A SLICE OF SUCCESS

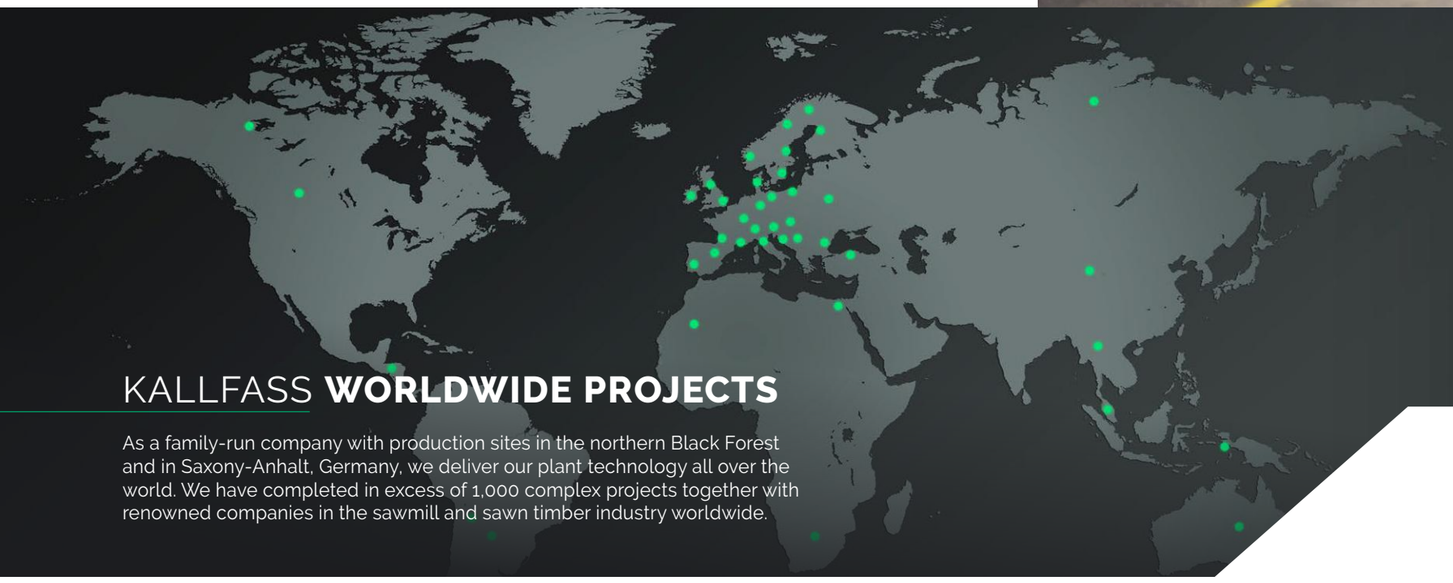
ALL-IN-ONE SOLUTIONS!
MACHINERY AND EQUIPMENT FOR THE

SAWN WOOD PROCESSING

KALLFASS
maschinen plus automation

FROM THE BLACK FOREST TO THE ENTIRE WORLD

We have a passion for machinery and plant engineering that is now in its third generation. Since 1949, we have focused intently on production requirements in timber processing. Our market and process know-how is characterised by comprehensive and profound experience. We do not provide any off-the-shelf solutions, but rather tailored, automated system technology of the highest quality.



KALLFASS **WORLDWIDE PROJECTS**

As a family-run company with production sites in the northern Black Forest and in Saxony-Anhalt, Germany, we deliver our plant technology all over the world. We have completed in excess of 1,000 complex projects together with renowned companies in the sawmill and sawn timber industry worldwide.

SYSTEM PARTNERSHIPS ON AN EQUAL FOOTING

Together with our customers, we plan, develop, and implement customised, interlinked production lines. Our product range includes **SYSTEMS AND COMPLETE MECHANISATIONS** with integrated safety and control concepts for the production of:

Construction timber

boards
squared timber
sticks
beams

Wooden packaging

pallets
boxes

Construction and garden timber

decking
fencing

Structural engineered wood products

cross-laminated timber
glued laminated timber
single/multi-layer boards

PLANER MECHANISATION

FULLY AUTOMATED SAWN TIMBER PROCESSING

KALLFASS designs a high-performance, fully automated planing mill based on innovative plant technology with process solutions that are optimised for all interfaces. The integrated control and safety concept ensures a perfect production process with a high degree of automation. Furthermore, it offers the possibility of connecting to master computers and guarantees maximum safety for the operating personnel.

COST-EFFECTIVE SOLUTIONS FOR A **CONSISTENTLY HIGH PLANT PERFORMANCE**

When using vacuum lifters or tilting platforms whilst destacking dry packages, a **STICK SCANNER**, detects whether sticks are on a layer. If this is the case, the scanner passes this information to a **STICK STRIPPER**, which subsequently drives across the layer. Before planing, an integrated **MOISTURE**, **STRENGTH** and **WARP MEASUREMENT** with a **TURNING DEVICE** ensure perfect planing results. The sawn timber's quality can be evaluated automatically using a **QUALITY SCANNER** and/or manually using an **ASSESSMENT CHAIN CONVEYOR**. These are all mechanisation solutions that enable consistent plant performance at the highest level.

FOR SMALL AND LARGE PACKAGES VARIABLE TIMBER BUNDLES

THE KALLFASS BUNDLING SYSTEM

This system combines individual timber pieces of the same dimension into compact and stable timber bundles before stacking or transport. Depending on the product requirements and dimensions, either several small parts positioned next to each other or individual large parts can be bundled and stacked into wood packages on the same system.

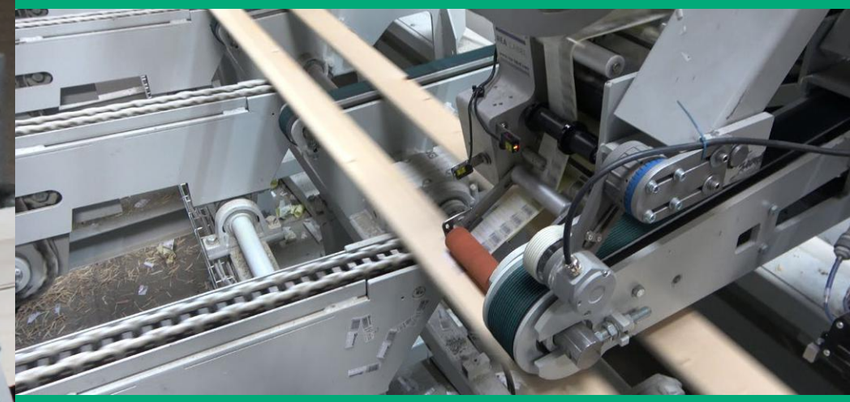
MACHINE DATA
BUNDLING

Output	6 – 12 bundles/min
Bundle dimensions LxWxH	min. 2,000 x 70 x 50 mm max. 6,000 x 200 x 160 mm
Stick dimensions WxH	min. 20 x 15 mm max. 200 x 70 mm

SECURING TRANSPORT PACKAGES USING **FOILING AND STRAPPING**

When foiling large, small or quart sawn timber packages after stacking protects the sawn timber from damage during transport and later storage. If requested, 2 - 3 small packs (possibly already individually wrapped and strapped) can be brought together as narrow quart packs on a loading width of 1,200 mm and subsequently wrapped and/or strapped.

When subsequently stacking large packages in multiple layers, **squared timber** placed between the individual wrapped/strapped packages as well as under the lowest package ensure the safe removal later using the forklift truck. Finally, the large package can be strapped again to ensure greater stability during transport. In this example, several foil wrapping and strapping stations would be integrated into the system. Depending on the requirements, the package strapping system is offered with or without hydraulic press, squared timber magazine, and squared timber milling machine.



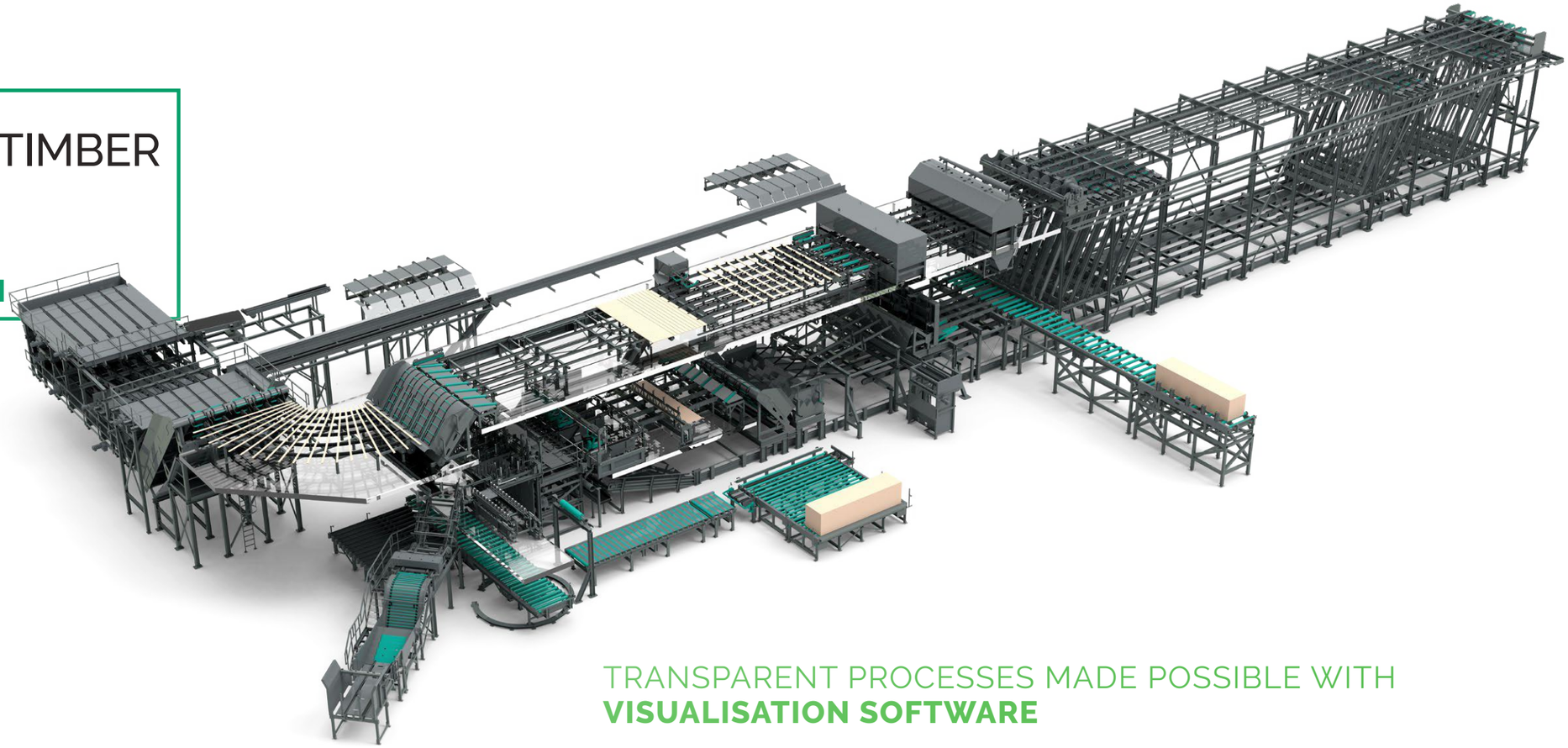
MARKING PRODUCTS WHILST MOVING – **INTEGRATED LABELLERS** WITH INKJET PRINTER

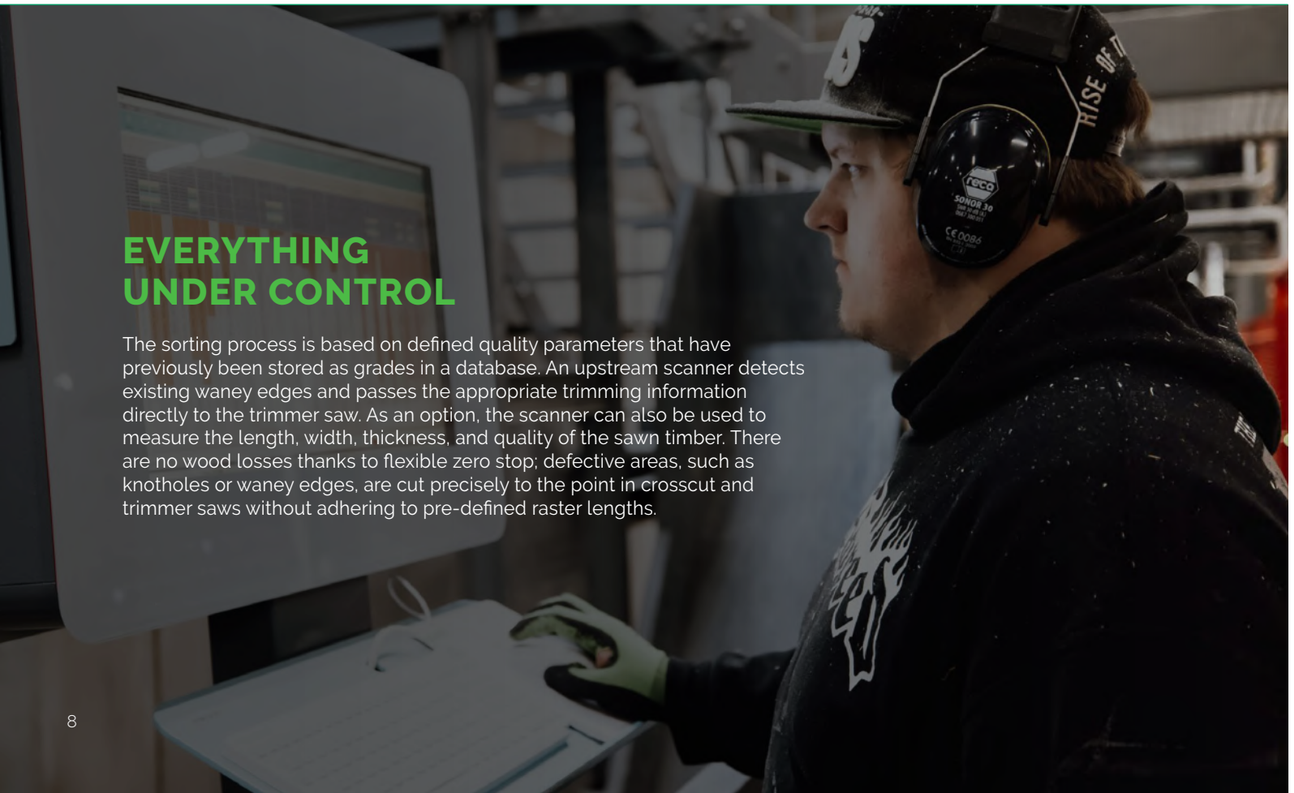
To increase the automation, commercially available labelling systems are integrated directly into the production line. Labelling of the wooden strips or wooden bundles takes place at the appropriate location during the production process. Data from higher-level ERP systems can be incorporated with great flexibility via interface software.

SORTING THE SAWN TIMBER

ENHANCING TRANSPARENCY, QUALITY AND UTILISATION

We have the solution for a fully automated sorting system that allows to be flexible and switch between different product orders, with little personnel effort and low retooling times. Moreover, this system offers the additional option of integrating sawn timber bundles from external infeeds.





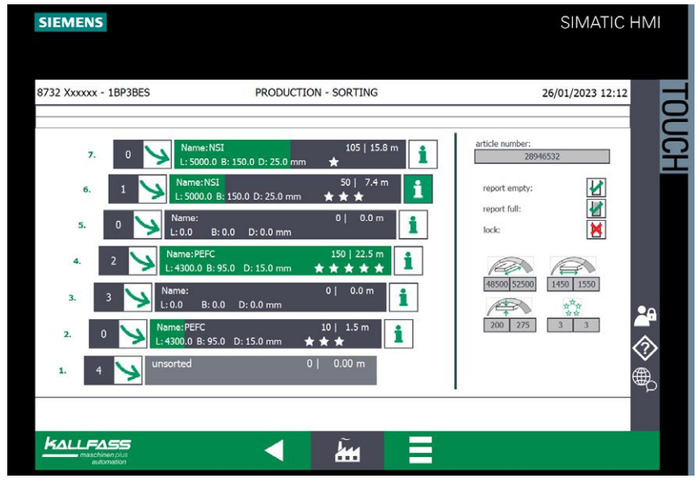
EVERYTHING UNDER CONTROL

The sorting process is based on defined quality parameters that have previously been stored as grades in a database. An upstream scanner detects existing waney edges and passes the appropriate trimming information directly to the trimmer saw. As an option, the scanner can also be used to measure the length, width, thickness, and quality of the sawn timber. There are no wood losses thanks to flexible zero stop; defective areas, such as knotholes or waney edges, are cut precisely to the point in crosscut and trimmer saws without adhering to pre-defined raster lengths.

TRANSPARENT PROCESSES MADE POSSIBLE WITH **VISUALISATION SOFTWARE**

Sorting facilities can temporarily store a wide range of different timber varieties. Therefore, an excellent overview of the occupancy status, filling level, and available wood dimension is essential and decides the economic efficiency of the production.

The visualisation software used by KALLFASS ensures transparency in the sorting system and simplifies the management of the system's parameters. For each sawn timber dimension and type, a product name (or an item number as an option) is saved in the sorting programme. The setting parameters stored as a suffix of the product name are automatically transferred to subsequent processes, such as multiple cutting to length or stacking. For example, the multiple cross-cut saw recognises which cut product must be fed next and adjusts the sawing units independently according to the required cutting pattern, all while production is running.



Fill-level display of a level sorting system with seven layers

Great importance was placed on the user-friendliness of the software programme. An easy-to-understand menu structure with logical symbols and stored help texts makes intuitive navigation in the menu possible.

HORIZONTAL AND GENTLE TO THE MATERIAL
LEVEL SORTING

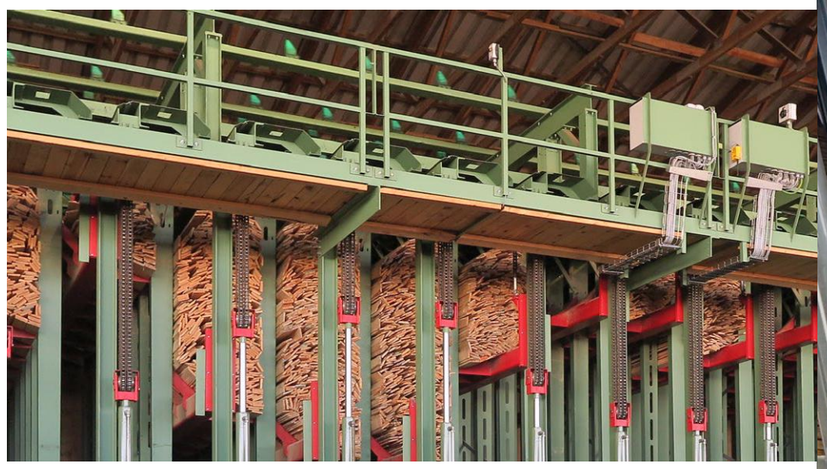
Buffer layer sorters loosely sort batch material on top of each other into layers. The material must be separated before filling and after emptying the system.

Film layer sorters are ideal for graded planed products, as each board film is gently and individually sorted into stacked layers. This type of sorting is very space-consuming; however, it makes subsequent separation unnecessary and the layers can be stacked at maximum capacity.

VERTICAL AND SPACE SAVING **BOX SORTING**

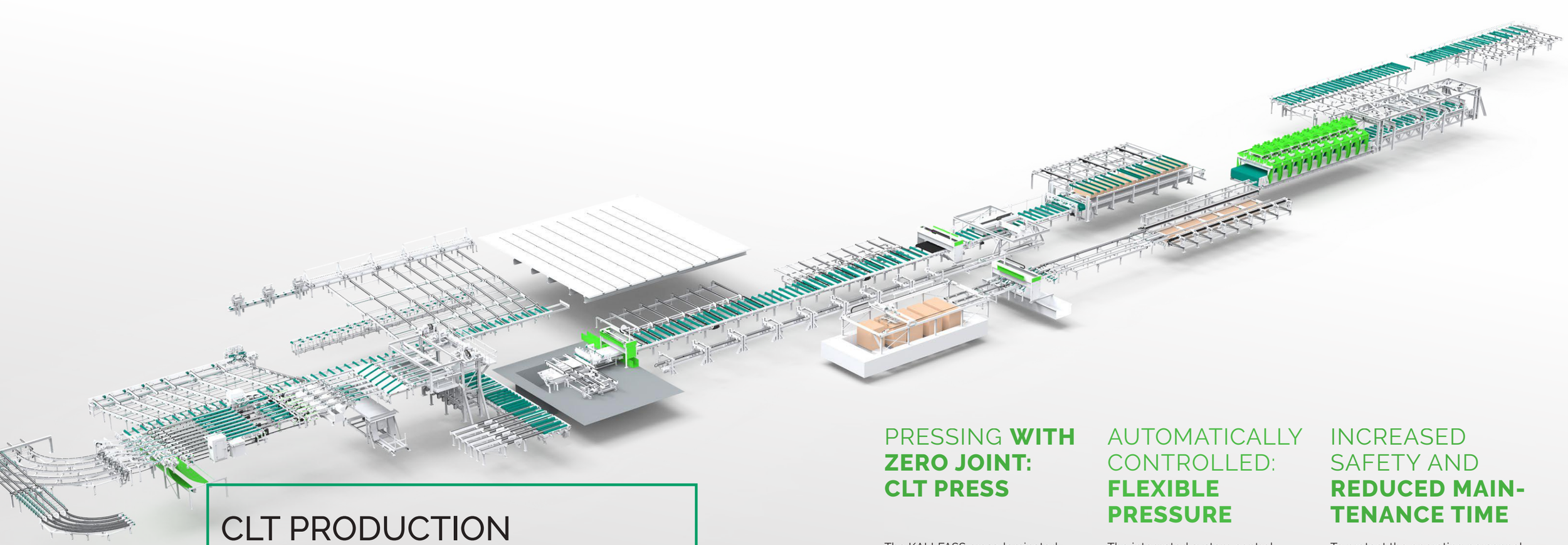
Vertical box sorters need less space and can accommodate more product boxes in the same area. These systems are most often used for side products with smaller dimensions that do not tilt during emptying.

Inclined box sorting is recommended for products with small and medium-sized material dimensions. These systems can be filled at high cycle rates and ensure reliable emptying.



MACHINE DATA
BOXES AND LAYER SORTING

Part lengths:	1,800 mm – 6,300 mm
Part width:	70 mm – 252 mm
Part thickness:	15 mm – 100 mm
Filling cycle time:	120 pieces/min. (inclined boxes: 160 pieces/min.)



CLT PRODUCTION

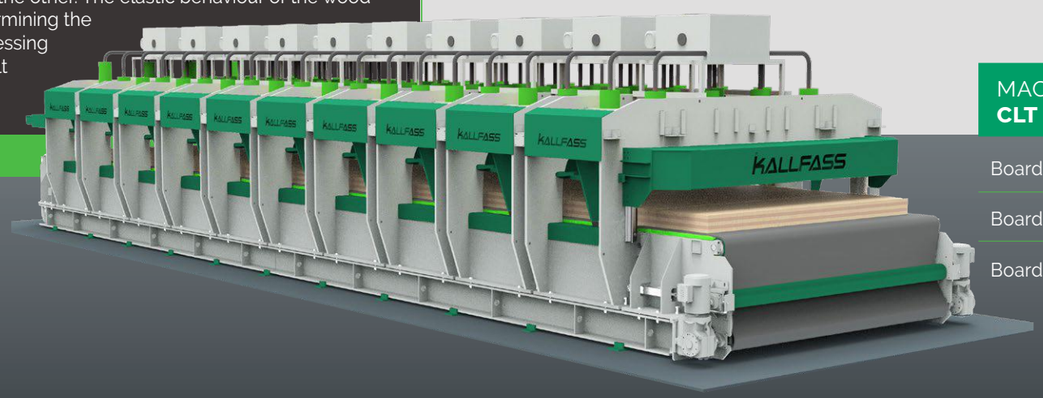
ONE-STOP SHOP

As an automation specialist, we offer solutions for gluelam production that provides a solution with the least possible number of interfaces.

Our product range: The mechanisation of the entire production line, from the package pickup (also for large packages) to the acceptance of the finished pressed elements, including our board press and turning device.

Always focused: A steady flow of material with maximum process reliability through separate safety areas and perfect production utilisation.

The cross-laminated timber press comprises several torsion-resistant press segments arranged one behind the other. The elastic behaviour of the wood is taken into account when determining the required pressing pressure. A pressing pressure of 1 N/mm² can be built up even with a maximum panel width of 3.6 m.



PRESSING **WITH ZERO JOINT: CLT PRESS**

The KALLFASS cross-laminated timber press joins single-layer panels into multi-layer panels with tolerance values of maximum 0.1 mm. Achieving this zero joint is guaranteed through a very high vertical pressing force in combination with a uniform pressure distribution across the entire panel surface. As an option, the press can be offered with additional transverse pressure when pressing wooden lamellas. A virtually isobaric hydraulic concept that works independently of the different plate dimensions. The result is a perfect bonding finish and a homogeneous end product with reduced curing times.

AUTOMATICALLY CONTROLLED: **FLEXIBLE PRESSURE**

The integrated system control automatically sets the pressure and adjusts it to the relevant panel size. Only those chain conveyor units and press stamps are controlled that are required for the board size, and this is what makes the KALLFASS press so efficient.

To speed up the pressure build-up, the press stamps can be pre-positioned. If necessary, return runs of the board press packs are possible as the conveyor can be moved back and forth. The process data and parameters can be recorded and archived on the master computer.

INCREASED SAFETY AND **REDUCED MAIN-TENANCE TIME**

To protect the operating personnel, the press stamps can be mechanically locked in the upper end position before proceeding with cleaning and maintenance work. Plastic conveyor belts, which can be cleaned quickly and easily, serve as press pads.
A full-length platform above the press assures access to all essential components such as hydraulic and electric system.

MACHINE DATA **CLT PRESS**

Board length:	8,000 mm – 16,000+ mm
Board width:	2,000 mm – 3,600 mm
Board thickness:	60 mm – 600 mm

MULTIPLE CROSS-CUT SAW

THE ALL-ROUNDER

Whether boards, panels, squared timber or round bars, the KALLFASS multiple cross-cut saw cuts workpieces to the desired lengths using millimetre precision. Upon request mitre cuts are available as well.

Typically, MULTIPLE CROSS-CUT SAWS are integrated into fixed-length cutting systems, sorting systems or planing mechanisations. These multiple cross-cut saws can cut both unfinished and planed sawn timber to fixed lengths, with a high cutting accuracy and tolerance of only ±1 mm at the ends. The workpieces are cut individually or in layers (max. 16 layers/min) and up to a cutting thickness of 200 mm (thicker cutting heights upon request). As an option, the board dimension data sets can also be obtained directly from the ERP system or the customer's master computer.

MACHINE DATA
MULTIPLE CROSS-CUT SAW

Fixed saw	right/left
Min. cutting length	500 mm
Max. cutting length	16,000 mm
Max. cutting thickness	200 mm
Cutting accuracy	1 mm
Saw motor output	5.5 - 18 kW
Feed capacity	3 kW
Max. feed rate	50 m/min

„PRODUCT SAFETY AT THE HIGHEST LEVEL FOR MANY YEARS - KALLFASS was the first German company to receive the German GS certification mark (Safety Tested) for these systems after type examination."

FLEXIBLE CUTTING – QUICK RETOOLING

On the one hand, a fast batch change during production is achieved by using stored cutting programmes that allow flexible board cutting. On the other hand, saw aggregates that can be adjusted to any height and arrangement ensure quick changeover times, because a CNC control automatically aligns the aggregates synchronously with the cutting pattern during ongoing production. Assuming six saw aggregates are used, the time needed for changeover is only approx. 30 seconds. Even a mitre cut can be achieved in combination with a saw blade adjustment.

STABLE PROCESSES – SIMPLE OPERATION

If the sawn timber is warped, this can adversely affect the sawing process. Therefore, KALLFASS offers saw aggregates with chain top pressure as well as different transport chains as equipment variants. These aggregates also process warped goods safely. An extraction system integrated into the aggregate ensures a clean production environment. The wood dust is discharged downwards immediately during sawing. Upon request, a discharge through the top is also available.

All system-specific processes are operated in a controlled manner using a PLC control system. As an option, a visualisation feature makes system operation even more user-friendly, as settings can be made either directly on a touch panel or a PC interface.

„As soon as workpieces only need to be cut to pre-set grid lengths, or defective areas need to be cut out, a trimmer saw, specially designed for this purpose, is used."

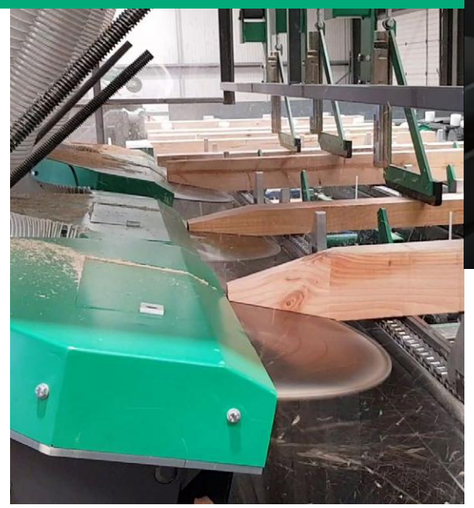
POST-POINTING / FENCING

PERFECTLY POINTED FENCE POSTS

The KALLFASS post-pointing line produces pointed fence posts from squared timber in consistent quality; on request, round-milled at the top or flattened on four sides for gate posts. The low manual effort ensures high productivity and guarantees the required flexibility in processing all orders.

The timber is aligned on the zero line upstream of the post-pointing station. Four circular saws point the squared timber on all four sides using a maximum cutting depth of 200 mm. Between two circular saws, each squared timber is automatically rotated 90°.

The result: Identical fence post packages ready for shipping, stacked with intermediate sticks and strapped.



If required, incising units for surface perforation, as preparation for impregnation with wood preservatives, can also be integrated into a post-pointing production line. Even before perforation, lumisensors detect unsuitable wood marked with luminescent chalk. In this case, the unsuitable wood is sorted and discharged through a flap.

PROFILING SQUARED TIMBER AND BOARDS MAKES FOR A GOOD APPEARANCE

In a post-pointing line, squared timber or boards are milled in a continuous process. For this purpose, the timber is fixed in the profiling unit with clamping holders and rounded on one side. Two motors, working in counter-rotation and in synchronisation, ensure uniform routing without fraying at the edges. Having an output of approx. six pieces per minute, the milling station is highly efficient.

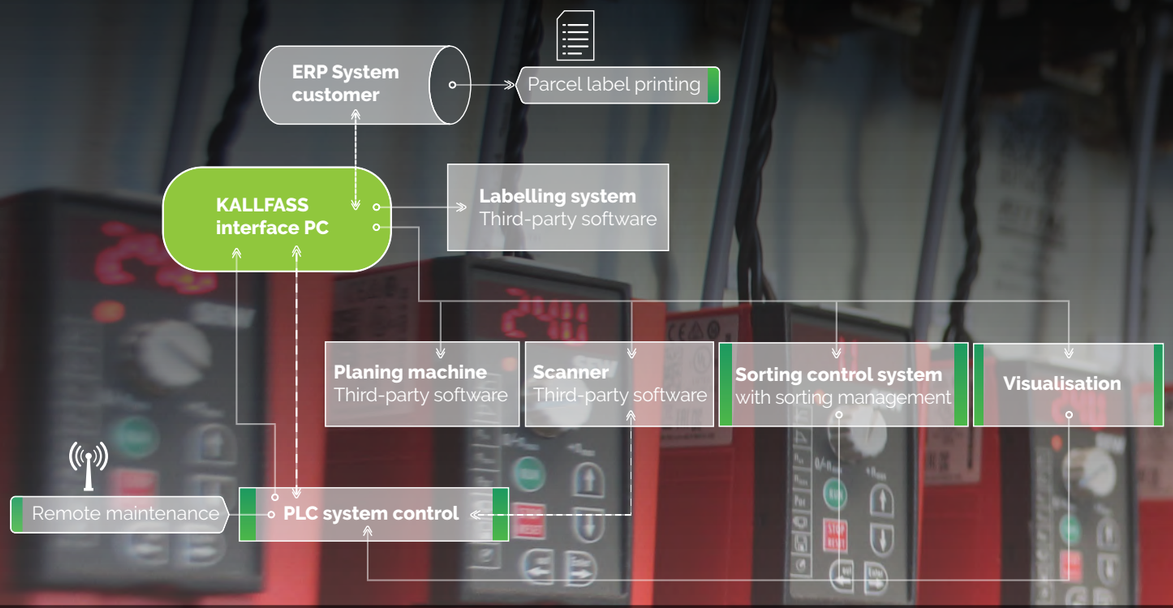
NETWORKED PRODUCTION

INTERFACE CONCEPTS FOR COMPLETE PRODUCTION LINES

Only the perfect interaction of all systems from master computers, system software, and PLC control ensures a flawless production process with a high degree of automation. When using the KALLFASS control concept, product data can be processed directly from the customer's ERP system. Moreover, the plant software of various manufacturers can be integrated into the manufacturing process.

NETWORKED PLANING/SORTING SYSTEM

Integration of customised applications



The data exchange between the customer ERP system and the KALLFASS interface PC usually takes place via CSV files. The latter are stored in a directory on the KALLFASS interface PC and processed from there. Continuously recorded production data is written back to the CSV files. The files are read out in cyclical intervals in order to return the current package data to the ERP system – according to a defined release procedure.

A SAFER PRODUCTION ENVIRONMENT

Recognise and avoid risks for the operating personnel

To make the operation of complex production lines as safe as possible, KALLFASS develops a safety concept for each project. Potential hazardous areas of the system are analysed in advance and documented internally in a risk assessment.

In very dangerous areas, doors and fences prevent access to the system. In addition, warning signs are installed to highlight any potential hazardous. Throughout the entire production line, PLC-controlled photoelectric barriers ensure the safety of the operating personnel. If an attempt is made to access the system manually at the wrong place, the system switches off automatically. When the system is first commissioned, the operating personnel are explicitly trained on the subject of operation & safety.

INNOVATIVE SOLUTIONS FOR

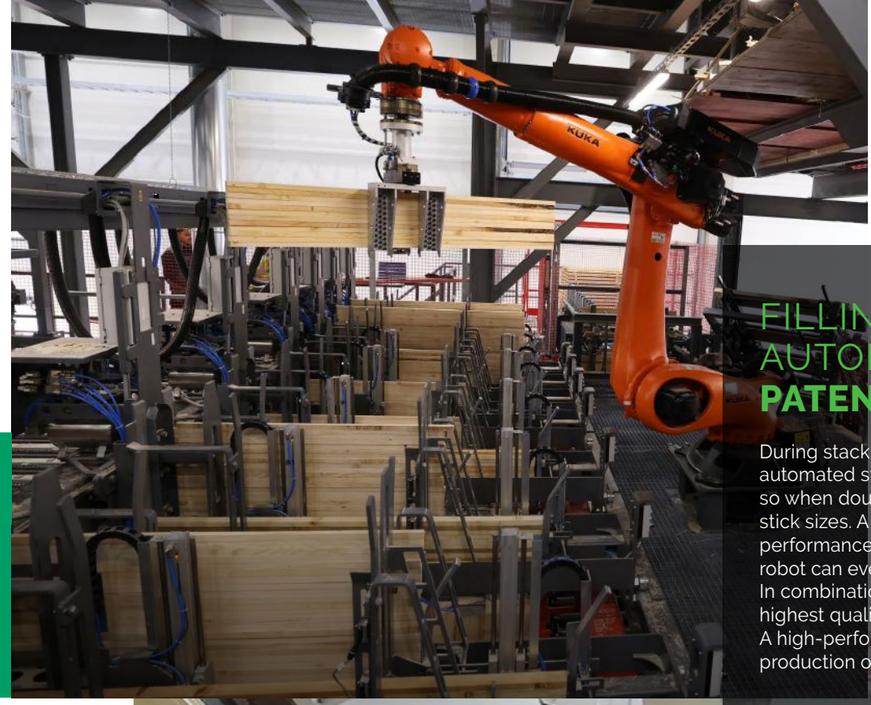
HANDLING AND LOGISTICS

In state-of-the-art wood processing, intelligent material logistics in manufacturing is one of the greatest challenges. Efficient control of procurement, warehousing, and the supply of materials to the production line can only be achieved with coordinated and innovative handling concepts that take into account the space available on site and combine processes logistically.

THE PERFECT DRYING CHAMBER SOLUTION FOR LARGE PACKAGES **MECHANISATION ON RAILS** IN THE CIRCULATION SYSTEM

In order to maximise the utilisation of drying chambers and to operate them efficiently, there is no way around stacking large packages. The mechanisation of these drying packages, which weigh up to 30 tonnes and are 6 m high, is carried out entirely on space-saving track rails using special transport trolleys without the aid of forklift trucks. A buffer zone designed to hold empty transport trolleys ensures closed-loop operation and the availability of the large number of trolleys required.

At a high cycle rate, the sawn timber is stacked into large packages and onto transport trolleys whilst drying sticks are put in place between the layers. The timber is then pulled out of the hoisting unit in the direction of a shuttle car and pushed onto it. As soon as one transport trolley leaves the hoisting unit, the next one is ready for stacking. The shuttle travels along a track with the securely positioned drying pack and pushes the wood package hydraulically onto the rails of the drying chamber. A total of at least two shuttle trolleys are needed. One shuttle continuously fills the drying chamber. A second trolley removes the dried goods and transports them downstream for further processing.



FILLING STICK MAGAZINES AUTOMATICALLY **PATENTED ROBOT HANDLING**

During stacking of wood packs, the constant filling of several automated stick magazines is a time-consuming task, even more so when double magazines have to be filled with two different stick sizes. A robot can now undertake this task with consistent performance and a high number of cycles. If required, a second robot can even feed the sticks into the buffer conveyor beforehand. In combination with stick scanners, only wood strips with the highest quality are made available for robot handling.
A high-performance solution for state-of-the-art, fully automated production of sawn timber.

AN INTELLIGENT STORAGE SYSTEM **STORAGE & RETRIEVAL SYSTEM** WITH HIGH-BAY WAREHOUSE

High-bay warehouses offer a lot of storage space on a small footprint, and, in combination with wa-rehouse management software, they ensure the rapid availability of material required at any given time. KALLFASS has developed a fully automatic, 3-axis carriage, allowing the straightforward operation of the high-bay warehouse. Operating parallel to the high-bay racking, the storage & retrieval system distributes a wide variety of wood products in horizontal and vertical directions while protecting the material at the same time.

FROM THE PLANNING STAGES TO PRODUCTION

SOLUTIONS FROM A ONE-STOP PROVIDER

As your solution partner, we take responsibility and accompany you through all project phases until the system is successfully put into service. Moreover, we support you even after the project has been completed.

YOUR EXPERT FOR **SPECIAL PROJECTS**

Whether a prototype for a new product must be developed and made ready for series production, technical alternatives for process sequences must be found, or logistical challenges in the production environment must be accomplished – we design a customised, economical solution concept for you and put it into practice. Because thinking outside the box is what we do best.

01

PLAN

DOWN TO THE VERY LAST DETAIL.

We generate a planning concept, taking into account all requirements and interfaces. We integrate the installation drawing into the production environment, incorporating all necessary supply connections. And finally, we appoint a project manager to take charge of schedule monitoring and project coordination.

02

DO

ALL UNDER ONE ROOF.

After the concept has been approved, we design the mechanical system components using 3D CAD technology. The finished sub-assemblies are welded together, fitted and painted before being passed on to the final assembly department. Subsequently, the control cabinets are installed and wired in accordance with the electrical circuit diagrams. If possible, the individual machines are pre-wired on terminal boxes.

03

ACT

ON-SITE EXPERTISE.

Our experienced technicians install the pre-assembled parts to form a complete system. Once the mechanical installation is completed, the control system for the production line is programmed. Subse-quently, the interaction between the master computers, the system software and the PLC control system is optimised. At the start-up of the system, technical documentation is compiled and the operating personnel are trained with regarding safety and operation of the system.

SUPPORT DURING THE DAILY PRODUCTION

In the unlikely event of a malfunction, or if the process must be optimised, we will connect with you using our remote maintenance feature and guide you step-by-step to achieve your goal. Or, if feasible, we can simply drop by in person. On request, we will provide you with a spare parts quotation including recommendations for stocking production-relevant spare parts.