

Automatic quality control of EUR/EPAL

Palletscan 240

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Call and set up a no-obligation meeting to learn more about
Palletscan 240 and its potential

A team of experts

Our team of experienced project managers, developers and skilled craftsmen can solve tasks ranging from mechanical design to large-scale turnkey industrial solutions, either independently, or in collaboration with our partners.

We gladly assume overall contractual liability for all activities associated with risk assessments and documentation. This may involve a project relating to the major modernisation of a complex production department, or

building a new development from scratch, which involves many elements such as floor construction and installation, development and procurement of process equipment, to supplying automation, integration and commissioning.



Facts about the machine

- Capacity 240 pallets/hour
- Option to select multiple languages
- Scanner station with 2D & 3D SICK scanners, includes software for analysing data
- Weighing station where each pallet is weighed to detect moisture in the wood
- Brushing station to brush off dust and other unwanted particles from the pallets.
- Conveyor through the system with heavy duty roller
- Aligning station for aligning pallets before scanning
- Nail press where protruding nails with or without heads are pressed down
- Pallet magazine for placing up to 15 pallets
- Extraction unit included and is ready fitted for connection to external extraction.
- Waste conveyor



Specifications

User-friendly operation

User interface

The pallet scanner is controlled via a PC and PLC solution with a user-friendly and uncluttered HMI panel. From here, there is the option to define certain default quality control tolerances for pallets.

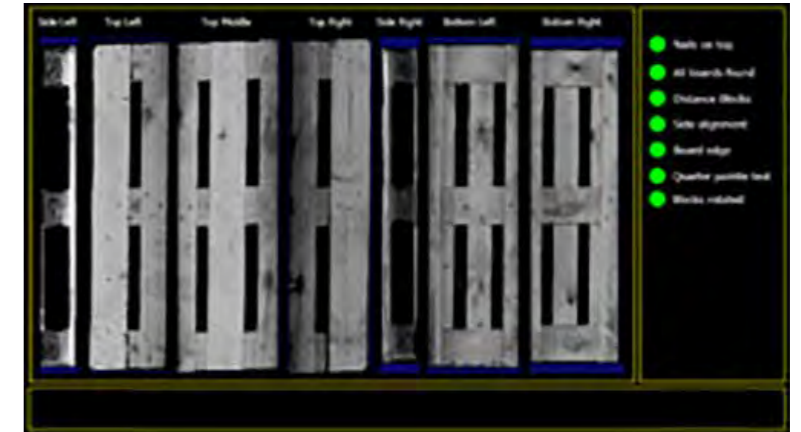
This ensures the desired sorting result and quality control levels are achieved, while also permitting an acceptable level of flexibility.

The HMI operator panel with touch screen and easy to understand screen display is used for controlling the machine. Any changes can be implemented quickly, often via the Internet.

Data and analyses can be accessed directly from the system, which allows for parameters and other settings to also be adjusted and set.

Analyses and statistics are stored in the system and there is an option to connect the system to the customer's ERP system or other similar system.

The scope of adjustment options available via the HMI operator panel is determined by the customer, which means that operators and technicians only have access to make system adjustments to the extent the customer wants.



Seneste paller 1		Status	Værdi
Total bredde		●	806.0
Yderside til yderside af midterklods		●	465.0
Højde ydre mål		●	146.0
Højde indre mål		●	100.0
Total længde		●	1198.0
Yderside til yderside af midterklods		●	673.0
Yderside til inderside af midterklods		●	530.0
Ydre brædder på underside og palleblokke		●	99.0
Midterste bræt på underside og palleblokke		●	145.0
Ydre og midterste brædder på overside		●	142.0
Midterste bræt på overside		●	101.0
Palleblokke langsides mål		●	138.0

Hovedside Færdig Næste

Decreases the risk of production shutdown

Production optimisation

Pallets with loose or missing boards or blocks are effectively eliminated to prevent them ending up in production and ultimately causing a production shutdown.

To ensure high quality, PALLET-SCAN provides 240 options to analyse each individual board on the pallet, so that unacceptable weaknesses are registered before the defect progresses further to production and packing.

The system can also register nails and other objects protruding from the pallets, thus eliminating the risk of damaging sensitive goods.

Damp pallets can be eliminated so they do not end up in production, and pallets with different colour nuances can also be eliminated.

To ensure transparency and improvement of the production process, statistics can be

compiled with respect to pallet quality, defects and deficiencies. This provides an overview of what areas on pallets are most often defective and flawed.



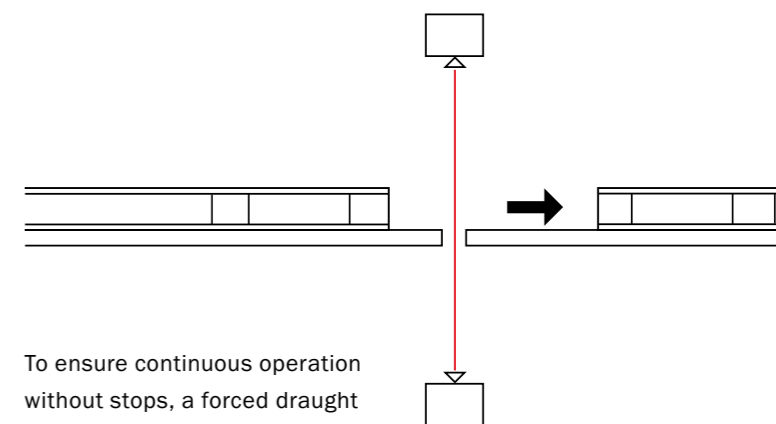
3D scanning ensures optimum inspection of the pallet

3D scanner & 2D camera

To ensure each pallet is optimally analysed, the top, blocks and bottom are scanned using three different sensors, which are angled to minimise blind angles.

The system generates a 3D model of the pallet based on the scan, which is then analysed using the predefined settings.

The system can scan up to 240 pallets per hour and conveyor belt speed can be up to 0.5 m/s.



To ensure continuous operation without stops, a forced draught fan is fitted that cleans the glass on the sensors. All sensors are also mounted on brackets for ease of maintenance.

SICK 3D laser scanning specifications

- Resolution approx. 0.5 x 0.5 mm
- Pallet measured with 3-4 mm accuracy.
- Distance measurement between blocks.
- Scanning of number of boards and blocks.
- Scanning of edges and defective boards.
- Scanning for holes in boards.
- Warped boards more than 3-5 mm.
(Can indicate split boards)
- Scans the entire block surface and counts the blocks.
- Checks for rotated blocks.
- Defects and marks measuring 3-5 mm can be spotted.
- Visible and free-standing nails, with and without heads, are registered.



2D camera ensures visual analysis

3D scanner & 2D camera

Even minor discolouration on the pallet can be detected using the installed 2D camera. The camera can identify pallets with dark spots and abnormal colouration.

Analysis from the 2D contract camera is an important part of the general analysis of the pallet state and quality, including precise measurement of the pallet.

2D contract camera analysis specifications

- Resolution of $>1 \times 1$ means that defects measuring 5 mm in diameter can be identified.
- Pallets that are too dark can be identified and eliminated according to customer specifications.



Prevent damage to visible nails

Nail presses & brush section

Palletscan 240 registers free-standing and exposed nails and other objects protruding from the pallet surface. Nails are immediately pressed down into the pallet using the nail press.

This minimises the risk of undesirable objects triggering a production stop, and avoids nails and similar objects from causing damage to sensitive products.



Cleaning pallets from dust and similar particles

Nail press & brush section

The brush section is isolated in a cabinet to keep dust and dirt out of the environment surrounding the sensor. The extraction unit is also included in the concept.

The collected waste is transported away via a waste conveyor, can be conveyed directly to a waste container.



Pallet inspection Complete system

Palletscan 240

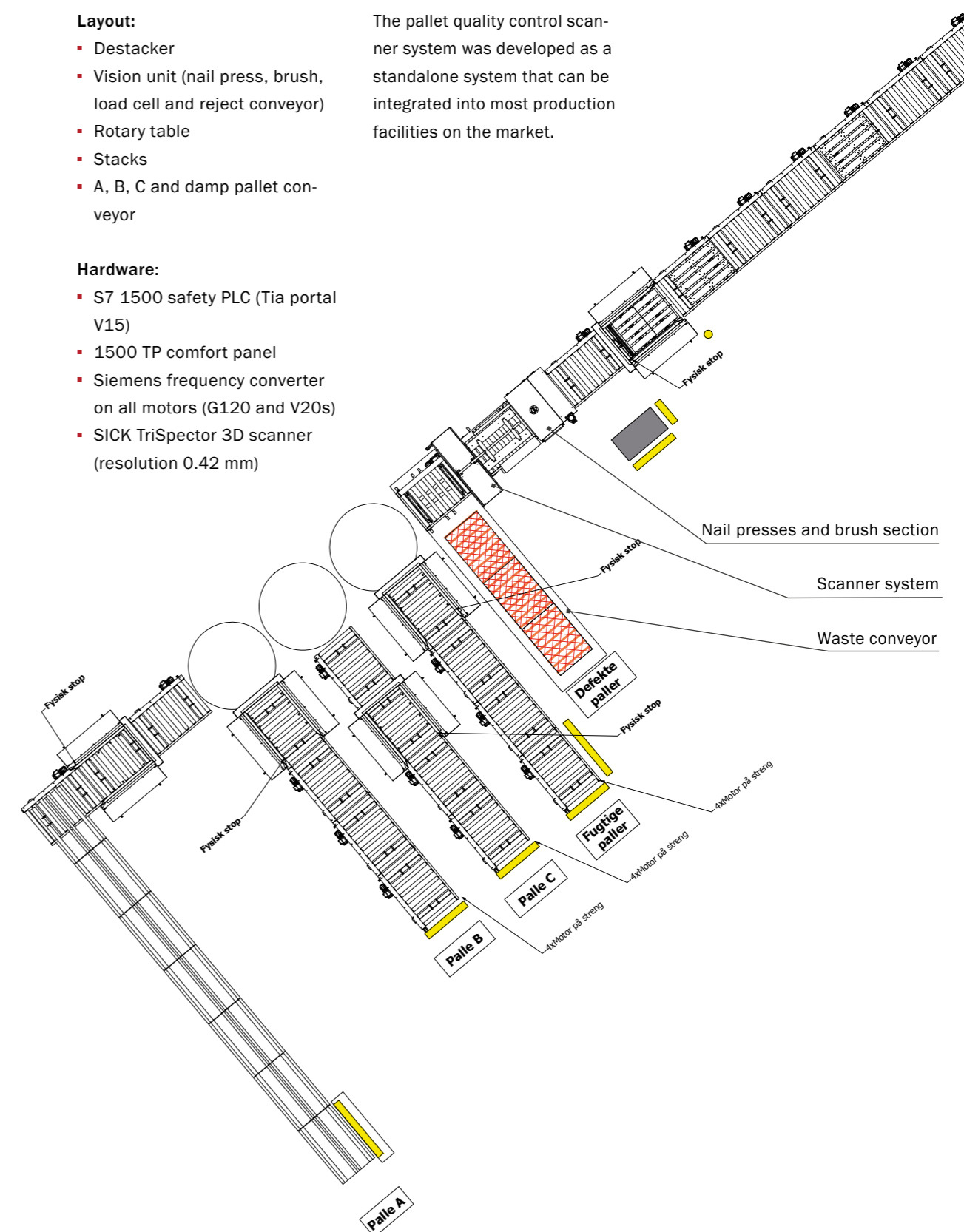
Layout:

- Destacker
- Vision unit (nail press, brush, load cell and reject conveyor)
- Rotary table
- Stacks
- A, B, C and damp pallet conveyor

Hardware:

- S7 1500 safety PLC (Tia portal V15)
- 1500 TP comfort panel
- Siemens frequency converter on all motors (G120 and V20s)
- SICK TriSpector 3D scanner (resolution 0.42 mm)

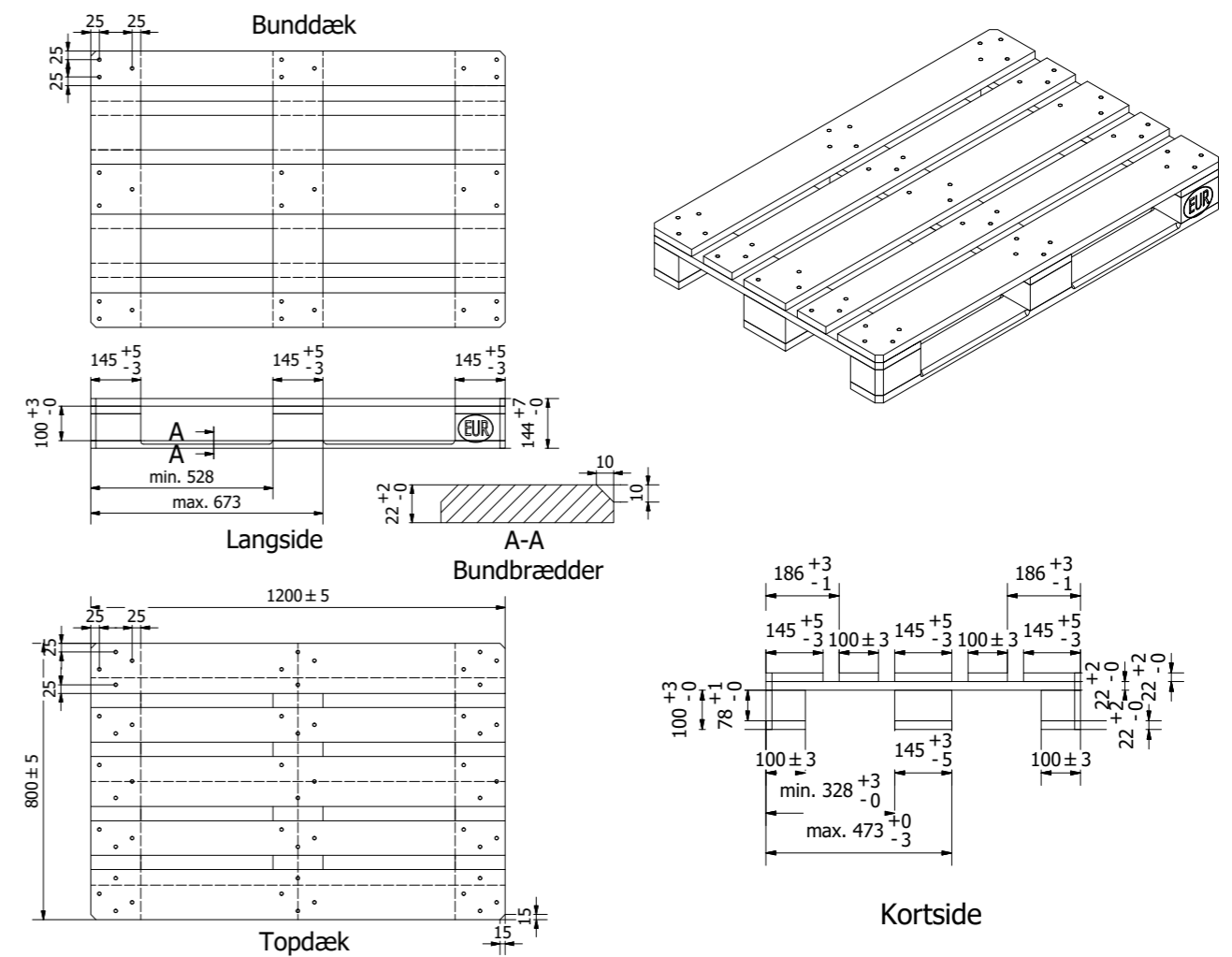
The pallet quality control scanner system was developed as a standalone system that can be integrated into most production facilities on the market.



Specifications

- User-friendly operation in multiple languages, including Danish, English, German and others
- Flexible solution where any changes can quickly be implemented, often via the Internet
- Statistics showing what pallet measurements are not approved, thus ensuring transparency in relation to pallet defects.
- Designed with easy service at the forefront to minimise production downtime.
- The system is supplied in a cabinet that ensures the correct lighting conditions for optimum scanning, and eliminates the nuisance class 2 laser light can cause in the surrounding environment.
- The brush section is fitted in a cabinet to keep dust and dirt out of the environment surrounding the sensor.
- A fast conveyor speed of 0.5 m/s provides a maximum scanner system capacity of 240 pallets per hour. The speed can be increased if requested by the customer.
- Sensors are mounted on brackets with sockets for fast and easy maintenance.
- Sensor resolution approx. 1 x 1 mm. This produces a highly accurate scan of the pallet.
- Analyses are rotated together with the pallet to ensure measurements are stable.
- Option to register nails and other objects that protrude from the pallet surface.
- The option to analyse individual areas on each board ensures a high degree of flexibility and quality in assessing pallet quality.
- Pallet discolouration can be detected via the 2D camera, with sorting based on colour and size of the discolouration, according to customer specifications.

- Euro-pallet specifications: Software for both scanners and data processing is based on current specifications.



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