

Direct surface measurement and quality assurance of paper

- Quality assurance via direct, optical 3D surface measurement
- Non destructive measurement of smoothness
- Surface measurement conforming to latest ISO standards
- Easy and fast failure analysis of print images
- 3D data and full color information
- Comprehensive measurement capabilities to improve printability
- Surface measurement of coated and uncoated paper
- Optimisation of clothing processes
- 3D geometry measurement of gravure cylinders

Applications

- FAILURE ANALYSIS OF PRINT IMAGES SHOWING MISSING DOTS
- 3D MEASUREMENT OF PAPER WITH INCOMPLETE COLOR APPLICATION
- PROCESS CONTROL OF SURFACE SIZING AND SURFACE FINISH
- EVALUATION AND QUALITY DEVELOPMENT OF BASE PAPER
- EXAMINATION OF GRINDING PROCESSES
- IMPROVEMENT OF PULP REFINEMENT

INFINITEFOCUS

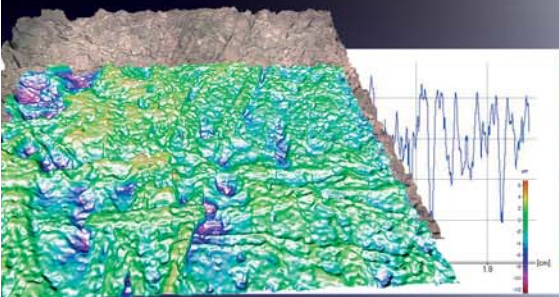
Today both, paper manufacturers and the printing industry miss the possibility to correlate the visual appearance of a papers' surface with robust and accurate 3D measurements, even though the correlation of the surface and its printability reflects an increasing need in quality assurance. This strong requirement is met by InfiniteFocus®. The system provides the highly accurate 3D measurement and 3D true color visualization of the surface. This unique combination of 3D data and full color information opens new possibilities in quality assurance as the direct correlation to a papers' printability. The system is used for surface measurement of both, coated and uncoated paper.

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.

OPTICAL SURFACE MEASUREMENT WITH TRUE COLOR

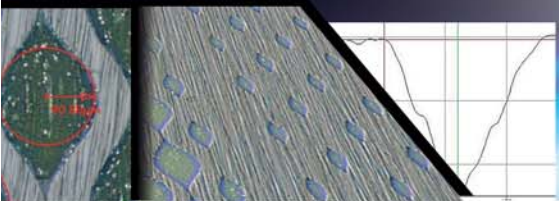
INFORMATION – INFINITE FOCUS® IN QUALITY ASSURANCE

Direct computation of smoothness



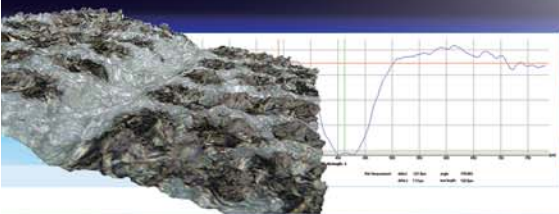
In most cases indirect methods are used to compute the surfaces' topographical structure by measuring an air flow but lacking essential data for the correlation to its printability. In contrast to conventional techniques Infinite Focus® measures directly and achieves numerical verification of the surface. This leads to a significant increase in quality assurance as essential information about the real state of a surface is provided. One example is the numerical evaluation of the real increase of the papers' smoothness after it has been calendered. Also, measurement results can lead to various measures to improve pulp refining. Roughness and other surface features such as gradient distribution are computed including statistical parameter by a simple mouse click without any deformation of the surface conforming to latest ISO standards.

3D geometry measurement of gravure cylinders



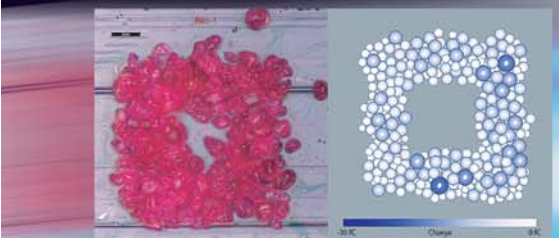
To avoid expensive missing dots in print images due to insufficient ink transfer, the optical 3D measurement device InfiniteFocus® is used for the geometry measurement of gravure cylinders. Missing dots often occur because of too inhomogeneous paper. In this case the contact between the cylinder cup and the papers' surface is not provided which leads to incomplete color application. Measurements of width and depth of the cups allow, prior to printing, the conclusion if the topography of the paper is homogenous enough for a complete and high quality color application.

3D surface measurement of missing dots



In the sector of rotogravure printing print images with missing dots are a common problem and matter of quality assurance. InfiniteFocus® allows the direct, optical surface measurement of paper to assess if the failure in print images can be attributed to a faulty printing process or poor paper quality. As InfiniteFocus® is the only instrument that delivers both, the entire surface topographic information and its true color information, it provides the easy identification of scratches, voids and other defects in the surface. The defects that appear on an inhomogeneous surface are clearly visible in true color and with entire depth of focus, enabling easy to perform, traceable and robust 3D measurement. Using InfiniteFocus® it is easy to establish if the print fault is due to poor paper quality or insufficient ink transfer.

Verification of a print process simulation to achieve offset-like printing quality



Today, the electrophotographic print process is widely used due to the cost effective relationship of print quality versus page costs. However, the demand for ever higher, more offset-like print quality is rising. With InfiniteFocus®, the leading manufacturer Océ printing systems has successfully increased the quality of electrophotographic printing processes. The system provides accurate and verified 3D data and visualization with full depth of focus of toner particles. Using InfiniteFocus®, it is for the first time possible to measure the deposition characteristics of toner particles accurately. Based on these results mathematical methods to simulate toner particles are computed to verify the print process. The results of the comparison between the test patterns and the simulations provide detailed insight into the physical background of the process specific effects leading to the increase of speed and resolution of electrophotographic printers.

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