

Alicona Imaging Direct Measurement of Smoothness with "InfiniteFocus"

InfiniteFocus is an optical 3D measurement tool for direct surface measurement. The system provides highly accurate 3D measurement with true color information of the topography, one of the most decisive factors of the papers' printability. Besides height differences and local "crates" of the surface the smoothness highly influences the complete color application and quality of a print image. In most cases indirect methods are used to compute a surface' topographical structure by measuring an air flow but lacking essential data for the correlation to its printability. These techniques are limited to only one single measured value and don't enable any numerical verification of the surface.

With the optical 3D measurement device InfiniteFocus paper manufacturers are able to perform direct surface measurement including the determination of the local homogeneity of a paper's topography. Essential information about the real state of a

surface is achievable which allows new and numerically founded measures for quality assurance and optimisation of productivity.

New aspects to realize advanced quality assurance with InfiniteFocus can be achieved in processes to increase the smoothness such as calendering. Conventional techniques only allow the determination whether the surface is smoother after it has been calendered. However, numerical data

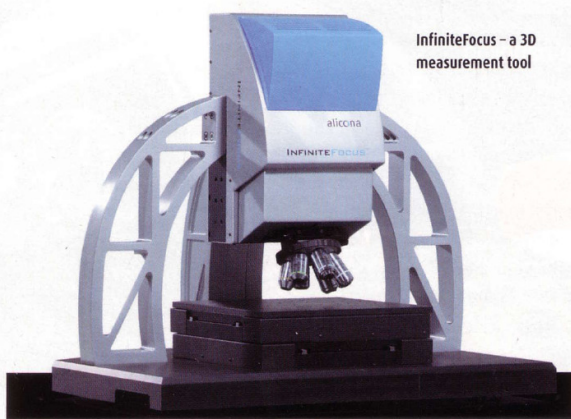
about the real degree of the increase cannot be provided. InfiniteFocus meets these requirements due to the direct and area based measurement. This is achieved based on the measurements of micro- and macro roughness values Ra, Rq and Rz. Also, meaningful marking analysis of paper after clothing is realised via Fast Fourier Transformation (FFT).

Roughness, height differences and other surface features such

as gradient distribution are computed according EN ISO 4287 standards without any deformation of the surface. International manufacturers successfully use the optical measurement system for applications such as the analysis of print images showing missing dots or incomplete color application, the optimisation of clothing processes, process control of surface sizing and surface finish, the examination of grinding processes as well as the improvement of pulp refinement. The system is used for both, coated and uncoated paper.

InfiniteFocus is based on the technical principle of Focus-Variation. Its operating principle combines the small depth of focus of an optical system with vertical scanning to provide topographical and color information from the variation of focus. Measurements reach a vertical resolution of up to 10nm even at surfaces with steep flanks or highly reflective geometries.

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InfiniteFocus - a 3D measurement tool