

VERSASCAN & VERSAEYE

Board examination systems

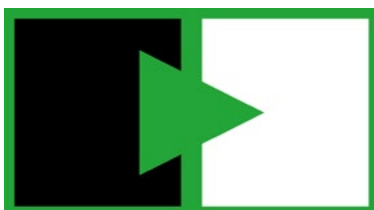


Ersa VERSASCAN & VERSAEYE Board examination systems



Why board examination systems?

- Proof of solder joint quality
- Traceability
- Industry 4.0
- No waste of materials



The Hermes Standard
for "M-to-M" in SMT Assembly

One major growth motor in the electronics industry are the increasing digital networks in both the industrial and private sectors, including the automotive industry and e-mobility. However, in the production of electronic assemblies, equipment manufacturers and EMS providers are faced with enormous cost pressure. "Zero-defect strategies" are a major component when it comes to taking up these challenges. In order to achieve stable quality, and meet the associated demand for zero-defects, permanent monitoring of the

assembly's specific side conditions and the process parameters of the soldering systems is indispensable.

The primary requirements in terms of printed circuit boards and components, such as wettability, soldering heat requirement, soldering heat resistance, layout, etc. have to be assumed as constants and presupposed in a soldering process. These preconditions cannot be adequately controlled in a soldering system but are essential for the quality of the soldering process.



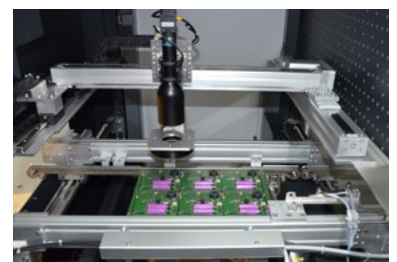
*VERSAFLOW 4/55 with
VERSASCAN and VERSAEYE module*

Arising from this fact, the soldering system process inspection can only monitor some of the parameters, which contribute essentially to the quality of the electronic assembly.

The aim of a “zero-defect strategy” in soldering is therefore to eliminate those soldering system factors, which can directly influence the process, from the outset. In addition, the soldering results should be inspected and documented immediately after the soldering system.

For this purpose Erska has developed the VERSASCAN and VERSAEYE modules. The VERSASCAN is used to check THT-equipped PCBs in front of the machine to detect errors before they occur; the VERSAEYE is used to verify and document the soldering quality after the soldering process.

*Ersa
VERSASCAN
module*

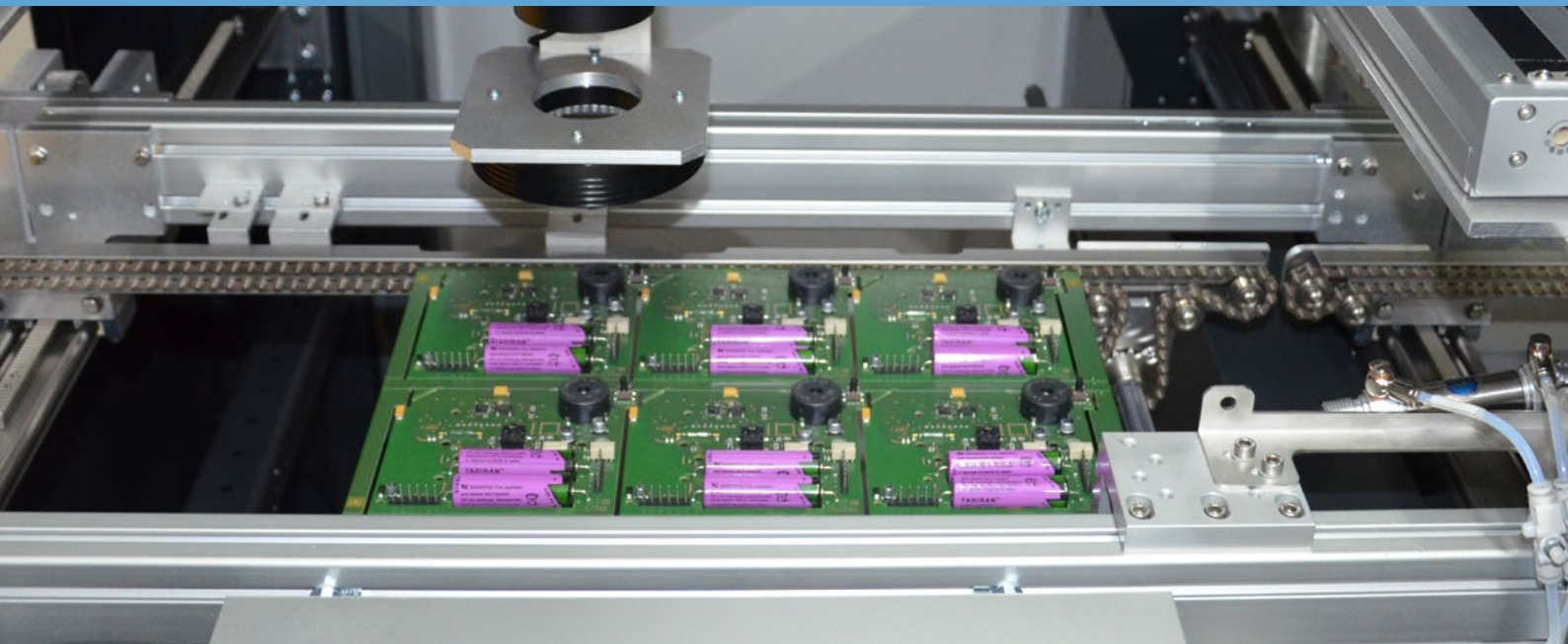


*Ersa
VERSAEYE
module*



Ersa VERSASCAN

Recognizes errors before they occur



VERSASCAN Highlights

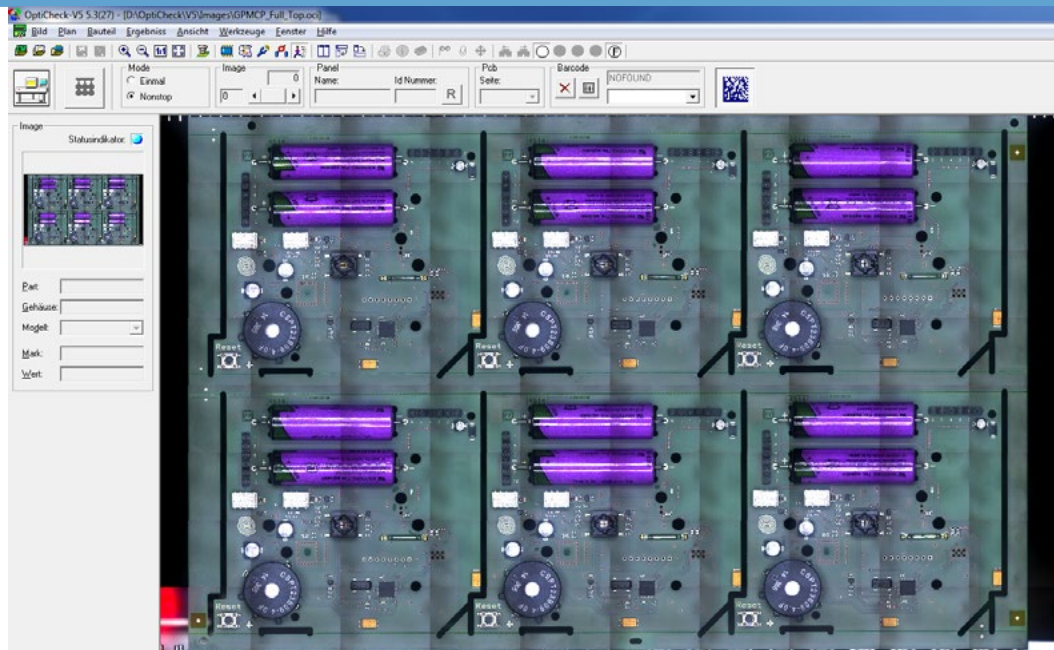
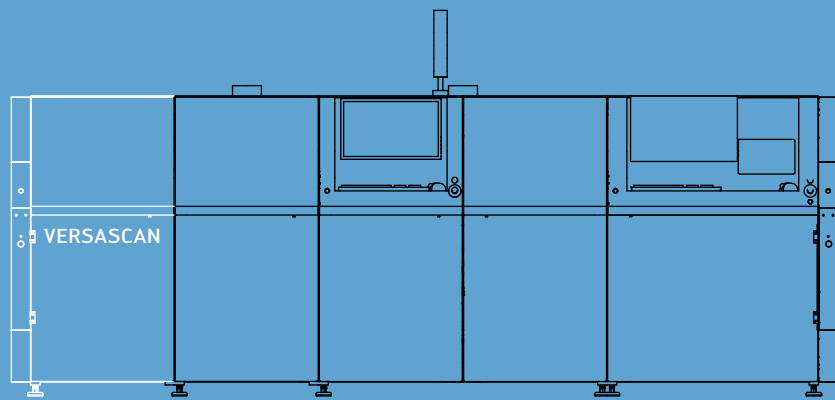
- Separate module fastened to the machine frame
- Recognition of multICODES on PCBs and work piece carriers
- Bad board detection in PCB panels (9 multICODES)
- PCB direction recognition
- Detection of incompletely assembled PCBs
- Detection of components with wrong polarization
- Detection of misplaced components
- Vision and reading system can be integrated above or beneath the conveyor level

The VERSASCAN module consists of a solid, powder-coated welded frame, control cabinet, cover with glass door and a width-adjustable pin-and-chain conveyor. The module is completely integrated into the VERSAFLOW selective soldering system. In this way, width adjustment and conveyor speed are adapted to the machine. As a result no throughput time is lost. On the contrary, it allows the user to recognize errors before they occur which leads to an increased throughput. Before the PCB is processed in the soldering

machine the high-resolution camera checks the following criteria:

- Complete assembly of the PCB
- Correct placement of the components
- Polarity of the components

For this purpose the camera compares the image of the current PCB with a reference image. The X-Y axis system with built-in tele centric optics detects up to 9 multICODES as well as the PCB direction.



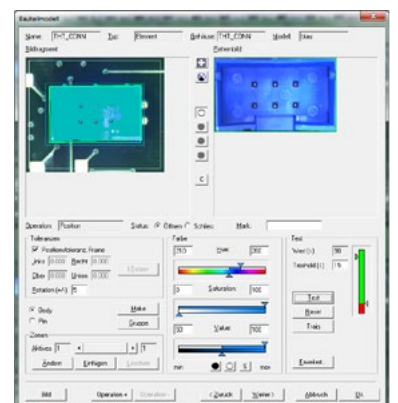
Bad board detection is used to identify defective components and to exclude the PCB or, in case of a PCB panel, to exclude the defective single PCB of the panel from the production process. This prevents defective PCBs from being soldered and reduces waste. Furthermore, valuable production time as well as equipment and resources such as flux, solder and energy are saved while maximizing throughput. In this way, errors can be corrected before soldering whereby rework costs are eliminated.

The results are logged and are then available for example as an XML file for follow-up processes. In order to be able to use the VERSASCAN in a ready-to-operate mode, it is possible to make preparations in the run-up of production based on CAD files or an offline programming. In this way, one can always be one step ahead.

At customer's request it is possible to go individually into adaptable sizes from 50 x 50 mm up to 508 x 508 mm.



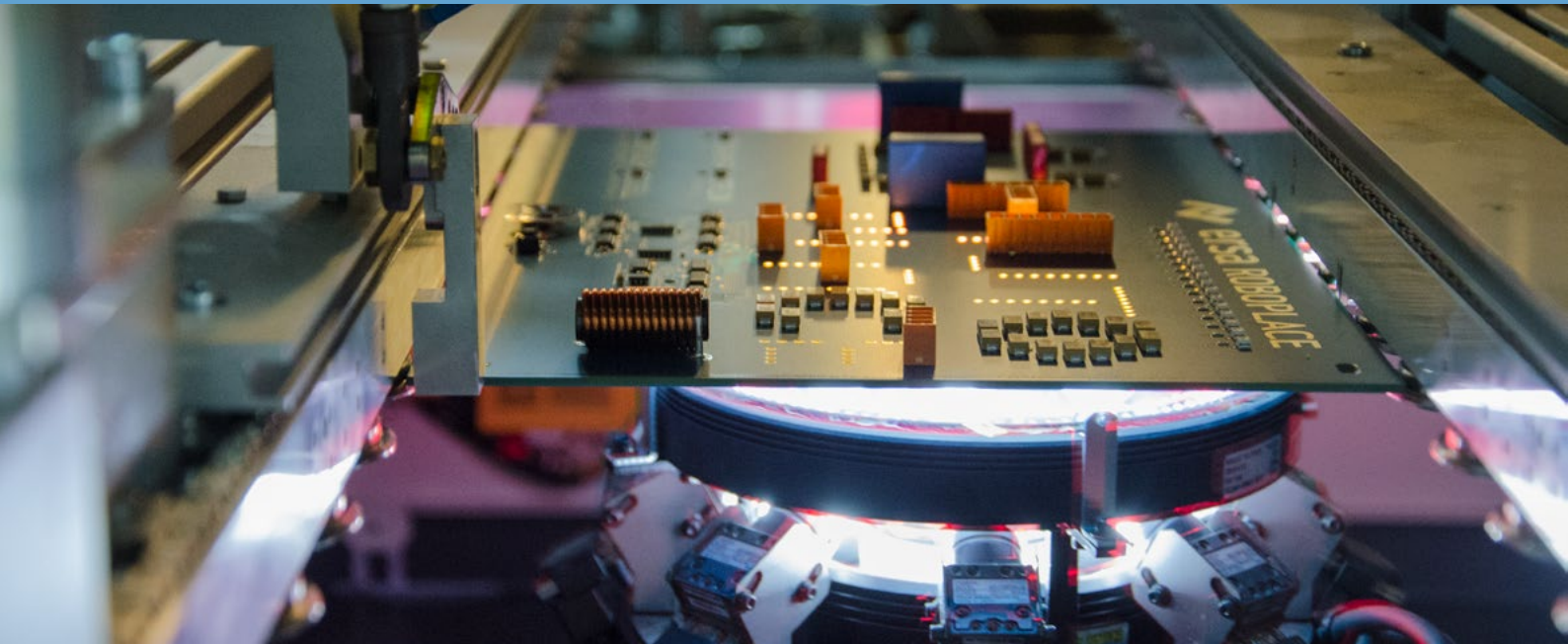
Component recognition



Creation of Libraries

Ersa VERSAEYE

Analysis, documentation and traceability
for the customers of our customers

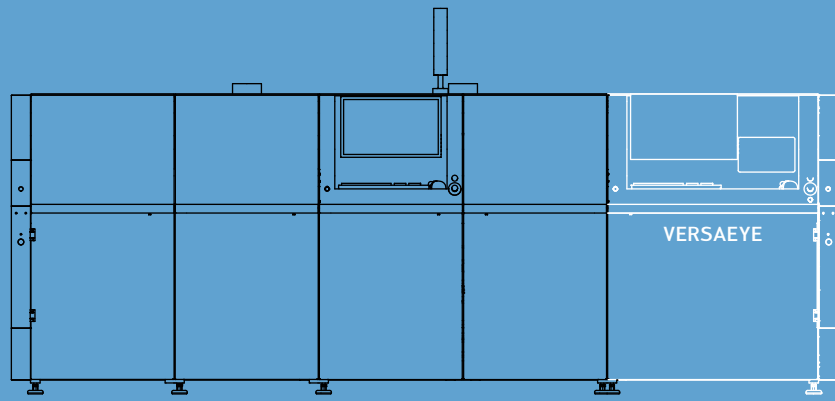


VERSAEYE highlights

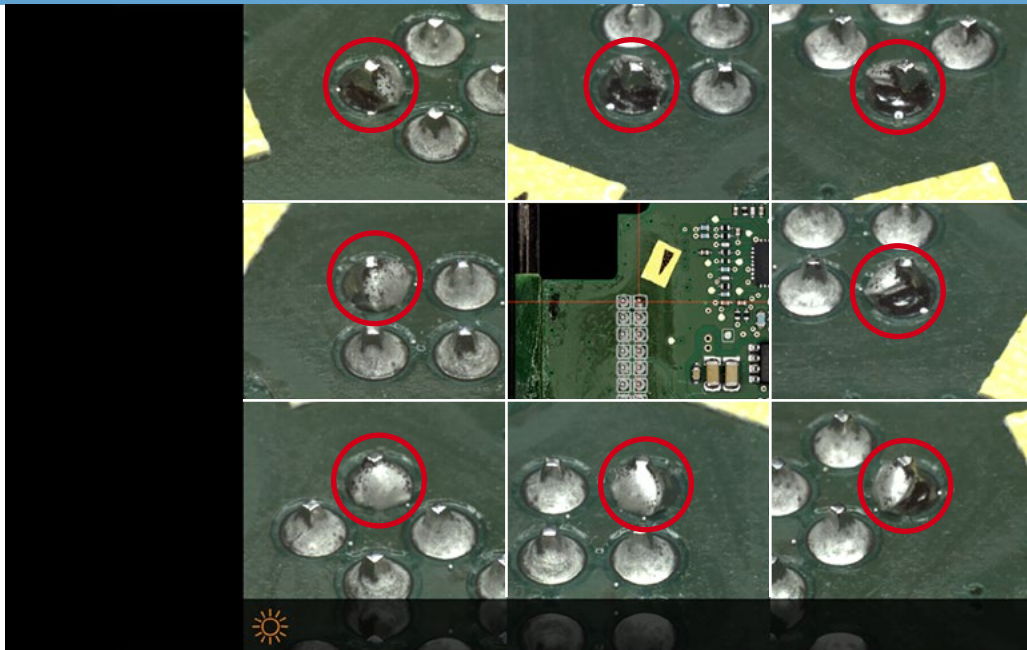
- System optimized for wave and selective soldering systems
- Compatible with work piece carriers
- Modular inspection possible: bottom, top or bottom & top
- Available with up to 9 cameras per module
- I/O interface
- Classification of inspection results at any time

The VERSAEYE inspection system is available in two versions. In the first version, the VERSAEYE module is integrated in the soldering system. The second version is a stand-alone module that can be positioned anywhere in the production line. Both versions consist of a solid, powder-coated frame. Servomotors move the axis system of the VERSAEYE in X-, Y- and Z-direction.

The VERSAEYE inspection system is equipped with 9 cameras. 8 cameras are arranged in a ring around the central camera. In this way, 360° inspections can be carried out. The central camera is equipped with a special lens, which prevents image distortion and allows for a precise inspection. Different reflection angles are realized by the innovative two-color ring lighting. Based on the reflection the software creates a color scheme of blue, white and red, and depending on the respective color shares it is detected whether the solder joint is good.

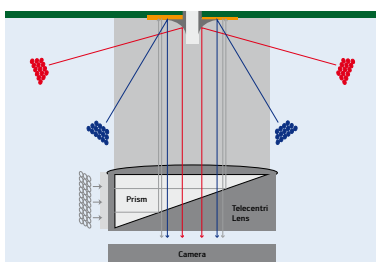


Thanks to the lateral cameras a detailed error analysis is possible. As you can see in the sample image: the poor wetting is only visible from a certain angle.

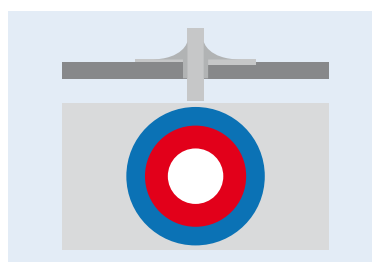


The software has been optimized for THT applications. Due to histogram programming, solder bridges, solder balls, poorly wetted solder joints or partially open solder joints etc. can be detected. The inspection results can be documented completely of course, and the traceability of the assembly is guaranteed. Error analyzes can also be created.

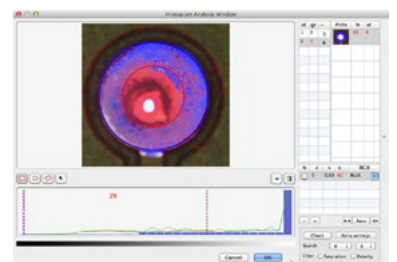
The handling of the PCBs can be carried out directly or via a workpiece carrier. The PCB conveyor is designed as a width-adjustable pin-and-chain conveyor which allows for a flexible product change.



3 different reflection angles for fillet detection

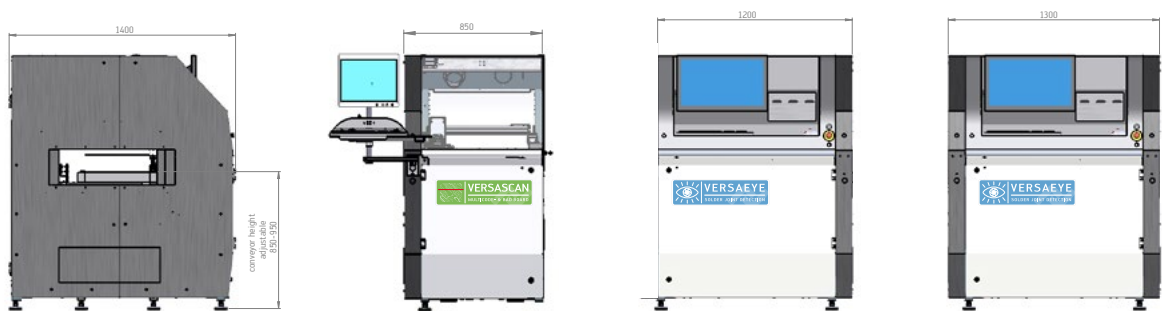


Reflection of a good solder joint



Screenshot software analysis

Technical data VERSASCAN & VERSAEYE



	VERSASCAN	VERSAEYE	VERSAEYE stand-alone
Dimensions			
Length	850 mm	1,200 mm	1,300 mm
Width	1,750 mm	1,750 mm	1,750 mm
Height	1,610 mm	1,610 mm	1,610 mm
Weight	ca. 150 kg	ca. 150 kg	ca. 150 kg
Feeding	manual/automatic	manual/automatic	manual/automatic
Conveyor system			
PCB top side clearance	120 mm	120 mm	120 mm
PCB bottom side clearance	120 mm	120 mm	120 mm
Working range	508 x 508 mm	508 x 508 mm	508 x 508 mm
Conveyor speed	1 – 200 cm/min	1 – 200 cm/min	1 – 200 cm/min
Inspection			
Field of view	50 x 40 mm	38 x 38 mm	38 x 38 mm
Inspection speed	2 frames/s	2 frames/s	2 frames/s
Electrical data			
Voltage	230 V	230 V	230 V
Power tolerance range	±5 %	±5 %	±5 %
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Power consumption	1 kW	1 kW	1 kW
Safety fuse	1x 6 A	1x 6 A	1x 6 A
Environmental specs/noise level			
Ambient temperature	15 – 35 °C	15 – 35 °C	15 – 35 °C
Permanent sound level	< 65 dB (A)	< 65 dB (A)	< 65 dB (A)

America
Ersa North America
info-ena@kurtzera.com

Asia
Kurtz Ersa Asia Ltd.
info-eap@kurtzera.com

France
Ersa France
info-efr@kurtzera.com

Mexico
Kurtz Ersa, S.A. de C.V.
info-kmx@kurtzera.com

China
Ersa Shanghai
info-esh@kurtzera.com

Ersa GmbH | Leonhard-Karl-Str. 24
97877 Wertheim/Germany

Tel. +49 9342 800-0
info@ersa.de | www.ersa.com

 **kurtz ersa**