Complete systems for the wood-based products industry
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## Complete systems for the wood-based products industry

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Siempelkamp plants for the production of wood-based products – competence from a single source

For more than 130 years, Siempelkamp has been building machinery and plants for the wood-based products industry. Over the course of time the mechanical engineering company from Krefeld has integrated into its portfolio more and more areas of expertise, the products and the process know-how of a wide range of subsidiaries and holding companies. All process-related machines are developed and built by Siempelkamp itself, which also tailors the design to customer requirements. With approx. 300 ContiRoll® systems sold, this has made the company into one of the world’s leading manufacturers of integrated wood-based products plants.

Under the Siempelkamp roof, all providers of key components and key services offered by the company come together to form an effective whole: innovative machine concepts from the Research and Development Centre, technical and technological expertise from the project work and planning unit, design, manufacturing, assembly and commissioning on-site, as well as comprehensive After Sales Service.

Regardless of whether customers purchase the entire product range or only a plant section from Siempelkamp – the items on offer are equally reliable, efficient and customised!
The key to a perfectly running system is an integrated planning process. This applies both to an entire production plant and to partial systems. Together with its Belgian subsidiary Sicoplan, Siempelkamp can look back on decades of experience of process engineering, project work and the comprehensive planning of wood-based products plants.

Siempelkamp’s plant project planning offers the best opportunity to get to know the Siempelkamp way of working and their planning skills as early as in the project development phase. Approval planning, the design of the customer’s provisions, initial profitability analyses for the feasibility study, a business plan or total investment costs: Siempelkamp supplies transparent data during the project development phase thus providing the customer with the optimum basis for estimating the planning, delivery, investment and financing costs.

With Siempelkamp, investors decide from the very beginning in favour of an experienced and reliable partner as well as a full-service concept for all of their planning tasks:

**Services**

- Process engineering and machine technology systems planning, including a raw material and energy requirement calculation
- Support with approval procedures
- Planning of entire production systems by the subsidiary Sicoplan
- Design of mechanical and pneumatic conveying equipment by Sicoplan
- Design and production of all process machines in the Siempelkamp Group
- Technological consulting and optimisation of the production process from the technological and economic aspect
- Modernisations, expansions and retrofitting of existing plants
Funding support

Where necessary, Siempelkamp is able to provide a team of specialists to offer advice to global customers with respect to their individual financing preferences in their short-term and long-term business. Together with the customer, the Siempelkamp specialists customise structures and solutions, which are subsequently developed in cooperation with selected financial institutions. Here, modern financial know-how is combined with Siempelkamp’s long-standing expertise as an experienced mechanical engineering company. Customers appreciate this service especially at times of major fluctuations on the capital markets.

Services

- Trade financing
- Project financing
- Export financing
- Domestic and cross-border financing
Siempelkamp has its own production facilities at various locations. At its headquarters in Krefeld/Germany, Siempelkamp has been building plants for customers all over the world for more than 130 years. Massive investments in recent years have upgraded its production facility to meet today’s requirements.

Additional equipment is supplied by Siempelkamp’s subsidiary CMC Texpan, Colzate/Italy, which has long been building machines for the forming line as well as the glue blending and metering system.

To bring its key components even closer to the market, Siempelkamp set up another two production facilities. Since 2004, Siempelkamp Wuxi Machinery Co. Ltd. has been satisfying the demands of its Asian customers fast and targeted. This production facility focuses on components, the major part of which is handmade.

At the end of 2008 Siempelkamp established another production facility at Blatnice/Czechia. This facility produces forming line components from the mat former to the roller conveyors. Thanks to this facility, Siempelkamp is able to accommodate its European customers even faster.
Wood preparation systems

Within Siempelkamp’s corporate structure based on the “All from one source” principle, wood preparation has an important role to play. It is a key factor in Siempelkamp’s portfolio ranging from debarkers to packaging lines. Ultimately, it is the quality of the prepared particles, fibres and strands which make or break the quality of the finished wood-based panels. Together with its subsidiaries and holding companies, Siempelkamp offers extensive expertise and decades of experience in the development and production of machines for wood preparation.

Wood preparation for particle board systems
Siempelkamp offers the entire range of machines required for the production of high-quality particles: drum chippers, knife-ring flakers, hammer and surface-layer furnish mills. Urban woods can also be processed following treatment in special equipment.

Gentle treatment of the particle materials is guaranteed by the Siempelkamp sifter technology, which comprises disc, roller and vibrating screens. Coupled with innovative conveyor technology (cf. page 24), Siempelkamp supplies an all-round package for the production of excellent surface-layer and core-layer particles. For the intermediate storage of the particles, Siempelkamp provides bins and silos as well as dosing systems for an even feeding of the downstream units.
Wood preparation systems

Wood preparation for MDF systems
For the production of high-quality MDF, Siempelkamp also has first-class wood preparation expertise on hand. The distinguishing features: high performance, low production costs and high-quality fibres. Siempelkamp provides sophisticated chipping and refining solutions: for the debarking of round timber, Siempelkamp supplies special rotor debarkers; thanks to the optimisation of the chipping geometry and material in-feed, drum chippers produce chips of the best quality. The chips are then finally put into interim storage in silos or bins with different discharge systems, such as live bottom discharge systems with dosing and rotary screws. Precisely metered discharge is of top priority here. Together with long-standing partners, Siempelkamp offers high-performance, energy-efficient refiners to MDF producers.

Wood preparation for OSB systems
For the production of first-class strands, Siempelkamp has developed its own strander: with a diameter of up to 2,500 mm, a cutting width of up to 850 mm and 56 blades, the Siempelkamp strander achieves a throughput of 45 t/h O.D. with a strand thickness of 0.65 mm. Other special features are part of the new design: the front support ring is equipped with a number of high-quality wear segments. The improved blade arrangement also improves the strand quality.
Siempelkamp wood preparation technology – an overview

- Debarker
- Chipping, flaking
  - Drum chipper
  - Knife-ring flaker
  - Strander
  - Hammer mill
  - Double-stream mill
  - Defibrator
- Fractionising / sifting / grading
  - Disc and roller screens
  - Vibrating screens
  - Wind sifter
  - Magnetic separator
  - Non-ferrous metal separator
  - Chip dry-cleaner
  - Chip washer
- Intermediate storage
  - Live bottom bins
  - Round silos
  - Bottom belt bin
  - Dosing bin with screw bottom
Irrespective of the use of thermal oil for the press, steam for the refiner, flue gas for the dryer or hot water for the building heating: Büttner energy plants ensure the stable supply of process heat. Nonethe-less this is achieved with an economical use of wood as a resource and a reduction of CO₂ emissions. The use of wood residues from production, such as bark, screening or sanding dust, ensures that the plants are highly cost-effective. Büttner covers the entire range of supplies and services – from planning, through supply to the commissioning of the entire energy plant, including the training of the customer’s personnel. With the connection of a directly heated dryer system the level of efficiency is greater than 95%.

**Product details**

- Furnace capacity from 10 – 100 MW
- Air-cooled grate firing – if necessary in combination with a combi burner system
- Process heat in the form of flue gas, hot water, thermal oil and/or steam
- Process control adapted to wood-based products plants
- Integration into new and existing plants

**Designed for**

- solid fuels (e.g. residual and waste woods)
- pulverised fuels (e.g. wood or coal dust)
- gaseous fuels (e.g. natural gas)
- liquid fuels (e.g. light and heavy oil)
Dryers

Siempelkamp supplies turn-key plants for the drying of particles, fibres and strands – each plant adapted to individual customer requirements. The product range comprises flash tube dryers, directly heated drum dryers for particles and strands, particle dryers heated indirectly with saturated steam, as well as single and two-pass fibre dryers. All dryers with drying capacities of up to 70 t/h and higher are used for industrial drying on a large scale: high levels of availability, energy-efficient operation and a reduction in the exhaust air quantity included. The components of the drying systems include heating systems and burners as well as state-of-the-art automation systems.

Everything is included: the planning and design of individual drying plants, the supply of the components and the economical production of large components, such as drums, close to the customer’s site as well as their assembly and start-up.

**Advantages**

- Drying capacities 70 t/h and higher
- Low specific energy consumption
- Individual solutions for various gas washers
- Short assembly and commissioning times by experienced specialists
- Performance improvement and upgrading/retrofitting of existing plants (all manufacturers)
The modular concept of Siempelkamp’s glue and chemical preparation system as well as metering and application systems not only ensures the best cost/benefit ratio, but also the best possible end product. Uniformly accurate metering of the glue blend and the optimum wetting of the particles are the basic requirements for a board to achieve good mechanical properties.

Siempelkamp metering bins are high-performance machines which accurately feed the material to the downstream glue application units. The improved levelling of the filling height and precision scales to monitor the metering make the glue application system even more efficient. The various machine sizes are perfectly adapted to the respective plant and process capacity.

Integrated chemical preparation systems are used for the accurate preparation and metering of glues and additives. For the purposes of preparation these glue kitchens are equipped with load cells, with state-of-the-art flow meters for the metering process, and are tested at Siempelkamp’s before delivery.

By means of an expanded blending chamber and a lower operating speed, Siempelkamp glue blenders achieve long dwell times and therefore the good blending of particles. The lower centrifugal forces reduce the level of particle crushing; new and easy-to-align blending tools ensure fast and optimum blender adjustment.
Glue blending system: Ecoresinator for MDF, Ecoresinator P for particle boards

The glue blending systems Ecoresinator and Ecoresinator P stand for glue saving and simultaneously optimised product quality for the production of MDF and particle boards.

Thanks to the special nozzle technology made by Schlick and the use of hot steam, the Siempelkamp glue blending system for fibres, Ecoresinator, has been shown to save 15% and more glue compared to the traditional blowline glue blending process. The homogeneous distribution of glue also improves the quality of the board and its surface.

Based on the success of the Ecoresinator, Siempelkamp has developed the Ecoresinator P for the homogeneous glue blending of particles. During initial trials on a customer’s plant it was possible to demonstrate glue savings of up to 10% in the core layer. Through the optimum wetting of the particle surfaces, less energy is required for the subsequent blending of the particles – provided that the particles are prepared by the customer in accordance with the Siempelkamp specifications.

For both the fibre and particle glue application processes, Siempelkamp supplies a glue injection system which is ready for connection and which includes a switchgear cabinet and automation software. The production data is continuously recorded, monitored and optimised with the Prod-IQ® process control system developed by Siempelkamp. With low investment costs, the Ecoresinator glue blending and metering system is also suitable for the subsequent upgrading of existing plants and can be integrated into the production plant within a very short time.
Mat former systems

A wood-based board is only ever as good as the mat forming systems used. Regardless of whether particles, fibres or strands are processed – Siempelkamp has invested in a good deal of development to develop excellent mat former systems to produce various kinds of wood-based boards.

In combination with the ContiRoll® press, these state-of-the-art systems are technically and technologically advanced machine units. The result: high-quality wood-based boards with which even the most demanding end customers are satisfied!

<table>
<thead>
<tr>
<th>System</th>
<th>Surface layer</th>
<th>Core layer</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particle board</td>
<td>Ecoformer SL</td>
<td>Cageformer</td>
<td>classic</td>
</tr>
<tr>
<td></td>
<td>Ecoformer SL</td>
<td>CrownFormer</td>
<td>combination</td>
</tr>
<tr>
<td></td>
<td>CrownFormer</td>
<td>Cageformer</td>
<td>combination</td>
</tr>
<tr>
<td>MDF</td>
<td>Starformer</td>
<td>CrownFormer</td>
<td>mechanical</td>
</tr>
<tr>
<td>OSB</td>
<td>DiscFormer</td>
<td>FinFormer</td>
<td>classic</td>
</tr>
<tr>
<td>CSU/OSL</td>
<td>DiscFormer</td>
<td>–</td>
<td>modified</td>
</tr>
</tbody>
</table>

Ecoformer SL

MDF forming head drives

OSB mat former
Siempelkamp’s forming line guarantees the best possible precompaction of the mat before the press and the highest levels of flexibility. Part of this flexibility is the simple adjustment of the production width and board thickness. Quality testing by means of mat scales, a metal detector, SicoScan moisture analyzer and weight-per-unit-area gauge rounds off the features of the Siempelkamp forming line. Prepresses which are specifically tailored to the products ensure optimum degassing and precompaction of the mats.

After precompaction of the mat, preheater systems specially designed by Siempelkamp can be used for its optimum precuring before it enters the press. The uniform through-heating of the mat before the press increases not only the quality of the product, but also reduces the necessary dwell time of the mat in the press and thereby improves the plant’s output.

With Siempelkamp’s tried and tested mat preheater Contitherm it is possible in particular to produce economically very thick MDF and OSB of up to more than 60 mm and wood fibre insulation boards of up to 300 mm. The system will increase the output by 30 to 50 %.

With the new type of preheater system known as Contibooster, it has been shown that plant operators achieve 10 % more output. This system uses a vapour-permeable wire-mesh belt instead of the intermediate belt. Steam boxes attached above and below the wire-mesh belts use overpressure to inject up to 500 kg/h of saturated steam into each mat surface layer and thereby heat up to 40 % of the mat. Upon request, Siempelkamp also supplies an additional Siempelkamp steam generator.
This has long been the number one among continuous presses and has made Siempelkamp into a world market leader: the ContiRoll®, the centrepiece of a forming and press line, designed for processing all kinds of wood-based materials. Siempelkamp built the first ContiRoll® in 1985 – the keystone data: 16 m in length and a daily output of 300 m³.

30 years and a series of development milestones later, the longest ContiRoll® in the world – at 77 m – was put into operation; daily outputs of more than 3,000 m³ are no longer a pipe dream. During the history of the ContiRoll®, approx. 300 press lines have been ordered and put into operation so far by Siempelkamp. The design principle has remained unchanged – in contrast, the technical details have been repeatedly refined over the course of time.

With the new ContiRoll® Generation 8, Siempelkamp has again raised the bar a little higher. The standard version has been upgraded by a new pressure distribution plate concept and additional press cylinders. Thanks to the resulting improvement in pressure distribution within the press, resin savings rise up to 15%.

Depending on the desired board size and capacity, three different design sizes offer customers an optimum selection: on the presses, the same product range (particle board, MDF / HDF, OSB) can be manufactured with the same technical performance.

### Pressure distribution ContiRoll® Generation 6++

<table>
<thead>
<tr>
<th>Specific pressure [N/cm²]</th>
<th>Generation 6++</th>
<th>Generation 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td>120</td>
<td>130</td>
</tr>
<tr>
<td>130</td>
<td>150</td>
<td>155</td>
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<tr>
<td>305</td>
<td>330</td>
<td>330</td>
</tr>
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</table>

Reduction of specific pressure variation of up to 70%
Thin MDF

Siempelkamp is the world leader in plants for thin MDF from 1.5 to 4.0 mm. Thanks to the Siempelkamp technology, which enables production speeds of up to 2,000 mm/s, this product, too, can be manufactured economically in the highest quality.

### Advantages

- **Short assembly times**
- **Rapid commissioning**
- **Stable ramp-up curve**
- **Highest levels of availability**
- **Lowest thickness tolerances**

<table>
<thead>
<tr>
<th></th>
<th>Design 1 (standard)</th>
<th>Design 2</th>
<th>Design 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal press width</td>
<td>6 – 9 ft</td>
<td>up to 12 ft, extremely high specific pressure profiles possible</td>
<td>4 and 5 ft (5 ft adjustable to 4 ft)</td>
</tr>
<tr>
<td>Nominal hotplaten length</td>
<td>up to 60 m (196 ft)</td>
<td>from 50 m (164.5 ft) to over 80 m (262.5 ft)</td>
<td>up to 40 m (131.2 ft)</td>
</tr>
<tr>
<td>Board thickness</td>
<td>2 – 40 mm</td>
<td>2 – 40 mm</td>
<td>2 – 40 mm</td>
</tr>
</tbody>
</table>
Finishing lines

Siempelkamp also has the right concept for the downstream processing equipment of wood-based materials. From the trimming and cut-to-size station downstream of the press to the packaging lines, Siempelkamp offers entire finishing lines, including storage technology, intralogistics and board processing systems.

Express, the boards are cut to length by means of precise diagonal saws. The cooling turner, which runs on flexible cooling programs, is followed by the stacking station, where high stacks of up to 5 m or consignment-based small stacks can be created. In the field of storage technology, Siempelkamp offers large-stack storage units, crane storage and high-stack storage racks.

The Siempelkamp sanding lines are equipped with fast feed technology, modern surface inspection units and intelligent stacking and grading systems. The subsequent cut-to-size technology is characterised by a very high capacity, flexible cutting patterns and small cutting losses; automatic packaging lines lower the costs and improve the quality of the packaging.

The Siempelkamp package in the finishing line is rounded off by a reliable intralogistics concept with high handling capacities, low maintenance costs and a highly transparent material flow.
Cut-to-size

Inline saw

Sanding, stacking

Book saw
Being a specialist in presses, Siempelkamp provides the appropriate concepts for the fast, accurate and economical finishing of particle boards, MDF or HDF. Although they are almost indistinguishable in terms of their appearance and feel from real timber products, the end products are for the most part provided with better utilisation properties.

Three short-cycle press concepts suited to different requirements are available: KT700, KT400 and Ecoline. In addition, Siempelkamp also supplies all plant components associated with the press. The recipe for success: turn-key surface finishing centres based on three different short-cycle press concepts.

**KT400**

With a 400 N/cm² nominal to 600 N/cm² optional pressing force, the KT400 is suitable for the economical lamination of furniture boards, laminate flooring and standard EIR products. Due to the sophisticated hydraulic control of the press cylinders, the fast, energy-efficient regulation of the heating system and flexible hot platens, this standard plant produced in Europe ensures optimum pressure distribution even when pressing format-reduced products.

**KT700**

With Siempelkamp’s KT700 short-cycle press it is possible in particular to create deceptively real high-quality innovative products with specific material and/or design qualities such as 3-D deep embossing. The main contributory factors towards this are the highly accurate paper laying technology, which is based on laser detection, the multi-cylinder systems and a nominal pressing force of 700 N/cm².

**Ecoline**

Since 2011 Siempelkamp has been cooperating with the top Chinese manufacturer HAPCO, a machinery and plant manufacturer for the wood-based products industry. Both partners make joint use of their specific strengths in the production of short-cycle press lines. The result: the Ecoline short-cycle press with an optimum price/performance ratio which is particularly suitable for standardised products.
Siempelkamp’s pioneering role as a specialist in plants for the processing of board-shaped materials is based not least on its intuition for new markets and the needs and wishes of customers. With the special plants made by Siempelkamp it is possible to manufacture innovative products efficiently and of high quality – the right concept for every requirement. Not for nothing is the Siempelkamp motto “Innovation is our tradition”.

Light-weight board plants

Hexagonal structures combine minimal material and energy requirements whilst at the same time achieving the maximum possible levels of stability. Siempelkamp makes use of these optimum structures for the industrial production of frameless light-weight boards. These consist of two thin wood-based panels (MDF/OSB) and a honeycomb core made of cardboard, paper or MDF, and stand out due to their low weight, stability, smooth surfaces and defined formats. The surfaces can be sanded, laminated, coated or further processed left untreated. This makes the light-weight boards ideal for furniture production in particular.

Siempelkamp’s double belt presses for the production of light-weight boards enable the production of around 34,000 m² of boards a day and are supplied including a handling system, a glue blending system and a cooling and stacking line.

Wood-fibre insulation board plants

Siempelkamp has developed a new production process for the manufacture of wood-fibre insulation boards used for protection against the cold, heat and sound. This means that in the dry process, 20 to 300 mm-thick boards can be produced and up to 30% energy per tonne saved compared to the traditional wet process. The adjustable density, board length and width enable the highly flexible production of the insulating material and optimum adjustment to different application requirements.

Siempelkamp presses also enable the production of flexible wood-fibre insulation boards for traditional insulation between the rafters in roof construction. The package is rounded off by a handling system which is coordinated with the product – including diagonal and cut-to-size saws, profiling lines, stacking and feed technology and a packaging line.
Special plants

Doorskin plants
Also in the special segment of doorskin — thin, form-pressed MDF glued on a wooden frame — Siempelkamp has made a name for itself with its special plant technology, which, with an output of up to 11 million doorskins a year, is one of the fastest in the world. This Siempelkamp technology enables the simple manufacture of light and inexpensive cassette doors.

Transformer board plants
Siempelkamp multi-daylight systems use the wet process to produce high-quality products, e.g. insulation material for high-voltage transformers. The quality of these products is characterised, among other things, by high density, uniform thickness, surface smoothness, high mechanical strength, flexibility, resistance to ageing and outstanding electrical insulation properties. A simultaneous closing device ensures simultaneous mat contact and the uniform mat compaction in all decks during a pressing cycle.

Siempelkamp transformer board plants are equipped with intelligent control and measurement technology, control by means of a database-based recipe system and a process data trending system for archiving the system data.

Laminated veneer lumber plants
Innovative products such as laminated veneer lumber (LVL) — even consisting of beechwood — with thicknesses of between 20 and 85 mm are produced on Siempelkamp’s continuous presses. For beech LVL in particular there are numerous new possible applications as supports, beams or boards in the construction industry or interior finishing. Fully automatic, continuous production with ContiRoll® Generation 8 ensures the best pressure distribution thanks to innovative pressure distribution plates. On request, Siempelkamp supplies the energy plant, glue storage and metering system, board handling and automation for LVL (laminated veneer lumber) — plants.
Conveyor technology

Ex debarker in the wood yard, as a feeder to the glue blending system or to the dryer; Siempelkamp conveyor technology can be found in wood-based products plants wherever bulk material has to be conveyed quickly and safely. Together with their subsidiary company Sicoplan, which is responsible for planning and engineering, and the fan producer Ventapp, Siempelkamp offers screw, belt, chain and flight conveyors, as well as pneumatic conveyors and extraction systems. With its conveyor technology, Siempelkamp once more translates its “All from one source” idea into reality.
Siempelkamp’s measurement technology system known as SicoScan stands for the integration of tried and tested quality measurement systems into automation and process control technology. SicoScan measures and visualises all the factors which promote optimum board quality. These include the moisture analyzer and weight-per-unit-area gauge as well as board thickness gauge and delamination detector.

The focus here is not on the individual measuring device, but rather the interaction and communication of all of the components. By means of a direct and fast network connection, all of the measurement data is reported to a central data collection point. Furthermore, SicoScan is integrated into the visualisation and operating concept, as well as the existing computer databases and screens.

### Advantages
- **Integrated system – no “stand-alone solution”**
- **Reliable exchangeable data**
- **Cost savings**
- **Improvement in the competitiveness of the plant**
- **Little cabling required**
- **Fast data exchange**
Process control technology

In order to analyse and optimise the production processes in Siempelkamp plants, Siempelkamp has developed the process control system known as Prod-IQ®. This provides important tools for production data management, quality control, servicing and maintenance which accelerate the workflow of the customer’s plant and continuously improve its operation.

Various modules are available to Siempelkamp customers

- **Prod-IQ.basics** contains basic modules for the creation of reliable and up-to-date management KPIs (availability, plant output, consumption, quality) as well as for process documentation (MFT = material flow tracking)
- **Prod-IQ.business** for the adjustment to customer-specific reports including Script-editor
- **Online-quality prediction** e.g. for IB and MOR using Prod-IQ.quality
- **Predictive and on-condition maintenance and repair support** using Prod-IQ.maintenance

### Advantages

- **High level of system availability due to fewer downtimes**
- **Optimised material consumption due to fewer rejects**
- **Higher production speed**
- **Online quality control due to quality prediction**
- **All data and figures quickly in the right place**
- **Evaluation of the impacts of changed settings on costs using Cost Trending**
- **Coupling of ERP systems for vertical integration**
- **Energy data acquisition of the low-voltage grid down to individual switch cabinets with the existing measurement technology**

### Savings

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Experience values from</th>
<th>to</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtime reduction in %</td>
<td>1,5</td>
<td>1,5 2,5</td>
<td></td>
<td>Systematic downtime analysis ➔ faster trouble shooting</td>
</tr>
<tr>
<td>Waste reduction in %</td>
<td>1,0</td>
<td>1,0 2,0</td>
<td></td>
<td>Online quality check</td>
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<tr>
<td>Cut in material consumption in %</td>
<td>2,0</td>
<td>1,5 3,0</td>
<td></td>
<td>Reduced process fluctuations ➔ lighter boards</td>
</tr>
<tr>
<td>Speed increase in %</td>
<td>0,5</td>
<td>0,5 6,0</td>
<td></td>
<td>Closest approach to the quality limit</td>
</tr>
</tbody>
</table>

Prod-IQ® = Cut in cost
Plant automation

Automation technology

Plant automation from Siempelkamp combines control technology processes, closed-loop control tasks, the operation and visualisation of high-performance automation solutions which can be ideally incorporated into the business processes of customers. As a result it enables optimum product quality and productivity. At the same time, Siempelkamp covers the entire spectrum from the highest possible degree of standardisation to concepts, which are individually tailored to customer requirements and state-of-the-art engineering. The automation solutions are uniform with respect to the use of electric components, control systems, closed-loop controls, network components, the drive technology, operation and monitoring systems all over the machine or plant. Furthermore, the solutions are integrated into the process control technology. Finally, Siempelkamp also ensures the safe implementation and fast commissioning of the plant automation system.

Switch cabinet construction

Switchgear units form the "central nervous system" of any plant. They supply all machine and plant components with electrical energy and generate the control signals for the automated production process steps.

Switchgear units of the Siempelkamp subsidiary ATR Industrie-Elektronik add to increasing the availability of the customers’ plants and product quality. Being nodal points, they bring together all the information which describes the current plant and process status. ATR switch cabinets are a perfect example of a product well balanced between standardised and customised design.

Services

- Contract manufacturing in made-to-order and mass production
- Power, control, drive and microprocessor cabinets up to 1,000 V
- Manufacture of the switchgear combination according to national and international regulations and standards, e.g. DIN, EN, ISO, NEC, UL, cUL, CSA and GOST
- High level of development and manufacturing skills for measurement and control electronics
- Intelligently optimised and standardised manufacturing processes
- 100 per cent final inspection of all switchgear combinations
- Acceptance and certification of UL and cUL plants in the building by authorised personnel
Transport, assembly/erection, start-up

For its international customers, Siempelkamp draws up not only transport concepts from A to Z, but also ensures the professional assembly and start-up of the plants on the local construction sites: the perfect way to round off the “All from one source” concept.

Transport
Siempelkamp’s tailored logistics concepts include the organisation and implementation of the entire logistics chain from global suppliers to the customer’s works. The specialists organise the punctual collection of the machine and plant components from the manufacturers and ensure the necessary packaging for the respective carriers and transport route.

Services
• Detailed planning and checks of the transport chains
• Barcode-based interface monitoring up to the customer level
• Full inventory planning for the construction site – in some cases including delivery to the foundation
• Implementation of the inventory planning by trained personnel on site
• Support with documentation and customs clearance in the receiving country

Assembly
Siempelkamp supplies all plant components for assembly on the basis of detailed assembly schedules and duty rosters to the construction site. In many cases, the experts focus on supervising and supporting the assembly team provided by the customer; an increasing number of orders includes a complete plant assembly by Siempelkamp. The pivotal point here: the Siempelkamp Assembly Manager, who on site manages the entire construction process and coordinates and monitors the supplies and services together with the Project Management in Krefeld.

Services
• Specification of deadlines, deliveries, tools and assembly personnel
• Coordination of the entire on-site assembly
• Speedy assembly process
• Transparency among all of the parties involved
• Binding agreement between suppliers, customers and Siempelkamp
• Monitoring of time and cost planning
Start-up

Not only mechanical, but also electrical and technological start-up is performed by the Siempelkamp specialists in a professional manner and in close cooperation with the customer. Siempelkamp’s core competencies: the start-up and the ramp-up of production are realised within a very short time and the plant reaches controlled 24-hour operation within a correspondingly short time. Why? Because a fast ramp-up is the highest aim of all our customers so that the investment quickly pays for itself through a prompt start of production. Start-up times from the beginning of commissioning to full production in less than six weeks are not unusual.

Services

• Mechanical and electrical commissioning of all machines
• Commissioning of the plant control and regulation system with and without material
• Training of the customer’s personnel for the operation and maintenance of the plant (mechanics, electrics, hydraulics)
• Start of board production with technological training, including technology manual
• Increase in production output until test operation of the plant
• Transfer of the running plant to the customer
"We go where our customers are," is the Siempelkamp customer philosophy. This also applies to the service in particular. Whether a spare parts service or conversion packages: the Siempelkamp service teams assist the customers in improving the efficiency of their existing presses with individually designed actions and modules.

Field service
Siempelkamp also offers worldwide field service. Highly qualified services from inspections or maintenance to troubleshooting – this is what the service teams offer for all matters associated with the wood-based product plants. They are provided with technical support in their global consulting and engineering deployments by various specialist departments of Siempelkamp Maschinen- und Anlagenbau.

If necessary, customers can avail themselves of the services of the international branches and subsidiaries around the globe. This service is also offered by Siempelkamp for Küsters and Metso presses.

Spare parts service
Reliable spare parts service adhering to schedule is an integral part of Siempelkamp’s After Sales Service. The service specialists identify the customer’s spare parts demand within short and provide adequate solutions. This will minimise downtimes and cost.

Advantages
- Optimisation of existing plants: better product properties, improved performance, less wear and tear, higher levels of availability
- Improved plant safety
- Employer’s expertise
- Expert support with inspections and maintenance
- Reduced costs in the case of downtimes due to local presence
Modification and modernisation solutions

With extensive modernisation packages, the Siempelkamp service incorporates state-of-the-art technology into all plants of the Siempelkamp brand, as well as all plants made by Küsters and Bison. Furthermore, Siempelkamp offers innovative, tailored solutions for plant optimisation.

Siempelkamp supplies spare parts for machinery and components for
- The wood-based products industry (Siempelkamp, Bison, Küsters, Siempelkamp Handling Systems, etc.)
- Metal forming presses
- Rubber presses
- HPL-presses
- Fibre cement board presses
- Gypsum fibre board presses

The spare parts service covers not only
- drive, linear and sealing components, but also
- hydraulic,
- pneumatic and
- electronic components, including the fabrication of components according to original drawings.

**Advantages**
- Special, customer-specific components according to drawings
- Original spare parts
- Fast identification of the correct parts
- Rapid availability; punctual delivery
- Avoidance of unnecessary down-times
- Reduced costs
- Efficient logistics
- Flexible production

Modification and modernisation solutions

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Siempelkamp offers modification/modernisation packages for
- ContiRoll®
- Multi-daylight plants
- Short-cycle presses
- Küsters and ContiPress®
- Board finishing lines

**Advantages**
- Process optimisation
- Productivity increase
- Improvement in plant availability
- Reduction in maintenance costs
- Short down-times
Research & Development

The requirements for the production of flat products are high: increasingly excellent quality and higher capacities combined with the sparing use of resources and high energy saving potential. Siempelkamp has set itself the target of implementing these requirements together with its customers. In its own R&D Centre, employees from a wide range of disciplines research new methods and solutions for highly complex technical processes.

Siempelkamp not only improves its own components and production technologies by developing them further, new individual components, processes and systems for future products and markets are also born here. Furthermore, the Centre assesses the customer’s raw materials and products and develops new technologies and processes on behalf of third parties. The company also offers customers extensive services for existing plants.

**Offers in Siempelkamp’s R & D-Centre**

- Chipping, Strandng, flaking
- Separating, sifting
- Drying
- Blending
- Resinating
- Tape laying
- Tape placement
- Pressing

  for the

- Wood industry
- Construction industry
- Plastics industry
- Rubber industry
- Automotive and aerospace industry

**Advantages**

- Exchange of knowledge between different market areas
- Intensive dialogue with universities and research institutions
- Innovative technologies
- Short implementation times in practice
- Project planning and design
SECOND HAND PLANTS

Second hand plants

Only Siempelkamp knows Siempelkamp equipment inside out: Siempelkamp buys field-proven machinery back tailoring it to new customer-specific requirements. Siempelkamp enables the professional and cost-effective performance of all measures from dismantling to re-commissioning and has the world’s largest installed base.

Services

- Marketing of pre-owned machinery for the manufacture of particle boards, MDF, OSB using continuous press systems made by Siempelkamp, Küsters, Bison and Metso
- Marketing of pre-owned machinery for surface lamination of particle boards and MDF (short-cycle presses made by Siempelkamp)
- Support in brokering or buying pre-owned machinery
- As-is analysis including technical assessment
- Technical consulting in repair, spare parts, retrofitting actions and upgrades
- Plant planning and engineering of customised solutions
- Project-specific planning of all the individual processes
- Expedient dismantling, care-free all-inclusive logistics packages, professional re-assembly including commissioning/start-up and guarantee of fitness for use.

Advantages

- Expertise of the plant manufacturer and system supplier for complete systems for the wood products industry
- Detailed knowledge and experience of the pre-owned plant business
- Database-based system for recording potential global interest
- Support from an experienced project team during the entire implementation process
- Cost reduction, greater availability of the plant, higher capacities, increased product quality and reduced maintenance costs due to the implementation of innovative modification and modernisation packages
- Project reliability in terms of deadlines and costs
- All-round solution from a single source – one responsible partner
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