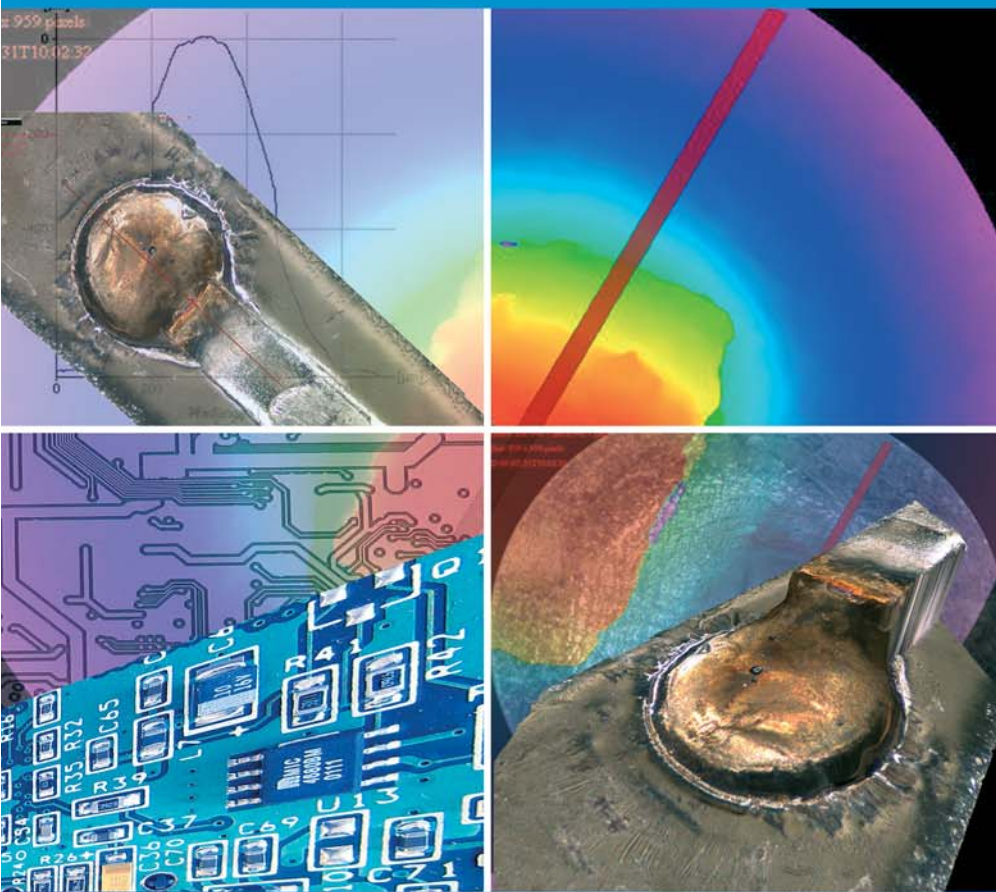


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Meaningful optical 3D surface measurement in electronics

- Form and geometry measurement
- True color information to registered 3D data
- Roughness and contour measurement conforming to latest ISO standards
- Measurement of surfaces showing steep flanks and strong reflections
- Surface characterisation of sub miniaturized components
- Highest resolution across measurement areas of several mm such as waver
- Fast and easy failure analysis
- Quality assurance and roughness measurement of conductors
- 3D analysis of plugs
- 3D measurement of layer thickness

Applications

INSPECTION OF WELDING SPOTS AND SOLDERING JOINTS

3D SURFACE MEASUREMENT OF MICROVIA

AUTOMATIC DETECTION AND MEASUREMENT OF LUMPS

INFINITE FOCUS

Electronic components have to be faster, stronger and more compact to meet the increasing industrial requests. Regardless of their use in the automotive sector, medical device development or telecommunication, manufacturers have to face continuously growing requirements in terms of density, complexity, reliability and durability of electronic devices. These demands can only be realized throughout consistent and state of the art quality assurance as provided with InfiniteFocus®.

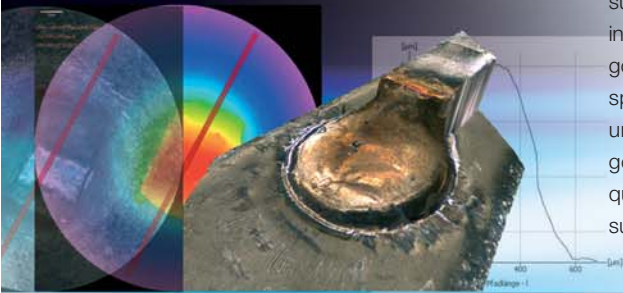
Crucial aspects such as welding spots and soldering joints are robustly and meaningfully measured. In the field of printed circuit boards, the use of InfiniteFocus® optimises the production of thin, highly complex and multi-layered printed circuit boards leading to more reliable and durable electronic devices.

InfiniteFocus® is based on Focus-Variation. The optical 3D measurement device provides the entire surface topographic information in combination with its true color information. Measurements reach a vertical resolution of up to 10nm even at complex geometries such as steep flanks and strong reflections. InfiniteFocus® can be used in the lab as well as an Inline sensor in production.

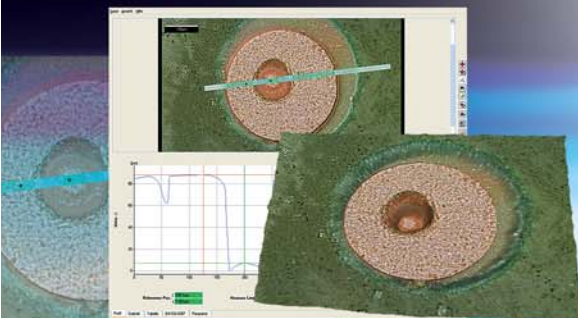
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OPTICAL SURFACE MEASUREMENT WITH TRUE COLOR

INFORMATION – INFINITE FOCUS® IN QUALITY ASSURANCE

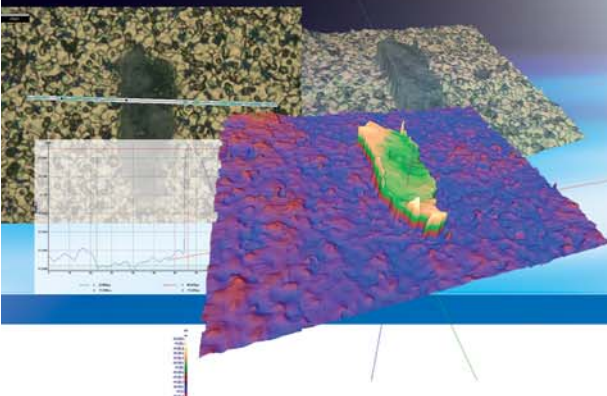
Automatic inspection of welding spots in production

In welding processes, the optical 3D measurement device InfiniteFocus® is used to automatically measure and classify welding spots and soldering joints in production. The inline surface inspection is performed in seconds and saves costly rework. InfiniteFocus® enables a 100% inspection and automatic classification with go/no go status through robust surface measurement. Measurements are obtained across the geometry of the whole spot including steep flanks, complex reflection properties and scale caused by burning. To define go/no go parameters such as irregularities due to scaling, the topography of the welding spot is measured including the fully registered 3D color information of its surface. This unique combination of robust topographical data and true color information provides the go/no go data for weld classification plus advanced metrology information. Advanced quality assurance is provided as scaled patches are easily identified, quantified and measured. InfiniteFocus® is also used for the 3D measurement of pins and pads.

Optical surface measurement of HDI Microvia

Manufacturers in the sector of printed circuit boards still struggle with common tactile and destructive surface measurement techniques, leading to inaccurate and not repeatable measurements.

Particularly in the HDI microvia technology sector quality assurance throughout robust surface measurement is a growing demand. AT&S (Austria Technology & System Engineering Corp.), market leader in Europe and among the worlds' largest and technically most advanced producers, benefits from optical and non destructive measurements obtained with InfiniteFocus®. The 3D measurement of certain surface patches such as the diameters of the blind holes is highly accurate and easy to perform. Even at steep flanks and greatly varying surface reflection properties measurement results up to 10nm vertical resolution are feasible. Analysis capabilities such as profile, area, roughness, volume etc. are provided. Additionally, AT&S benefits from the comprehensive visualization properties as InfiniteFocus® provides the entire surface topographic information in combination with its registered true color information.

Lump detection of solder paste used in printed circuit board manufacture

Solder paste is a colloid that is applied to hybrid circuit boards, used to attach and link surface mounted components on the board. The quality of the joints is dictated by the surface characteristics of the dried paste. Poor performance results can occur because of irregularities in the surface of the paste that are caused by large or irregular lumps in the matrix.

So, quality assurance of the composition and topography of the paste, pre and post application is a very important parameter. Both, particle size and distribution have to be identified. The paste must not have a certain number of lumps with a defined height or diameter in a specified measurement area. However, the question arises how to differentiate one lump from another on what is effectively already a lumpy surface. InfiniteFocus® easily identifies these lumps as 3D data are obtained in combination with the true color information of the surface. The system provides robust and accurate surface inspection and numerical quantification of lumps. All out of range features are fully automatically identified and measured as InfiniteFocus® automatically scans the selected region also over large field of views.

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