crushing and Conveying (IPCC): use of mobile crushing machines ' increased use of conveyor belts directly in the mine

Pull-roll stand

Compactor lorry

belts. Both belt types are in demand in mining and other major industries.

Just as in Australia, the two press lines at the US location contain a press with a length of 18.4 m each and produce, according to the local conditions, belts with a width of 2,600 mm (8.5 ft). They operate according to the multi-piston principle which Siempelkamp developed in the late 1990s and first introduced in the USA: "The concept was a debut in the United States. The plant operator benefits from the most uniform pressure distribution ever achieved by a hydraulic discontinuous press," explains Steffen Aumüller. Fenner was also the first company in the world to use a press with a length of 18.4 m.

The new conveyor belt press at the Kwinana location is the fourth joint project between Apex/Fenner and Siempelkamp. In this business relationship and as a reliable partner, Siempelkamp gladly supports the motto of this big player in conveyor belt manufacturing: TEAM – Together Everyone Achieves More!

Siempelkamp in China:

Leading with smaller presses

In China, the world's largest market, Siempelkamp's machines and plants for the wood-based materials industry are optimally positioned. Long before the dynamic development of the "Middle Kingdom" caused other German companies to fancy about China, competence from Krefeld had already been established. The recipe for success: look closely – determine needs – and develop suitable concepts which optimally meet the local conditions.

By Ralf Griesche

The business relationship between Krefeld and China has a long tradition: In the 1950s Siempelkamp supplied the first presses to China, in the 1970s the first particleboard plant followed. Since the 1980s the demand for machines and plants made in Krefeld increased significantly. Single and multi-daylight presses with annual production capacities ranging from approx. 20,000 to 80,000 m^3 were very popular. Today this market is dominated by local providers while Siempelkamp competence is in demand in other areas. Our successful ContiRoll® concept is at the top of the order list!

ContiRoll® goes China

Since 1988 Chinese wood-based material manufacturers have been ordering the ContiRoll®. Especially larger companies have discovered the many advantages of the continuous press from Krefeld which produces thin boards and other special products economically and in excellent quality. Until 1997 Siempelkamp sold four ContiRolls® in China – one for particleboard production and three for MDF production. Furthermore, Chinese plant operators ordered nine daylight presses for particleboard and 14 for MDF up to this point.

Up to this time the range of customers was made up exclusively of government-controlled companies. This changed with the reform and liberalization policies and the modernization of the country: Since 2001 privately financed companies are primarily using Siempelkamp products and services. The first customer from the private sector was the Dare Group in Dianyang/Jiangsu: The company ordered a 8.5' x 37.1 m ContiRoll® for MDF/HDF which was accepted in 2003. Within only five years the Dare Group ordered three more MDF plants of the same size and the largest particleboard plant in China to date with dimensions of 8' x 42.1 m.

4' concept: Small size for highest efficiency

"Rù jìng wèn sú" is a Chinese saying that translates into the following: "If you go to a foreign country, you ask for its customs." Siempelkamp internalized this saying in order to optimally place its reference product, the ContiRoll®, in the Chinese market.

In March of 2009 the ContiRoll® at Zhejiang Liren Wood Industry in the Chinese province of Zhejiang produced its first board which was superior in the market: With a width of only four feet, this press is the smallest representative in the ContiRoll® family. Siempelkamp specifically tailored the concept to the special requirements of Chinese plant operators. The primary goal was to offer an alternative to the 4' wide multi-daylight presses for which raw material and energy consumption had become too high and outputs too low for the increased demands. Siempelkamp came up with the following idea: Why not build a smaller ContiRoll® which will offer a more economical solution, which will be optimal for smaller and

4' ContiRoll®: Clever investment, excellent board quality

- Symmetric density profiles – improved, consistent quality
- Production of the finished board size immediately after the press – only the cutting into lengths is necessary
- Improved harmonization with customer's existing equipment: Siempelkamp supplies the equipment from the mat forming machine to the double diagonal saw. The remaining machines for the plant can be supplied by local providers corresponding with the 4' concept (e.g., 4' sanding lines).
- Optimally tailored to increasing transport costs and raw material costs: the 4' concept allows decen tralized locations and thus the concentration on local raw material and consumer markets.
- High availability, optimal pressure distribution, quick start-ups at consistent ramp-up curves.

- Trends in China, regarding the use of 4' plants:
  - 2007: towards the production of thin boards
  - 2009: towards flooring boards and boards with a medium thickness range
  - 2012: from MDF towards PB

medium capacities, and which will provide plant capacities that are twice as high compared to daylight presses?

Just as the larger presses, the 4' ContiRoll® is based on the know-how from more than 250 plants which Siempelkamp implemented in almost 30 years. The 4' model is the optimal solution for manufacturers and suppliers of local markets which are common in China. Compared to daylight presses the concept offering advantages such as less trimming and low material removal is especially interesting if there is a high demand for MDF in the premium segment and a limited supply of wood, which is the case in Asia. Another advantage convincing to plant operators: the popular Asian board sizes 4' x 8' as well as 4' x 9' can be produced directly. Therefore, the need for a costly cut-to-size line becomes obsolete.

Furthermore, the 4' ContiRoll® design incorporates all the features of the larger presses. Especially the flexible infeed head allows the production of thin MDF (≥ 2,0 mm) at high feed rates. The press system designed for optimal controllability ensures ideal pressure control and pressure distribution over the length and width of the press for all board thicknesses, production speeds, and each desired product quality.

When the 4' ContiRoll® was introduced in 2007 the trend was towards producing boards that were especially thin. Meanwhile, the production increasingly focuses on flooring boards and boards with a medium thickness range.

Summary and vision: More particleboard, longer press lengths

Siempelkamp has sold a total of 40 ContiRoll® presses to Chinese plant operators prior to April 2012. 90% of this number included presses for MDF/HDF production. However, since 2010 the Krefeld team has recorded an increasing number of new investments in the area of particleboard plants – a change of trend.

The reasons: Due to strongly increased capacities, the competition in the MDF market has grown. Also, in the past, MDF was used in places where the use of particleboard would have made more sense. MDF was looked at as the higher-valued solution. However, due to the fact that MDF production goes along with high raw material and energy costs, the focus now is on a new generation of high quality particleboard. China's furniture industry has reported a high demand for this new product.

Siempelkamp, by far, has not yet reached the end of innovations for the Chinese market when it comes to the 4' concept: After the team first offered a ContiRoll® model with a length of 33 m and later one with a length of 38 m, it is now working on a press with a length of 48 m.

The following project profiles demonstrate: Together with our Chinese customers we are optimally positioned to spur on the Chinese wood-based materials industry with innovative and custom-made concepts!

Sichuan Guodong Construction Co., Ltd.

Chengdu, Sichuan Province, P.R. China

HDF/MDF dual plant: 2 x 8' x 27.1 m with ContiRoll®

Siempelkamp is the complete supplier starting at the refiner

Includes: the first resin dosing system made by Siempelkamp, first press exhaust cleaning system for China

Dry cleaning plant and oscilliating screens by CMC

Board thickness: 2 – 32 mm

Both plants are connected to a common finishing line

World's largest production plant for thin boards

Capacity: 300,000 m³/year at 8 mm

Production started in June 2011

Mr Wang Chunming, Chairman of Sichuan Guodong Construction Group

"We have a very good reputation in the market, and most flooring and furniture manufacturers in Chengdu are using our boards."


1.


2.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1. Screening system and recycling from CMC Texpan | 2. Dryer from Büttner
3. Resin kitchen | 4. Pre-press and ContiRoll® | 5. Transfer carts for loading and unloading of the high stack storage system | 6. Saw system

Jiangshan Liren Wood Industry Ltd.

Jiangshan City, Zhejiang Province, P.R. China

Forming and press line with 4' x 33.8 m ContiRoll® for HDF/MDF

Board thickness: thin boards with a thickness up to max. 18 mm

Contractual capacity: 115,000 m³/year

Effective capacity: approx. 130,000 m³/year

First 4' press line tailored to the preparation technology available locally in China.

Low investment, high productivity, high quality

Production started in March 2009

Ms Sha Jing

"We produce 15 – 20% above acceptance capacity."

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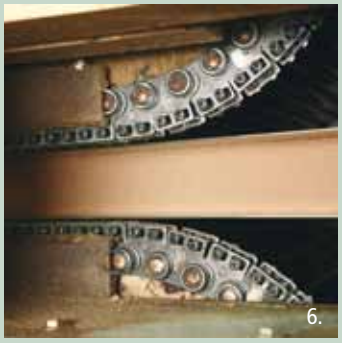

6.

1. 4' Lishui III forming and press line | 2. Forming line | 3. Press infeed
4. Double diagonal saw | 5. Mr. Xu Mengzhang, President Liren Group
6. Compacting area

Guangdong Hanhong Wood Industry Co., Ltd.

Shaoguan, Guangdong Provinz, P.R.China

HDF/MDF forming and press line with 2 x 4' x 38.7 m ContiRoll®

Two parallel, partly mirrored 4 ft plants with common automatic storage system

Board thickness: 2 – 25 mm

Contractual capacity: 120,000 m³/year

Ecoresinator for high resin savings

Production start in mid-2012

Economic operation, product diversity, finished board without cut-to-size line

Mr Guo Zhaohui, General Manager
Guangdong Hanhong Wood Industry

Plant is still in the installation phase.

1. Two times 4' ContiRoll® | 2. Forming line
3. Double diagonal saw | 4. Star cooler

Shaowu Luyuan Wood-based Panel Co., Ltd.

Shaowu City, Fujian Province, P.R. China

HDF/MDF forming and press line with 4' x 38.7 m ContiRoll®
Board thickness: 2 – 25 mm
Density range: 550 – 950 kg/m³
Contractual capacity: 120,000 m³/year
Effective capacity: approx. 150,000 m³/year
Production started in 2011

Mr. Mao, Plant General Manager, Shaowu Luyuan Wood – based Panel Co., LTD

"We have a 99.9% rate of qualified boards."

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1. 4' ContiRoll® | 2. Forming line | 3. ContiRoll® infeed
4. Compacting area ContiRoll® | 5. Double diagonal saw
6. Operator's Office

Tianyuan Wood Industry Co., Ltd.

Tianmen City, Hubei Province

HDF/MDF forming and press line with 4' x 33.8 m ContiRoll®

Board thickness: 2 – 25 mm

Density range: 550 – 959 kg/m³

Contractual capacity: 105,000 m³/year at 8 mm

Effective capacity: approx. 144,000 m³/year

Mr Guan Keqin, President Tianyuan

"We have a monthly capacity of up to 12,000 m³."

1. 4' ContiRoll® | 2. Mat former bunker with former head | 3. Forming line
4. Double diagonal saw | 5. SicoScan process measurement system | 6. Edge trimming


1.


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Tengching Gulin Treeindustry Co., Ltd.

Tengching, Yunnan Province, P.R. China

Equipment ranging from dryer to cooling and stacking line with 4' x 38.7 m ContiRoll®

Scope of supply: particle separator, dryer, resin application system, forming and press line, cooling and stacking line

Mat spraying system: Sicospray

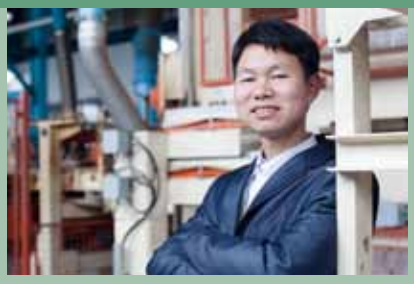
Board thickness: 2 – 25 mm

Contractual capacity: 123,000 m³/year at 9 mm

Effective capacity: approx. 165,000 m³/year

Yunnan location has rich timber resources

Production started at the beginning of 2012



Mr Zhang Dingxing, Plant General Manager, Tengching Gulin

"We produce 40% above acceptance capacity."

1. ContiRoll® | 2. ContiRoll® outfeed | 3. Siempelkamp mat spraying system
4. Forming line | 5. Double diagonal saw | 6. Cooling and stacking line

Sichuan Jianfeng Forestry Co., Ltd.

Mianyang, Sichuan Province, P.R. China

HDF/MDF forming and press line with 4'x 38.7 m ContiRoll®, double diagonal saw, cooling and stacking line

Board thickness: 2 – 25 mm

Density range: 550 – 890 kg/m³

Contractual capacity: 123,000 m³/year at 9 mm

Four weeks after the production of the first board, 517 m³/day at 540 – 560 kg/m³ (LDF) was effectively achieved.

Effective capacity: up to 150,000 m³/year

Production started in March 2012

Mr Yu Quing, General Plant Manager Jianfeng

"The availability of our line is already more than 99.5%."

1.

2.

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1. Forming line | 2. Press line | 3. Forming line with mat spraying system
4. ContiRoll® infeed | 5. Controller room | 6. Siempelkamp resin application and blending system

Guangxi Donglin Wood Co., Ltd.

Luxu Town, Binyang County, Guangxi Province, P.R. China

Customer purchased two of the same plants for different locations

Scope of supply for DongZheng II: particle separator, dryer, resin application system, HDF/MDF forming and press line with 4' x 33.8 m ContiRoll®, cooling and stacking line

Board thickness: 2 – 22 mm

Density range: 650 – 920 kg/m³

Contractual capacity: 116,000 m³/year

Effective capacity: approx. 130,000 m³/year, production started at the beginning of 2012

DongZheng I will be built in the province of Hubei, installation start is forecast for the 2nd half of 2012

Mr Zheng Yuanwei, Vice President Donglin

"Three days after the first board we went into three-shift operation."

1. Dryer by Büttner | 2. Forming and press line | 3. ContiRoll®
4. ContiRoll® infeed | 5. Double diagonal saw | 6. Cooling and stacking line


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NIS Ingenieurgesellschaft supports plant operators:

Maximum plant availability with STUDIS

Since November 2011, two lignite units at the RWE Power AG plant in Neurath/Germany have been running success-fully in trial operation. These units are the most modern of their type in the world, and have been supported since their commissioning in May 2011 by a NIS Ingenieurgesellschaft mbH concept. The stationary turboset diagnosis system (STUDIS) successfully supports RWE in early fault detection and operating point optimization for the two turbosets and their auxiliary units.

By Georg Spielmann

What is a lignite-fuelled power station?

A lignite-fuelled power station is a special form of power plant in which coal is burned as the primary fuel. There are special power plants for lignite and for hard coal.

The power plant types are specifically designed for the respective fuel used, as each fuel has different processing properties, calorific values and ash fractions. In Germany, lignite-fuelled power stations are used to generate electricity for the base load, while hard coal is mainly used for medium load.

Where does the coal for the Neurath power plant come from?

The Neurath lignite-fuelled power plant obtains its coal from the Hambach and Garzweiler brown coal opencast mines. With an operating area of 3,389 ha (as of 2007), and an approved maximum excavation area of 8,500 ha, Hambach is the largest opencast mine in Germany. Over 40 mill. t of brown coal have been excavated from this area each year since 1984. It is estimated that 1,772 mill. t of brown coal are still available here for extraction.

Neurath is part of the large Garzweiler I opencast mine. The origins of the Neurath pit can be traced back to the 19th century. Over a current area of 6,600 ha at Garzweiler I, an annual total of approx. 35 – 45 mill. t of brown coal are excavated.

The two new RWE lignite units 2 and 3 at the plant in Neurath utilize optimized plant technology (BoA 2 & 3) and have a gross output of 1,100 MW. Since the first of these systems was commissioned in 2003 at Niederaußem (unit K), these are the most modern systems of their kind in the world, and the largest in Europe.

The construction of BoA 2 & 3 broke new ground in many technical respects, and the same applies to the two turbosets. The steam turbines are the largest single-shaft power plant systems in the world. The most modern generation of blade equipment is used here, including the longest titanium low-pressure end-stage blades available on the world market. Electricity is generated by the world's largest dual-pole generators with a rotation speed of 3,000 rpm.

STUDIS condition monitoring system: Operating behavior in the sights

With a view to the entirely newly developed blading concept, RWE places particular emphasis on recording the exact condition of the turbosets. This allows the identification and evaluation of any deviations from normal operating behavior. Condition monitoring systems provide exceptional support in this regard.

Opencast lignite mine, Neurath power plant (source: RWE)

Condition monitoring – safe and efficient

Condition monitoring pursues two significant objectives:

a) safety and

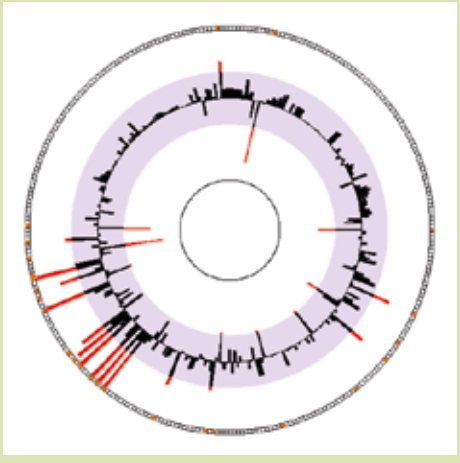
b) machine efficiency

The concept is based on regular or continuous recording of the machine conditions. This is performed by measurement and analysis of significant physical variables (vibrations, temperatures, position/approximation etc.).

Modern condition monitoring systems have the highest requirements for

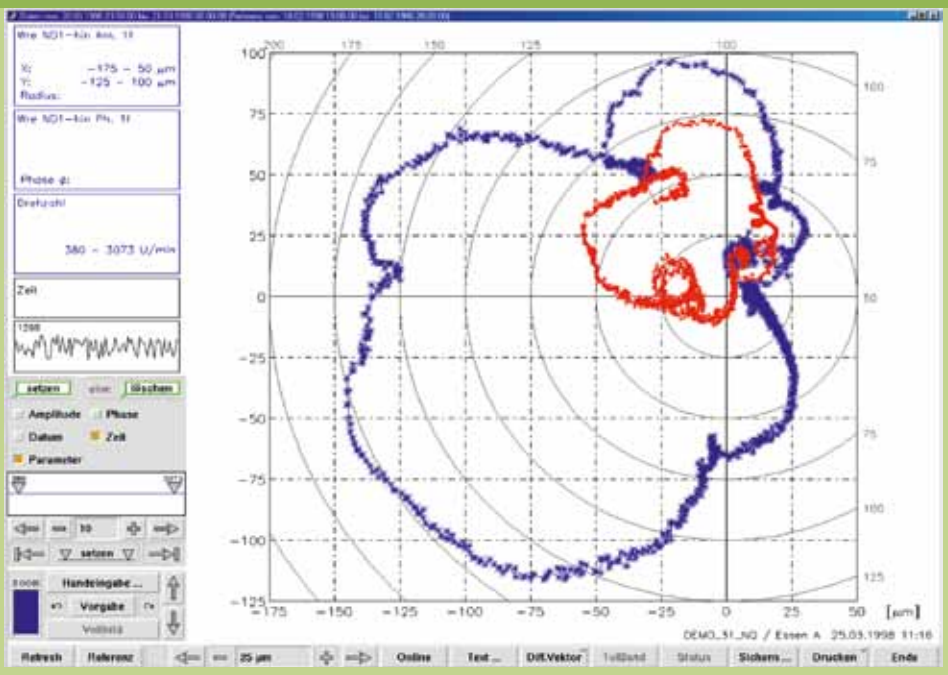
- sensor hardware
- recording and transmission of measurement data
- automatic processing of measurement data (analysis, diagnosis)
- plant-specific knowledge

One significant advantage is that the concept offers the greatest potential for cost savings, as the service life of critical machinery components can be almost entirely utilized. At the same time, it is possible to coordinate necessary maintenance work procedures to fit in with the production schedule.

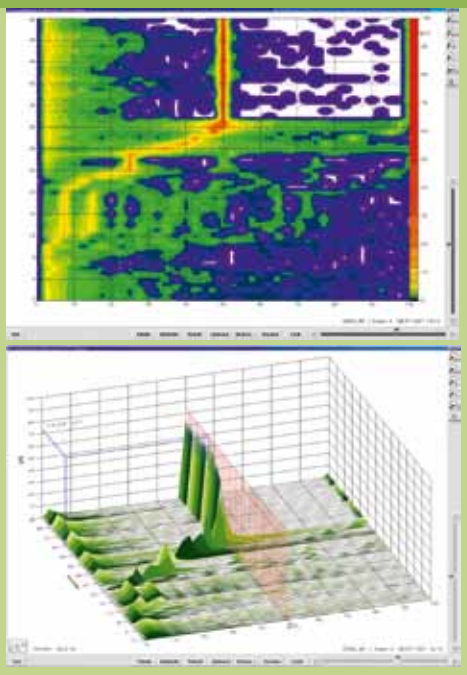


Online evaluation of current machine status with the "Magic Eye" of STUDIS – a high-compression data display

Visualization of the turbine shafts' vibration in the Nyquist diagram



Display of vibration amplitudes by means of a spectrogram



In the "waterfall diagram", frequency analyses of vibration signals are displayed as a time sequence

The stationary turboset diagnosis system (STUDIS) from NIS Ingenieurgesellschaft mbH is just such a system, optimally supporting plant operators. "We designed STUDIS for purposes of early fault detection and diagnosis, in order to meet one of the preconditions for condition-dependent preventive maintenance," explains Dr Aldo Weber, the NIS business area manager responsible for process data analysis and consulting.

And not without cause. "Based on the values provided by a monitoring system, STUDIS recognizes and reports deviations from the normal behavior of the plants, and possible errors in an expert system. In order to perform analyses and diagnoses, the plant operators can furthermore access the data stored in the system at any time."

STUDIS is a known variable for RWE. The concept has already been successfully used in many of the energy company's power plant units since the beginning of the 1990s, e.g. in unit A – E of the Neurath facility. On the basis of these many years of successful cooperation, it is understandable that RWE also uses STUDIS for early fault detection, analysis and diagnosis in the new BoA units. "The diagnosis system does not only assess the turbosets. It also monitors the feed pump drive turbines, fresh air fans and extraction ducts, as well as the motors and pumps located on the turbosets," says Dr Aldo Weber.

STUDIS: convincing features, from commissioning to service

STUDIS sets the points for reliable monitoring right from the very start. The system already supports RWE in early fault detection and operating point optimization during the commissioning process for the new BoA units. Any malfunctions, or any changes in vibrations or expansions, can immediately be identified and analyzed, hence avoiding damage. In the subsequent operation of the BoA units, STUDIS provides support e.g. through the early recognition of signs of ageing, wear, or any deterioration of the vibration behavior. This is a fundamental precondition for condition-dependent preventive maintenance.

Not only the system is right, but also the personnel support provided by the NIS service team. "During the evaluation and

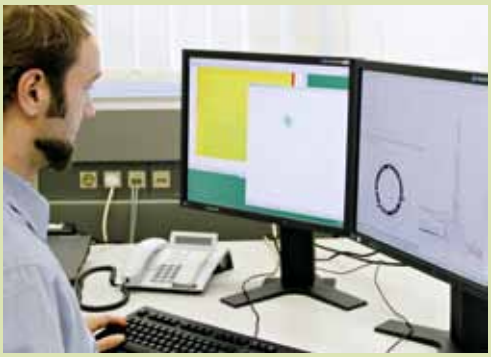
assessment of the system behavior observed, our specialists provide RWE with the required support at any time. Directly on site, or in the form of remote servicing. Our experts always have their eyes on the plant, and support RWE from the commissioning to the future operation of the BoA units," says Dr Aldo Weber.

STUDIS in operation: features and advantages

- Monitoring of the machinery for changes, thus predicting damage before it occurs
  –> long-term monitoring and early fault detection
- Determination of any damage and its extent
  –> damage analysis and avoidance of inconvenient operating conditions
- Selection of the optimum point in time for repairs, corresponding adaptation to the production process (output schedule)
  –> ensures high economic availability of the machinery
- Reduction of maintenance costs
- No unnecessary stoppages
  –> reduced downtimes
- Reduction of consequential damages
  –> reduces the risk of a major failure
- Lower replacement parts costs and smaller warehouse stock
- Detailed work scheduling **–>** less overtime
- Increasing operating reliability and safety
- System lifetime **–>** 15 years

Opencast lignite mine (source: RWE)

Opencast lignite mine at night (source: RWE)



Online monitoring of machine condition

Turbine in a power plant

Assembly and start-up of a turbine

Turbine blade rows

Up and running after Siempelkamp redesign:

Alcoa's closed-die forging press reloaded

By Egbert Schulte

The 50,000-ton closed-die forging (the "50k") press of the US forging and extrusion specialist Alcoa Forging & Extrusions has been operating again since February 2012. The 100 million dollar investment was completed according to schedule and thanks to Siempelkamp support, one of the world's largest closed-die forging presses has become one of the most modern and efficient forming presses of its class.

At Alcoa's location in Cleveland/Ohio the giant press produces structural parts for the aircraft industry, the energy industry and other markets. Part of the production line since 1955, the press plays a central part in the company's history. As part of the American "Air Force Heavy Press Program," the press performed important services by providing parts for almost every military airplane and vehicle over the last six decades.

Alcoa: Inventing the future for over 120 years

1888:
Charles Martin Hall established Alcoa and thus realized his vision of an economic solution for extracting aluminum.

1903:
The first airplane with an aluminum heart: the engine used by the Wright brothers for their first flight at Kitty Hawk contained aluminum parts made by Alcoa.

1940 – 1960:
Alcoa gained world market leadership in the global aluminum industry. During this time the company set the course for modern products in an important and highly competitive growth market.

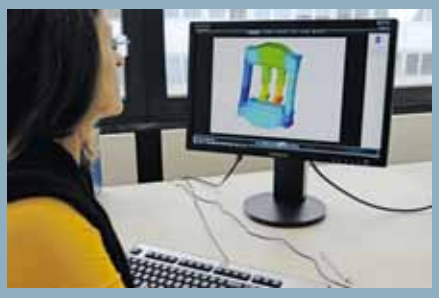
Seit 1994:
Alcoa experiences global expansion: through internal growth, new international partnerships, and important acquisitions in Europe and the USA. The company doubles sales and triples profits

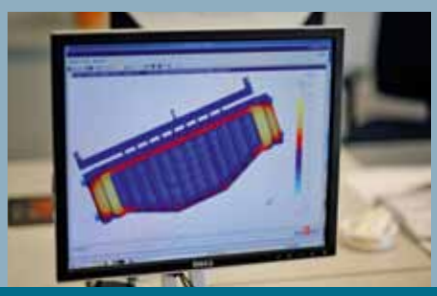
2012:
In addition to inventing the modern-day aluminum industry, Alcoa's innovations have been behind major milestones in the aerospace, automotive, packaging, building and construction, commercial transportation, and consumer electronics industries. Alcoa employs approximately 61,000 people at 200+ locations in 31 countries across the world.

Aluminum has become the ideal material for practical packaging, for a new generation of airplanes and cars, and for thousands of other modern products that are more robust, safer, lighter, more energy efficient, and can be recycled easily.

Design process

FEM calculation





Simulation of casting process

Pouring from four ladles simultaneously

Lifting of the casting

Component piece on the portal milling machine

Final machining (left) and shipment to America (right)

Due to its central role in the American aircraft industry and its large press capacity, the closed-die forging press is a "National Historic Mechanical Engineering Landmark" in the United States. This award was presented by the US American Society of Mechanical Engineers for international benchmark achievements in the area of mechanical engineering.

In 2008 the press forged its last part for the time being: Workers discovered cracks in the base and beams of the press. The production had to be shut down. In 2009 Alcoa decided to invest 100 mill. dollar into the redesign of the press and to retain important manufacturing jobs in Northeast Ohio.

The gigantic rebuild project included the redesign and the modernization of the press – no piece of cake at a height of 26 m (85 ft) with five stories above and seven below the ground. "One of the major challenges right from the beginning was parts management, involving thousands of parts," describes Christian Zoldak, Senior Staff Mechanical Engineer, Alcoa Cleveland. Accordingly, the disassembly of the press took seven months.

Siempelkamp support from the FEM calculation to a record casting

After its disassembly, the redesign and modernization of the press had to be initiated. For this task Alcoa decided to partner with Siempelkamp: "As the only company in the world with the know-how to design and make parts for a press as big as the Alcoa press, Siempelkamp received the order for the king-size project," says Mike Rembold, Global Capital Projects Director – AFE.

Next to our skill set we were also well-known to Alcoa since we had already built several forging presses for this customer and maintained good relations.

The order consisted of 14 large castings for the upper, cross and lower beams as well as the foundation beams. All parts for this order were cast at the Siempelkamp Foundry. Ten of these castings weighed between 200 and 250 t (220 and 275 US tons); four additional parts had weights ranging between 70 and 140 t (77 and 154 US tons). The customer's stipulations regarding the new parts were clearly formulated and included: 1.) exact fit of the new parts into the old press, 2.) maximum part weight could not exceed 224.5 t (247 US tons), and 3.) fatigue resistant parts.

The Siempelkamp scope of supply also included other special parts such as a tooling plate with a weight of 105 t (116 US tons), a cover plate weighing 45 t (49.6 US tons), different centering and stroke limiting rings as well as a guiding system for the moving beam.

As part of this project, the Siempelkamp Foundry achieved a special highlight: The Krefeld team cast the upper beam for the Alcoa press with a raw casting weight of 260 t (287 US tons) and set a new world record. 283 t (312 US tons) of molten iron with a temperature of 1,350°C (2,462°F) was poured from five ladles.

From the simulation to the installation: Siempelkamp milestones for the super giant

1. The starting point for all tasks were blueprints from the 1950s: with the help of these originals, Siempelkamp analyzed the original press design, carried out calculations according to the Finite Element Method (FEM), and optimized the design.
2. Calculations of the stress level for the castings were carried out.
3. The Foundry developed prototypes on the computer screen: The entire casting process was simulated from the pouring to the solidification, to the calculation of the internal stresses in the finished casting.
4. The first foundation beam was cast in August of 2009.
5. July 2010: world record casting! 283 t of molten iron poured twice into two separate upper beams for Alcoa's closed-die forging press. The Krefeld team outperformed its world record from 2009, the heaviest casting to that date with a raw casting weight of 255 t (281 US tons) made of ductile graphite iron.
6. Delivery of the castings to North America.
7. Installation of the new parts in Cleveland by the Alcoa team. Several young engineers from Krefeld were on site to assist with this special task.

Component part delivery via the Cuyahoga river

The 50 K with column stands

50 K with column stands above the ground

Siempelkamp Team with Mike Rambold (right), Alcoa

50 K with erected column stands

Press inauguration: Eric V. Roegner, President Alcoa Forgings and Extrusions

The 50K as a model

The redesign of the closed-die forging press was not only a special challenge for Siempelkamp. The project also represents the biggest construction project in the history of Cleveland. During the redesign, production did not stop but continued only 20 yards away from the construction site. Although slower, a close-by 35,000 t press took over production for its larger counterpart.

Press reloaded: an engine for growth and success

After an exemplary redesigning and modernization phase, the forming press is stronger than ever. The new model is operating more efficiently and precisely. The finishing requires less process steps than before: "Parts leaving the new press will still need some finishing, but there will be less wasted metal," says Eric V. Roegner, President Alcoa Forgings & Extrusions. An additional benefit: "The machine will be able to produce thinner parts that are still strong enough to be used in airplane structures." Alcoa's forging press makes parts that are larger, thicker and more complex than those that can be produced by competitors on similar-sized forging presses. For the F-35 Joint Strike Fighter Program* Alcoa Cleveland manufactures the large aluminum structural die forgings that have weights ranging from 1,800 to 6,000 pounds and dimensions between 10 and 23 feet.

* F-35 Joint Strike Fighter Program for fighter jets build by Lockheed Martin. The F-35 is the first stealth multi-purpose combat aircraft manufactured in series production.

Not just the quality but also its efficiency turns the press into an absolute benchmark product. "Our unique press offers the ability for Cleveland works to double its capacity to serve our customers in the commercial and defense aerospace markets as well as industrial and energy markets," says Eric V. Roegner. "Our iconic press played an integral role in Alcoa's rich history and will be an equal key component to our company's future growth and success!"

50K up and running

The aircraft industry is waiting for products

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