Siempelkamp

bulletin

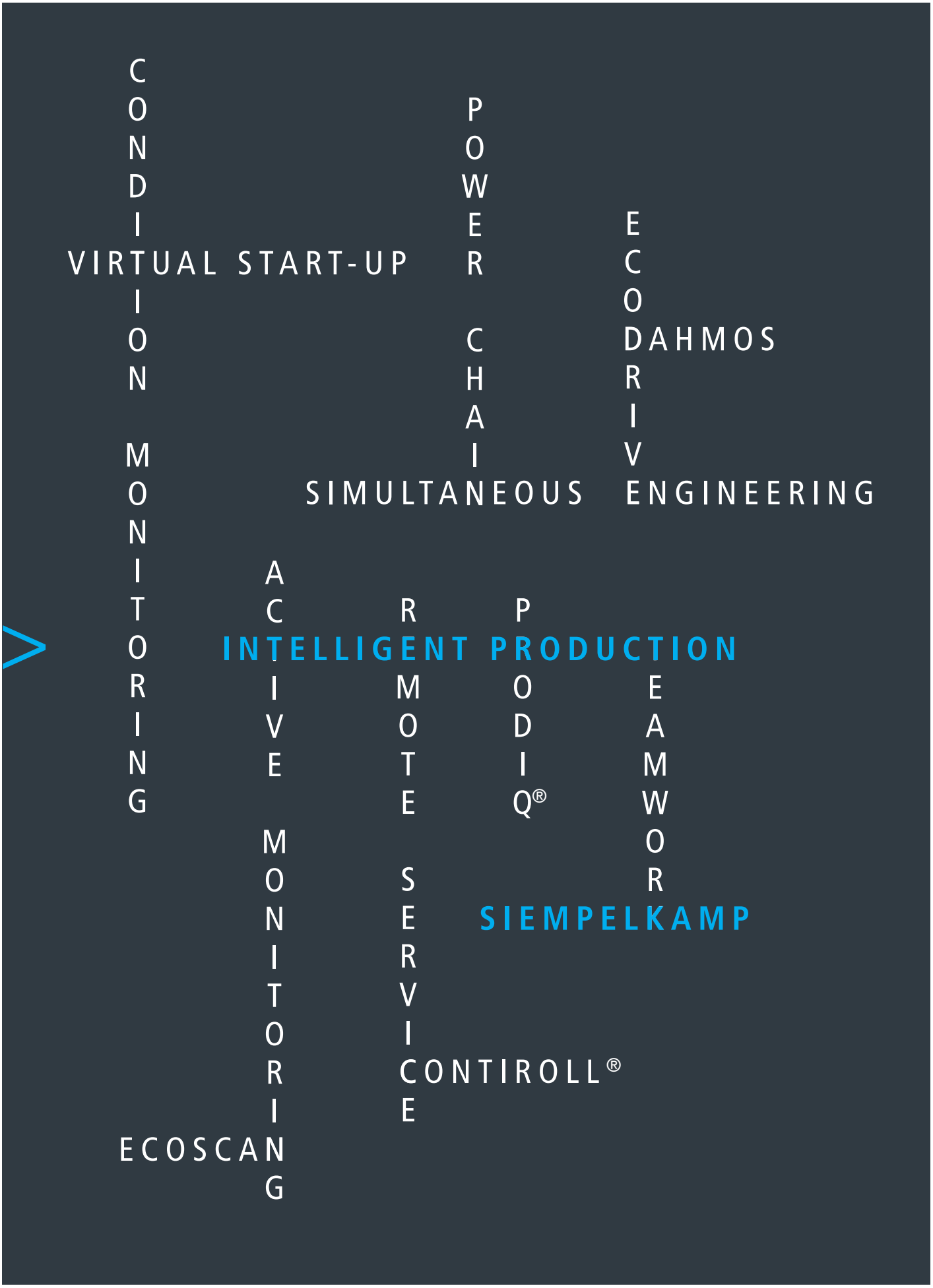
THE SIEMPELKAMP MAGAZINE **01_2017**

Next level High-Speed-Production –
ContiRoll® Generation 9
also available as **ContiRoll® Generation 9 NEO**

ContiRoll® news
Here comes Generation 9

Interview with AGT
Intelligent production pays off

Southeast Asian market
Projects and prospects


CONDITION MONITORING
VIRTUAL START-UP
POWER CHAIN
SIMULTANEOUS ENGINEERING
ECO DAHMOS DRIVE
ACTIVE MONITORING
INTELLIGENT PRODUCTION
REMOTE SERVICE
MODIQ®
TEAMWORK
ECOSCANG
CONTIROLL®
SIEMPELKAMP

Dr.-Ing. Hans W. Fechner Spokesman of the Management of G. Siempelkamp GmbH & Co. KG

Dear Reader,

"Intelligent Production" is the subject of this Bulletin. This catchword is as ever-present as ambiguous. It is usually flanked by the terms "Industry 4.0, Digitalisation, Smart Factory". The common denominator is the intention to implement in machinery production what has long been a reality in the consumer goods industry: manufacturing processes relying on self-adjusting and self-optimising plant components. No matter how specific a product may be – all its characteristics are well planned ahead to prevent failures and shortcomings right from the start. Mobile communication means, real-time sensors open up new options for a decentralised process control, which is most important in our industry where plant owners and producers operate several sites and branches throughout the world.

What is your perception of "Intelligent Production"? What is ours? There are many possible interpretations, with the digital systems and digitalisation looming large. In recent years, our Research and Development Centre has not only adjusted a few screws, but boosted our continuous in-house development scheme to make your plants and processes faster and more efficient and to fully utilise your resources.

One thing is for sure: even though the factories continue to automate, man will remain in the focus. Your staff and ours form the basis, which even the most sophisticated tools can't do without. This is why our Bulletin not only reports on high-end technologies, but on the teams without whom such technologies would be inconceivable.

And now, please enjoy reading our Bulletin 2017!

Dr.-Ing. Hans W. Fechner

: Machines

: People

: Markets

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At LIGNA 2017 Siempelkamp is presenting the "next level" ContiRoll®. Which innovations make this continuous press a benchmark in the wood-based products industry? Our ContiRoll® Special provides all details at a glance.

> Read more about this project starting on page 8.

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How does a driver of innovations, such as AGT, interpret the topics of "intelligent production" and "intelligent factory"? Kurtulus Topaloglu, Production Director, and Fikret Erdogan, E&A Manager at AGT, provide details in an interview.

> Read more about this project starting on page 60.

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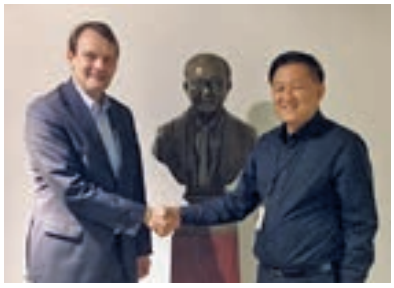
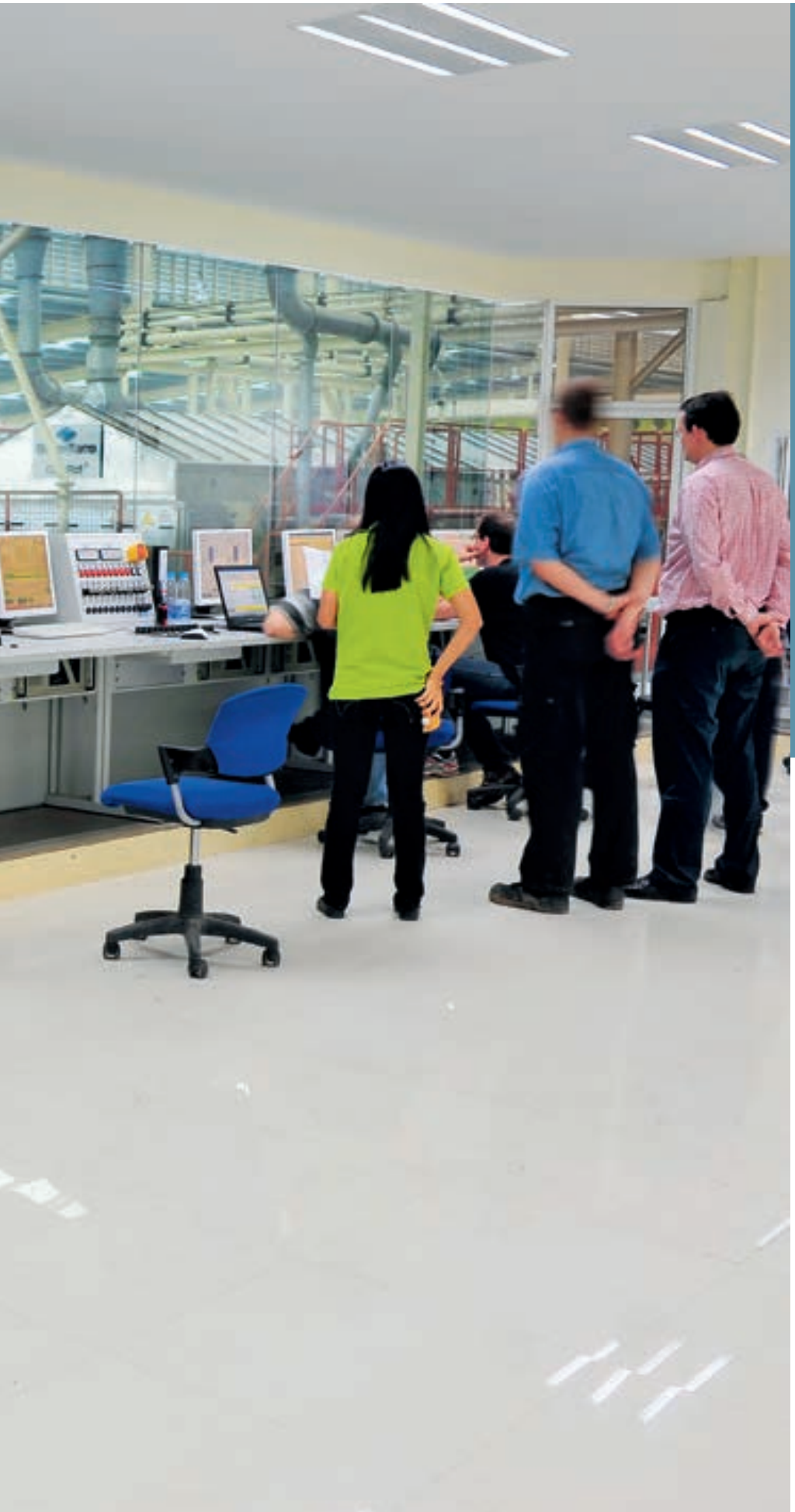
Two orders from China and Thailand emphasize Siempelkamp's leading role as systems supplier for press technology in Asia. What plant features are in demand? How is the market developing in Southeast Asia? How does Siempelkamp provide local support for customers from Singapore?

> Read more about this project starting on page 80.





MACHINES

Intelligent production made by Siempelkamp links industrial plants with modern information and communication technologies, resulting in self-controlling and self-configuring systems, as the case may be. From the design, the application of digital systems to the use of mobile devices at the construction site, the goal is the overall intelligent production.

Next-level high-speed production:
And here we go: ContiRoll® Generation 9 and ContiRoll® Generation 9 NEO!

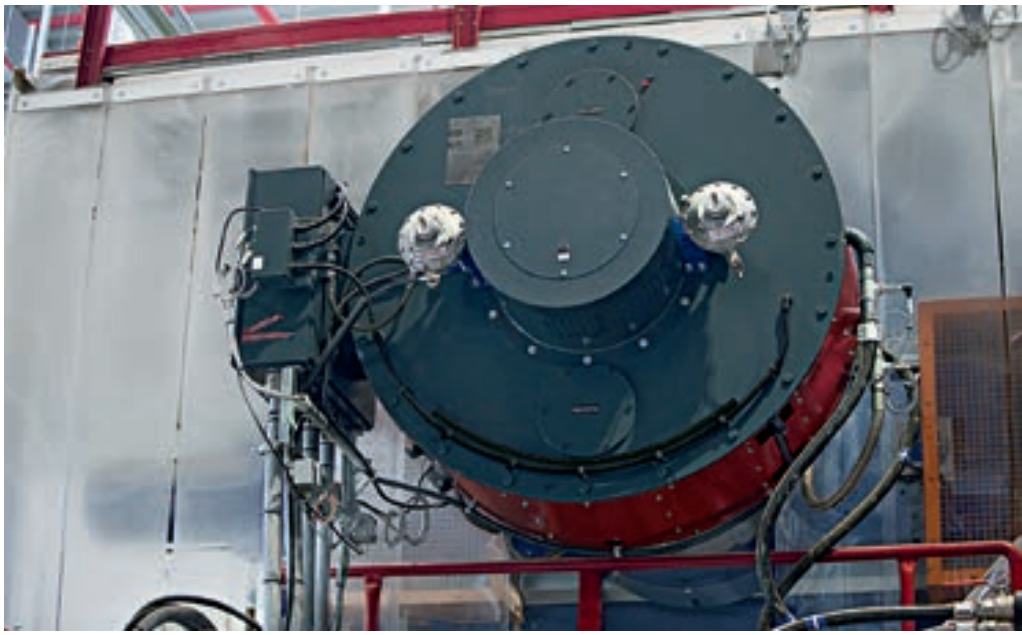
➜ By Dr.-Ing. Hans W. Fechner

With annual outputs of up to 900,000 m³, absolute reliability and unsurpassed product quality, the ContiRoll® has become the standard where the continuous production of boards is concerned. It has been sold more than 310 times worldwide and is being used to manufacture boards in many different types of climate across the globe. But Siempelkamp has not rested on its laurels and will soon be launching a ground-breaking upgrade: a newly developed press infeed, state-of-the-art drive and instrumentation technology, simulation and process control technology as well as new processes for mat pre-heating and the finishing line have elevated the ContiRoll® to new heights. The developments will deliver decisive market benefits: production increases of up to 30 %, highest machine uptimes, minimised maintenance requirements, high-precision performance and status controls, product qualities that have been increased again with the potential to realise even more savings in materials and energy consumption – all at reliable operating speeds of 2,500 millimetres per second. In short: the ContiRoll® Generation 9 and ContiRoll® Generation 9 NEO have arrived!

The ninth generation of the ContiRoll® comes with many features that possess state-of-the-art character – from the Ecodrive concept to the new finishing-line processes. But the best news first: **the new ContiRoll® Generation 9 is also available in the ContiRoll® Generation 9 NEO version.** NEO stands for New Entry Option – the super flexible infeed that delivers top performances and dramatically increased production outputs.

Siempelkamp will be presenting the ContiRoll® Generation 9 NEO with the innovative extended press infeed at the LIGNA 2017. A strong structural frame has been created with ten press frames that have been spaced at distances of 530 millimetres from each other. The hot platen containing the booster heater, which has been extended by 100%, operates in conjunction with the highly specialised press hydraulics to ensure highest production capacities. This

ContiRoll Ecodrive
– drive concept



design means that it is possible to increase productivity by up to 30 % – which is simply sensational!

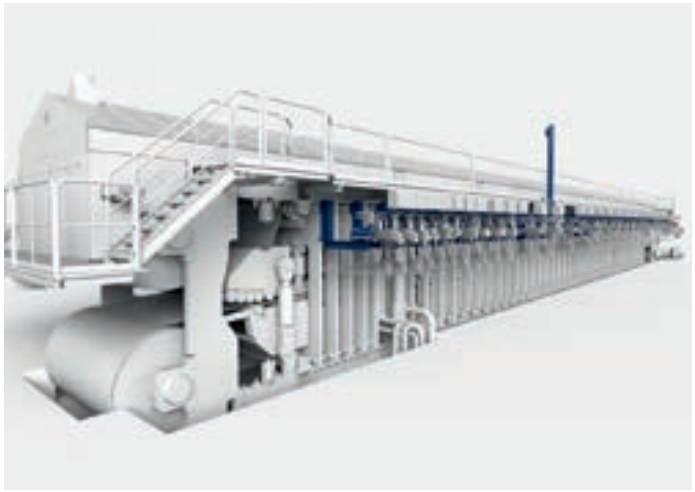
ContiRoll Ecodrive – a drive concept establishes itself

The energy-efficient servomotor with two-stage gearbox has been demonstrating how reliable it is in production operations for two years. The key performance indicators and energy efficiency are so impressive that Siempelkamp has now introduced this drive concept as the standard drive for the ContiRoll®'s discharge drums. The ContiRoll Ecodrive system enables plant operators to realise energy savings of at least 7% during full-load operations and up to 14% during partial-load operations – with the very best of efficiencies. The consistently high torque across the entire range of production speeds of up to 2,500 millimetres per second is achieved with the help of the permanently excited synchronous motor and its two-stage gearbox. "It was very important to us in developing the ContiRoll Ecodrive system that the requirements currently set out in the standard governing energy-efficient drive systems are far exceeded so that the system will be able to continue to satisfy the demands that are going to be made on it in the future," said Werner Schischkowski, Head of Automation Technology at Siempelkamp.

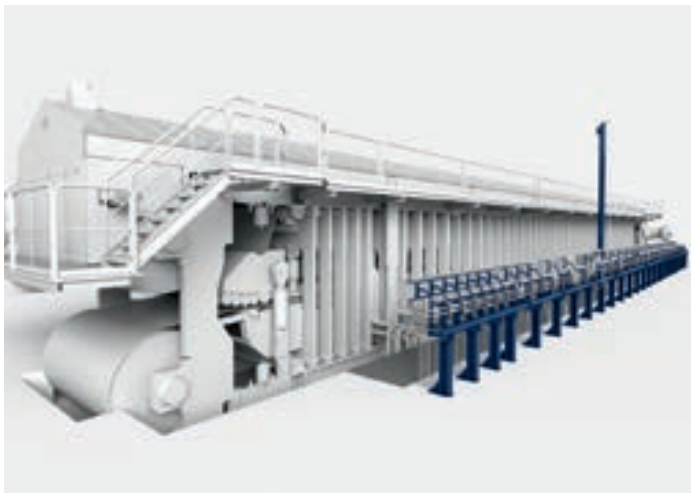
The fact that the synchronous motor normally runs at a low number of revolutions even when production speeds are high means that wear on bearings and gears becomes insignificant and the fact that a two-stage gearbox has been used means that there is a very low probability of system failure. The ContiRoll Ecodrive design that uses a two-stage gearbox increases service life and dependability several times over compared with conventional drive concepts that employ complex gearbox geometries.
A water cooler for cooling the drive has also been integrated into the ContiRoll Ecodrive to prevent the negative effects that are associated with the used air that has been contaminated with dust for cooling.

The ContiRoll Ecodrive system may also be retrofitted in existing plants, the cost frame is comparable to that of conventional four-motor drive solutions. Conversion to Siempelkamp's new drive concept does not require complex modifications. Retrofitting would allow production to be quickly commenced at a constant

ContiRoll® Generation 9 NEO



Top left: Top fitting of function beams
Top right: Central fitting of function beams
Below: Free positioning of function beams



drive power with optimum and uniform running characteristics – and to achieve considerable energy savings for a rapid return on investment and a long operational future.

HPC-40 – the power chain for high-speed production

Both the market and manufacturers want increasingly accelerated production speeds to enable them to satisfy the demand for MDF / HDF. The year 2017 has seen Siempelkamp take a decisive step forward towards meeting these demands as the new ninth-generation ContiRoll® is able to achieve production speeds of up to 2,500 millimetres per second. But such speeds can only be realised if the components are able to keep up with them: the chains, for example, are exposed to great loads as they take up roller rods in their links, carry the roller-rod carpet through the press and convey it from the press discharge to the infeed. Depending on the plant's operating mode, these chains are exposed to enormous thermal and mechanical stresses. As a result, they inevitably start to stretch over time. Controlled chain tensioners are usually employed to take up the slack and maintain the required processing conditions during production. But the new digital era has also increased the demands that are being made on chains, which means that a generation of chains that possess clearly defined properties is now being called for.

That's why Siempelkamp has introduced new manufacturing processes to achieve significant improvements in the wearing behaviour of its newly developed HPC-40 (high-performance chain). It is now, for example, considerably easier to monitor the new HPC-40 with sensors. The tensile strength of the new roller-rod chains has been further improved to a significant degree with the help of optimised component geometries. This facilitates the prevention of uncontrolled wear phenomena in some areas of the chains and so extends the total service life to the point when replacements are unavoidable. The new HPC-40 chain will be fitted as standard from September 2017. But it may also be retrofitted in existing production plants without the need for any modifications as it is compatible with all peripheral components.

Hydraulics made by Siempelkamp – highly specialised, absolutely precise, perfectly controllable and now also individually configurable

The new ContiRoll® Generation 9 unit also comes with further improved hydraulics. The previously solitary units for the pre-press, the optional compactor and the press itself have been redesigned from the ground up. The number of individual components has also been largely reduced by, for instance, combining them into a central unit – thus reducing the amount of maintenance required for the hydraulic system. A large filter has, for example, been fitted to considerably scale down the necessary maintenance work. The new central hydraulic system, which now simultaneously supplies the prepress, the compactor and the ContiRoll®, also delivers benefits for the working environment. There will, for instance, be no more noise emissions caused by the pump in the area around the prepress in future. These measures also permit the monitoring of the hydraulic performance to be optimised due to the fact that all the relevant and central lines have been installed

in the hydraulic core in proximity to each other, a fact that also significantly minimises the number of sensors required for controlling and monitoring performances. The new hydraulic system at the heart of the ContiRoll® is efficiently monitored by a performance-management system.

The function beams constitute another innovation in the hydraulics system as the ninth generation of the ContiRoll® now allows them to be positioned as needed. Customers are – in addition to the previous attachment to the top frame elements on the left or right next to the press – now also able to freely position the function beams, e.g. next to the press on the foundation. The new beam design and redesigned connection lines allow the function beams on the ninth-generation ContiRoll® to be individually coordinated to suit conditions at site. This means that additional installation situations have become feasible, e.g. installation directly on the frame elements at floor level or parallel to the production line with free aisle between the press and function beams.

Whether ultra-thin or ultra-thick boards – the press now only outputs highly precise dimensions!

At production rates of 2,500 millimetres per second, any fluctuations in production will result in cubic metres of waste product. In certain circumstances, a few square metres of board will end up as waste even when fluctuations have been detected due to the fact that it is only possible to correct product thicknesses using the thickness measurement feedback.

Siempelkamp has therefore has done its utmost to perfect the procedures used on the ninth-generation ContiRoll® for measuring thicknesses to ensure that high-quality output is reliably achieved at all times even when production capacities are high. The approach uses an entirely separate design because this was the only way of measuring thicknesses without the machine influencing the results in any way. A structurally robust independent measuring frame serves as a stable reference point – separated from all thermal and structural material deformations.

Hot platens, heating lines and falling strands: a twist for ease of maintenance

The Siempelkamp system takes full control both of the hydraulic pressure generated by the ContiRoll® and how the press is heated. No reason not to optimise things here as well. Sought and found: the connection flanges for the heating lines that terminate on the sides of the hot platens as a feed line on the one side of the heater and return line on the other.

Strands may fall on to these connection flanges during production – particularly during OSB production. But regularly cleaning the hot connection flanges results in a lot of maintenance effort. This is where another innovation that has been realised on the new ninth-generation ContiRoll® comes into its own: the heating lines in the calibration section have been directed into the hot platen from below and above – and from only one side. The other side of the press remains free of heating lines thus making it possible to achieve a more maintenance-friendly design for the geometry of the press fume extraction system. The fact that the heating lines have been removed from the side that provides access for servicing the press has meant that it was possible to implement an easily accessible press fume extraction system.

And because the heating lines now terminate vertically from above and below at the hot platens, strands are no longer able to drop onto the hot connection flanges – they fall into the material chute. Two conveyor screws, one on the right and one on the left of the press, are now responsible for cleanly removing any strands that drop out of the mat while it is being processed. Maintenance hatches allow free access to the screw conveyors at all times.

Also successfully tried and tested in the new concept: pressure distribution plates and an extra row of cylinders

The ninth generation of the ContiRoll® continues what had already made the eighth generation so pioneering: unprecedented and verifiable precision of raw board dimensions. This is achieved, on the one hand, by the use of pressure distribution plates and, on the other, by the additional row of cylinders that has been part of the ContiRoll® since the eighth generation. The pressure distribution plates counteract the hot platens' resilience between the frames preventing them from expanding – something that is common on frame presses. This solution is technically far superior to all other approaches, e.g. the parallel press gap system.

Measuring frame: better safe than sorry

- Anchored between two press frames in front of the calibration zone in the transition wedge
- Made from materials with a very low thermal expansion coefficient
- Top and bottom measuring sensors always at calibrated reference level – prevention of long control transient-value functions = more precise and faster measurements
- Duplicated sensors over the product that measure the stroke and under the product that measure the pressure allow wear on the insulation layer to be compensated for
- Better monitoring options

When the new measuring frame measures a product thickness of six millimetres within the machine, the product is actually manufactured at a thickness of six millimetres – for the smoothest of surfaces, for surfaces that may be painted and for surfaces that do not require the addition of sand-offs!

The ninth generation of the ContiRoll®: **Sophisticated environment for high-performance plants**

➜ By Dr.-Ing. Hans W. Fechner

Many changes have also been made in areas that are also associated with the ninth generation of the ContiRoll®. That is because latest findings and sophisticated detail solutions have been implemented in high-end technology to reduce maintenance work and increase product capacities. High-end technology that includes the Ecopulser that uses cutter-free size-reduction technology, the new compactor for fibre preparation, EcoScan as the latest addition to the SicoScan family and the ContiWave unit for mat preheating – all of which have been developed to contribute to high-speed production in the future – also naturally available as retrofit options for existing plants. And the improvements do not stop with the ContiRoll® – they continue with the new six-unit diagonal saw that eliminates speed limits in finishing lines. Enabling a rapid incorporation of all the innovations into the production chain, it is possible to virtually commission the entire line in advance. This minimises the time windows required for the respective assembly tasks so that the improved machine capacities may quickly reflect in even higher quality wood-based boards.

Ecopulser Twin

Ecopulser – the cutter-free dimension for material disintegration

Particle processing starts with Siempelkamp's Ecopulser – which stands for an entirely new way of re-chipping particles and chips without the need for cutters and almost entirely without wear. To this end, it utilises two opposing rotating vane rings to produce interference within shock pressure fronts and generate sonic shock waves. The sonic shock waves interact with the bulk material and break the material structure down. The Ecopulser is also perfectly suited for abrasive cuttings due to the fact that there is no contact when the particles are broken up in the air.

The negative pressure generated as a result of the principle employed by the Ecopulser pulls the chips or particles through the rotor set so that the wood cells containing air, water or ice are ripped apart and separated along their fibres when the negative pressure hits them. The fibres are largely preserved along their length, which helps increase the strength in the particleboards they are used to produce. This innovative method of breaking the material up is absolutely energy-efficient as only around 10% of the friction energy is lost as heat. The potential to save energy is enormous: it is possible to save approximately 10 kWh/t of produced core-layer material and approximately 40 kWh/t of produced surface-layer material.

The system also helps reduce the costs for maintenance and servicing: due to the fact that no cutters are used in the process of breaking down the raw materials, there is no need for resharpening or even replacing them. Even such impurities as stones and metal particles have no effect on the Ecopulser because there is no contact between materials and the vane rings. The Ecopulser is also available as a twin version that delivers twice the performance for high-capacity production plants.

With x-ray eyes for a clear view – EcoScan NEO

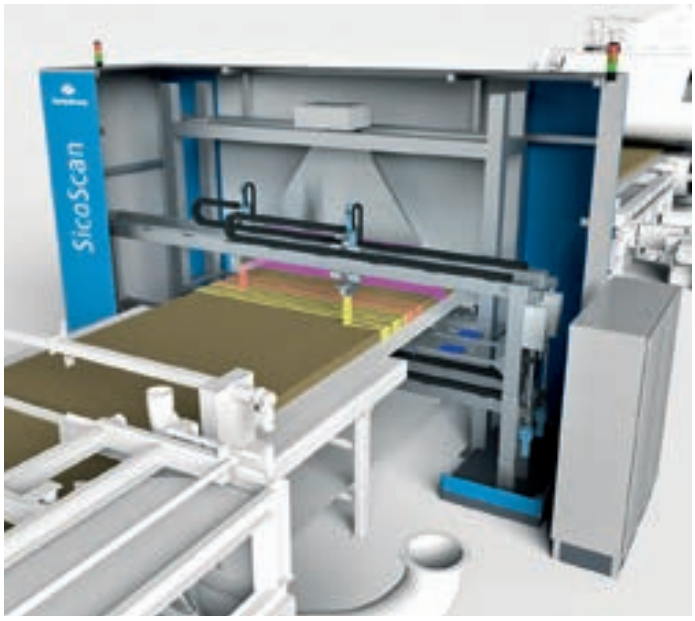
Much further down the line of the production process, the EcoScan NEO unit monitors the product directly behind the mat former with the help of two separate functions combined within a single measuring system: high-resolution analysis of the weight per unit area and reliable detection of foreign bodies by the simple and rapid capturing of the measured data across the entire mat cross-section.

The EcoScan NEO unit, which is responsible for measuring the weight per unit area on particle mats, fibre mats and strand mats, makes fast absorption measuring possible as it uses two traversing measuring heads to scan the full width of the mat with sine waves. Depending on the press width, one or several sources of x-rays under the material scan the product while the self-adjusting measuring heads above the mat detect unabsorbed residual radiation. This means that while taking account of the forming belt even the slightest of fluctuations in the surface weight will be detected across the entire measured range with a consistently high resolution of ±0.5% of the mat weight.

An independent and separate x-ray system on the EcoScan Neo unit scans the entire surface of the mat using an intelligent algorithm to detect foreign bodies that are up 1.6 millimetres small. The clear multidimensional visualisation means that even the smallest of foreign bodies and forming errors may be precisely localised on the mat and that mat sections that are defective as a result of the process may be isolated with the help of fluctuations in the weight per unit area. The fact that the integrated EcoScan measuring system may be interfaced with the intelligent Prod-IQ® control means that statistical analyses may be carried out and the results then presented in a variety of user interfaces.

Prototype of EcoSan with traversing measuring heads

EcoScan NEO

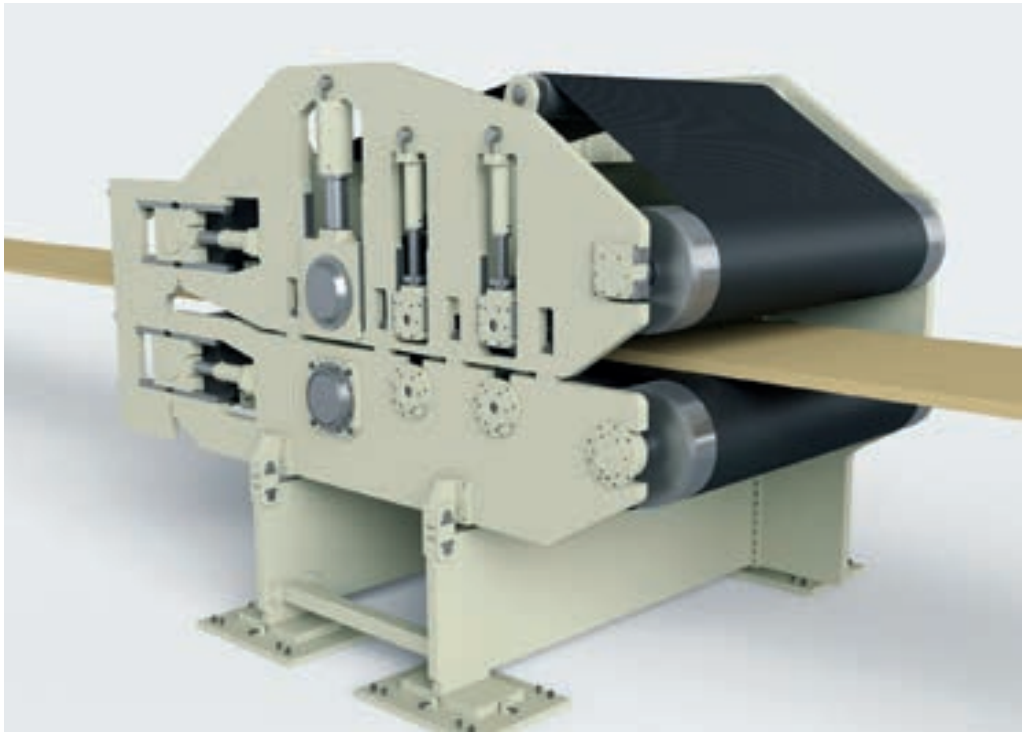


EcoScan NEO concept with high-resolution weight analysis (in front) and foreign object detection (behind)

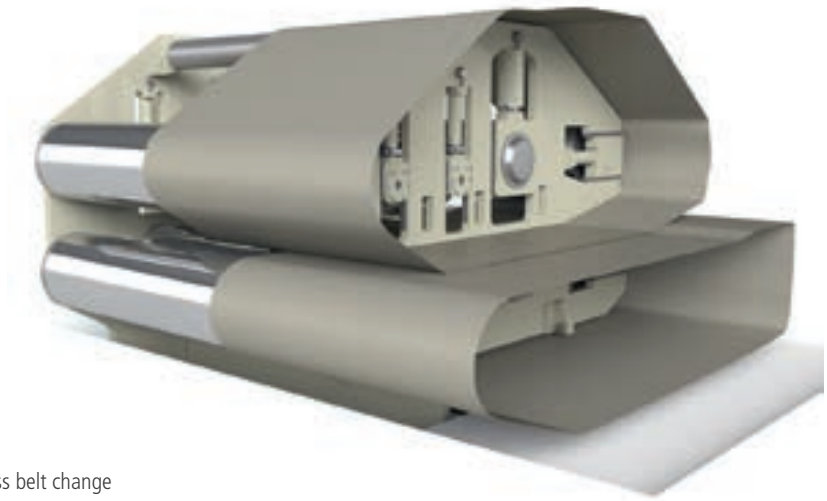
Good alignment is half the pressing – Siempelkamp's new compactor

The next component in the production chain – the new compactor – delivers production reliability and increases the production quality for fibreboards in a broad spectrum of thicknesses ranging between one and 42 millimetres. The compactor accelerates mat pressing by compressing the fibres. Its compression of up to 8,000 N/cm reliably destroys any lumps of glue and undesirable structures so that they are no longer able to cling to and damage the steel belts on the press. The precompaction between the compactor's screening belts also prevents blowouts in the following pressing processes.

The housing for Siempelkamp's new compactor has been designed as a self-supporting structure that allows the two screening belts to be easily removed from the side after the rollers have been moved into their servicing positions. New pre-assembled endless screening belts may then be quickly and easily installed in the compactor in the same way. The optimised roller geometry ensures that air is evenly evacuated from the mat and the material is compressed to the product's nominal thickness. Additional height-adjustable supporting rollers are responsible for a controlled air evacuation zone and optimum preparation of the mat for the pressing process.



Compactor



Quick endless belt change
through self-supporting structure

The turbo system in front of the ContiRoll® – ContiWave, mat preheating with microwaves

The ContiWave unit for preheating mats with microwaves – a Siempelkamp development that significantly increases production capacities in particleboard, OSB and fibreboard plants and that makes operations fast and reliable even for thick products. The homogeneous distribution of heat across the entire cross-section of mats is also useful when such special products as laminated veneer lumber (LVL) need to be manufactured.

The ContiWave unit represents an attractive alternative to the process of extending the length of presses on existing plants as the product mat already enters the press at higher temperatures. The ContiWave's modular design makes it possible to optimise and adapt microwave preheating to the product with a total performance of more than 600 kW and a microwave frequency of 915 MHZ that is ideal for the purpose. Patented slot antennas above and under the product ensure that microwave input coupling is extremely reliable, which

ContiWave – mat preheating with microwaves

helps achieve rapid and homogeneous mat heating. This heating technology guarantees stable process conditions at all times – for all seasons, in all weathers.

Thanks to the precision heating control, the ContiWave unit may be perfectly adapted to the process requirements in cycled operations carried out on multi-daylight presses. Special filter elements have been used to almost entirely shield the employed microwave radiation in the inlet and outlet tunnels, so ambient emissions remain far below legal limits. This means that highest levels of operational safety can be guaranteed with the ContiWave unit.

Downstream of the press is upstream of the (six-unit diagonal) saw

The production speeds of up to 2,500 millimetres per second that can be achieved with the ContiRoll® naturally require high-performance finishing lines. It must be ensured that the shortest of boards can be cut and any interruptions to production prevented when saw blades need replacing. Siempelkamp's six-unit diagonal saw has been designed to operate continuously and achieve maximum production capacities while taking account of, and consequently eliminating, the resulting increase in dust-emission rates.

Thanks to its modular design, Siempelkamp's six-unit diagonal saw requires little assembly effort – and thanks to highly modern commissioning simulations, start-up times are extremely short. Advance simulations allow sequential product changes and even board-format changes to be executed while operations are still ongoing, all the required functions have been incorporated in the best way possible into the control concept.

The mechatronic approach allows the production parameters to be conductively captured at the machine frame house and then processed by the process-control systems. This means that it is also possible to make laboratory cuts and change the saw blades while production continues at full speed. Siempelkamp's six-unit diagonal saw executes its ultra-fast cuts in perfect coordination with the respective product without the need to interrupt production processes. The friction-wheel feed also allows the system to be perfectly adapted to thin boards – which may be produced at speeds of up to 2,500 millimetres per second.

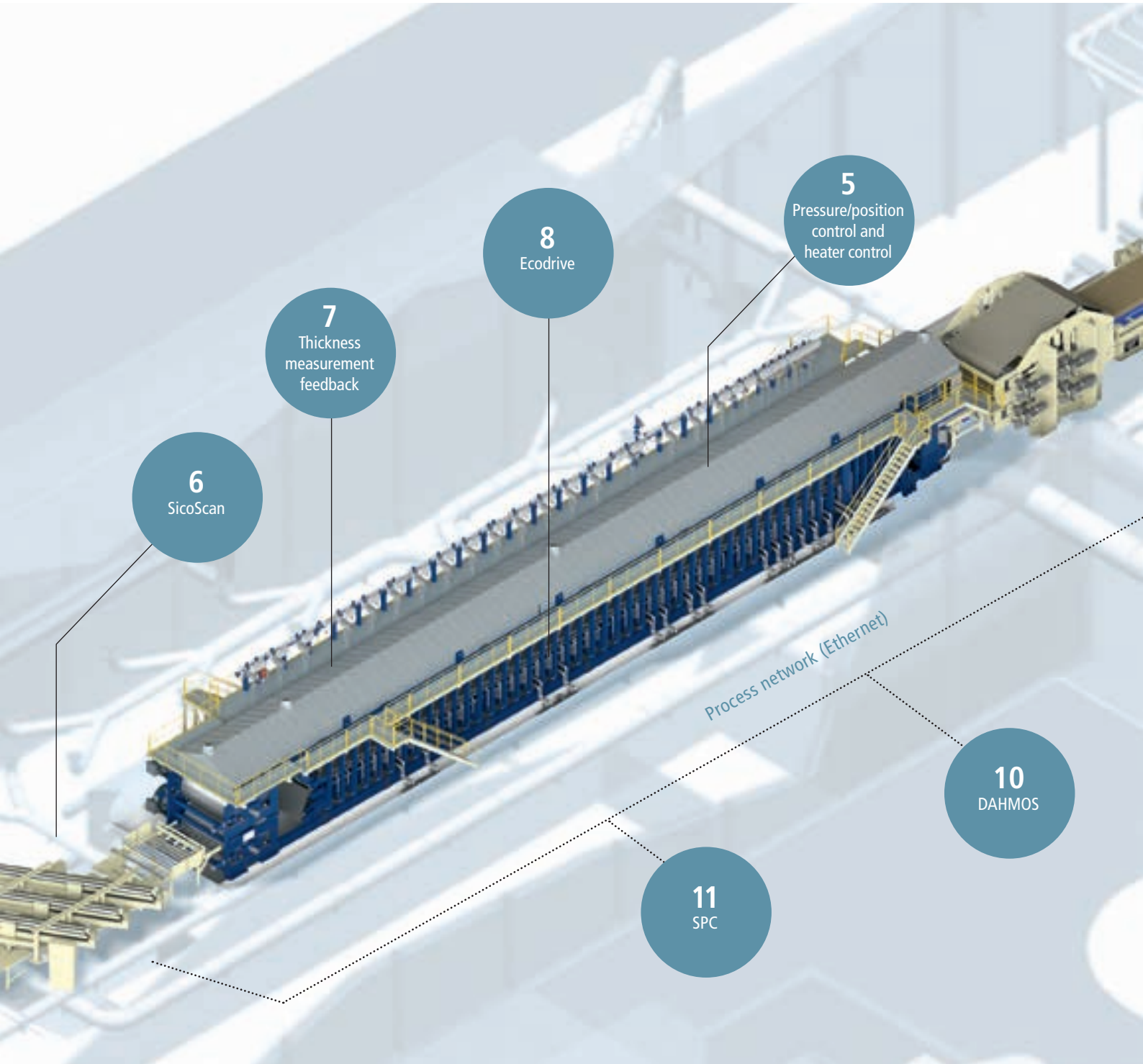
The particle extraction hoods on all Siempelkamp saws have additionally been optimised for high-speed production. Extraction flows were analysed to create flow-optimised housings that significantly increase efficiencies. The modified hood geometry improves the extraction performance by between 40 and 50% and delivers considerable energy-savings potential as they reduce the required extraction performances.

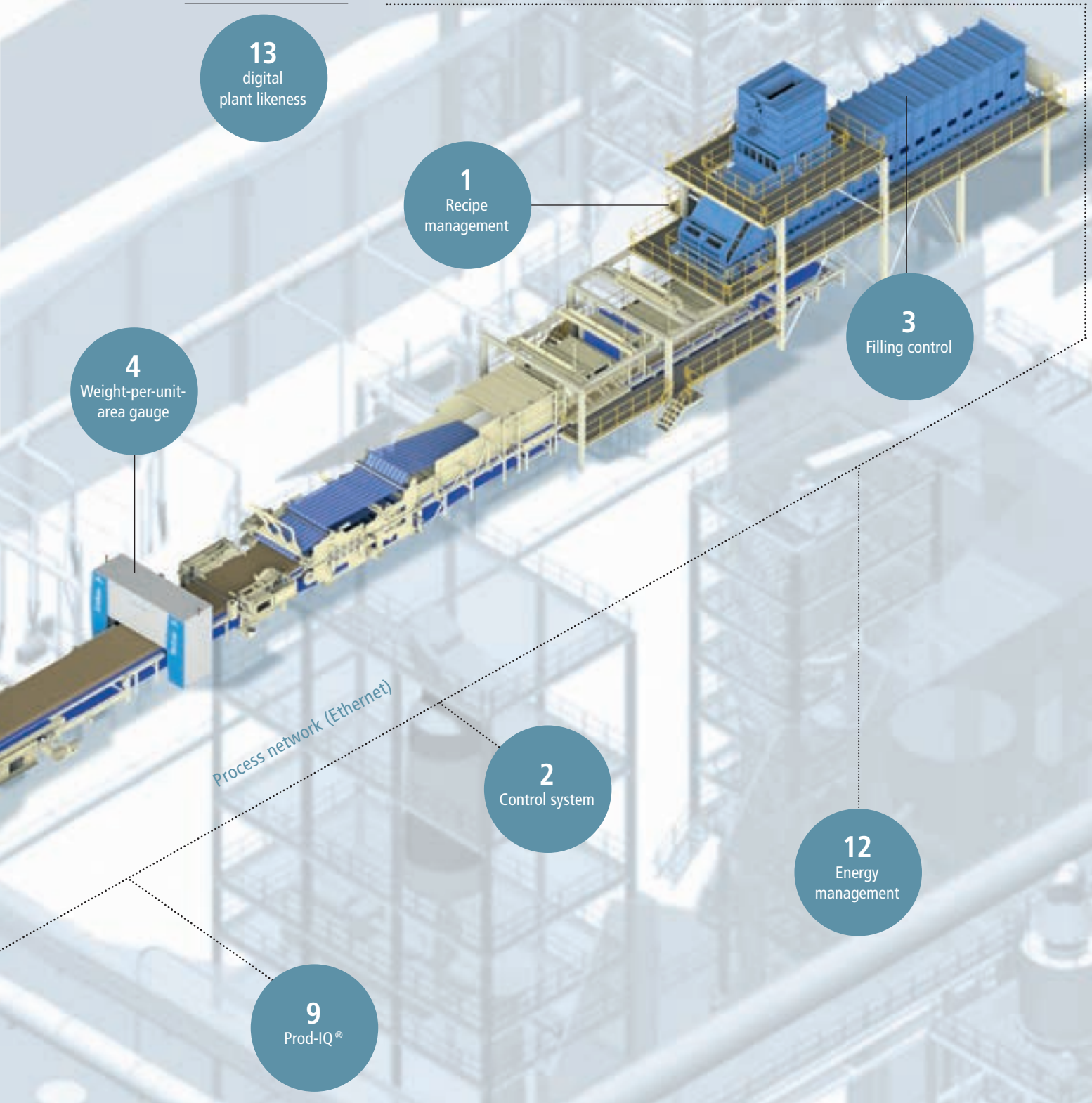
Siempelkamp's D&E – Where the future begins:

Self-optimising plants take a weight off our customers' minds, providing top quality at reasonable cost.

→ By Werner Schischkowski and Gregor Bernardy

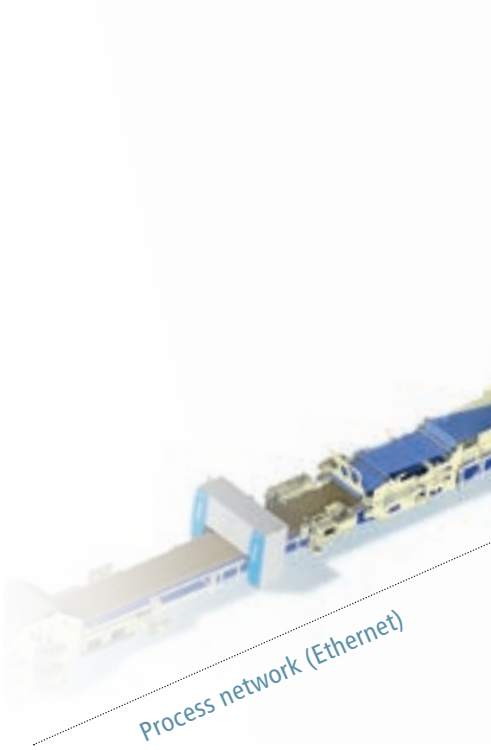
Intelligent Production, Smart Factory, Industry 4.0 – catchwords on everyone's lips. The wood-processing industry, too, turns digital. Networking all over the place. Not only does Siempelkamp do its utmost to obtain excellent physical properties for wood-based board, the wood-based board created by intelligent production is a reality, too! At Siempelkamp's the future is tangible. Advantages for our customers: the customer only defines the production order and the respective recipe. Everything else is taken care of by the plant. Quality-monitored production. Reliable. Automatic. Cost-efficient. Predictable.



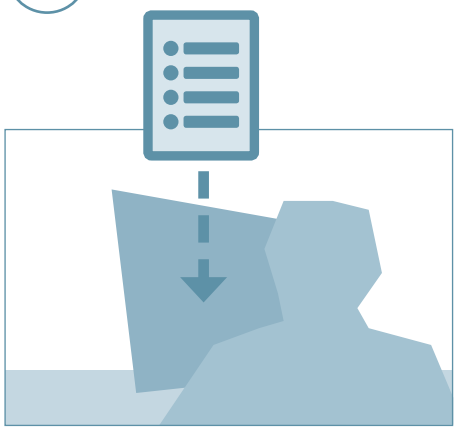


A self-controlling and self-optimising plant – not a vision any more. At Siempelkamp's, it's a reality. 13 characteristics define an overall concept for Prod-IQ® Next, which lightens a plant owner's workload: the operator releases a production order. The rest will run off automatically, precise and targeted. These are all communicating and interacting factors in a self-optimising plant, which are decisive for the end product. Everything become transparent. A virtual product memory is created, covering the entire added value chain.

What do a wood-based board and a pie have in common? At first glance – nothing. At second glance, there are quite a few things indeed. Similar elements are needed in their manufacturing chain: frequent product changes, more and more individualised recipes, continuous production, minimised downtimes, efficient use of resources, all turning into a high-quality product. For both industries "Intelligent Production" is a challenge and an opportunity, all starting with the same recipe. Everything else is taken care of by the plant ...



1 RECIPE MANAGEMENT



The order list appears, the respective recipe is selected

1

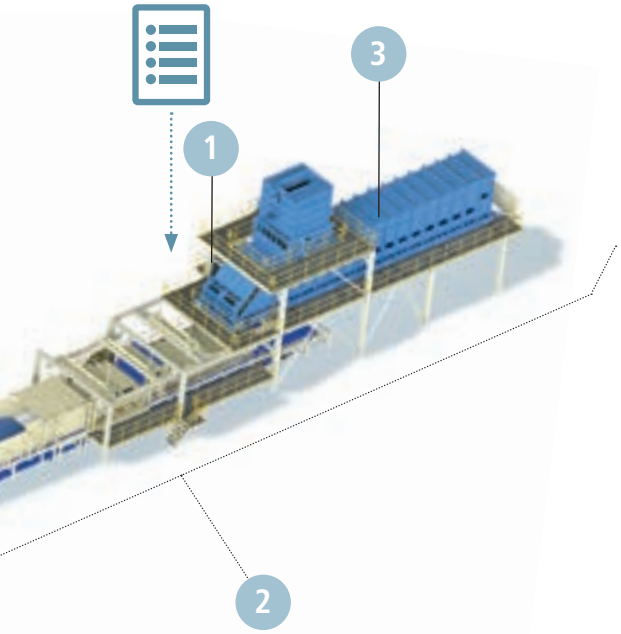
Recipe management – Backing up our technological know-how

Intelligent production starts with the recipe. The recipe exhibits the kind of board production. The design of the new recipe manager has been suited to the man/machine interface of a self-optimising plant, employed by the technologist to optimise, save and manage the recipes. Board specific data such as thickness, length, width, quality and order number is received by the plant in the form of a production order. "On loading a recipe, intelligent production starts by all relevant machines and all open- and closed loop controls adopting this recipe. Just as it has been possible for quite some time to order one's individualised pie online, it is possible now to do likewise in wood-based material production. When our customer requests specific physical properties, for instance, our recipe manager is able to guarantee that the plant adjusts accordingly. "This means the product will be created according to our customer's request without the operator having to intervene," says Werner Schischkowski, Senior Head of the Automation Dept.

To this end, we try to realise the interruption-free so-called sequential product change whenever possible. That means all machines – one by one – can be switched automatically to the new recipe in compliance with the material flow. There is no need for the reject mat nose to open and scrap precious material.

2 CONTROL SYSTEM

Switch cabinet with control system



2

The control system – Our intelligent hardware

The control system is the brain of the plant responsible for open- and closed-loop control of all the machines and equipment connected to form a complex production facility. Intelligent production requires control systems that satisfy entirely and future-oriented the demands put on application, fast response times, dependability, programmability, diagnostics, condition and quality.

Depending on what is requested by our customers, we install PLC by Siemens or Rockwell tried and tested for years. The new generation of Siemens control systems guarantees the compliance of their hardware platform S7-1500 and the engineering tool TIA portal with the requirements of mechanical engineering on future intelligent control and production systems.

The well established ControlLogix control systems enable us to meet all requirements put on an intelligent production within the Rockwell-based systems. "Faster computers are required to meet the demand for faster data processing and thus faster production processes," explains Jörg Jaschke, Head of Prototyping & Development Siempelkamp Automation Dept.

3

Mat former control– It has proven a recipe for a precise mat

An adequate hardware platform is by all means an important technical prerequisite. The plant's intelligence, however, lies within correct control algorithms.

Homogeneous filling of the mat former bins guarantees the mat to be most accurately spread and formed, thus ensuring a consistently high board quality. To this end, the upstream plant components must be perfectly tuned to one another. That applies to MDF, OSB and particleboard production plants alike.

The material characteristics are known everywhere in the feeding system at any time. Hence it is possible to assess the exact number of boards that can be produced from the material volume already blended with glue. This is especially true for the sequential product change without interruption: here most accurately metered material volumes and changeover times are required and traced back to meter the glue required most precisely in advance. The glue volume corresponds to a defined number of boards. This is to help minimise the rejects.

3 FILLING CONTROL

Fibre spreading

4 WEIGHT-PER-UNIT-AREA GAUGE

EcoScan

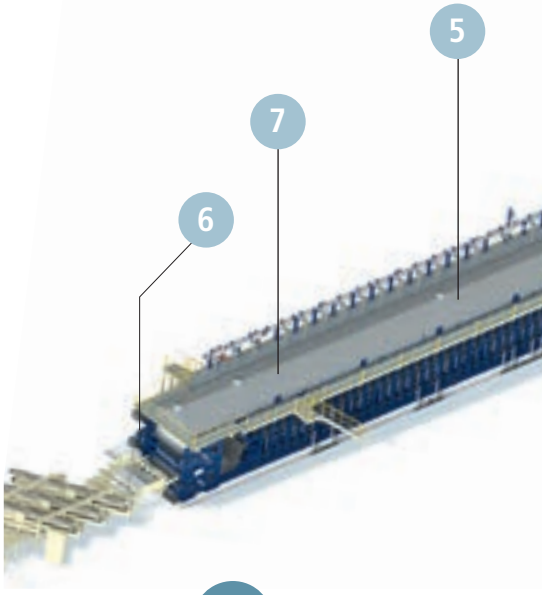
4

Weight-per-unit-area gauge EcoScanNEO – consistent spreading = consistent density distribution

The plant operators focus on reducing raw materials, while at the same time maintaining optimal board qualities. The precise distribution of weight per unit area in longitudinal and transversal directions is most important for the board quality.

Therefore Siempelkamp has extended its range of integrated SicoScan gauges by the weight-per-unit-area gauge EcoScanNEO. It comprises an X-ray-based gauge and a control system for energising actuators, the design of which has been specifically adjusted to the mat former. An innovation relying on the simple truth, "perfect forming for the perfect raw density".

EcoScanNeo also comprises an X-ray based gauge for the detection of tramp material. The specific demands made on an optimal weight-per-unit-area measurement and unlimited tramp material recognition can be fully satisfied, as both systems work independently. There is no need for additional metal detectors (Please also refer to our article on page 30).



5

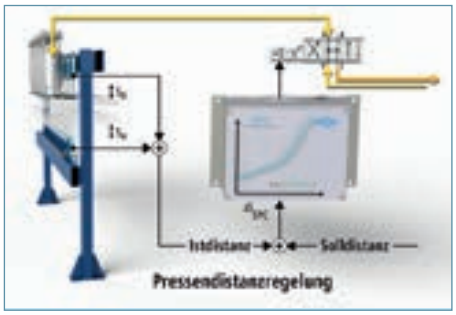
Pressure/position control and heater control in the press

The ContiRoll® operates on the continuous principle, as the name says. Highly-dynamic hydraulic systems comprising more than 80 rows of cylinders serve to press everything optimally, fast and most precisely. Siempelkamp uses the internal automation system SPC (Siempelkamp Press Control) to operate the complex hydraulic systems.

The press can be operated in pressure- and position-control that rely on fast and modern computers, most accurately designed valves and cylinders, most precise pressure sensors and position gauges. The pressing forces or press gaps requested by the technologist are precisely controlled and guaranteed.

And so is the heat required according to the recipe. The temperature is adjusted by the heater control.

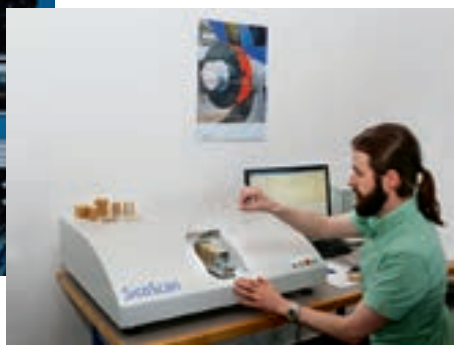
5 PRESSURE/POSITION CONTROL AND HEATER CONTROL



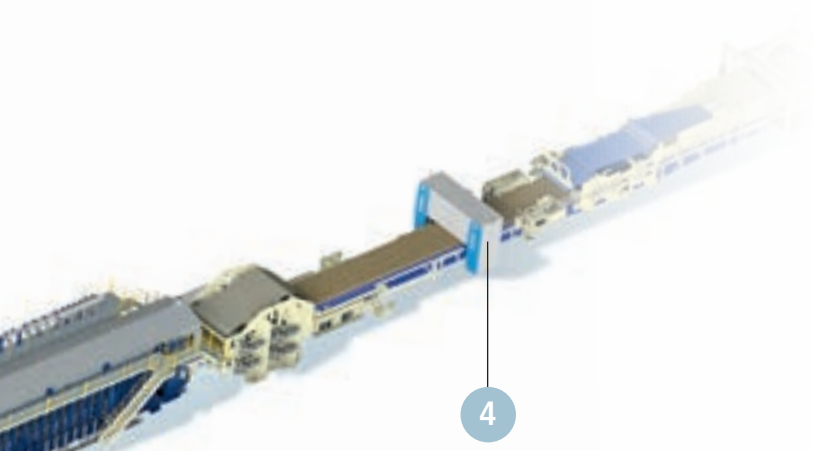
Pressure and position control, heater control

6 SICOSCAN

SicoScan Thickness gauge/delamination detector



SicoScan– view of the control stand



6

SicoScan – precision gauges integrated in the overall system

Without precise gauging there is no intelligent production. SicoScan is the final module to build a fully automated production line, incorporating quality gauges, machines, process control technology and automation technology in an overall system. Not the individual gauge is in the fore, but the integrated system.

SicoScan is the last module to complete a fully automated gauge installed in Siempelkamp's production line, comprising individual gauges to detect the moisture of the material on the forming belt, the weight-per-unit-area ex mat former, the tramp material recognition upstream of the press, the board thickness and delamination (if any) as well as the board weight ex press.

The gauge is incorporated in the automation system, communicating directly with the control systems. This is a prerequisite for fast control circuits, which, in turn, have positive effects on the product quality. All measured values are used to assess whether an optimised production with the Prod-IQ® runs optimally; the data concentration in a database prevents unnecessary multiple data handling.

7

Thickness measurement feedback – still more accurate

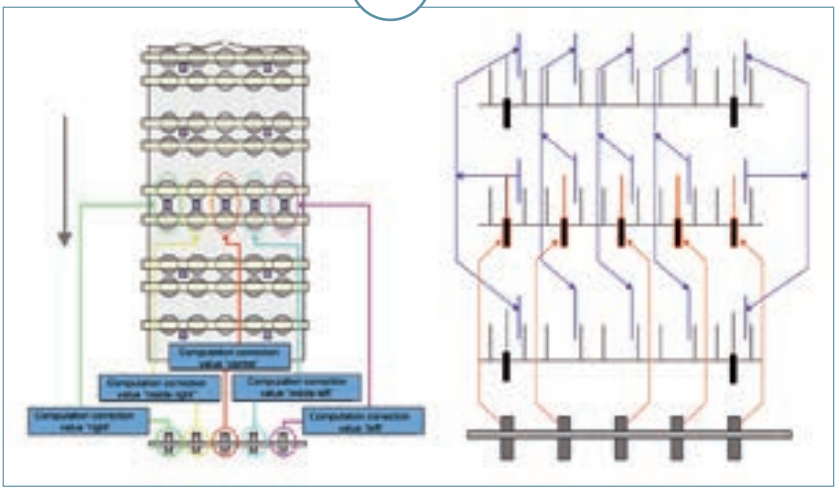
As for the board thickness and any deviations from what was intended, wood-based board producers can't take a joke. And rightly so! Thickness measurement feedback is responsible for complying with the thickness tolerances in Siempelkamp plants – part of the pressure control/position control in the calibration zone of the ContiRoll®.

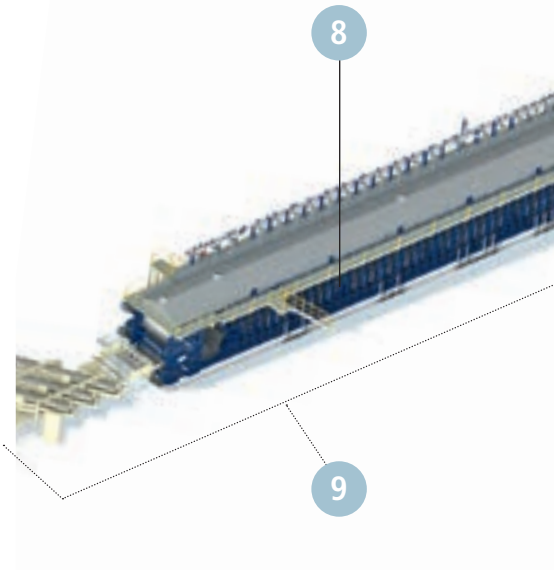
Any change of one of the multitude of parameters influencing the production of the wood-based board would also change the board thickness and would have to be corrected individually in the press settings. This is not the case in Siempelkamp plants. Here, a consistent thickness is achieved automatically by the master control system specially implemented for the calibration zone and according to technological demands.

SicoScan, a process-integrated board thickness gauge, is able to detect even the smallest thickness variations across the board width. The SPC (Siempelkamp Press Control) is responsible for precisely meeting the thickness tolerances.

The intelligent process control system in the calibration zone continues to optimise the board thickness automatically across the product width without requiring the operator's intervention. "Today's demands on the high-performance control systems for our machinery and plants can only be satisfied using the specially developed hardware SPC with real-time applications," says Rainer Krumbach-Voß, Head of Control Technology within the Automation Dept.

7 THICKNESS MEASUREMENT FEEDBACK





8 ECODRIVE

ContiRoll Ecodrive in use

8
ContiRoll Ecodrive – drive system of the next generation

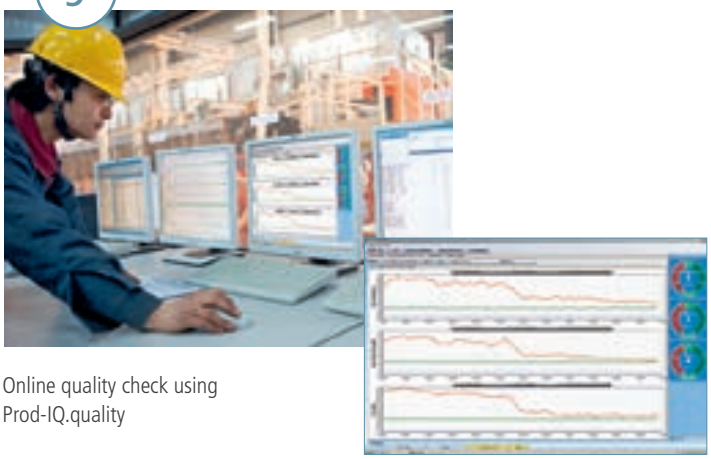
Intelligent production depends on innovative drive systems. Not only do we focus on energy efficiency: output, controllability, operational safety and maintenance are just as important criteria. This is achieved by the new Siempelkamp drive system ContiRoll Ecodrive, comprising a frequency converter, an energy-efficient servomotor and a two-stage gearbox. All elements are finely tuned to one another. This concept has turned out most advantageous compared to stand-alone systems by having the most positive effects on the product quality.

When developing the motor/gearbox system we focus on a fast and precise speed control which bases on a specific and optimised motor design. The integrated control system is able to maintain constant the r.p.m. – and thus the production speed – , which is indispensable for a good product quality. We use fast and optimised controllers to deal with this challenge easily, even if there are dynamic load variations occurring during production.

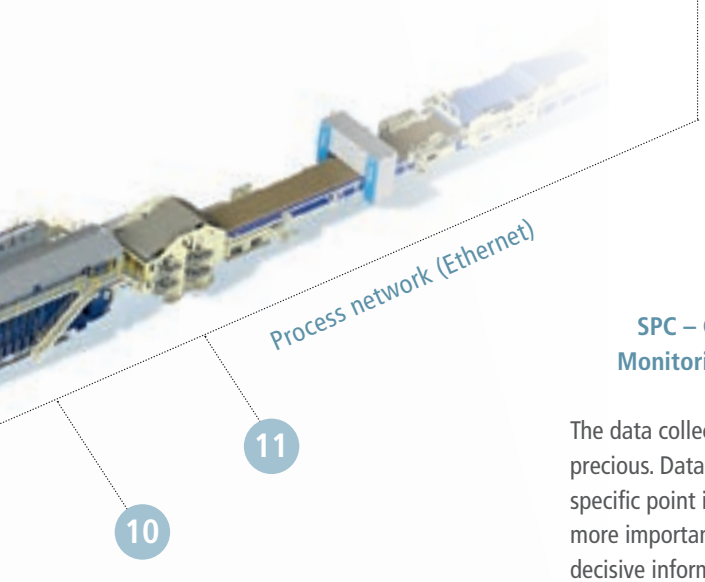
9
Prod-IQ® – Guaranteed quality

Prod-IQ®, a name says it all: intelligent and innovative process control system. All measured values are signalled to a centralised database and processed by Prod-IQ®. This concept is about check and double check, which is unique in the market. Even before being tested in a lab, the physical properties of a wood-based board can be predicted reliably online, using the assessment methods of statistical modelling Prod-IQ.quality and the newly developed physical modelling Prod-IQ.profile. Prod-IQ.quality assesses e.g. the IB and the MOR, Prod-IQ.profile the raw density profile. The measured data are used for a new definition and readjustment of the production process. Safety reserves and excess dimensions can thus be reduced, optimising the entire production process. The basic idea is: we have a recipe and the board leaves the press with precisely the parameters we set before. Quality guaranteed online. Cost-efficient. Our process control system has turned out to be in control, to report, and to adjust," says Gregor Bernardy, Head of the Process Control System Dept. at Siempelkamp's. (See also next article page 26.)

9 PROD-IQ®



Online quality check using Prod-IQ.quality



10

DAHMOS – for quick diagnoses

DAHMOS stands for another important process step towards intelligent production. The tool's function consists in collecting, archiving, and evaluating relevant process data as quickly as possible to enable prompt trending, which, in turn, helps reveal sources of error and supports trouble-shooting.

Besides, DAHMOS has a long memory: events long past have been memorised and can be consulted for today's diagnosis. The data can be used in many ways. In the world of big data it has already been included into our standard plant equipment and for the on-condition production and monitoring in connection with predictive maintenance concepts.

11

SPC – Condition Monitoring – Monitoring and planning, instead of repairing

The data collected by DAHMOS are most precious. Data on the machine's condition at a specific point in time are becoming more and more important. For their interaction suggests decisive information about the operational condition. Important data must be collected real-time and fast. The machine, in turn, must receive the resulting reaction for its control adjustment.

No problem for the ContiRoll®: it is equipped with the Condition Monitoring System developed by Siempelkamp. It includes: signal pick-up, controller, a web-based user surface and an interface for automatic notification and remote access. The system furnishes the customer with all evaluations and strategies for the use of data –up to predictive maintenance.

Will the machine parameters be exceeded during production? Is production done with consideration? Is there lack of lubrication? Are the motor currents or vibration figures released by the drives still plausible? The data volume and data correlation and algorithsms suggest most valuable information. Before limitation or even loss of production occur, all necessary repair or replacement may be planned and realised safely ahead.

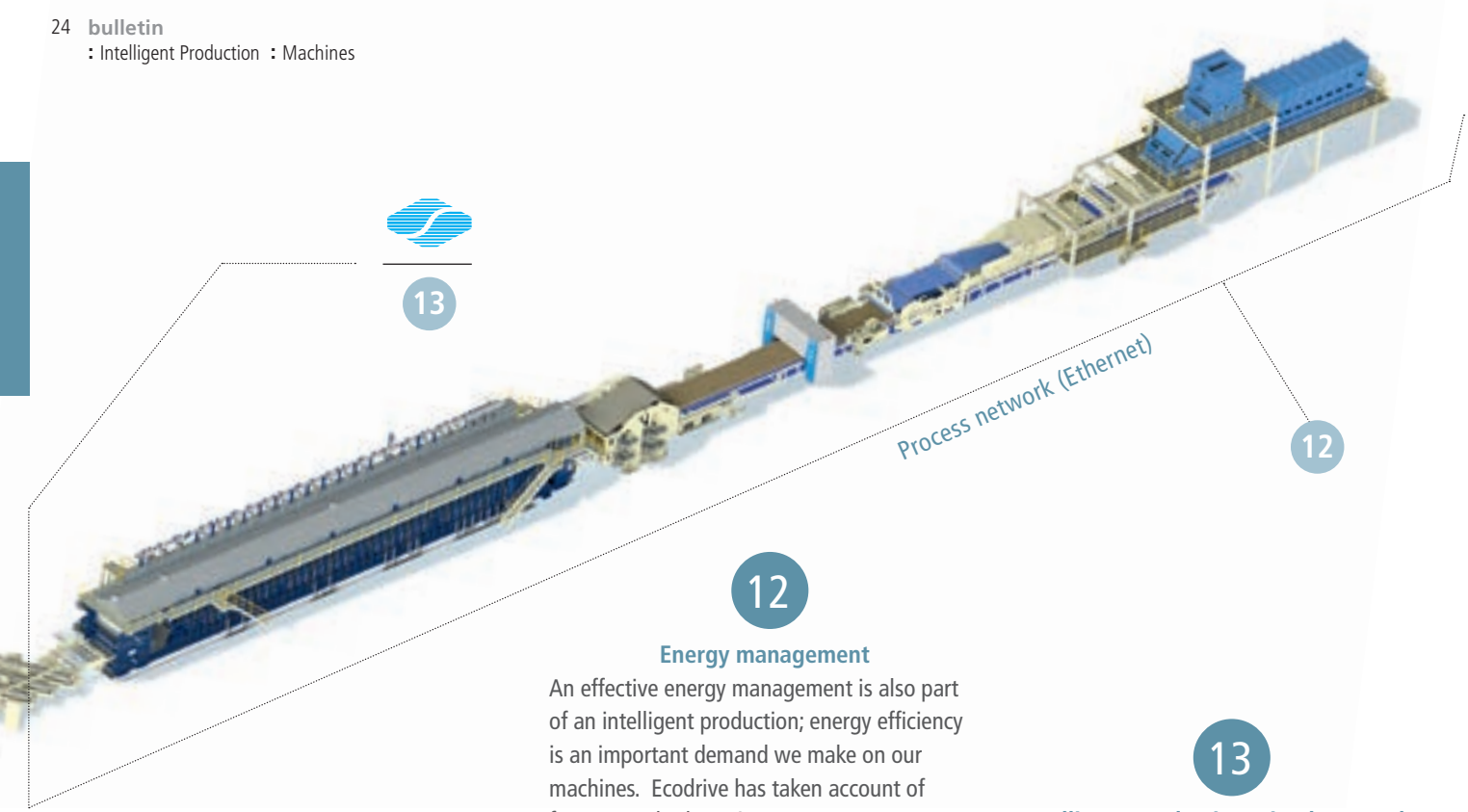
In combination with Prod-IQ.maintenance these data are gaining importance. CMS information is the basis to provide Siempelkamp customers with an online access to operating and maintenance manuals, modules for the organisation and optimisation of on-condition maintenance and repair of all plant assemblies. This will reduce the maintenance costs, while at the same time increasing their plants' uptime. Plant operators may order e.g. lubricants and spare parts from their suppliers by email when needed just in time. When using web-based information concepts it is possible to read the plant statuses on modern communication means like smartphone or tablet.

11 SPC

SPC: Overview

10 DAHMOS

DAHMOS: Process data of the entire plant at a glimpse



12

Energy management

An effective energy management is also part of an intelligent production; energy efficiency is an important demand we make on our machines. Ecodrive has taken account of future standard requirements on energy efficient drive systems yet, already exceeding them today. When designing and engineering our switchgear assemblies we put emphasis on using low-loss switchgear, lighting equipment and frequency converter components. Advantages for our customers: loss and thus power consumption is reduced in the switchgear assemblies.

Our switchgear assemblies are equipped with modern energy meters. The information on the power consumption is evaluated and displayed in Prod-IQ®. This guarantees an overview of the power consumption of the plant any time, opening up the possibility of implementing an effective energy management system.

13

Intelligent production – implemented at Siempelkamp's. The digital plant likeness

Intelligent, networked engineering has also been implemented in our own group of companies. That means, Siempelkamp also fully utilises the intelligent, digital engineering methods indispensable for a cost-saving, effective development of machinery and plants.

The digital plant likeness is one of the central concepts. 3D-design drawings developed within multidisciplinary team play, are converted into 3D-machine simulations.

Modern simulation systems create an animated image, exhibiting the real functions of machinery and plants. The digital likeness serves to simulate processes as early as in the basic engineering stage and is best suited to train and instruct our customer's staff before handing over real plant operation. The digital likeness is also used for software office tests, for virtual, real-time start-ups using the real control systems even before the actual start-up of the real machinery has taken place. Clear advantage for the plant operator: as early as in the sales stage, the information content may be improved and start-up times reduce significantly.

12 ENERGY MANAGEMENT

Energy consumption per board produced (kWh) can be read any time

Werner Schischkowski,
Senior Head of Automation Department

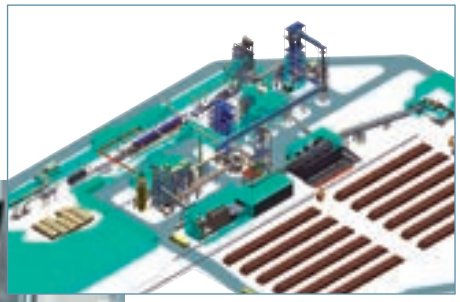
The overall concept – The self-optimising plant

13 factors, one concept: all factors contribute to one common basis, linking the automatic product changes, online quality control and cost-efficient process within a closed control loop. Wood-based board producers are able to read all information about their plant's condition in individually tailored forms and records. Intelligent production in this respect means: collecting, evaluating information and drawing their conclusions.

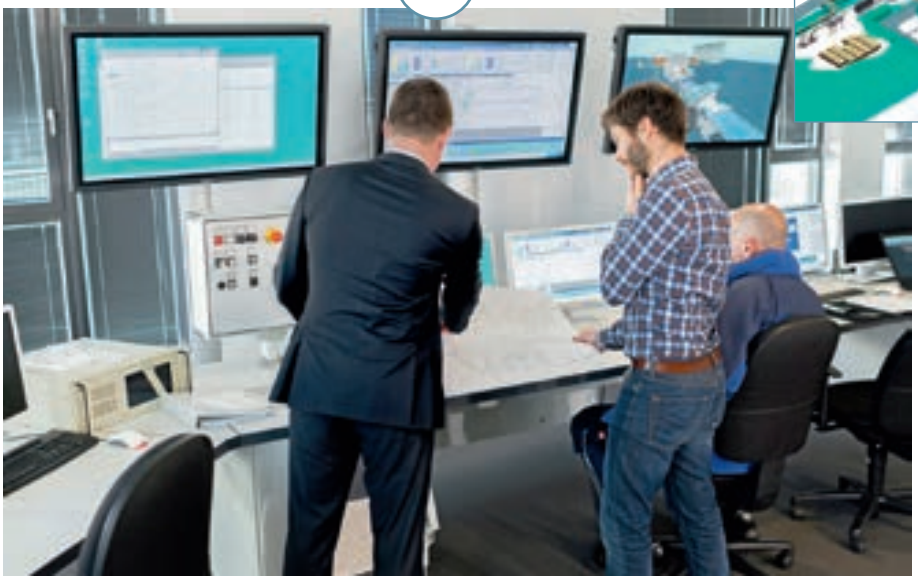
Not only is it possible to synchronise individual plant components, but also to collate information from its installed base throughout the world at the company's headquarters. A self-optimising plant multiplies its value by a transparent communication among the machines and plants operated by the plant owners in all parts of the world. Recipes may be loaded for individual production orders or as requested by the customer and be started fully automatically. A plant operator is able to commence a well-targeted control operation from its headquarters at all of its sites throughout the world.

The concept of a self-optimising plant is safe to rely on. For Siempelkamp customers this is no pie in the sky, but familiar daily routine.

13 DIGITAL PLANT LIKENESS



The digital likeness – descriptive and detailed



Simultaneous engineering, virtual start-up: mechanical, hydraulic, technological engineers and software and automation specialists are well connected

Prod-IQ®, Guaranteed quality:
Higher output by intelligent control technology

Maintenance

→ By Gregor Bernardy

Siempelkamp's Prod-IQ® stands for an innovative, intelligent process control technology. A glimpse behind the scenes.

Production data management and quality control, maintenance and repair linked to an ERP-system – all that is part of Prod-IQ®'s job. The individual Prod-IQ® modules have been developed on the basis of our customers' needs to increase systematically their plants' productivity. For some years now, Siempelkamp has been using and constantly developing these modules; it has turned out that there still is significant saving potential to be found in our customers' production cost! And this potential is exploited simply by making full use of the information included in the plant data that are already available. Originally developed to serve specific purposes of the wood processing industry, Prod-IQ® has been proving its suitability for other business segments such as plants for metal forming or for the production of wood-fibre insulation board.

Evaluation

What advantages does this concept offer? The cyclic collection of process data is a prerequisite for all the functions. The data available in the process network are read from the PLC via the OLE for Process Control (OPC)-interface. Prod-IQ.basics applies a time stamp to the process values collected for each parameter and, depending on their use, memorises these values continuously as mean, minimum, maximum or event values in a database. All other Prod-IQ® modules will base on this process status. This enables trend displays, online-evaluations or reports for flexible periods of time.

Searching, measuring, evaluating – and intercepting

All measured values are signalled to a centralised data collection point and processed by Prod-IQ®. At the same time, the measured data are used for a new definition and re-adjustment of the production process. Safety reserves and excess dimensions can thus be reduced, optimising the entire production process.

"The basic idea is: we have a recipe and the board leaves the press with precisely the parameters we set before. Our process control system has turned out to be in control, to report, and to adjust," says Gregor Bernardy, Head of the Process Control System Dept. at Siempelkamp's.

Front: Historical information in Prod-IQ.basics: Reports on production order, shift, day or month including all characteristic figures on plant capacity, uptime and consumption

Centre: Quality prediction (red line), necessary safety reserve (green line), quality limit (cyan line)

Rear: Prod-IQ®: Downtime collection and statistics

Repair

Gregor Bernardy, Head of Siempelkamp's Process Control System Dept.

The Innovation: Prod-IQ® Next

Siempelkamp customers know about the integrated **Prod-IQ®** concept (see box): The latest innovation within the Prod-IQ®- family – **Prod-IQ® Next** – features a superordinate closed loop, controlling several closed-loop parameters. That includes the batchwise production change, machine by machine. The glue blender, for instance, will be adjusted to the new production order precisely at the time the new material is needed.

The system also includes an online quality check of the board properties (e.g. IB and MOR) as well as the raw density profiles, ensuring that the requested quality will be produced. There is no need for additional expensive safety reserves. "Our customer will obtain the consumption and speed figures that result from the specific recipe for its board production. Prod-IQ® Next will then help our customer to optimise its production using material and energy most efficiently" as Gregor Bernardy puts it.

Prod-IQ®: The measuring system and its modules

.basics

Data collection
Collection of process data to enable centralized storage in a data base.

Material flow tracking
Lab report containing the measured values correlated according to time and place of occurrence in the process flow.

Downtime collection/statistics
Systematic detection of downtime and its cause.

Production Data Manager
Standard reports for evaluations of production orders, shifts, days and months.

Config Manager
Centralized system configuration for data collection, downtime causes, etc.

Trending (online + historical)
Production data in the time-line diagram for process monitoring.

Siempelkamp-performance proof
In new plants: evaluations and daily reports that can be used for a certain period of time.

...

.business

+ licences for two Office PC
+ customized reports
+ incl. Script editor (acc. to the specs)

.quality

+ technological support
+ modelling
+ online quality prediction and check

.maintenance

+ logic tree
+ periodic maintenance
+ on-condition maintenance
+ feedbacks (scheduled / unscheduled maintenance + repair)
+ history

.options

for extensions
+ order module with ERP interface
+ cost trending
+ lab interface
...

for other plant components
+ sanding line / finishing line
+ painting line
+ short-cycle press
...

for other plant types
+ transformer board plant
+ wood-fibre insulation board plant
+ metal forming plant
...

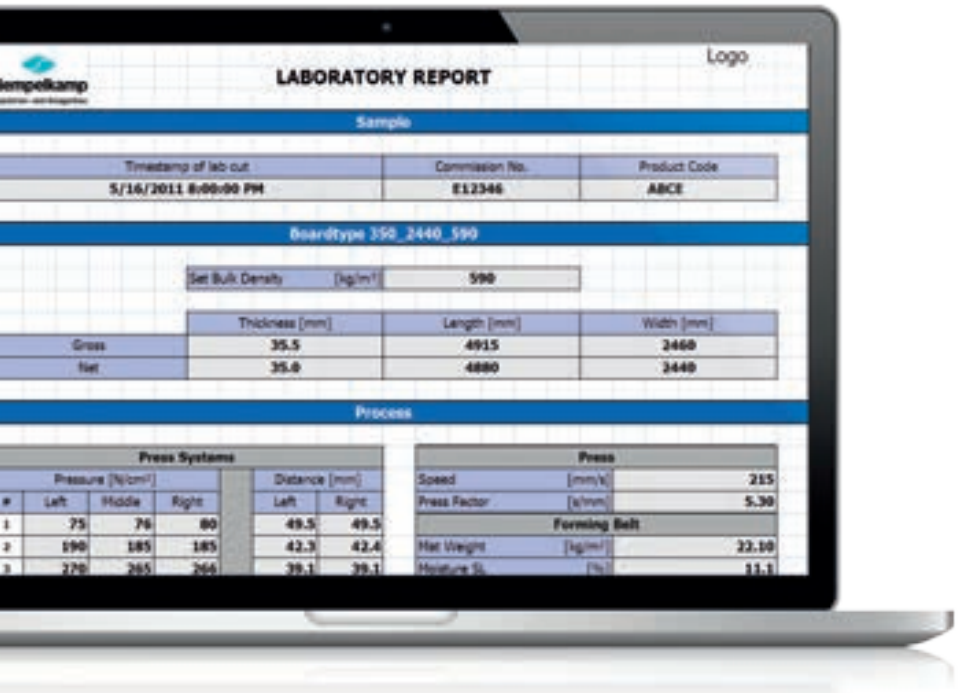
View of the "Big picture"

Teamwork

Teamwork – our key to success

Board production must always rely on experience – the experience of the whole team. Today the experienced operator does the fine-tuning. Prod-IQ® Next takes this role, collecting, saving and bundling all the experience and using it for simulations, modelling and algorithms to ensure that the board has exactly the requested characteristics. A customer-owned knowledge base – that is the real value of the system. Expert knowledge has been saved and is able to control if and when required.

Control technology and automation optimise the process automatically, measure temperatures, collect moisture variations – and adjust what has to be adjusted. The control parameters are self-adjusting. The plant will always produce exactly the product that has been defined by the recipe. "Our fine-tuning and software options furnish our customers with the best possible solution," says Werner Schischkowski, Senior Head of the Automation Dept.



The result: top quality

What are the plant operators' benefits from the intelligent process technology? The plant's uptime is extended. Material consumption and rejects will be reduced. Last but not least the excellent product quality will remain unchanged. Prevention is included because Prod-IQ. maintenance, for instance, stands for preventive maintenance. This will preserve the value of our customers' investments and increase the uptime. All these factors will guarantee our customers' peace of mind.

INTERVIEW

INNOVATIVE TECHNOLOGY FOR OUR FORMING SYSTEMS – A MECHATRONIC APPROACH

➜ By Dr. Silke Hahn

How can we reduce variations in density distribution across the mat especially in MDF-lines? And when we succeed – what are the benefits for the plant owner? The answer to this question is a mechatronic approach. Dr. Volker Middelmann, Head of the R&D at Siempelkamp, will go into detail.

Bulletin: Dr. Middelmann, what is the basic issue of the new technological concept for the MDF forming systems?

Dr. Volker Middelmann: We always develop system solutions from our customers' perspectives. They focus on reducing the raw material consumption while at the same time maintaining optimal board qualities. As for our forming systems we aim at reducing the variations in density distribution in longitudinal and transversal directions of the mat. The set value tolerances can be specified even tighter. This will cut down the raw material consumption and thus the production costs – while even improving the product's quality!

Bulletin: Let's get to the point, what is the concept like?

Dr. Volker Middelmann: Our forming system technology is a mechatronic approach designed to optimise the density distribution in the fibre mats using online measurement in longitudinal and transversal directions. According to our concept, any deviations found in density distribution can be reduced to a minimum by a targeted adjustment of different machine components. One prerequisite is that the machine components used are sufficiently flexibly to adjust to actually allow for the compensation of any identifiable variation. Besides, the measurement technology must be sufficiently precise to detect any perturbance variable while the control system must be sufficiently intelligent to identify the relation between forming quality and setting of the machine components. These three core elements are reason enough to call it a mechatronic approach.

What is the particular importance of the measurement technology in this case?

Dr. Volker Middelmann: Our innovative measurement technology detects the density variations to a precision hitherto unknown. We use X-ray sources specifically developed for this application. Their resolution is better than of those available in the market as it has been improved many times over. The X-ray sources are scanning the mat traversing it on rails. Our engineers call them "non-contact measuring heads".

Bulletin: What is the algorithm for turning the measured values into the machine adjustment?

Dr. Volker Middelmann: That's the key question in our development! As soon as the control system has detected values beyond the tolerances, the machine components will be adjusted fully automatically. The measuring signals just have to be interpreted over a period of time. Only systematic variations may be eliminated. Statistical variations, always occurring when processing natural raw materials like wood, cannot be eliminated.

Bulletin: Do you have a simple example?

Dr. Volker Middelmann: There is a comparable system to be found in our daily road traffic. The anti-lock brake system installed in our vehicles counteracts wheel blockage by controlling the brake pressure. This active safety system responds to external influences most individually – depending on whether the road is wet or dry, the ground is solid or loose, there are pebbles or snow: the braking distance will be extended or reduced. The anti-lock brake system is able to control the brake pressure acting on each tyre within milliseconds. This enhances the stability and manoeuvrability. Our EcoScan sensors do likewise: they influence the

> MEANWHILE WE ARE ABLE TO USE THE DATA REMOTELY, IN CLOUDS OR APPS. ACCESS AND USE CAN BE ADJUSTED TO JUST ANY INDIVIDUAL DEMAND. THIS IS PRICELESS CONSIDERING THE MOST DIVERSE INFRA-STRUCTURES WHICH THE WOOD-PROCESSING INDUSTRY HAS TO ACCOMMODATE.

Dr. Volker Middelmann

actuators responsible for density distribution thus responding to undesirable status changes.

Bulletin: Which machine components exactly will be influenced?

Dr. Volker Middelmann: There are three relevant components when it comes to minimise density variations. First of all there is an oscillating chute: it is actuated by a rack-and-pinion drive using defined speed profiles so that the mass distribution inside the bin can be adjusted online. The second component is the levelling roller unit: level and speed of the rollers are separately adjustable. This ensures that the conveyance can be precisely adjusted to the needs, e.g. fibres can be conveyed in or out. Moreover, crosswise density distribution can be optimised. The third element comprises the adjustment of the side walls in the prepress to influence the density distribution at the edges.

Bulletin: "Tramp metal detection" also plays a part in active monitoring …

Dr. Volker Middelmann: Exactly. Our new generation measuring system, the EcoScan NEO, does not only include the X-ray technology for density distribution mentioned above, but also a separate X-ray system for tramp metal detection. Even though both measuring systems base on the X-ray technology, we decided to design two independent systems. This is the only way to ensure both functions at the precision targeted by

> OUR INNOVATIVE MEASUREMENT TECHNOLOGY DETECTS THE DENSITY VARIATIONS TO A PRECISION HITHERTO UNKNOWN.

Dr. Volker Middelmann

us. Siempelkamp has thus avoided uneasy compromise, giving plant owners the opportunity to live up to even the highest demands. The system is able to detect tramp metal and non-metal as small as 1.6 mm all over the mat offering our customers the best possible protection for their continuous presses.

Bulletin: Back to the overall concept – would you call these Siempelkamp innovations revolutionary?

Dr. Volker Middelmann: I'd rather call this concept an evolutionary result of the continuous development of our automation technology. We have long been aware of the importance of this subject. But not until recently have the prerequisites been provided to realise the active monitoring reliably and, above all, individually.

Bulletin: Which of the prerequisites were the most important?

Dr. Volker Middelmann: At present we are able to draw on an adequate infrastructure. Fast progress in the measurement and sensor technology result in outstanding developments – in our case e.g. in the field of X-ray technology. High-precision X-ray sources of that type have not been available in the markets. That is also true for other developments e.g. in the field of data processing, which have paved the way for our remarkable breakthrough. Meanwhile we are able to use the data remotely, in clouds or apps. Access and use can be adjusted to just any individual demand. This is priceless considering the most diverse infrastructures which the wood-processing industry has to accommodate. The much cited achievements of Industry 4.0 were unthinkable without these prerequisites.

Bulletin: The concept is already in the experimental state. How do you describe the current state?

Dr. Volker Middelmann: One of our most renowned customers has decided to equip one of its plants with our concept. We are glad that this manufacturer of wood-based products will accompany us on our way towards an integrated mechatronic solution!

„Flying measuring head" in operation

Better performance using less air:
Siempelkamp rethinks the fibre sifter

→ By Christian Hassler

The energy required for wood fibre sifting can be reduced if the airflows or pressure losses are minimized. Greater sifter performance at lower energy consumption – does it work? This was a challenge for Siempelkamps' technologists because customers require more energy-efficient sifters with higher throughputs. It was also more than enough of an incentive for our technologists to develop our own sifter.

The last step in the fibre preparation process takes place inside the fibre sifter. Here, everything revolves around two important quality aspects. On the one hand, the sifter separates foreign objects from the wood fibres. Airflows separate the light fibres from the undesired tramp materials, for example, glue lumps, metal pieces, and coarse fibres or fibre bundles, which could damage the downstream plant components and reduce board quality. By the drag and by their own weight the heavier tramp material falls through the airflow to the bottom of the sifter while the acceptables are conveyed further by the airflow. On the other hand, the sifter reduces fluctuations in moisture by subsequent drying of the fibre material.

The new, completely self-developed sifter forms a new, central component in our product portfolio.

Rubberwood: a special challenge for the sifter

A special task needs to be solved in Southeast Asia: here, a sifter also needs to be able to separate the rubberwood latex secretions from the fibres, otherwise the board quality would be significantly reduced by latex spots. On the local markets rubberwood is available in significant amounts. It is plantation wood originating from overaged rubber trees that were used for latex production (see box).

The requirements for the new Siempelkamp sifter were high, after all, the market has been offering tried and tested sifter technologies. However, the in-house development was based on ambitious development goals. During use with various types of wood, the new sifter

Rubberwood: rigid, easy-care, strong

Rubberwood, the wood of the rubber trees, is considered a very strong, rigid, and easy-care type of wood. Rubberwood is a precious hardwood to customers of wood-based material manufacturers because it is approximately 50% stronger than oak, and, at the same time, a durable natural product.

The tree is primarily planted on plantations in the so-called "rubber belt" (approximately between the 30th northern degree latitude and the 30th southern degree latitude). The three major producing countries are Thailand, Indonesia, and Malaysia. The white latex, necessary for the production of natural rubber, is extracted from the tree's bark. When the yield decreases due to overaging of the plantation, the trees, which are then approximately 30 years old, are cut and typically processed into lumber.

should provide a higher fibre throughput, that is a higher production capacity, and be, at the same time, more energy efficient than other models available on the market. Furthermore, given the same tonnage, the new sifter should separate more tramp material from the fibre flow.

70 %

is the expansion of the sifting area compared to standard designs due to the flow-optimized sifter body

Lifting the cyclone

BY

30-40 %

the installed fan output was reduced compared to conventional sifters

One for all, all for one … EcoSifter

One advantage was that for this project Siempelkamp could count on the expertise of its specialists within the Group. The first step in achieving the ambitious objectives was to design flow-optimized sifter bodies and the air supply lines. With CFD (Computational Fluid Dynamics) software, specialists of Siempelkamp Ingenieur- und Service GmbH developed various flow models. These models were turned into manufacturing solutions by the planning specialists of Siempelkamp's Belgium subsidiary Sicoplan and experienced Siempelkamp technologists and developers. The result was a flow optimized design featuring a large sifter area which allows for high fibre throughput while providing an improved degree of separation of the undesired tramp material. The EcoSifter scores points with its air supply

Top left: Lifting the fan, bottom: Heavy-duty tools

Top right: Setting the separating bend, bottom: Lifting the rotary air lock

system. The linear airflow distributes itself evenly, divided in upper and lower airflows, over the entire width of the sifter.

Four motor-driven air intake regulators provide for a precise control of the upper and lower airflows. To optimize the airflow, the sifting area was increased by 70 % compared to standard designs. This significantly increases the fibre throughput. By means of various airflow corrective measures, swirls in the upper airflow, the sifting airflow, are reduced so that significantly higher sifting quality is achieved. As a result of targeted control even smallest tramp material (less than 1 mm in size) is separated from the wood fibres and falls through the transport airflow, which was also optimized, onto the twin screw conveyor on the sifter bottom.

The energy savings are also impressive.

Rear side of the sifter exhibits both air inlets

Side view

20 %

higher production performance due to higher fibre throughput

The energy savings are also impressive

Via an innovative separation arch at the EcoSifter outlet, the amount of air used for the fibre transport is exactly the amount that is needed to achieve the optimal sifting results. The remaining air is directly supplied back to the sifter. This design reduces the size of the fans and the drive power. Furthermore, the size of the downstream fibre cyclone and the corresponding steel construction can be significantly reduced.

As a result of the significantly lower pressure loss in the air supply lines and in the sifter housing, the installed fan output is reduced by 30 to 40 % compared to conventional sifters. Finally, production is increased by 20 % due to the significantly higher fibre throughput compared to standard models.

The practical test – and a closed production chain!

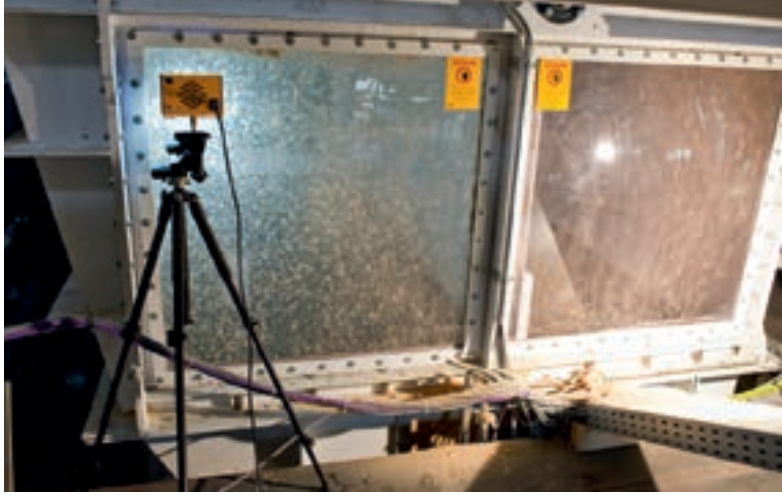
To prove all claims in an actual production environment, the new EcoSifter, built by Siempelkamp's subsidiary Ventapp, was installed at Siempelkamp's R&D Centre in Krefeld. Ventapp, specializing in fan technology, manufactured the fans, which are customized to the sifter's airflow, with frequency converter control for energy-efficient airflow generation as well as the innovative sifter housing.

With the complete installation of the new sifter for testing purposes, Siempelkamp, once again, performed a spectacular prototype installation at its own premises. Since the successful installation at Siempelkamp's R&D Centre, the sifter has been subjected to intensive testing under real-life conditions until the start of LIGNA 2017.

The new EcoSifter is running

Fine tuning of the sifter

Sifter and piping at Sico's R&D Centre



Plexiglas in the lower sifter housing

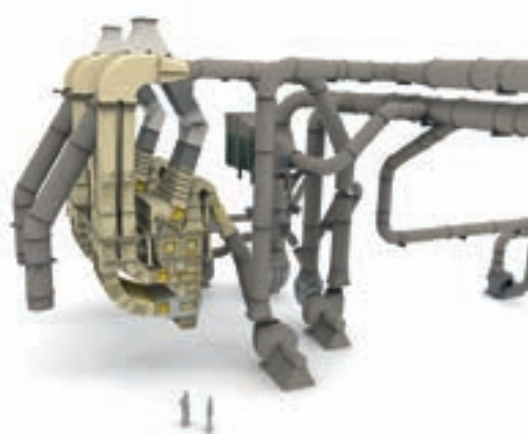
Commissioning in load operation

Transport air flow behind Plexiglas

At LIGNA 2017 the new Siempelkamp sifter will be presented to the public for the first time. Interested visitors to the fair are invited to see for themselves the excellent results at our R&D Centre in Krefeld.

Just after its commissioning, the new EcoSifter convinced its developers of its efficiency. Motor-driven air dampers for the fine-adjustment of the airflow supply ensure an even distribution of the sifting airflows. Subsequent tests with smoke markers revealed, clearly observable through a Plexiglass window, starting points for finetuning and flow optimization on the real object, similar to wind tunnel tests carried out in the automobile industry. Now the time had come to carry out the first sifter process in load operation. To do so fibre material was supplied to the closed test cycle and then continuously supplied via a conveyor belt through the material infeed. In following tests the fibre throughput was continuously increased – the predictions from the flow simulation were confirmed under real-life conditions. After the intensive tests carried out by Siempelkamp, the sifter is now available for testing by interested customers. On both sides of the housing, large Plexiglas windows are installed to observe the fibre material and tramp material. The material behaviour inside the sifting airflows can be followed easily with the help of a high-speed camera.

The new EcoSifter, developed completely in-house, is a new central component in the product portfolio of the Krefeld company with long-standing tradition. Siempelkamp offers the complete production chain for wood-based material boards – from the debarking and refining processes (Pallmann) to the stacking and storing of the finished boards. By the way, operators of existing production plants do not have to do without the enormous energy saving potential and the high fibre throughput of the innovation: for the modification solution, the fibre loosening units and the twin screw of the existing sifter remain unchanged. In this way, only the air supply system and the actual sifter housing are replaced – of course, if so desired, also with Ventapp fans including frequency converter control on all motors!



Piping incl. fan connections

Large machine for excellent chip quality:
Pallmann presents king-size disc chipper

→ By Stefan Wissing

At LIGNA 2017 Pallmann introduces two main components for the manufacture of quality fibres needed for the production of high-quality MDF – a disc chipper and a refiner (see page 36). Both exhibits are components of the largest single order ever received by Siempelkamp. SWISS KRONO SC, LLC ordered an MDF / HDF line for its plant in Barnwell, USA, and in this framework decided for these two components for fibre production. The disc chipper, particularly, is packed with innovations and represents high competence.

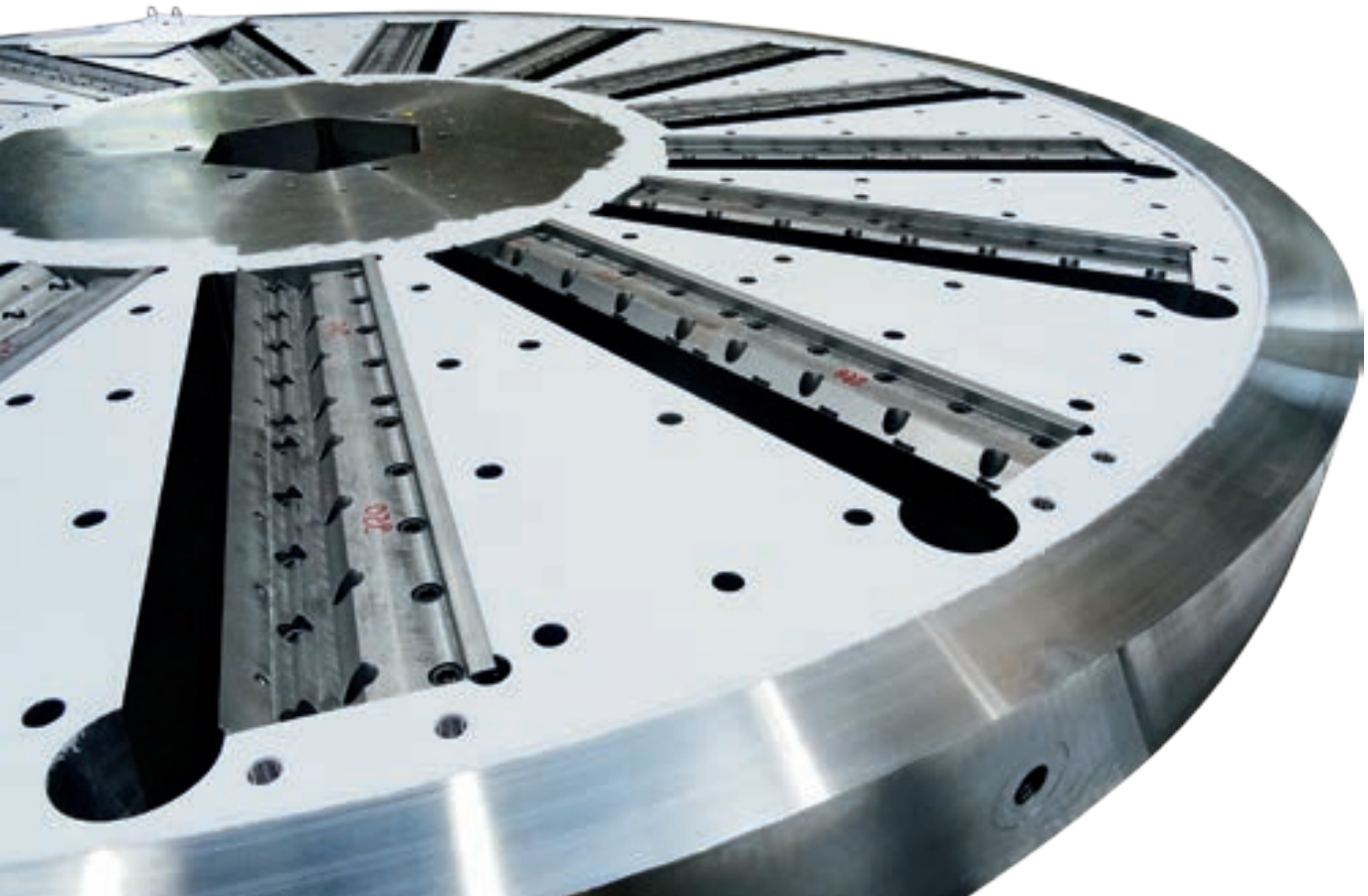
With the correct chipper technology numerous process steps in the production of wood-based materials can be guided into the right direction: The chipper technology influences the size and shape of the chips which are important for their use, transport, and storage properties. It also ensures uniform edge lengths to improve flow behaviour and conveying properties. Clean interfaces and low damage to fibres significantly improve the chip quality. Pre-requisite for using disc chippers is the suitable feed material – primarily plantation wood, if possible long logs.

This, for example, applies to the order from SWISS KRONO GROUP for Barnwell.

Hence no question that manufacturers of wood-based materials expect top products in this area, for example, a perfectly designed disc chipper.

Pallmann will present the new disc chipper PHS 36 H15 at LIGNA 2017. This version is the largest ever built by the Siempelkamp Group! The name of the disc chipper stands for a disc diameter of 3.6 m and 15 integrated knives.

Chipper disc finish-machined



Milestone order "Barnwell"

From South Carolina Siempelkamp received the largest order in the company's history to date: in September 2016, SWISS KRONO SC, LLC ordered a complete plant for MDF/HDF production. The scope of supply includes the entire product range of the Krefeld plant specialist for the wood-based materials industry.

The company of the SWISS KRONO GROUP ordered an MDF/HDF plant with a yearly capacity of approximately 280,000 m³ for its Barnwell, South Carolina, location. The Swiss family-owned Swiss company, specializing in wood processing and wooden building materials, is investing $230 million in this project to expand capacities and to create 105 new jobs. The largest share of the annual output goes into the production of laminate flooring carriers.

The scope of supply for this plant illustrates the growing support of wood-based panel manufacturers in regards to Siempelkamp's comprehensive competence spectrum. The expertise of almost all Siempelkamp subsidiaries is combined in South Carolina. Sicoplan in Belgium developed the entire plant concept and plans the new equipment based on three-dimensional models. Pallmann, the expert in size reduction technology within the Siempelkamp Group, contributes the wood-yard with a drum debarker, disc chipper, and a chip washing system including a refiner. Büttner will supply an energy plant with a capacity of 53 MW and a dryer. The Italian subsidiary CMC will supply the screening technology.

The forming and press line with one of the latest Generation 8 ContiRoll® presses will come from Krefeld. In the first construction phase the press will be designed for a dimension of 10' x 30 m. The scope of supply also includes a finishing line, a cooling and stacking line, a sanding line, a cut-to-size saw, and an automatic high-rack storage system.

Handshake after signing of the contract in Krefeld (from left to right): Dirk Koltze (Siempelkamp USA), Bernd Henrich (Swiss Krono USA), Ulrich Kaiser (Siempelkamp), Jürgen Philipps (Management Siempelkamp), Roland Kovacic (CTO Swiss Krono Group), Norm Voss (Swiss Krono USA), Peter Beck (Siempelkamp)

Chipper disc
twith mega diameter

Disc chipper: the basics

Function: Chipping of wood with several knives which are arranged radially on a flywheel disc

Material: Turning of logs into quality chips

Design: Depending on the feed material the chippers are available with vertical or slanted discs

Process: The material is horizontally fed into the heavy disc which is equipped with knives. The cut is performed between the vertical rotor knives and the counter knives. The chips are discharged either at the bottom or the top of the housing.

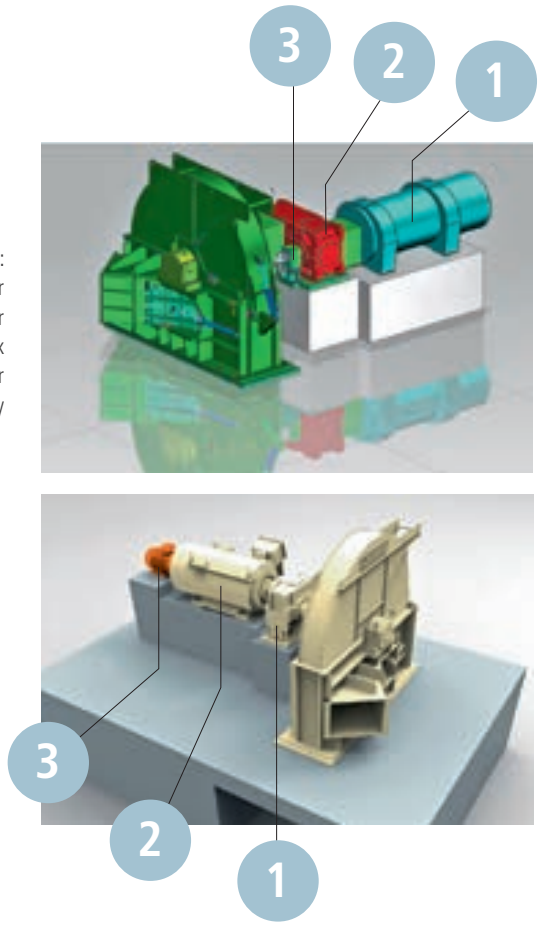
Design details of the new PHS 36 H15:

- Machine housing in heavy steel design, stress relieved
- Slanted horizontal feeding, chip discharge at the bottom of the housing
- Disc made of special steel and electro-dynamically balanced
- Disc diameter 3.6 m
- 15 regrindable knives
- 2 regrindable stator knives, which are adjustable outside the machine
- 1,400 – 2,000 kW main drive motor of the disc
- Pony motor with FC for acceleration of the disc (hydraulics for the opening of the machine cover and the lid to the chipping chamber)

Innovative drive concept: the Dynamo Principle

The new disc chipper impresses not only with its size but also with an innovative drive concept. All components including the motor, gear-system, and electric switch gear are optimized. "The essential difference between the previous and new drive system is the substitution of the hydraulic starter motor with an electric motor for starting and braking the disc. This will improve energy efficiency: electric energy is fed back into the mains when the motor is used to stop the disc," explains Stefan Wissing, Spokesman of the Management of Pallmann Maschinenfabrik GmbH & Co. KG. "In this way the motor is used as an electric generator according to the dynamo principle. This is a clear advantage over a hydraulic drive, for in ths process energy is converted into heat, requiring a cooling system. The new design can do without an expensive cooling system."

Otherwise the electric motor performs the same specific technical functions as did its hydraulic predecessor, that is, to start, brake, and rotate the disc as well as position it for a



From the previous concept to the new: in the new disc chipper the main motor (1) gear box (2), and hydraulic motor (3) have been replaced with a gear box (1), main motor (2), and a pony motor (3) assembly

"The essential difference between the previous and new drive system is the substitution of the hydraulic starter motor with an electric motor."

STEFAN WISSING, SPOKESMAN OF THE MANAGEMENT OF PALLMANN MASCHINENFABRIK GMBH & CO. KG

knife change. In short, the new drive represents a perfectly coordinated and designed concept.

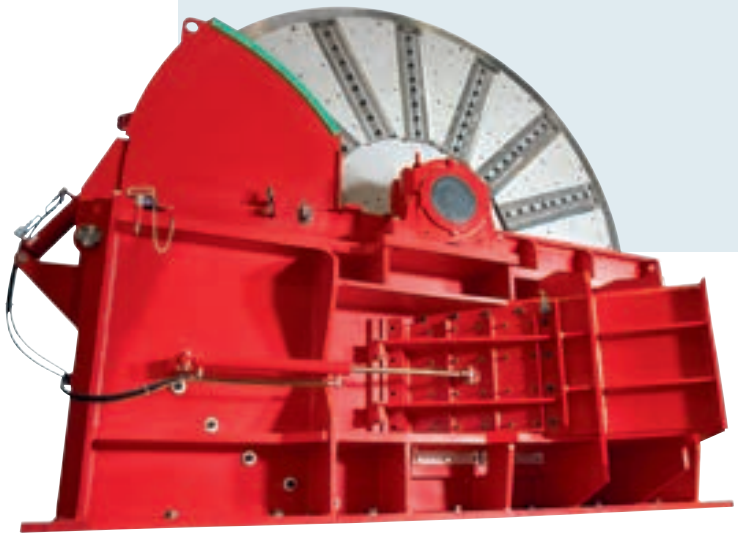
Bearing system: even more precision

The bearing system of the newly designed disc chipper also sets benchmarks. Its task is to carry out precision work and ensure consistent chip quality. The precision bearing system has minimal tolerances for shaft deflection, shaft and disc movement. This is a prerequisite for optimal chip quality, consistent chip thicknesses and neatly cut ends.

"The woodyard is the largest one equipped with a disc chipper ever supplied by the Siempelkamp Group thus setting new standards for the future," says Stefan Wissing. This woodyard is designed to allow for a future expansion of the plant to almost twice its actual annual capacity.

Customer benefits in a nutshell – the new disc chipper

- maximized chip quality and minimized chip damage
- chip discharge with additional installations to carefully guide the chips out of the housing (reduces fines)
- adjustable the chip widths via additional installations inside the chip discharge end
- two stator knives of perfect geometry for optimum chip quality
- large spout for continuous feed
- all parts in contact with the infeed material are designed as replaceable wear parts to maintain a consistent and uniform chip quality
- low specific power consumption
- knife change from the front, quick access to the knives by the lid in front of the machine housing, changing of stator knives by the lid in the spout
- setting of knives outside of the machine
- optimal chip quality and reduced energy consumption by narrow cutting gaps
- precision bearing system ensuring tight tolerances, minimum shaft bending and movement



Fiberizing with a sophisticated system:
5 orders in 2016 for the Pallmann refiner

→ By André Krahl

Next to the disc chipper, Siempelkamp and its subsidiary Pallmann will also introduce a new ground-breaking refiner concept at LIGNA 2017. Customers benefit from increased precision and improved operational safety, a long service life of the system, and optimal fibre quality.

Complete refiner system

For decades Pallmann has been building refiners for the preparation of various materials. The experience and practical knowledge gained from many wood preparation plants which the company has installed worldwide have influenced the new ground-breaking concept of the Pallmann pressurized refiner. 5 plant operators were convinced of the new concept and ordered refiners in 2016.

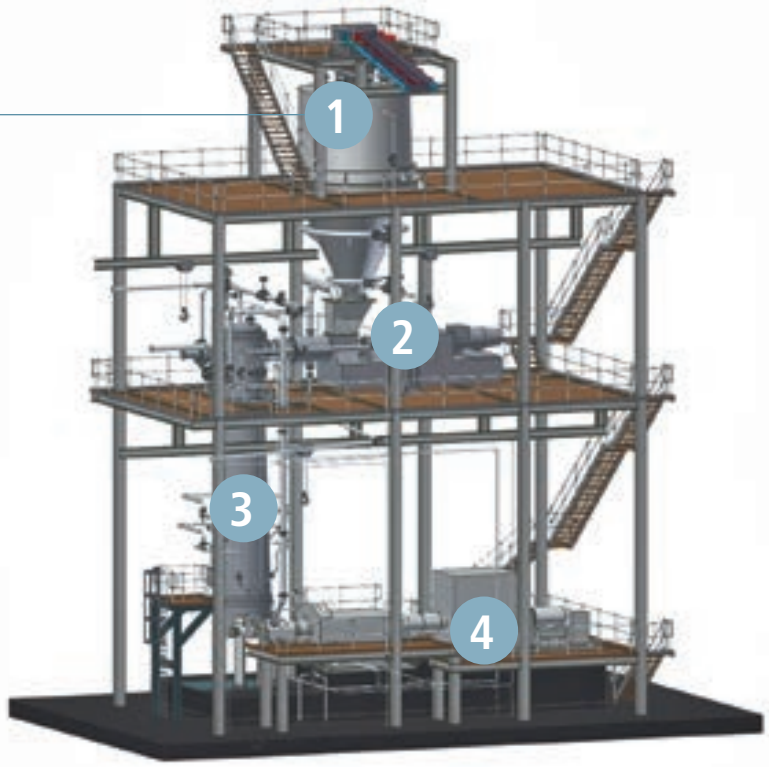
From wood chip production to the corresponding wood-yard to the finished fibre, Pallmann offers size reduction machines with all the necessary know-how, always tailored to the required throughput amounts. Next to material preparation for particleboard production, Pallmann has been providing size reduction technology for the MDF industry since 1985. Since then more than 100 refiner systems have been supplied worldwide.

Current projects that Pallmann has already delivered or that are close to being delivered not only regard the order for Barnwell but also a project for the Turkish Yildiz Entegre Group at their location in Romania. For both new plants the size reduction specialist from Zweibrücken in Germany supplies a disc chipper as well as the downstream refiner system.

How does such a system work? The core element in the fiberizing process is the refiner plant consisting of four main components: the chip bin, plug screw, digester, and the pressurized refiner.

The optimal pre-conditioning of the chips starts with the **chip bin**. Here, the chips,

REFINER-ANLAGE



Refiner system by Pallmann: chip bin, plug screw, upper part of digester, lower part of digester with discharge screw and feed screw as well as refiner with main drive motor, start motor, and emergency lubrication pump

CHIP BIN

1

Presteaming of clean chips by supplying atmospheric steam

2

Draining of chips and controlled feeding of digester

PLUG SCREW

DIGESTER

3

Cooking of chips

REFINER

4

Turning chips into high-quality fibres

which were cleaned and separated from dirt and contaminants in a prior washing process, are pre-steamed by supplying atmospheric steam.

The **plug screw** is mounted to a base frame as a complete unit with a blow back valve, drainage system for squeezing water, gearbox unit, curved-tooth coupling, and frequency-controlled three-phase motor. A pivot bearing absorbs the thermal expansion of the digester. To control the chip feed, the plug screw rotation is speed controlled. For the optimal adjustment to different materials as well as different moisture contents, various models of the plug screw are available.

The third main component is the **digester** which is designed for flexible cooking times.

The practical knowledge gained from many wood preparation plants which the company has installed worldwide have influenced the ground-breaking concept of the Pallmann pressurized refiner.

Plug screw

Installation of a chip bin

The digester is made from rust and acid resistant steel and tested per strict pressure vessel regulations. The selected fill level inside the digester, together with the rotational speeds of the plug screw and discharge screw, determine the cooking time. The radiometric level indication and control system is motor-driven. The frequency-controlled discharge screw is filled by means of an agitator in the digester and provides, via the subsequent feed screw, for continuous feeding of the refiner.

The pressurized refiner – the main component of the refiner system

The preparation of chips to high-quality fibres takes place in the pressurized refiner. The advanced bearing concept of the Pallmann **pressurized refiner** ensures the necessary precision of the grinding discs setting for consistently high fibre quality. Its core element, the hydrodynamic bearing, is exemplary in the area of refiner technology. No other system offers better conditions for operational safety, long service life, and optimal fibre quality.

Digester

"Five orders in 2016 alone confirm that our refiner concept meets the demand of the market precisely!"

ANDRÉ KRAHL, AUTHORIZED REPRESENTATIVE AND AREA SALES MANAGER, PALLMANN

A wide selection of different grinding disc profiles allows for flexible adjustments to different wood types or other materials

Highest precision thanks to technologically coordinated mechanical engineering

Turning chips into fibres requires a high level of precision. The interaction of the thermo-mechanical parameters – pressure, temperature, the time frame in the refining zone, cooking and presteaming times – is coordinated with predefined values in the Pallmann refiner system.

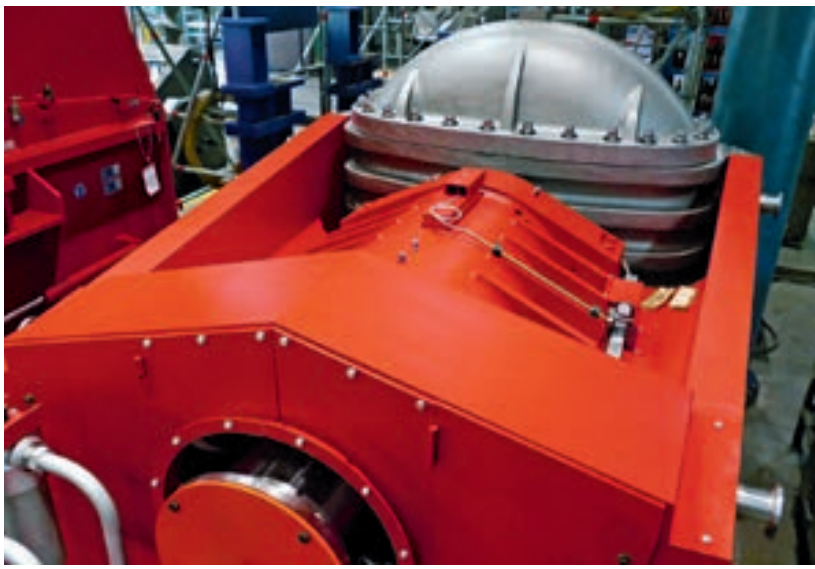
The advantages for the plant operator: the service life of the entire bearing assembly is increased exponentially thanks to the separate absorption of the axial and radial forces by different bearing types. Adjusting the milling gap is very precise, even under full load, by means of an integrated servo hydraulic system. This ensures a consistent gap which, in turn, provides consistent fibre quality.

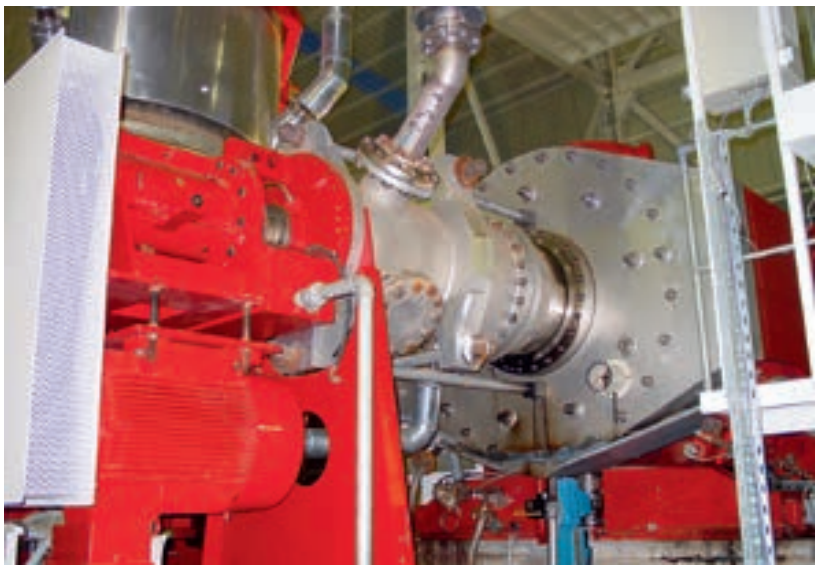
The grinding segments open up additional benefits: the grinding disc housing, made of stainless, acid-resistant special cast-iron, is designed for an operating pressure of 12 bar. By profiling the grinding discs, the type and quality of the produced fibre is significantly influenced. A broad range of different profiles allows for flexible adjustments to different wood types or other materials. The replacement of grinding discs is significantly simplified because the individual grinding disc segments are installed on a segment holder which can be loaded outside the machine. This, in turn, leads to reduced machine downtimes.

Other technical details of the refiner concept by Pallmann include the spherical guiding of the bearing unit for absolutely tilt-free operation. The bearings are sealed wear-free and lubrication is guaranteed until the machine stops – even during a power outage.

At LIGNA 2017 the Siempelkamp Group demonstrates that, in regards to size reduction technology, the entire area of material preparation for the wood-based materials industry is covered.

Refiner





Pallmann at LIGNA 2017:
Clear the ring for the PZSE

PALLMANN
TOP PERFORMANCE IN SIZE REDUCTION

→ By Harald Fried

Pallman – the specialist for size-reduction engineering – is presenting its No. 70 sharpening and setting robot at this year's LIGNA trade fair. Reason enough to take a closer look and investigate the perfect flake further and its benefits for board production.

Pallmann sharpening robot

"Everything starts with flakes – the more precise and fit for purpose the production of flakes is, the more manufacturers of wood-based panel products will benefit. Focusing on – i.e. thinking about and planning – flakes will produce savings. Savings in silo sizes, machines, knife changes and even in personnel as a side effect," said Harald Fried, Authorized Officer and Sales Manager at Pallmann, who, among other things, is responsible for the sales regions of Central Europe, North America, China, New Zealand, Australia and Africa. And the benefits don't stop there: "The more consistent the supply of flakes from the front end is, the easier it is to 'fine tune' the downstream sections of the plant. And such fine-tuning allows the pressing factor to be cut and the required quantities of glue and material to be reduced. So, in this regard, intelligent production first means defining the use and then manufacturing the flakes specifically for that purpose."

Pallmann has developed the PZSE sharpening and setting robot to produce the perfect flake. Knives used in chip flakers require regular sharpening and adjusting. Pallmann's robot handles these tasks fully automatically; the knives are set to perfectly identical inside diameters and then sharpened. The only staff required are the people needed for handling the knife rings, i.e. putting them in and taking them out of the robot. The wear shoes are also ground when the knives are changed (which is needed only when the knives' wear limits have been reached) and the knives are then precisely aligned in parallel to the reference surfaces in the knife ring. "This allows the time required and necessary numbers of staff to be reduced – but it also allows special flake-quality consistencies and grades to be achieved with the help of precisely controlled processes that are executed in accordance with specific parameters," said Harald Fried.

Intelligent concept with the 'PZSE system': the benefits

- Precision knife protrusion irrespective of the knife ring's inside diameter
- Tight flake-thickness distribution curve
- Measurement of the natural wear of the knife ring's inside diameter by a status-diagnosis system
- Regrinding of the knife ring's wear shoes
- Consistently good quality of flakes in tight tolerances over the entire useful life

PZSE: sharp benefits

What exactly can the sharpening and setting robot do? The knife ring with dull knives is transported on mounting cylinders to the carrier disc inside the robot and secured there. The desired knife protrusion is then entered into the central computer for the fully automatic execution of the process. Intelligent and electronically controlled torque wrenches unscrew the secured knives; pushers slide the dull knives against stops that are automatically set to the values entered in the computer.

The sharpening program commences as soon as all the knives have been moved forward and clamped: the knives are sharpened in the rotating knife ring using a wet-grinding process. The sharpening unit is located on a compound slide rest; the electronic system controls the grinding wheel's forward movement and oscillation across the entire length of the knives with utmost precision.

A special cleaning system then cleans the knife ring as soon as all the knives have been sharpened to the level of protrusion set in the computer. When the sharpening and setting process is completed, the ready-to-use knife ring is then hydraulically removed from the PSZE robot.

Pallmann – key figures

- Established by Ludwig Pallmann in 1903
- Based in Zweibrücken
- Internationally leading supplier of size-reduction engineering, systems for flaking and refining various types of wood, and recycling
- More than 1,000 types of machines
- World's largest research and technology center for testing size-reduction and materials preparation technology
- Workforce: 330
- Principle: '100% utilization of wood'
- Part of the Siempelkamp Group since 2012

"The entire size-reduction process depends on this machine – high-quality flakes cannot be produced without a reliably and precisely set knife ring. Our concept has the advantage that it is able to significantly cut the time needed to achieve perfectly set knife rings and simultaneously drastically reduce the number of staff required for the process. The 'human factor' can therefore be replaced with reliable and highly precise machine technology," Harald Fried explained.

The need to do so results from technological progress and the demand for even larger production plants. Pallmann's equipment also continues to grow in size and deliver even greater performances. Setting and sharpening work also increased with the size of our machines so that our automated concept that has been realized with the robot is exploiting two remarkable benefits. One is that 'worker times' have been cut through the realization of high levels of so-called 'manless times'. The second is that the level of automation thus achieved means that it is now possible to ensure evenly set knife rings that are able to reliably deliver perfect flakes. How are these benefits utilized? The cleaning, assembling and setting of knife rings previously took more than two hours. Pallmann's robot has reduced the time required to put the ring in and take it out again – which is between 20 and 30 minutes of so-called 'worker time' for each ring.
The entire sharpening and setting process is executed fully automatically – without the need for any staff.

1) Worker time = the time that an employee needs to put the rings in and take them out again = manipulation times

2) Manless time = automatic time during which the robot operates fully automatically

Screwing unit

Belt filter

Setting unit

After its development in 1996, the robot's benefits were first recognized and utilized by Egger Rambervillers in France. This company was quickly followed by operators in North America, Korea, China, Brazil, which helped the system spread across the world. Its qualities – reliability, precision, reproducibility, lower numbers of required staff – still convince as clear USPs over the competition.

Grinding unit

PALLMANN CUSTOMER'S QUOTE

"Everybody in the market thought we were mad to want to use the robot - but competitors are now very interested in copying our front end and line. The new system enabled us to reduce the number of staff needed in the sharpening room from five operators per shift to only two. The use of the robot has also almost doubled the knife life spans achieved previously with the manual handling of rings because all the knives protrude by the same amount and so are exposed to identical wearing loads. More importantly, however, the robot has significantly improved flake quality and made it much more consistent! That means it's now possible to fine-tune the line. The savings we have achieved with Pallmann's PZSE robot and PZKR knife-ring flaker totals 5% of overall costs. At 300,000 m³/p.a., it's easy for anyone to calculate the break-even points for their own lines. It offers the potential to make savings that are quite easy to realize."

Statement from a Chinese customer

Harald Fried, Authorized Officer and Sales Manager at Pallmann

The flake for Particle Board 4.0

Such precision equipment already enables manufacturers of wood-based panel products to realize this vision today: the economic production in wet processes of precisely the grade of flake that is required for a specific type of board. "The right flake at the right time at the right place in the plant – that's what our robot delivers, which means that plant operators are able to produce boards that possess the physical characteristics that best meet their specific demands," said Harald Fried. "Kitchen worktops need to be manufactured? The knife protrusion moves forward to set the flake profile to thick. Later the knives can be retracted to produce finer flakes for thinner boards. Consequently, it is possible to cut silo sizes. It is even possible to reduce the number of machines and the energy required to grind down the flakes. All of which can be regarded as steps that are taking us closer towards intelligent plant design and the production of Particle Board 4.0!"

Knife-ring flaker LIGNA Highlight No. 2

Another highlight from Zweibrücken to be presented at the LIGNA fair is the PZKR-series knife ring flaker. It can be used in dry or wet processes that are employed to break down chips and turn them into flakes with highly consistent grades and geometries. Flakes produced in this way are ideal for the production of particle boards, briquettes and pellets. This knife ring flaker operates on the basis of the principle that uses counter-rotating knife rings which was patented in 1956 and which has since achieved success across the globe. The concept makes it possible to flake very damp and difficult types of wood in continuous operation. It also prevents blockages in chip channels even when old wood and annual plants are processed. The counter-rotating principle guarantees greatest operational reliability and even loads on all replaceable wearing parts around the ring. This, of course, saves costs for wearing parts and reduces specific power requirements.

Top and bottom:
Installation examples at customers

A rapidly rotating impeller drives the chips against the knives on the counter-rotating knife ring. The fitted knives cut flakes that possess high grades and even geometries. These are then discharged from the bottom of the machine and may subsequently be removed by pneumatic or mechanical systems or auxiliary extractors.

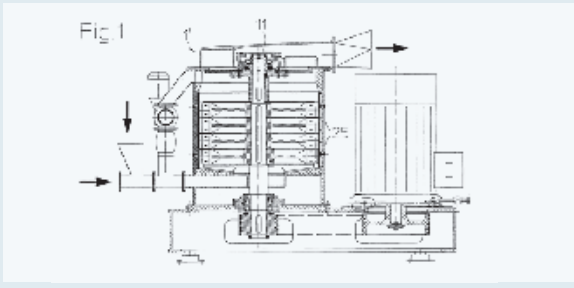
Pallmann PZKR
knife-ring flaker

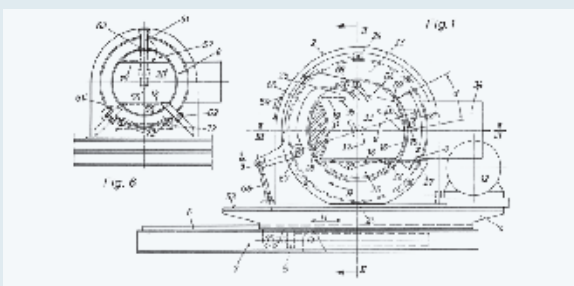
Pallmann patents: pioneering work

Ludwig Pallmann, the grandfather of Hartmut Pallmann, filed the company's first patent – a stone mill with self-aligning bottom driven concept in 1934. It was a concept with which he pioneered the field of size-reduction engineering.

The developments by now three generations over time resulted in another 200 patents, utility patents and trademarks. Patents that included the one granted for the flaker in 1952 and the turbo mill in 1953 that laid the foundation stones for the successful global distribution of Pallmann products. Other pioneering patents followed, including the patents for the PSKM double stream mill, the PLV Plast Agglomerator, the PZU OSB direct flaker with optimum automatic knife changer, the PZSE sharpening robot and not least the PCLE Cleanomat for flakers.

More than 175 of these patents remain in effect to this day and are evidence of the extraordinary expertise in size-reduction engineering that exists at Pallmann.





Top: Patent specification for Ludwig Pallmann
Center: PLM Turbofiner – patent sketch
Bottom: PZU long log universal flaker – patent sketch

Siempelkamp's initiative "Intelligent Production" will pay off: **Less raw material required, more profitable production using the Ecoresinator**

→ By Carmen Lorch and Thomas Steeger

The Ecoresinator is Siempelkamp's innovative response to competitive pressure, discerning consumers and increasing material costs. Since its first launch at LIGNA 2011, many plant owners throughout the world have realized the most convincing advantages of this glue/fibre blending system: significant material savings, low operating costs, technological flexibility.

Ecoresinator – the all-rounder

- up to 15% less glue consumption
- precise metering of the glue mix by an intelligent control
- homogeneous application to the fibres
- optimal modulation of the glue droplet size in regard to the product requirements
- reduced production costs
- test and assembly prior to delivery, therefore enabling the customer to resume production in no time
- wear resistant, as it works in the low-pressure range
- no downtime, since a cleaning automatism is integrated
- low investment costs, as the upstream and downstream equipment do not require modification

Ecoresinator – State-of-the-art glue/fibre blender

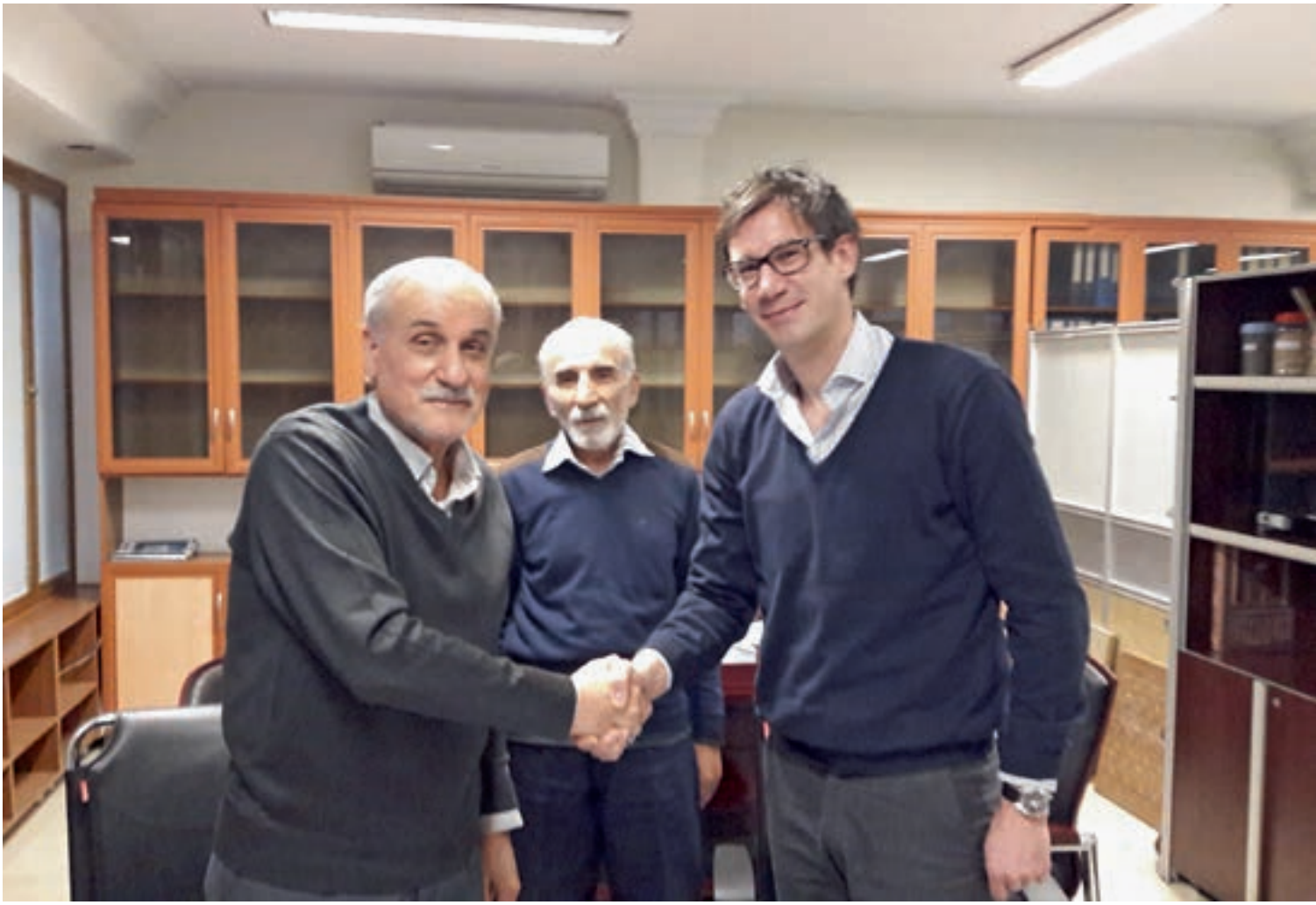
Compared to traditional blowline resination concepts the Ecoresinator requires up to 15% less glue while at the same time improving the board quality. The 2-component nozzles developed by Siempelkamp and Schlick in close collaboration use steam to atomise the glue, which can therefore be optimally applied to the fibres. Specific product requirements are accommodated by varying the steam volume accordingly. This, in turn, leads to considerable glue savings.

Another outstanding feature: any existing plant can be retrofitted with an Ecoresinator within short, since it is supplied as a preassembled glue-injection system including switch cabinet and automation software.

In 2016 alone Siempelkamp successfully marketed six Ecoresinator systems totalling the systems sold since 2011 to 35! What exactly is greeted with enthusiasm by our customers? On the one hand, the glue savings potential and the great technological versatility enabling optimal modulation of the glue droplet size to the product requirements. On the other hand, it is extremely advantageous that all Ecoresinator systems are tried and tested at our workshop

15 %

… glue savings can be achieved using the Ecoresinator, while at the same time improving the board quality.



Bagasse premiere; contract negotiations with Lohe Sabz Jonnob Company (from left to right): Thomas Steeger (Sales Ecoresinator, Siempelkamp Logistics & Service GmbH), Y.A. Mirzakhani (Commerical Director Lohe Sabz Jonoob Company), A. Ebrahimian (Member of Board of Director Lohe Sabz Jonoob Company)

All Ecoresinator systems are tried and tested at our workshop prior to dispatch, thus ensuring that installation and restart of production be made within one production shift only.

prior to dispatch, thus ensuring that installation and restart of production be made within one production shift only. "Minimum downtimes and the resulting fast ROI have been especially convincing to our customers," says Thomas Steeger, Modernisation Sales and Mechanical Retrofits at Siempelkamp Logistics & Service GmbH, at Krefeld.

2017: One premiere, one start-up

The story of success of the intelligent glue-injection system continues in 2017: earlier this year Siempelkamp was awarded a contract for the supply of an Ecoresinator to be used in a production plant employing mainly bagasse as raw material. A long-standing customer from Iran went for this concept. "Using bagasse is a premiere for us, proving once again the technological versatility of our Ecoresinator: it can handle all the raw materials that are suitable for MDF production," says Thomas Steeger.

We are pleased to state that the Ecoresinator has achieved another milestone in March 2017: At Jaguaraiva, Brazil, a facility site operated by the Chilean wood-product manufacturer Arauco, an Ecoresinator was successfully commissioned. This was our second supply to Arauco! The customer was delighted, amongst others, by

Start-up at Arauco, the team: front line from left to right Alex Ferreira Alves (Arauco, plant manager), Rudolf Ohlendorf (Siempelkamp technologist Ecoresinator), Jorge Santos Silva Filho (Arauco, Production Coordinator MDF1, Product-coordinator MDF 1), Riva da Silva Lima (Arauco, MDF-production manager). Rear line from left to right Wellington Vieira (Arauco, production operator), Jaime Piekas (Arauco , Engineering-coordinator), Edemilson do Nascimento (Arauco, process- and quality manager), Roldenir Francisco da Trindade (Arauco, process analyst)

the short installation time / startup within 12 hours resulting in an excellent overall uptime. Max. uptime is guaranteed by intelligent flushing sequences and cleaning intervals. Thanks to their positive experience Arauco will instal another – this will be the third – Ecoresinator in mid-2017.

Bagasse – a useful by-product

Bagasse are the fibrous residues from sugar cane pressing for sugar production . It is a so-called by-product or joint product. Bagasse is to be found in all sugar-producing countries e.g. Brazil, China, Thailand. The material is taking on an important role, since re-cycling and resource efficiency have come into the focus of many industries: bagasse has been turning from waste used as fuel for production facilities into a sustainable raw material.


MDF

PEOPLE

Even prior to the invention of the hot platens, Siempelkamp always focused on intelligent new products. These are designed, built, and sold by people. A solid team with a burning interest in the topic is the foundation for intelligent production – from the machine operator to the managing director

INTERVIEW

"BEFORE EVERYTHING ELSE, GETTING READY IS THE SECRET OF SUCCESS." Henry Ford

– Intelligent production à la AGT

"Çürük iple kuyuya inilmez", is a Turkish proverb that literally means "You shouldn't go down a well with a brittle rope." Likewise does a wood-based board producing company when it decides in favour of the best equipment to be successful in the market. Hence the Turkish company AGT Wood Ind. & Trd. Ltd. Co. operates a high-end MDF production plant made by Siempelkamp. How does an innovation driver like AGT interpret the issues of "intelligent production" or "intelligent factory"? We asked Mr Kurtulus Topaloglu, Production Director and Mr Fikret Erdogan, E&A Manager at AGT for their opinion.

Bulletin: Mr Kurtulus, AGT runs the most modern and high-performance MDF plant in Turkey. What requirements do you place on your suppliers, particularly with regard to our magazine's motto "intelligent production"?

Kurtulus Topaloglu: With regard to intelligent production, we engage our suppliers to realise a high degree of automation within the production chain and to react fast when it comes to service orders. For instance, in collaboration with Siempelkamp's technologists we have initiated a software study about an automatic change of press parameters aiming at optimising our production.

We have also asked the companies SAP and Microsoft to develop several projects with regard to industry 4.0-applications in the refiner and dryer sections. They are working on it. Siempelkamp has developed the gauge system SIC-CAM for masterboard measurement both for the multi-diagonal saw and the cut-to-size saw. We are keen to use an automatic masterboard measurement during production, which is why we are most interested in this product.

Siempelkamp has optimised the rotational speed of the cooling turners for them to suit higher cycle times in thin-board production. Additional operating elements installed in the visualisation system have enabled us to increase the speed by 7%, if so required by the production type.

Bulletin: Keyword "intelligent factory": How does AGT put "intelligent production" into practice in order to serve its customers with the best possible support?

Kurtulus Topaloglu: First of all, we have increased our plant's production speed; secondly, the flexible product change enabled us to increase our output as well and to fully satisfy our customers' demands. We now run the ContiRoll® Generation 8 press within almost superior limits. Last year, we produced more than 480,000 m³; this year we have even more ambitious targets. To maintain the plant's assets and operability, we have

At AGT's in March 2017 (from left to right): Kurtulus Topaloglu (Production Director AGT), Prof. Dr. Heiko Thömen (Berner Fachhochschule, Institut Werkstoffe und Holztechnologie), Dipl.-Holzwirt Günter Staub (Siempelkamp Maschinen- und Anlagenbau GmbH), Mehmet Söylemez (CEO AGT), Dipl.-Math. Gregor Bernardy (Siempelkamp Maschinen- und Anlagenbau GmbH), Fikret Erdogan (E&A Manager AGT), MSc Benoît Homerin (Berner Fachhochschule, Institut Werkstoffe und Holztechnologie)

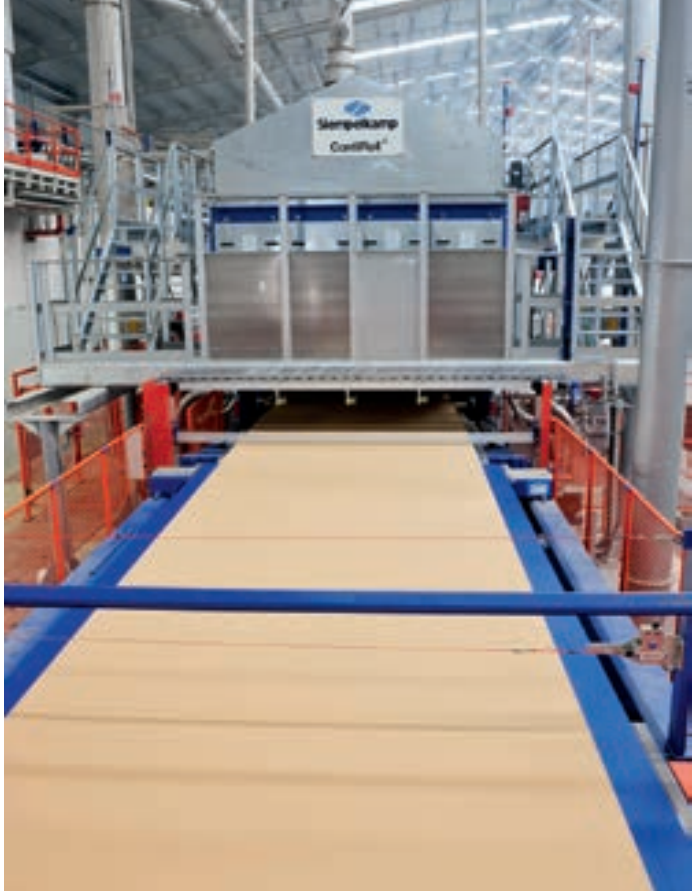
a stringent maintenance scheme supported by Siempelkamp. In August 2016, we kicked off the TPM-system (Total Productive Management) at AGT. Our aim is zero breakdown and no unintentional downtime. We intend to have stepped up the OEE (Overall Equipment Efficiency) of the MDF line up to 98% by the end of 2019. If we succeed in reaching our targets, AGT will be the first in the world to operate an MDF plant deemed worthy of the "Excellence Award" given by JPM (Japan Institute of Plant Maintenance).

Bulletin: Your company is among the top 500 Industrial Enterprises and has realised a growth rate of 33% in 2016. What does AGT aim to achieve in the future?

Kurtulus Topaloglu: AGT has a strategic plan towards sustainable growth: setting up another MDF plant in Antalya and a new production facility in a foreign country are part of this plan. In 2016, we were the first in our industry to implement a Research and Development Centre in Turkey. In the near future, we will reap the fruits of our studies.

Bulletin: Mr Erdogan, the plant includes our intelligent process control technology Prod-IQ®. It covers the areas of production management, quality assurance, and maintenance with an ERP-link. What is your experience with this tool?

Fikret Erdogan: Prod-IQ® is an intelligent system using process values, production management and quality parameters for production and maintenance purposes. We can log on the local ERP-system online and furnish our own ERP-system with all necessary data. So you can easily view all the process and production data and prepare a production report, if so requested.



ContiRoll® at AGT

Also, this system is user-friendly, flexible and can be extended to your process requirements any time. In my opinion, the Prod-IQ® system is a first step in realizing intelligent plant management. In addition, one can easily handle any difficult process steps such as density profile control, moisture content control and ContiRoll® press parameter setting. Such optimisation will show its positive effects in high-quality board, less consumption values and very effective process conditions, which means in fact, in money saved, improved uptime, reduced production costs and increased productivity. Considering that the industry 4.0-era has already started, we should use intelligent management systems such as Prod-IQ® in order to pursue this control philosophy. Otherwise, we will miss the boat, losing time, money and competitiveness.

As a result we are happy to use the Prod-IQ® system and I really strongly recommend it to be used in every board-producing company.

Bulletin: Was it difficult to make your team familiar with this system?

Fikret Erdogan: As mentioned earlier, the Prod-IQ® system has been designed user-friendly. We have gained some experience in using this system. After a short training period, our team acquired sufficient experience to be able to use this system, handle all required process variables with ease and assess short- or long-term trends of process conditions. This has cut the time for trouble-shooting. We have recently been working on extending and implementing some intelligent options. I am sure that they will pay within short.

I would like to thank Siempelkamp's team for their kind support in constantly improving our system.

Kurtulus Topaloglu,
Production Director AGT

Fikret Erdogan,
E&A Manager AGT

INTERVIEW

"LEAVING BEHIND A MARK INSTEAD OF A HOLE": THE SIEMPELKAMP SALES TEAM SPEAKS MANY LANGUAGES

➜ By Dr. Silke Hahn

How does the Siempelkamp sales team seize the requirements made by the globally represented wood-based panel industry? Jürgen Philipps, spokesman for the executive board of Siempelkamp Maschinen- und Anlagenbau GmbH, and Ulrich Kaiser, sales manager for wood processing plants, tell more in the interview about a concept that has made Siempelkamp "first choice".

Bulletin: "If you want to have an effect on somebody, you first have to speak to them in their language," Kurt Tucholsky once said. How can this maxim be translated to the Siempelkamp sales team?
Ulrich Kaiser: Our sales team speaks many languages and is familiar with the cultural specifics of the various regions. Our sales teams have been working together with their customers in the respective markets for many years. They know the ropes and are thus able to cater to the respective requirements of their customers in the best possible way. Siempelkamp supplies the wood-based panel industry across the world with the latest wood technology systems. Such industrial goods are normally in need of a lot of explanation. Sales talks are never distinguished by talking somebody round but solely by an intensive effort to provide the customer with benefits. Yet, that can only be successful if you are able to communicate with your business partner in the same language on a level playing field.

Jürgen Philipps,
Spokesman for the executive board of Siempelkamp Maschinen- und Anlagenbau GmbH

Bulletin: Siempelkamp has local representatives across the world from the USA to Australia. Is there such a thing as a global sales approach – or are the different markets to be considered in entirely differentiated ways?

Jürgen Philipps: Siempelkamp operates eleven offices and sales companies in all parts of the world. The demands on these external offices are very similar in a global sense, but have not been limited to sales alone for a long time now. In fact, they act as service partners for our customers before and after selling a plant. They are the immediate point of contact for all queries and problems. They are accountable to our customers for the right goods being delivered to the right place at the agreed time and at the best price and that they are successfully put into operation. Thanks to this holistic approach, Siempelkamp has been regarded as the "first choice" supplier for some 130 years and more.

Ulrich Kaiser: The framework conditions for the successful implementation of this principle are, in fact, somewhat different in each country. Cultural differences, consumer behaviour or the infrastructure of a country often provoke our sales staff to develop different ways.

Bulletin: Whether a wood-processing plant is sold in the Belarus or goes to a Brazilian customer: Where exactly are the differences in the markets and also the people concerned?

Ulrich Kaiser: The answer to this question leads us directly to the self-concept of our sales organisation. It very clearly illustrates the complexity of our responsibilities and challenges. Before entering a market, it goes without saying that companies do their homework, because it is important to know what the customers expect. Regional differences have to be recognised and taken into consideration. In a territorial state such as Russia, where there are many climate zones and cultures, it would be fatal to turn up with only one sales concept. Sound knowledge of the market is essential and is reflected in the assessment of any new project – be it in Brazil, South Africa or in any other country.

Jürgen Philipps: In the 90s in the former Soviet Union, there was a great demand for goods from the West. "Made in Germany" in particular was and is a seal of quality that you could and can rely on. Back then, comprehensive advice and consequent support in implementing the projects was important. We recognized that at an early stage and made our entire know-how available to the market with extraordinary dedication – no ifs and buts.

This is how we have succeeded in supplying the Russian-speaking area with more than 20 plants to date, almost all of them being complete plants. It was a really extraordinarily great challenge for our company since complete plants have not been supplied to most other countries for a long time now, but mainly press lines or partially complete plants. Yet in this case it was different. The enquiries came, particularly in Belarus, as public invitations to tender, which were kept pretty general. We then developed an overall concept from them.

Ulrich Kaiser,
Sales manager for wood processing plants

Bulletin: Which special demands did the market make on this concept?
Ulrich Kaiser: First of all, we had to develop the overall concepts. We had to include typical customer's provisions in our scope of delivery. The best examples of this are possibly the plants for Ivatsevichdrev, Russisch Laminat or even Kalevala: this is where the fully automated factory was developed, where the tree trunk is placed on it at the front and the coated and packed panel leaves the factory from the back of it. And this together with a biomass energy concept that makes the factory fully self-sufficient energy-wise.

Although such a project has long been managed by established customers in the West and with own resources, we are still faced today with "newcomers" who rely on our experience and planning skills. That's what we're here for, but a strong team is also needed, equipped with great expertise, a lot of empathy and above all, staying power.

Bulletin: What prerequisites does an excellent salesperson at Siempelkamp have to bring with them?
Ulrich Kaiser: The successful salesperson likes people and has a high degree of empathy. They are easily able to put themselves in the customer's shoes and act as their trouble-shooter. Added to this is profound expertise, technical expertise coupled with the ability to not only recognize a customer's problems but also to solve them. This results in trust. The successful salesperson likes to convince. They have the right mixture of drive, courage and self-confidence. They leave behind a mark and not a hole.

Bulletin: How are the sales staff trained?
Ulrich Kaiser: As everyone knows, there is a great difference between knowing and mastering. It is what separates the theorist from the practitioner. One knows how it works, the other can do it. Learning by doing, that is our motto. Permanent customer contact is decisive.

In addition to this, we have our regular sales meetings. All of the sales staff compare notes about their markets and experiences. Once a year we hold company conference lasting several days that the representatives of our offices abroad also attend. And last but not least, our sales training courses must be mentioned, which at irregular intervals act as a link between theory and practice. We compare notes with our own experts on a regular basis in the scope of internal workshops. The intent of these is to compare the technically feasible with the demands of the market and develop new solutions.

AGT Devam Ediyor,
"AGT continues" – in
happy collaboration with
Siempelkamp

Conveying know-how vividly

Bulletin: How does "learning and sharing" work among the staff, for example between the different generations, technical disciplines or locations?

Jürgen Philipps: Sharing knowledge is just as important as acquiring knowledge. Einstein once said: "Information is not knowledge. The only source of knowledge is experience." A successful business depends on its staff's experience. Experience must, however, be constantly collected, conserved and made available to the different levels and generations within a company. But it is not only about the know-how within a company but also the knowledge of our customers, who gather their own personal experiences with our plants.

The indispensable prerequisite for successful "learning and sharing" is a climate of openness and trust in a company. The collection, distribution, preservation and use of knowledge require their own structures and systems that need to be looked after constantly. Not so very long ago, the entire Siempelkamp business for wood-processing plants met up with AGT, our Turkish customer, for a two-day networking meeting. This was made possible because a strong trusting relationship had been established during the course of the project. "We never walked alone" was the conclusion our customers came to – a good basis upon which one is happy to compare notes.

Bulletin: The cover story of this Bulletin issue is "Intelligent Production". What are the demands Siempelkamp customers make on our competence in this field?

Ulrich Kaiser: The topic "Intelligent Production" goes in two directions. On the one hand, we work on intelligent, optimized structures and production processes in our company every day. This is what our customers expect, as this is the only way we can lead the way in international

Group photo with Siempelkamp cooling turner

competition and provide our customers with intelligent technology of the highest quality at competitive prices on time. On the other hand, it is all about the further development of our products, of course, and the corresponding technology.

Bulletin: Mr Philipps, which ideas and concepts are particularly relevant for our customers in your opinion where intelligent production or factory is concerned?

Jürgen Philipps: Siempelkamp has always been focused on intelligent new products even before the invention of the hot platen. It is thus no wonder that the key continuous press technology that was able to assert itself on the market was developed at Siempelkamp more than 30 years ago. This was the only concept that revealed industrial maturity and whose enormous cost savings in production were convincing. The competitors of today have all proceeded to manufacture their presses on the basis of the continuous press concept according to which the Siempelkamp ContiRoll® works.

A constant competition of ideas has created more and more new system- or process-relevant products at Siempelkamp in recent decades. The focus was always on the reduction of production costs. With the SicoScan systems, we learned at a very early stage to control the production process more accurately. With the Ecoresinator, Ecoformer and Ecodrive, a further significant reduction in raw material and energy costs was achieved.

MDF plant at AGT

Bulletin: Mr Kaiser, which developments are of particular significance in your opinion?
Jürgen Philipps: The constant further development of our ContiRoll® is the focus of our daily work. In addition, Siempelkamp has become the doubtlessly most important industry equipper for the wood-processing industry, especially in the past decade. In doing so we are supported by our subsidiary Büttner, for example, with whom we can provide fully integrated drying and power plant concepts for the self-sufficient provision of energy to our factories (see also our article from page 94).

Especially the most recent integration of Pallmann, specialist in size-reduction engineering, who have quickened our development from press supplier to complete plant developer, stands for exemplary symbioses within the Siempelkamp Group. Size-reduction engineering for particle and strand production is trend-setting, as is refiner technology (see page 44). "All from one source" – with Büttner, Pallmann, also with CMC for front-end equipment, we are setting new industrial standards.

Last but not least, the further developments in the field of our Prod-IQ® production management systems must be mentioned. Production data has been automatically collected for quite a while now and has been made available to the management in the shape of statistics. Prod-IQ® Next will do even more. It will optimize the process automatically and relieve the management increasingly of work.

Finally, "lead engineering" needs to be pointed out. With this 3D technology, we are able to record reality on site and put it on our computers. This way we can recognize whether our plans conflict with reality before a machine or hall has even been built. Today, we prevent collisions at an early stage, ones that used to be recognized far too late, and which used to lead to considerable annoyance and additional costs.

> "WE NEVER WALKED ALONE" WAS THE CONCLUSION OUR CUSTOMERS CAME TO – A GOOD BASIS UPON WHICH ONE IS HAPPY TO COMPARE NOTES.

Jürgen Philipps

Learning and sharing

"Brainpool" Open Hybrid LabFactory:
Research campus for lightweight construction materials starts research operation in Wolfsburg

➔ By Dr. Michael Schoeler and Lothar Sebastian

Lighter materials, environmentally friendly production, new key technologies for vehicle construction of tomorrow, invented by experts from science and industry – that is the goal of the Open Hybrid LabFactory (OHLF) in Wolfsburg, Germany. The research campus started operation on September 22, 2016. As member and supplier of a 2,500 metric ton press Siempelkamp is part of this brain pool.

OHLF OPEN HYBRID LABFACTORY
Der LeichtbauCampus.

Technische Universität Braunschweig

NFF NIEDERSÄCHSISCHES FORSCHUNGSZENTRUM FAHRZEUGTECHNIK
Ein Zentrum der TU Braunschweig

The public private partnership, established in 2012, does collaborative research on behalf of industry and science on the topics of "material development, concepts, and production technologies for lightweight hybrid components". The objective of the project is to research mass production technologies for the manufacturing of lightweight hybrid components.

At the research campus for lightweight construction materials the entire value chain for hybrid components is represented, starting with the design to the manufacture of reinforcement textiles, and the hybrid manufacturing processes to the recycling. The goal is to establish the basis for the production of particularly light, and therefore energy and resource efficient vehicle bodies and drive systems in large quantities. Here, researchers are further developing the so-called hybrid construction. Materials with different properties – metals, plastic materials, textile structures – are combined to components that are as light as possible. They offer the same safety and performance as those used in conventional cars.

To make this possible, experts from universities, research institutions, and industry work together at eye level at the research campus. Under the lead of the Automotive Research Center Niedersachsen of the Technical University of Braunschweig – Volkswagen, BASF, DowAksa, Engel, IAV, Magna, Siempelkamp, ThyssenKrupp, ZwickRoell, Institutes of the Fraunhofer Society, Technical University Clausthal, University of Hannover as well as many other companies research in a joint effort the development of hybrid materials. Internationally operating technology leaders contribute their expertise to the academic research process but also gain expertise in return. Students and young scientists also profit from the diverse points of views and experiences of the partners.

"Intelligent production is the collecting of all relevant production data with the objective to increase process efficiency and automation."

SAMIRON MONDAL, MANAGING DIRECTOR SIEMPELKAMP MASCHINEN- UND ANLAGENBAU GMBH

OHLF press by Siempelkamp in Braunschweig – opening ceremony
(Source/image rights: OHLF / Matthias Leitzke Photodesign

Prof. Johanna Wanka, Federal Minister of Education and Research, during the opening ceremony
(Source/ image rights: OHLF / Detlev Wecke Photodesign)

Prof. Johanna Wanka, Federal Minister of Education and Research, said at the opening of the campus: "The research campus is the result of a productive cooperation of science and industry which is receiving attention far beyond Wolfsburg. Here, the automobile of the future is developed: light, environmentally friendly, and safe. This is possible due to the excellent conditions at the research campus. Research results can be implemented quicker in new products, processes, and services."

2,500 metric tons in the name of research

For production testing of hybrid lightweight structural components used in the automobile, aerospace, and general machine engineering industries, Siempelkamp developed an innovative hybrid press which has become the core element at the Wolfsburg campus. The 2,500 metric ton press can form organosheets as well as manufacture fibre-reinforced composites using the RTM and the SMC process. The press can also be utilized for deep-drawing and hot forming of various materials. Another technical highlight: by means of a special extruder the hybrid components can also be back-moulded for the manufacture of large high-strength components.

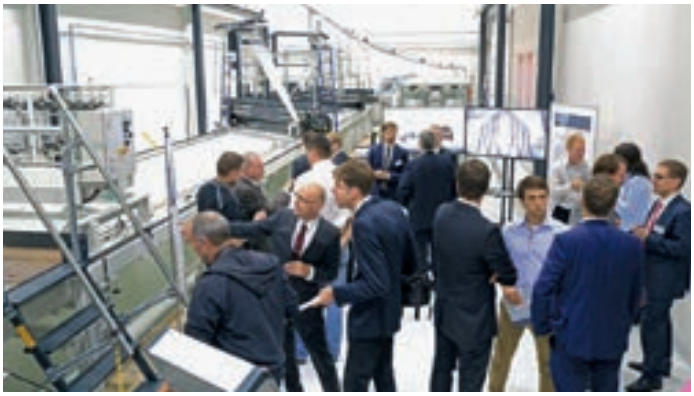
"This press is unique regarding its function and technology," explains Dr. Michael Schöler, head of Siempelkamp's R & D centre and initiator of the project at Siempelkamp. Four cylinders with a pressing capacity of 625 metric tons each allow pressing speeds of up to 800 mm/s. Accuracies in the +/- 0.05 mm range are achieved. The die cushion applies a force of 1,000 metric tons. Another feature: the ram with a dimension of 2,000 x 2,500 mm^2 can be tilted by 5°. Thus, the material can be optimally distributed in the pressing section.

OHLF has the objective to develop a solution that allows the large-scale production of hybrid lightweight materials. The goal here is to achieve maximum strength with as little material as possible. A simple example: an unfinished vehicle body, which is made of 200 to 300 individual components and various materials today is to be manufactured from 20 to 30 hybrid components in the future. This not only saves material but also reduces production time.

The space for this ambitious project is provided by the lightweight material research campus. It incorporates a 799 m^2 laboratory, a 2,500 m^2 technical centre, and 4,692 m^2 of office space. Dr. rer. nat. h.c. Dieter Siempelkamp and Dr.-Ing. Hans W. Fechner were among the guests at the opening ceremony of the campus in September. "We are happy to contribute our know-how to such a high-quality research and production process together with other international companies!

OHLF press made by Siempelkamp: the concept

- Accuracy – pressed composite parts are very thin and cool quickly. Pressing is about combining high closing speeds and the subsequent slower pressing to keep the process within the required narrow tolerances.
- Entirely hydraulic operation of the press table – no guidance of the frame
- "Stress-free closing" of the tools – high precision is required, other than the tool guidance, no other guidance shall be dominant. The horizontal orientation of the ram is highly precise.
- Tilting of the ram during tool closing prevents air bubbles from being trapped in the pressed composite parts



Get together at the research campus for lightweight construction: experts discuss visions for the future (Source/ image rights: OHLF / Matthias Leitzke Photodesign)

An eye on visionary vehicle construction: SPE Automotive Award 2016

Siempelkamp's commitment in the OHLF is not the only activity the company dedicates to automobile manufacturing of the future. Once more, the company emphasized its competence in visionary vehicle construction in October 2016: on 17 October, the most innovative and creative solutions as well as means of communication related to vehicle construction were awarded during the "SPE Automotive Awards" in Düsseldorf/Neuss, Germany. Here, Siempelkamp, together with its customer Magna, was awarded fourth place.

Shiny: A Cadillac ATS-V with the award-winning hood

Calling for entries for the award is the International Society of Plastics Engineers (SPE). The main topic are plastic materials used in the automobile industry. Categories include the areas of interior design, exterior use/body construction, applications under the hood/chassis, as well as electronic and optical components. The parts manufacturers as well as the developers or press manufacturers can place here.

In the category "body construction" Siempelkamp's Canadian customer Magna Exteriors was nominated with a Class A carbon fibre engine hood for a Cadillac. Magna invited its German partner, the supplier of the corresponding press, to the Awards – and earning a successful fourth place! The deciding factor for this award is the high surface quality of the hood which was commended as an innovative product with special properties.

The winning team during the awards ceremony, from left to right: Philip Grella, Product and Process Development, Head of Advanced Development Group Magna, Toronto, Grahame Burrow, President of Magna Exteriors, Dr. Josef Laux, Director of Business Development and Advanced Engineering-Lightweight Composites-Magna Management AG Cham, Dr. Michael Schöler (Head of Research and Development at Siempelkamp)

"The design and manufacture in a networked environment and in a way that is appropriate for the material means intelligent production to me. One should not, for example, try to substitute existing metal structures with composite structures."

DR. MICHAEL SCHOELER, HEAD OF RESEARCH AND DEVELOPMENT

"Making-of OHLF-press":
Backgrounds, achievements, visions

→ By Dr. Michael Schoeler

The startup of the research campus for lightweight construction materials in Wolfsburg marks a milestone in the success story of the multi-function press which Siempelkamp supplied to Open Hybrid Lab Factory e.V. (OHLF). We are taking a look at the "making of" process.

The starting point for this press was Siempelkamp's research and development department scheme which has been refining continuously our process technology for more than five decades. One of the key success factors is the proven expertise in large-scale plant construction, paired with a large part of creativity and foresight resulting from numerous collaborations with customers and partners.

About 40 years ago, the development of a technology that allowed the pressing of particleboard without the need for screens or cauls to transport the mat was one of our first milestones. Later the further development of the ContiRoll® represented essential challenges, as did the topic of energy efficiency as well as the pressing of boards made from a wide variety of raw materials. Siempelkamp has been setting its latest benchmarks in the areas of fibre-reinforced composites and hybrid lightweight construction. The basic prerequisite for these achievements is the intensive networking with research institutes, companies, customers, and partners – as in the case of the OHLF press.

The press table during machining

"To me, intelligent production means the complete control of mechanization, mass production, and automation."

LOTHAR SEBASTIAN, HEAD OF DESIGN ENGINEERING

Top: Siempelkamp becomes a full member of OHLF e.V
Bottom: Constitutive advisory board meeting for OHLF e.V

As a full member of OHLF, Siempelkamp supplied the heart of the entire research project, a newly developed 25,000 kN press for hybrid materials. The press has attracted the attention of the automobile industry because the mixture of metal and composite material is highly attractive. The combination of low weight and strength is decisive for the technological lead in the automotive industry.

Composite parts are extremely light and hard and are therefore used as standard parts in many application areas in automobile construction. However, this alone is not enough: Load-bearing structures, for example, require additional properties such as the high strength found in steel. Here, hybrid materials come into play because the mixture of metal and composite materials offers both advantages, namely, the ability to produce lightweight parts with the properties of steel.

Our strength: precision with high pressure!
In 2014 Siempelkamp received the order to supply the multi-function press to OHLF. The pressing process is of central importance when it comes to the manufacture of the desired hybrid materials. The process has to succeed with high accuracy, only then, will the material meet the requirements. Not acceptable, for example, is when air bubbles become trapped inside the material during the pressing of the carbon fibre layers. As soon as these parts are heat-dried after painting, the air expands, breaks through the fine surface, and causes pinholes in the paint. These parts are rejects because the automobile industry sets high quality standards. Another challenge is to evenly distribute the viscous synthetic resins between the fibre layers.

Siempelkamp presses provide this type of precision work and furthermore avoid the dreaded air pocket effect: the layers are not only pressed down from above but an additional tumbling motion from the side helps squeeze out the air pockets. This process is similar to applying a protective cover to the screen of a smartphone. Even at high pressures, the Siempelkamp press operates smoothly. With this press concept one fourth of the material can be saved because every part is accurately produced.

The OHLF press began successful operation at the Siempelkamp plant in Krefeld in 2015. The acceptance by the customer followed at the end of June; the on-site installation started in the same year. In 2016 the press is contributing its share to produce hybrid lightweight components economically as well as ecologically. The research roadmap of OHLF is set to continue until 2030 with its endpoint being the economical large-scale production of fibre-reinforced plastic/metal hybrids.

Hybrid press for OHLF: key data

- 4 cylinders
- Pressing force: 25,000 kN
- Pressing area 1,800 x 2,500
- Speed: 800 mm/sec
- Accuracy +- 0.05 mm
- Maximum drawing force: 10,000 kN

24 hours a day, 7 days a week remote service:
Modern cryptography for safe and quick remote support

→ By Armin Lingen

When a plant is down, when production is disrupted, or when it can be optimized, reliable service is required. This support has to focus on two things: firstly, the efficiency of the plant, and secondly, the high security requirements when carrying out remote maintenance processes. The solution offered by Siempelkamp Logistics & Service GmbH is a remote service which is specially developed for industrial use.

Support during troubleshooting on site

The customer demand placed on the service and spare parts specialist in the Siempelkamp Group has significantly changed in recent years. Plant operators expect minimal response times. That's why remote service has to be available 24 hours a day 7 days a week. No problem!

"With our remote service we can analyze the plant status directly, quickly, and above all securely," explains Armin Lingen, Head of Internal Service at SLS. And this is how it works: following a service request from the plant operator, the plant is connected via the Internet and a service router with Siempelkamp's central remote server. All connections are always temporary and are solely made by request of the plant operator and only regard authorized plant areas and functions. Plant operators can constantly monitor all activities taking place during the remote maintenance session. Additionally, the entire service operation is documented automatically.

SLS remote service:

Quick, secure, and reliable availability

- Remote plant maintenance
- Plant optimization
- Troubleshooting
- 24/7 service in the event of plant failure

Customer benefits:

- Maximum security and convenient use
- Secure connection via VPN
- Plant access exclusively and only after service request by the operator
- Access only to previously released plant components
- Automatic documentation of the service
- User-friendly operation
- Reduced downtime, costs, maintenance


SINAMICS
SINAMICS

From password to passed – the process

This uniform solution for all remote maintenance tasks related to wood-based material production plants follows a clear process. After the plant operator submits a service request, the SiteControl connects with the central server at Siempelkamp. The firewall of the operator treats this request as an outgoing, encrypted SSL connection via https port 443. This process creates a ticket in Siempelkamp's central Server. At the same time the technician on duty is notified who then accesses the ticket via password. Only after that, a secure bi-directional end-to-end application tunnel to the plant with access rights to the remote object, determined prior to the connection (e.g., visualization, programming device of the plant operator, etc.), is established.

Plant operators can monitor all remote maintenance processes and interrupt them at any time. Once the service job is completed, the secure connection is closed. Without a new service request, there is no way to connect to the plant from the outside.

Plant operators can monitor all remote maintenance processes and interrupt them at any time.

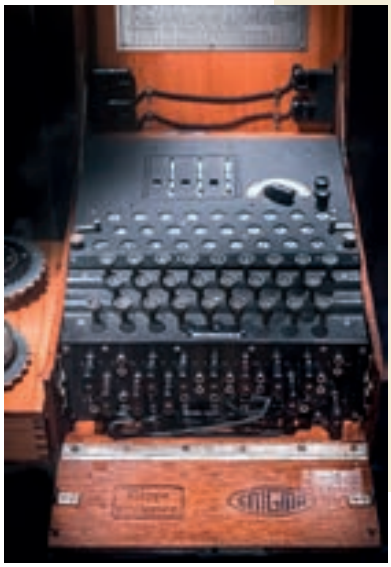
Cryptography: history

Kryptós (Greek) = 'hidden', 'secret'. The earliest use of cryptography can be found in the third millennium B.C. in ancient Egypt. In the Middle Ages Hebrew scholars used simple mono-alphabetic substitution ciphers. At the same time in Europe diverse cryptographs were developed to protect diplomatic written correspondence.

In 1883 Auguste Kerckhoff laid down the principle of modern cryptography. According to it the security of encryption is not based on the secrecy of the method but on the secrecy of the encryption key. Security grows with the length and therefore with the number of possible keys. As long as a cryptographic method has no weakness, one would have to try half of the options to obtain the information that makes sense, statistically speaking.

In World War II mechanical and electromechanical cryptographic equipment was used. During this time considerable headway was made in the area of mathematical cryptography.

Cipher wheel for the so-called Caesar cipher



Arthur Scherbius applied for a patent for ENIGMA in 1918, which was originally marketed commercially.

Security is also ensured by a secure cryptographic procedure which provides a complex encryption in line with IT security. "To ensure data security, confidentiality, and authenticity, that is, to protect the particular sensitive data of our customers from fake senders, we use a 'secret language' which encrypts data and secures data transmissions," explains Armin Lingen. This service is completed by audit-compliant documentation, the authentication via user roles concept, and the high scalability through central management. This means that in each individual automation device in the plant network all access rights are centrally administered. The user roles concept ensures that previously authorized access rights can only be changed by people that were assigned to this task.

The remote service is available for ContiRoll® plants and can also be retrofitted to existing plants.

"With our remote service we can analyze the plant status directly, quickly, and above all securely."

ARMIN LINGEN, HEAD OF SERVICE BACK OFFICE

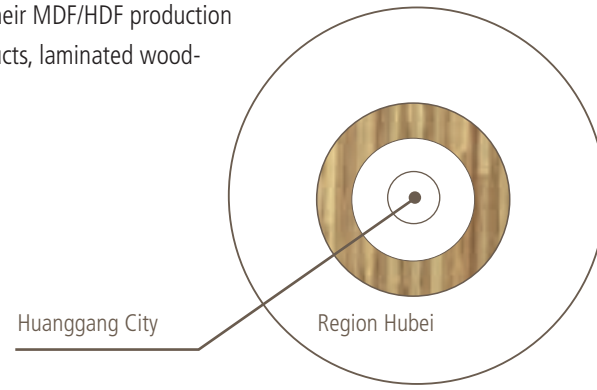
MARKETS

Whether in the machinery and plant engineering, casting technology or engineering & service business unit: all Siempelkamp business units are networked and open up synergies to support customers in increasingly fast-moving markets – with state-of-the-art products that also meet tomorrow's demands.

Challenges for the future:
New MDF/HDF power for the Asian market

➡ By Henning Gloede

Two new orders from Asia emphasize Siempelkamp's leading role as systems supplier for press technology: Yekalon-Jiufangyuan Panels, Inc. (China) and Vanachai Group Public Limited (Thailand) are expanding their MDF/HDF production lines with the support of their Krefeld partner. Both manufacturers produce, among other products, laminated wood-based boards for the building and interior sector.



CHINA

Yekalon, one of the leading suppliers of building and decoration materials ordered an 8th Generation 9' x 33.8 m ContiRoll® press as the core component of a new production line in December 2016. The scope of supply also includes a flash tube dryer by Siempelkamp's subsidiary Büttner, the resin metering system with Ecoresinator, and the compactor including a mat preheater.

Yekalon/China: Profile

Founded:	1997
Product range:	floor coverings, sanitary ware, windows & doors, kitchen cabinets & wardrobes, curtain walls, architectural metal work
Manufacturing:	150 production sites focusing on research & development, manufacturing as well as building and decoration materials
Mission:	"Beyond the dream of decoration, in pursuit of scientific, healthy and fashionable global building and decorating materials."
Vision:	"To be the leader of global decorating and building materials, to be the integrated-solution provider of world-class building and decorating materials."

The order also includes the relevant components for the finishing line including a 4-unit diagonal saw system, a cooling and stacking line as well as an automatic high-stack storage system. Siempelkamp's process control technology Prod-IQ® will manage all production-related processes. Connected to an ERP system, Prod-IQ® also covers the areas of quality assurance, servicing, and maintenance.

The special feature of this plant is the equipment package for high-speed thin board production including a compactor which provides additional compression in front of the press. Material lumps and other impurities are destroyed by the compactor.

Vanachai Group / Thailand: "Balanced Industry"

Founded:	1943 1995 public listing on stock exchange of Thailand
Product range:	Particleboard, MDF, sawmill products, HDF doors, melamine doors & door frames, recomposed teak veneer doors, decorative wall panels
Manufacturing:	More than 2 million cubic metres of wood-based panels such as MDF and particle-board manufactured on 10 continuous production lines in 3 locations across Thailand, door skins and laminated flooring, glue manufacturing.
Employees:	over 5,000
Vision:	"Leadership in the wood-based panel industry, leadership in forest conservation"

The Thai Vanachai Group, listed on the Thailand stock exchange and one of the leading companies of the Asian wood-based materials industry with a long tradition in this sector, ordered a complete forming and press line for MDF/HDF with an 8' x 25.5m ContiRoll® press, Generation 8. The scope of supply for the finishing line includes a cooling and stacking line and an automatic storage system. As with Yekalon, the plant also contains the equipment package for high-speed thin board production. The manufacture of boards with a thickness starting at 1.0 mm is planned.

This is Vanachai's eleventh production plant from its German partner Siempelkamp. The cooperation between both companies can be traced back to 1980 when Vanachai ordered its first single-opening, type 'Texpan', particleboard press from Siempelkamp. This discontinuous line was later sold. Today the Vanachai Group operates, next to the recently ordered plant, eight additional continuous presses made by Siempelkamp/Kuesters and is considered the largest board producer in Southeast Asia.

Both companies intend to produce an annual output of 250,000 m³ MDF/HDF with the new Siempelkamp plants after startup. At Yekalon installation is scheduled to begin in summer 2017, at Vanachai in autumn 2017.

Shaking hands at the signing of the contract in Thailand: Henning Gloede (Managing Director Siempelkamp Singapore) and Wanthana Jaroennawarat (Managing Director Vanachai Group of Companies)

INTERVIEW

WOOD-BASED MATERIALS INDUSTRY IN ASIA: THE TRENDS

Interview with Henning Gloede, Siempelkamp Singapore

Bulletin: Both new orders indicate pleasing demand from the Asian market. How can the current situation of the wood-based materials industry in this region be characterized?
Henning Gloede: The wood-based materials industry in Southeast Asia has always grown in five to six year cycles. An investment phase, which we are currently experiencing, is always followed by a two to three year market consolidation during which the newly installed capacities have to be absorbed by the markets first. Most of this growth is currently taking place in Thailand, Vietnam, and Indonesia and, with it, in the most populated markets. These markets are at the same time home to the strongest furniture industry in Asia.

"The biggest challenge to manage in the future will be the sustainability of the required raw material sources for the wood-based industry."

HENNING GLOEDE, MANAGING DIRECTOR SIEMPELKAMP SINGAPORE

Bulletin: How has the Asian wood-based materials industry developed since you started working for Siempelkamp Singapore 25 years ago?
Henning Gloede: When I started working in Singapore in 1992 wood-based material boards were produced by means of discontinuous processes on single and multi-opening presses. Around 1992-1993, Siempelkamp started up the first ContiRoll® presses in Indonesia and Thailand. This new continuous process technology started a new era in this industry which was characterized by improved product quality, higher productivity, and much larger capacities. Whereas in the past unfinished particleboard and MDF were able to survive in the markets, today our customers have to bring increasingly innovative products to the market in order to distinguish themselves from another and stay profitable. During this development Siempelkamp has always supported its clients. Products, such as ultra-thin MDF of up to 1mm, enable our customers to stay one step ahead of the competition these days.

Bulletin: What challenges do you see for the future?
Henning Gloede: The biggest challenge to manage in the future will be the sustainability of the required raw material sources for the wood-based industry. Diminishing wood resources in parts of Southeast Asia and China are already posing a big challenge in the industry now. This problem can only be addressed and solved in a joint effort between our customers and the respective local governments. The adherence and enforcement of existing local and international forestation and environmental laws will also play a pivotal role in this future challenge.

In high demand in the specialized press: Siempelkamp expertise

Bulletin: How do you and your team from Siempelkamp Singapore support customers from the Asian market?

Henning Gloede: We support our customers in Southeast Asia from both of our offices in Singapore and from our branch office in Kuala Lumpur. The sale of new plants in Asia is covered, in close cooperation, by our office in Singapore and the sales department in Krefeld, Germany. The spare parts business for our existing customers is also handled by our Singapore office and in cooperation with our service company Siempelkamp Logistics and Service GmbH in Bad Kreuznach, Germany. After-sales service for existing plants as well as installation services for our new plants are managed in our branch office in Kuala Lumpur, Malaysia, which employs 22 people. Our objective is to one day manage a self-sufficient after-sales centre in Asia which can support our customers on site and without any delay in all technical and technological aspects. Owing to our new spare parts storage centre in Bad Kreuznach, to which we will have 24 hours a day and 7 days a week online access starting July 2017, we can supply our customers, operating a combined number of 40 continuous plants in Asia, with spare parts in the best and quickest possible way.

Bulletin: In line with our current Bulletin motto "Intelligent Production" there is a direct connection between the Siempelkamp headquarters and the local plants …

Henning Gloede: The Siempelkamp ContiRoll® lines are equipped with special software enabling a live connection between our headquarters and the customers giving us the ability to solve problems that cannot be identified locally. This ensures our customers quick, reliable, and effective support.

Team Siempelkamp Singapore (from left to right): Irene Chong, Henning Gloede, Hui Lee Wong, Patricia Lopez, Philipp Schmitz) at FurniPro Fair in Singapore 2016

Only three months from First-Board event to acceptance: **Production start, ahead of schedule, at the latest Egger plant**

➜ By Stefan Wolff

December 2016: Director General Peter Weismayr introduced to a group of invited journalists, for the first time, the new production line for MDF at Egger's plant "Drevprodukt Gagarin", 150 km west of Moscow. The background: The most modern production plant of the Egger Group has been producing MDF and HDF since spring 2016. Between the production of the first board and the start of regular production only three months passed, a sensationally quick ramp-up! This extremely quick production startup is one of the decisive market advantages for Egger – next to the ultra-modern material and energy efficient equipment by Siempelkamp

The long-term customer has been relying on Siempelkamp quality and state-of-the-art technology made in Krefeld for almost three decades. Gagarin is the latest of a total of 17 international production locations of the Egger Group: on May 2011 the leading wood-based materials manufacturer acquired the Russian "OOO Gagarinskiy Fanerniy Zavod", a particleboard plant with an annual output of 500.000 m^3, as well as the downstream finishing equipment with a capacity of 20 million m^2. As part of the acquisition Egger also took over 500 employees and approximately 80,000 ha of sustainably managed forest area, supplying close to half of the required wood for the production of wood-based materials.

At that time, Egger was already operating a plant in Shuya. Shortly after acquiring the plant in Gagarin, the Egger Group decided to expand its second production location in Russia to meet the locally increasing demand for MDF and HDF. Thomas Leissing explains the development investment of almost 200 million Euros, half of which is spent on expanding the infrastructure at the location: "In the medium-term we see Eastern Europe and Russia develop into growth markets for laminate flooring and we would like to produce these products locally. The new production plant in Gagarin will enable us to do so."

"Go" for Gagarin

During 2014 Egger ordered from the Siempelkamp Group the new production line. The order included the forming and press line with a Generation 8 ContiRoll® press, the Ecoresinator glue/fibre blender as well as the fibre dryer

Aerial view Egger Gagarin

Egger key data

In its company history of over 50 years the EGGER Group recorded the largest turnover with 2.3 billion Euros in the financial year 2015/16. EGGER invested 300 million Euros of this amount in growth and maintenance investments. The largest part was spent on extending production capacities at the Gagarin (RU) location. A MDF/HDF production plant as well as a laminating line and a flooring production line were established.

The St. Johann and Unterradlberg locations in Austria were extended by logistics areas; the departments of element production and finishing processes were modernized. The company carried out further growth investments in the areas of energy, maintenance, and logistics and modernization measurements at the Rambervillers, Rion des Landes (both France), and Hexham (UK) plants. Egger increased its number of employees from 7,400 to 7,800, largely in favour of the Russian Gagarin location.

Assembly oft the Mat spraying device

Press discharge end with drive system

Prepress and mat former

and an energy plant. Siempelkamp will supply a turnkey plant including the constructional steelwork.

Perfect planning from the beginning, precise production of all subsections, as well as the ideal cooperation between the installation teams from Siempelkamp and the customer was the winning combination that resulted in the extremely short ramp-up of the entire plant. The customer – supplier relationship paid off for both sides. Not only the early production start but also state-of-the-art plant technology, including all electrical and hydraulic components, guarantee decisive market advantages for the Egger Group due to material and energy efficient technology. The products of the Egger Group enjoy an outstanding reputation worldwide. This exceptional quality with the corresponding material characteristics did not go unnoticed in the Russian market. Since spring 2016, the Egger Group has been able to produce MDF and HDF for the furniture industry and for the in-house flooring production. With the cutting-edge 9' x 48.7 m ContiRoll® press the manufacturer achieves an annual production output of up to 500,000 m³. This is double the amount of the previously achieved production output at the Gagarin plant – this growth is paying off in the form of 350 new jobs for the region.

Plenty of steam

The first installed building systems at Egger's new business premises were two components outside the manufacturing building – the energy plant and a fibre dryer by Siempelkamp's subsidiary Büttner. The biomass energy plant is designed for a total combustion capacity of 61 MW. The system contains a moving grate for burning bark, a sander dust burner as well as a granulate injection system for burning coarse particles and rejected fibres. The plant produces flue gases, which are cleaned by means of an electrostatic precipitator for use with the fibre dryer as well as steam for the production process.

The flashtube fibre dryer with a dimension of 3.4 x 6.0/4 R is heated with flue gas from the energy plant and a 40 MW gas duct burner by Büttner. The material throughput of 70 metric tons of fibres per hour makes this dryer the

Prepress and mat edge trimming

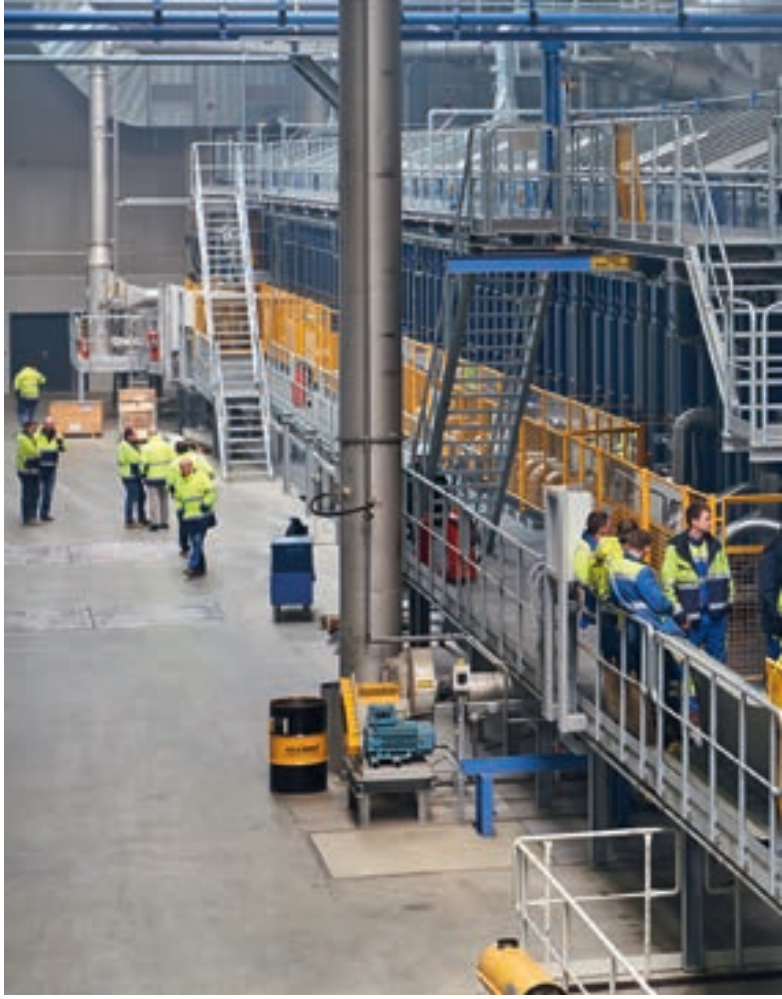
With the cutting-edge 9' x 48.7 m ContiRoll® press the manufacturer achieves an annual production output of up to 500,000 m³. This is double the amount of the previously achieved production output at the Gagarin plant.

largest fibre dryer worldwide. Here, at the beginning of the process chain, the Egger Group starts to implement its sustainable production of wood-based materials. Egger saves up to 15% in resin with the Ecoresinator in the forming line. The reliable Siempelkamp technology offers significant savings potential during the pressing process. The in-house manufacturing of hydraulic components pays off in a number of ways here. On the one hand, the hydraulics are tailored to meet the needs of the press. On the other hand, this specialization opens up new possibilities:

Egger saves up to

15 %

… in resin with the Ecoresinator.



Egger MDF made in Gagarin*

Compared to many other wood-based materials, MDF has higher bending strength, higher tensile strength, and excellent screw-in properties. Unlike particleboard MDF has a significantly higher mechanical stability and is therefore more resilient. MDF is characterized by its load carrying capacity as well as its physical properties that are comparable to those of solid wood. Egger-MDF is especially characterized by:

- edges excellently suited for profile milling
- high edge strength
- optimal density profile
- excellent elasticity
- homogeneous fibre structure
- extremely smooth surface
- high load bearing capacity
- low swell
- DIN EN 622-5 certified and also certified according to Russian GOST standard (requirements for wood-fibre boards according to the dry process)

*extract from the corporate brochure

Precise individual control of each cylinder allows the control of the pressure distribution in the crosswise direction over the entire production width and thus ensures a homogeneous thickness tolerance of the board. Exactly these unique selling points guarantee Egger's accustomed demand on board quality: high densities of the surface layer provide for excellent paintability. Only a board, the sanding tolerance of which has been reduced to the absolute minimum can meet this need. Starting with Generation 8, this is no problem for the ContiRoll® press: together with the individual control of each cylinder in the calibration zone, pressure distribution plates below the hot platens ensure this homogeneous product surface because they eliminate compression fluctuations between the frame gaps so that adhesive bonds in the material cure optimally.

Quality made by Egger
Egger MDF, a quality concept for a product known worldwide, which is now also pro-

Done! Frida is ready for operation

duced at the Gagarin location – with a board dimension of 2,800 – 2,070 mm and a thickness between 6 – 40 mm. Director General Peter Weismayr explains to the invited journalists that the area of the acquired former particleboard plant at "area-65 HA" was extended by two thirds. There are 17 buildings on the premises which are used in different ways. The most cutting-edge production location of the Egger Group consists of warehouses for wood-based panels, office and lavatories and locker rooms, and finally production buildings for five different production processes. These buildings are complemented by impregnation and lamination systems, flooring production as well as a particleboard plant and finally the new highly modern MDF production.

Peter Weismayr is visibly proud of the world's largest Büttner fibre dryer and, of course, of the fast and precise ContiRoll®. Enthusiastically, he explains that the work for this MDF plant did not begin until August 2015 but that the first MDF was already pressed in April of the following year. A complete MDF production plant – completed in only eight months! This was only possible because of the perfect cooperation with the committed and trained personnel of the Egger Group. Everything worked out perfectly, the structural requirements at the location, the necessary preparations of the customer, and the cooperation of both installation teams.

The Siempelkamp assembly engineers were able to rely on optimally implemented machine foundations and complete production buildings. "Ralf Borchers, the responsible project manager, the planning teams at the Egger parent company in St. Johann as well as the teams from Büttner and Siempelkamp have done a great job," says Rolf Trummel, Key Account Manager at Siempelkamp Maschinen- und Anlagenbau GmbH. Here, too, the Egger Group stays true to its guiding principle: 'For us quality means the fulfilment of defined requirements in all areas.'

When it comes to quality, Siempelkamp operates similarly. The technology leader with the guiding principle 'Leadership in Technology' can refer to comprehensive know-how from the high-tech planning with laser scanning, to high-tech production, to experienced installation engineers. Quality prevails everywhere!

A complete MDF production plant – completed in only eight months!

Two new plants for L'Union des Forgerons: **An interim report**

➔ By Rüdiger Bartz

From open-die forging all the way to ring-rolling – so that the technical forging applications at L'Union des Forgerons will continue to meet future product requirements, the traditional French manufacturer of high-quality forgings invested in two new production plants from Siempelkamp. The order from October 2015 included a 30/33 MN open-die forging press, designed as a combination open-die and ring blanking press and a ring rolling mill with radial and axial forces of 4,000 kN each.

Assembly in Krefeld (from left to right): axial frame, radial frame, upper mandrel bearing incl. mandrel lifter and main rollers

Design and construction of both machines were carried out in Krefeld. The ring-rolling mill is the second concept of its kind for Siempelkamp after the successful startup of the first version at JSC Metallurgical Plant Electrostal (we reported in Bulletin 2/14). All main press components as well as their ancillary components were made on Krefeld's factory floors.

An important synergy effect: Siempelkamp Giesserei (foundry) prepared the moulds and cast the structural parts for the press as complex casting geometries from nodular graphite cast iron. Only a short distance away on the same premises, these large components were measured in the machine shop, precisely marked via a laser, and finally machined on the gigantic

Top:
Assembly of the open-die forging press

Bottom:
Mechanical completion of the open-die forging press

portal milling machines. The experienced transfer of the workpieces already pays off at their production in Krefeld. On the same company premises, the workflows can be planned under tight time constraints due to the interdisciplinary cooperation. Costly intermediate transports do not apply.

Two installation starts – mid-term report

The on-time assembly start for the open-die forging press was scheduled for October 2016; for the ring-rolling mill this deadline was set three months later in December. The half-way point is now exceeded at the installation site in the French Mereville, and it is time for an interim statement. When in autumn 2016 the Siempelkamp installation team started their work on site, the on-site foundation for the open-die forging press was measured and inspected to begin with the heavy-load assembly. The first heavy press components installed by the team were the lateral foundation supports, followed by the lower press bolster with the vertical tensile members and tie-rods. At the same time the underground components and the transfer table were installed.

After the static supporting structure of the press was installed, the movable main press component, the ram, was lifted onto the transfer table. The press assumed its final shape when the last significant structural part was installed. The upper bolster with the plunger cylinder (single acting cylinder) was lifted over the tie-rods and bolted to the frame construction. The mechanical assembly was completed in March of 2017 with the assembly of both return cylinders and the assembly units for all ancillary press movements.

Application for special tasks

The design of the press has one distinctive feature: the new press for L'Union des Forgerons was designed for two main tasks. For one thing, the press will be used for open-die forging of special alloys such as nickel-based or titanium alloys and provide flexible production for workpieces with a weight of up to 10 metric tons. On the other hand, one of the press' main tasks will be the manufacturing of ring blanks made of these same alloys. Because the customers of L'Union des Forgerons are primarily from the aerospace fields, but also the oil and gas industries, the individual

Packing of the radial frame

production of workpieces or blanks in small batches is common.

To perform these operations, the new press needs to allow quick re-tooling to meet the corresponding requirements and needs to provide special production processes for open-die forging. The Siempelkamp press will meet these specific requirements for the customer in many respects. Because the press will permit turning the bottom forging die and changing the top forging die, it will be able to pre-form blanks. A tool magazine allows quick changing of forging dies. From now on, Siempelkamp will offer this flexibility to L'Union des Forgerons when manufacturing ring blanks which are further processed by the new ring rolling mill. A lifting and centring device for blanks as well as a tool shifting table will automate the three-stage forging process consisting of upsetting, pre forming, and piercing.

The new open-die forging press will replace an outdated 1,000 metric-ton pre forming press

of French origin at L'Union des Forgerons. Together with the new ring-rolling mill, this replacement will make the company ready for the future. The Siempelkamp ring-rolling mill will replace an outdated system of German make. With the dual function of the forming press and the ring-rolling mill, the manufacturer will achieve maximum flexibility throughout the entire production process by summer 2017 which, due to the enormous competitive advantage, will secure its market position sustainably.

The main assemblies of the ring-rolling mill were meanwhile completed on Krefeld's factory floor and their basic operations were tested in the presence of the customer. Due to the experiences that Siempelkamp made during the complete installation and startup of the first ring-rolling mill of this type in autumn 2013 at its own premises, installation of the most important assemblies of the current mill is sufficient to guarantee proper system function. The fully wired and piped assemblies will be transported, after the acceptance test by the customer, to Mereville in the French department of Meurthe-et-Moselle. Once on site the installation work will be limited to the completion of the assemblies and their adjustment to one another. At this point the production from one source pays off because L'Union des Forgerons is able to start operating its new ring-rolling mill sooner. Together with the open-die forging press, the French specialist for forgings will maintain its leading market position in the area of forging of special alloys.

Assembly of the radial frame

Loading of the radial frame

1 + 1 = 5:
Integrated concept "dryer plus energy plant": development from 2012 to 2017

➜ By Carsten Otto

In February 2012 Büttner Gesellschaft für Trocknungs- und Umwelttechnik mbH and Siempelkamp Energy Systems GmbH merged to form Büttner Energie- und Trocknungstechnik GmbH. The Krefeld and Hannover locations gave their expertise as a specialist for drying and energy plants new clout within the Siempelkamp Group. The benefit for the plant operator: two components, which belong together in regards to process technology and plant engineering, are perfectly coordinated and supplied to the construction site. It is time for a review of the synergy effects of the last five years.

4 x Büttner competence: left Carsten Otto (Head of Sales), founder August Büttner on the portrait, right Andreas Klug, Dirk Homann (Management)

Arauco, Bennettsville, SC, USA: the third new Büttner particle dryer at this location

Siempelkamp's motto "All from a single source" was literally fuelled by the merger: Customers that buy dryer and energy systems, usually opt for a turnkey project. Primarily topics evolving around energy technology and combustion plants are treated with a lot of respect by plant operators. "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 have not only optimized numerous processes in previous years but also streamlined them," describes Carsten Otto, Head of Sales at Büttner.

For Büttner this decision was both a strategy for the future and a step toward "returning to the roots". The company, which was established in 1874 by August Büttner, started out by engineering energy plants. Büttner did not start focusing on its core business of today – dryer solutions – until 1928.

"Value pack"

The 2012 merger resulted in numerous advantages that plant operators benefitted from over the last five years. The engineering effort is significantly reduced as soon as a customer buys the dryer and energy system from a single source. The logistics processes as well as assembly and startup have also become more efficient. Additional advantages have opened up in the area of procuring component parts: even prior to the merger, Büttner purchased parts globally and always close to the plant operator. Since the merger this concept has also been applied to the purchasing of parts for energy plants. Customers of energy systems benefit from parts that were purchased close to their final destination and from the corresponding lower transport costs.

Regarding process technology as well as plant engineering competence, energy and dryer systems clearly belong together. Process technology and automation are optimally adjusted to one another in one department. This has a positive impact on product quality. Consequently, Büttner's strategy to offer both products as an integrated concept continues to receive the approval of the customers.

Homanit, Grosno, Poland: Büttner fibre dryer and energy plant for the new MDF plant by Siempelkamp

Increasingly more often customers are ordering both their plants for process heat generation and drying as an integrated concept.

Kick-off in Sweden, current success in Canada/Europe: two milestones

The kick-off milestone of Büttner's successful concept was set in 2011/2012 when IKEA placed the very first combination order. This means one of the first complete plants by Büttner Energie- und Trocknungstechnik GmbH was ordered by one of the world's leading furniture manufacturers. The Swedish-based company IKEA intended to expand the capacity at the Hultsfed location and ordered from Büttner a new particle dryer together with the appropriate energy plant.

The type 4.6 x 24 R single-pass drum dryer has a throughput capacity for dry chips of 25 t/h. The scope of supply of the dryer consisted of a hot gas dust removal system, a pre-dryer, a drum dryer, the steel construction, and the entire thermal insulation.

1.400 MW

is the combined installed thermal output of the 27 complete plants that customers ordered from Büttner between 2009 and the beginning of 2017.

The energy plant with a total combustion capacity of 36 MW will use a 53 m² grate to generate around 22 MW of flue gas for heating the dryers and 13 MW for heating thermal oil. As with the drum dryer, Büttner also supplied the entire range of equipment from the fuel storage and conveying system to the thermal oil heater and the steam generator including the water treatment plant as well as the piping, brick lining, steel construction, and insulation. The complete installation of the dryer and energy systems was also Büttner's responsibility.

The most recent example of Büttner's successful combination concept: the Canadian OSB manufacturer Norbord is relocating a continuous press from its location in Alberta, Canada, to Inverness, Scotland, for a new OSB line. In the course of this relocation Norbord ordered from

Büttner a new OSB drum dryer including the corresponding energy system in 2016/2017. The type 6.5 x 36 R single-pass drum dryer has a throughput capacity for dry strands of 45 t/h. Next to the entire ventilation system equipment including steel construction and insulation, the scope of supply for this order also includes a 500 m³ wet-material horizontal metering bin.

The energy plant with a total combustion capacity of 55 MW will use a 75 m² grate to generate around 40 MW of flue gas for heating the dryers and 15 MW for heating thermal oil. As with the drum dryer, Büttner will also supply the entire range of equipment from a live bottom for the fuel storage to the primary circulation system for thermal oil which will include the piping, brick lining, steel construction, and insulation. The complete installation of the dryer and energy system is also Büttner's scope of supply and will be completed by mid-2017. This order once more confirms Büttner's "all from a single source" competence. Customers ordering the combination package consisting of dryer and energy plant benefit from an integrated concept. Both products are perfectly coordinated to one another from the engineering to the startup.

Swiss Krono in Vasarosnameny, Hungary: Büttner energy plant and strand dryer with the new metering bin for wet strands

Camsan Entegre, Hendek-Sakarya, Turkey: Büttner fibre dryer and energy plant for the new MDF line

Dryer plus energy plant: applied worldwide and a successful concept in all areas of wood-based materials

The cooperation between Büttner and SES began in 2009 and quickly became a success measured by the high level of acceptance among customers alone. From 2009 to the beginning of 2017 plant operators ordered a total of 27 complete plants consisting of energy and dryer systems.

All wood-based material areas including, for example, MDF, OSB, particleboard, and pellet production are represented equally concerning the demand for dryer and energy systems. The concept is also confirmed by the fact that the large wood-based material manufacturers have repeatedly ordered complete plants.

Furthermore, the demand is globally present: geographically, Büttner has supplied and installed its complete solutions in all important regions of Europe, the USA, South America, Russia, Turkey, China, and Southeast Asia. The combined installed thermal output of these 27 plants amounts to over 1,400 MW.

INTERVIEW

"SOMEWHAT BUMPY START, STRONG MERGER":

Interview with Andreas Klug and Dirk Homann, Managing Directors, as well as Carsten Otto, Head of Sales at Büttner

By Dr. Silke Hahn

Bulletin: Mr. Homann, Mr. Klug, Mr. Otto, which conclusions have you drawn from five years of "dryer and energy plants from a single source"?

Dirk Homann: It was a somewhat bumpy start because after the merger different personalities, working methods, and decision-making paths had to be harmonized. Even though we had worked successfully together in two separate companies prior to 2012, the individual departments and competences for the new company had to be properly organized after the merger.

Carsten Otto: We had mastered the construction of dryers and energy systems but our team still had to grow together. Both locations have learned a lot from each other and when I reflect on the remarkable number of orders we are processing successfully, then I realize that this number is the best award for Büttner's employees. Our customers and potential customers will also take exactly that into account when it comes to their new projects.

Andreas Klug: Next to a good product, the attitude, commitment and qualifications of the employees are the key to the success of a company. After the initial come-together events, we were able to combine the individual competences in departments over the last five years. Standardizing the work methods and systems, providing a high level of training as well as the ongoing communication between the company's locations through an intense personal exchange and time-saving video conferences have ensured the high-quality and on-time installations of our systems in the end. This is exactly what our customers expect from us. My conclusion after five years is that we have built, in a short timeframe, a strong team as well as technologically advanced our products.

from left to right:
Carsten Otto, Andreas Klug, Dirk Homann

Bulletin: What can be said about the specific character of the respective orders – for example, about outstanding performance, size, product range or region where the integrated concepts are sold?

Carsten Otto: Our complete package consisting of dryer and energy plants including the proven Büttner burners has been finding a ready market worldwide. The acceptance by our customers and their confidence in us is high. Our customers appreciate that the former, partially difficult, interface between both systems was eliminated. The many possibilities to select, together with the customer as a team, the right dryer as well as discuss the energy demand and to correctly determine the available fuels at the same time and then, finally, to dimension the appropriate energy supply system result in a clear advantage for the future operator of the plant.

However, Büttner will of course continue to work together with other manufacturers if the conditions on site do not allow for a different solution and the customer so wishes. We will continue to sell high quality dryers, energy plants, and burners as individual solutions.

Bulletin: To what extend did you manage to bring the competences of two different teams, operating at two different locations, under a common denominator?

Andreas Klug: We first combined the areas of process technology, design, purchasing, and automation to implement the customer advantages of the combination package as quickly as possible. Priority was given to uniform design criteria and components as well as the very important control system because this was expected from Büttner in terms of competence and quality. This process did not always go smoothly. Next to extraordinary organizational efforts we had to, of course, make sure not to lose sight of our customers, projects, and orders.

Dirk Homann: The Büttner management is very satisfied with the current state of business after the relatively short timeframe since the merger. Nevertheless, we will not sit back and relax but continue to advance, as is typical at Büttner.

ASDOC – A smart concept that satisfies customer requirements: **Siempelkamp NIS successfully carries out a full system decontamination at NPP Biblis**

➜ By Andreas Loeb

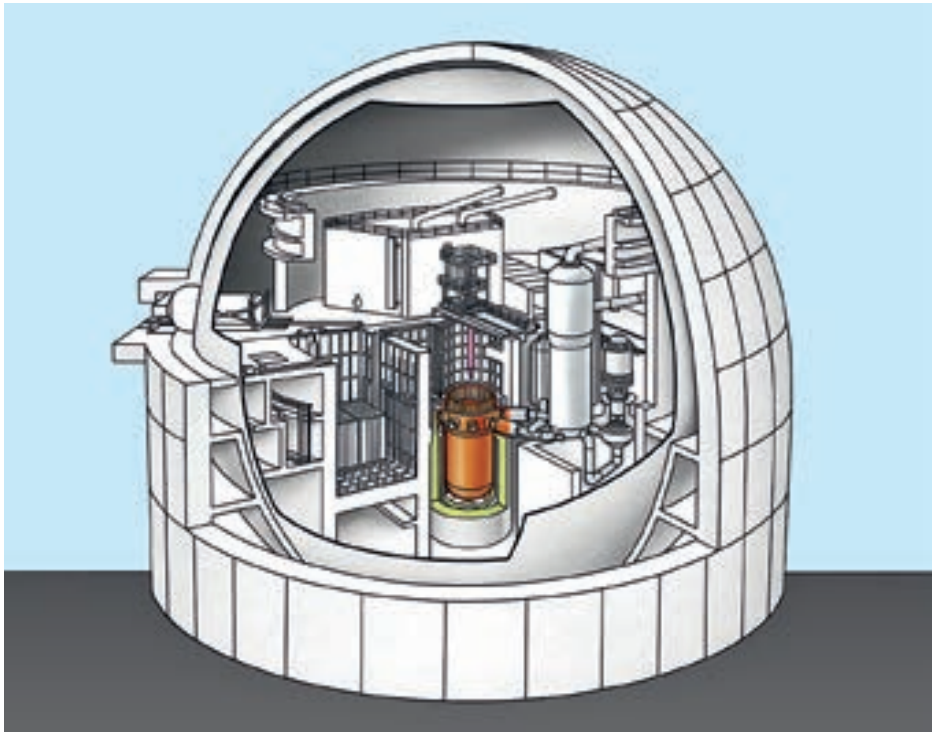
From October to November 2016, Siempelkamp NIS Ingenieurgesellschaft mbH carried out a chemical decontamination of the primary circuit in unit A of the nuclear power plant Biblis. It was a combination of innovation and economy that lead to a successful completion of the project!

Power plant Biblis in Hesse

Located in the south of the federal state of Hesse, the nuclear power plant Biblis with its two nearly identically constructed pressurized water reactors generated a power output of up to 2525 MW up until the German government decree to phase out nuclear power. As a result of the Fukushima nuclear disaster the plant operator – RWE AG – shut down operation of unit A. At that time, unit B was already undergoing its routine outage, so that it was not necessary to shut it down.

For the plant operator, the end of power operation made a change in thinking necessary. A major energy supplier prior to the shutdown, RWE's main focus now had to shift to decommissioning planning. For this, the contacts to Siempelkamp NIS were one of the primary factors. Since the commission of the two units in 1974 and 1976 the physics department of NIS had been responsible for nuclear calculations and core design and was hence a major contributor to a safe and economic plant operation.

Due to its expertise in process engineering the Alzenau-based company was invited to participate in the tender for a full system decontamination (see info box 1). In this tender the experts of Siempelkamp NIS eventually prevailed by demonstrating their competence in the field of primary circuit decontamination. "Our task



Cross section of a pressurized water reactor

was to conduct a test decontamination of a part of the system, the pressurizer surge line. The overwhelming success convinced both the operator and the authorities, so that we were awarded with the qualification required for the project," says Markus Thoma, the Project Manager for Decommissioning and Consulting at Siempelkamp NIS.

It was not only the technical capacities, but also the economic aspects of the concept that induced RWE to award Siempelkamp NIS with an order: "Our approach incorporated already available plant facilities as well as the staff at Biblis, so that it effectively integrated existing resources," says Andreas Loeb, Vice President for Decommissioning and Consulting. And last but not least, Siempelkamp NIS had already been known as a reliable partner, having proved its competence in the form of hardware deliveries, fuel management during plant operation and calculation of accruals.

FSD-Team Nuclear Power Plant Biblis Block A (RWE and Siempelkamp NIS)

What is a Full System Decontamination?

At an operating temperature of > 180°C during power operation of a nuclear power plant, a protective oxide layer will develop on the media-wetted inner surfaces of the piping system and components. In this process, radionuclides are incorporated into the oxide matrix.

The goal of a chemical decontamination process is to dissolve this oxide layer and keep it in solution, so that the incorporated radionuclides can be removed.

When the order for decontamination of both units was placed the project initially started in summer 2013 with the full system decontamination of unit A, using the ASDOC process (=Advanced System Decontamination by Oxidizing Chemistry) developed by Siempelkamp NIS. This leads to an efficient decontamination of the primary system as well as the auxiliary systems of a nuclear power plant. The concept: available service fluids and plant-inherent operating systems are an integral part of the project and are used effectively. After an interruption of the process after two decontamination cycles the process was adapted in a comprehensive development process, so that it can also be used in an environment of weak materials with a low acid resistance – This was the birth of AS-DOC_D-MOD! This concept was then applied when the project continued in Biblis on October 4 2016.

The process chemistry is based on an oxidation step and a reduction step. An acid is added to stabilize the pH value and to avoid precipitations.

The primary circuit decontamination is conducted without a separate decontamination facility and exclusively uses in-plant systems, such as dosing facilities, TC, TH and TA system.

Biblis project: "Our approach incorporated already available plant facilities as well as the staff at Biblis, so that it effectively integrated existing resources."

ASDOC_D-MOD: Innovation with many advantages

- Primary circuit decontamination integrates plant operating staff
- Process control by Siempelkamp NIS from outside the containment
- No elaborate erection of equipment in radiation fields
- Reduced danger of leakages: The primary circuit does not need to be opened, the cooling water is not led along additional external facilities
- Only soluble compounds, no precipitations of oxides in the process
- Small and well-controllable use of chemicals
- Small amount of waste

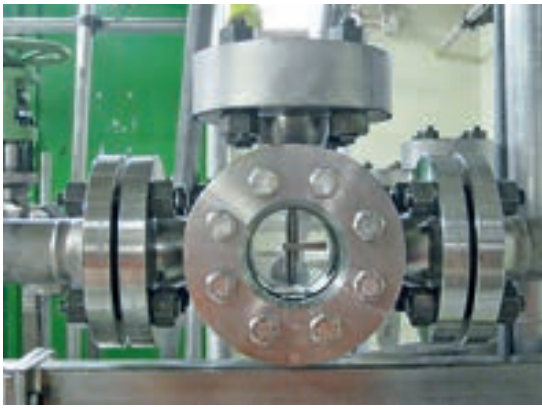
During decontamination, the plant itself is operated according to the plant's operating manual. In the same way, the process-accompanying analytics make use of in-plant systems.

An extensive analytic scope with appropriate analytic frequency has been specified in order to monitor the decontamination process during project implementation. The chemical parameters were analyzed and the wetted materials were monitored by integrating an external facility into the decontamination circuit, again by using mostly in-plant analytic technology. The decontamination progress was tracked with a total of 191 fixed dose rate sensors. 72 of these measuring points had been predetermined as representative of the complete facility and as the basis for the contractually agreed decontamination success (average decontamination factor DF=75).

All analytic data generated during the decontamination were promptly electronically transmitted to the data evaluation and process control centre outside the controlled area. Process control hence also took place outside the reactor building by a joint team of plant employees and Siempelkamp NIS in three-shift operation. Siempelkamp NIS was present on site with a wide variety of experts, so that all requirements could be fully met: Engineers, chemists and physicists contributed to the project success in the same way as the chemical lab workers who performed analyses, or the technicians and mechanics who supported the site managers.

This team conducted a total of 13 decontamination cycles within six weeks, so that a total activity of 7.8 E12 Bq Co-60 could be removed from the plant system during the decontamination and then deposited on ion exchange resins. After the decontamination the 72 reference measuring points showed an average decontamination factor of DF=90.2, which was also confirmed by the authorities.

"Perfectly done," concluded Rüdiger Juch, RWE's project manager, in December as the final report was being written. And finally, as after A comes B, block B is next in line and is planned to be decontaminated starting in the third quarter of 2017 as well. "This project has attracted a great deal of attention in the industry, and we have already received requests for comparable projects," said Andreas Loeb.



Left: Valve Housing after Decontamination

Right: Inspection glass of the monitoring System with built-in sample

Monitoring system in the decontamination circuit for material samples during the running FSD

Siempelkamp Maschinenfabrik (factory): **New tasks for the production**

→ By Dr. Joachim Martin and Ralf Meier

With Siempelkamp, plant operators not only find a partner that can supply large high-quality castings but a world market leader that can also machine these components at its factory located next to the foundry. Currently, the company is laying the foundation to provide additional services at its Krefeld location.

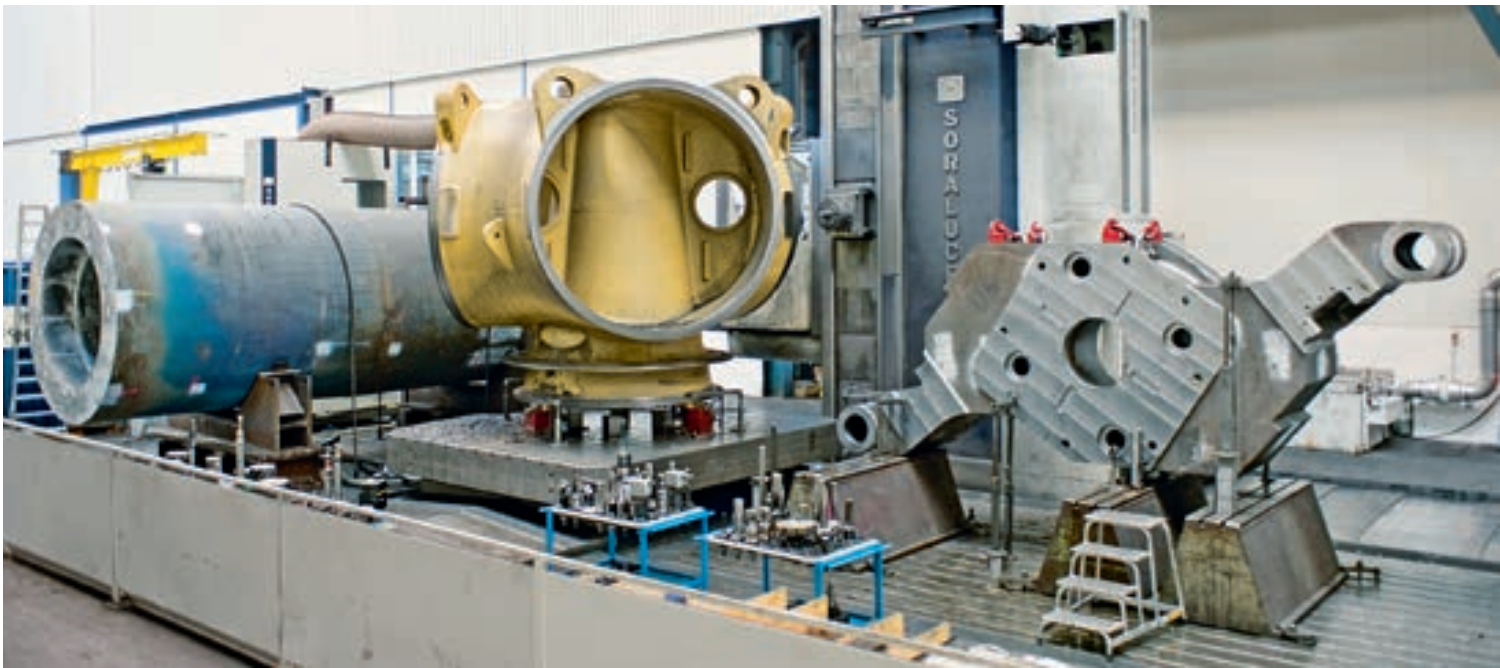
The services of Siempelkamp Maschinenfabrik range from purchasing the material to flame cutting, welding, and straightening, mechanical machining, deep hole drilling, piping, and hydraulic assembly to the assembly of press component groups and painting. Furthermore, the Maschinenfabrik is the right partner regarding the final assembly of large presses including their wiring and startup.

Comprehensively equipped machinery is the basis for our work. The core competence of the Factory is the area of large-scale metal cutting. We can handle large workpieces with weights of up to 450 metric tons and machine them to tolerances as low as 0.03 mm/m.

Since 2016 a boring mill made by Bimatec Soraluce set up at the Krefeld location has been helping to ensure that the Maschinenfabrik continues to successfully position itself in this field. This machine is extremely versatile when it comes to the machining of large parts. Since summer 2016 this boring mill has been in high demand machining parts that were cast in the neighbouring Siempelkamp Giesserei (foundry).

2017: Turning and milling centre for the Krefeld location

This year, Siempelkamp Maschinenfabrik is preparing to further centralize the Group's important manufacturing skills in Krefeld. The take-over of a turning and milling centre paves the way for future machining of MOSAIK® containers in Krefeld. The necessary approval procedures are currently underway; the vertical range of manufacture at the headquarters of the Siempelkamp Group will soon set another milestone!



Multitasking for the Bimatec Soraluce: on the left a CASTOR® cask body, in the centre a rotor hub for a wind power plant, on the right, waiting to be machined, the cross beam for the new open-die forging press designed for L'Union des Forgerons, France.

Turning and milling centre in the factory

Machine with workpiece ready for inspection: two parallel production processes (Photo: WFL)

New: multi-functional turning-boring-milling centre

Mid 2016 the idea was born to technically and economically optimize the manufacture of cylinder components in Siempelkamp's factory by using a new machine concept. Alternative production processes and flows aiming at a more efficient production of cylinder components were discussed with several machine tool manufacturers. Soon it turned out that one production concept best met the need for the Siempelkamp cylinder components. This is a concept that allows for two production processes to run off simultaneously in one machine. The workpiece is automatically transferred from one spindle to the other and can thus be machined on all six sides without manual intervention.

At the end of 2016 Siempelkamp decided to buy a Millturn M80-G made by WFL located in Linz, Austria. WFL is regarded to be the leading supplier in the area of integrated machining processes. WFL is the only manufacturer worldwide that focuses exclusively on the production of multi-functional turning-boring-milling centres.

To combine all machining and measuring operations in one single WFL Millturn will increase the production efficiency tremendously. This is an investment that will pay off in virtually no time!

Millturn – technical data:

Max. turning length:	3,000 mm
Max. turning diameter:	1,000 mm
Number of tools:	108
R.p.m. range:	up to 1,600 1/min
Drive power:	80 kW (left) 90 kW (right)
Max. torque:	5,860 Nm (left), 4,800 Nm (right)

Turning-boring-milling unit:

R.p.m. range:	up to 5,000 1/min
Drive power:	58 kW
Max. torque:	up to 640 Nm

Clamp once – machine until completed

Owing to their multi-functionality Millturn turning-boring-milling centres with five programmable axes allow the complete machining of precise and complex workpieces. The objective to machine and measure on only one machine tool a wide range of workpieces with a minimum number of setups required has been achieved. Due to the interpolation of up to five axes, even free-form surfaces can be machined easily.

The advantages of two parallel production processes:

- reduced cycle times
- automated clamping process
- increased utilization
- more efficient use of personnel
- improved quality
- increased flexibility

Millturn M80-6 (Photo: WFL)

Siempelkamp Logistics & Service GmbH:
The new hall is completed!

➜ By Stefan Wissing

Building work of the new SLS logistics hall started on 1 July 2016 (please refer to our Bulletin 02_2016). Less than 10 months later – since the end of April 2017 – the hall is ready for use i.e. it can be furnished and equipped. Best prospects for plant operators who want to be on the safe side when it comes to spare parts supplies!

The newly erected service and logistic centre offers significantly higher capacities for spare parts storage. "The logistics centre is of enormous importance for our customers who will profit from an even higher efficiency and faster spare parts supply of our service unit," says Stefan Wissing, Managing Director of Siempelkamp-Logistics & Service GmbH and Spokesman of the Board of Directors of Pallmann Maschinenfabrik GmbH & Co. KG.

Since 24 April 2017 the hall is ready for use i.e. it can be furnished and equipped, goods have been ordered, shelves are filled. This is organised by a newly implemented warehouse software. It enables an even more efficient handling of incoming goods, storage, order picking and dispatch.

A 32t crane supplied by Siempelkamp Krantechnik, a modern lift for storing the sundries

New logistics hall in Bad Kreuznach: view from the outside

"Work in progress": flooring work in the hall in March 2017

First storage in the pallet storage rack

The new vertical lift shuttle is being equipped

as well as an additional electric forklift and other necessary equipment optimise the work of the warehouse workers.

SLS has always focused on reasonable and reliable stockage. Owing to the new dimensions even more items can be held in stock. In addition, short distances to the airport in Frankfurt/M enable to dispatch any part within 24 h to all major international airports. The new system will help SLS to simplify its logistic processes, accelerate operations and lower its operational costs. Plant operators, in turn, may rely even more on SLS in receiving fast and targeted support in an emergency.

"Known consignor": Dependability certification

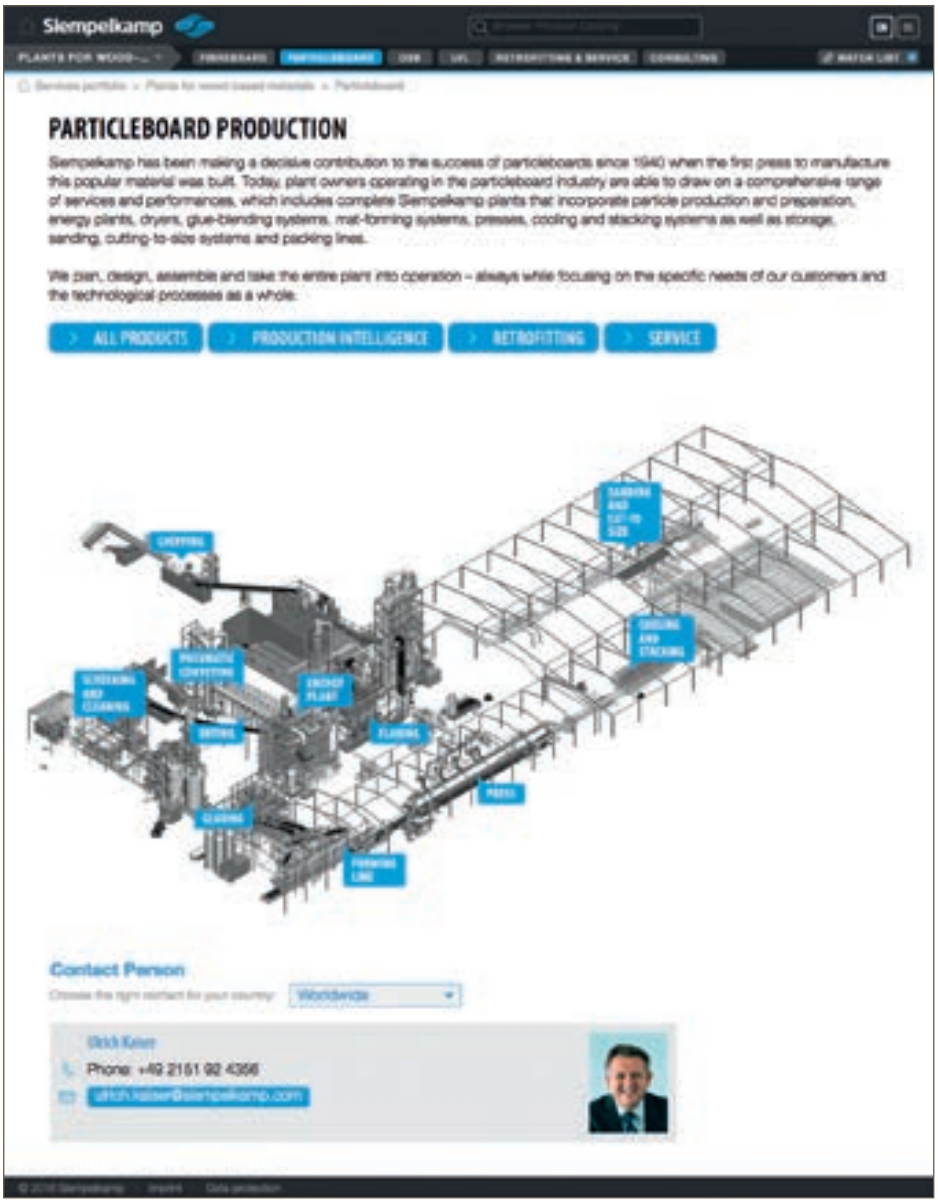
The "Known consignor" certificate will be a dependability certificate for the new logistics hall, which SLS was awarded in 2012 and which was re-confirmed in 2015. This certificate is awarded within an audit by the Luftfahrtbundesamt (federal civil aviation authority). Our customers will receive their spare parts as fast as possible by one of our international partners. "While airfreight has to be checked by the respective authorities at airports or freight forwarders before being loaded on board an aircraft since 2013, we carry out these checks ourselves at our site in our function as "Known consignor". That implies that the freight leaving our warehouse is considered to be safe," says Stefan Wissing.

The new hall meets all the structural and organisational preconditions and safety requirements. We are thus able to continue to supply the goods without delays caused by external inspections. A sophisticated safety policy introduced in Bad Kreuznach renders X-raying of the freight and manual checks by external checks superfluous.

New Siempelkamp tool to be presented at LIGNA 2017:
Digital product catalogue now online!

➔ By Dr. Andreas Wieners

At LIGNA 2017 Siempelkamp will present a new online tool which makes all information regarding the products of the Krefeld machinery and plant engineering specialist even more accessible. The digital product catalogue is ready for service and contains all the important key data for plant operators and their teams in unprecedented clarity!



View in the product catalogue – the complete overview

The product catalogue covers six central Siempelkamp service areas including wood-based materials, rubber, and composites as well as metal-forming. It also comprises services regarding upgrades and consulting. In the area of consulting customers receive important information regarding topics that complete the Siempelkamp concept from the planning of entire plants to financial services to process technology.

How exactly is the catalogue presented? "We primarily paid attention to clarity and interactivity," describes Dr. Andreas Wieners, Project Manager for Siempelkamp's product catalogue. "For example, customers have the opportunity to virtually navigate through a complete plant to get a closer look at specific parts." From the wood-yard, the virtual path leads to the chip and fibre production and from there to all other plant sections including the ContiRoll® all the way to the laminating plant. Product data sheets on either PC, IPad, or smartphone provide plant operators with all the relevant features, functions, options, and

advantages of Siempelkamp's products. Tables to select product sizes and versions, three-dimensional model views, photographs, and of course the right contact partner complete the "concept". The entire catalogue is available in German and English.

Cross-media approach: Internet presence and product catalogue

To what extent does the new digital product catalogue correspond with Siempelkamp's Internet presence? "The product catalogue continues, in a cross-media approach, what the classic online presence has already been touching on, however, the bandwidth and depth of the content have been prepared significantly more detailed for the customer in the new tool," says Dr. Andreas Wieners. The selection of the desired depth of information can be implemented via a user-friendly menu navigation.

Digital product catalogue – Your access

http://products.siempelkamp.com

Who will benefit from this new online tool? Primarily customers and interested parties who request more information on Siempelkamp's portfolio. The data is especially interesting for plant and site managers, planners, project managers, and technical purchasers. Wherever there is online access, in the office and at the construction site, information can be visualized clearly and concisely on any terminal.

Readily available information – whether you are in the office, at the construction site or on the road

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