

# OptiTopo surface measurement technique

## a unique method to correlate surface topography to print defects

### Fields of application

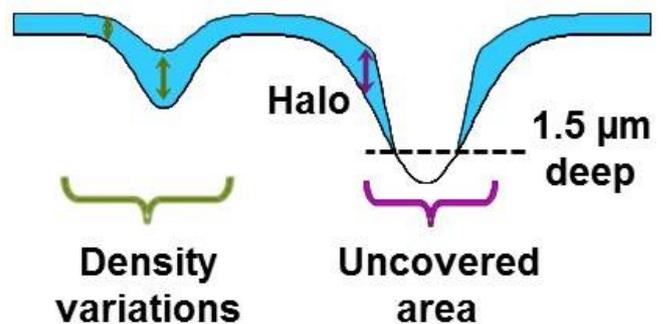
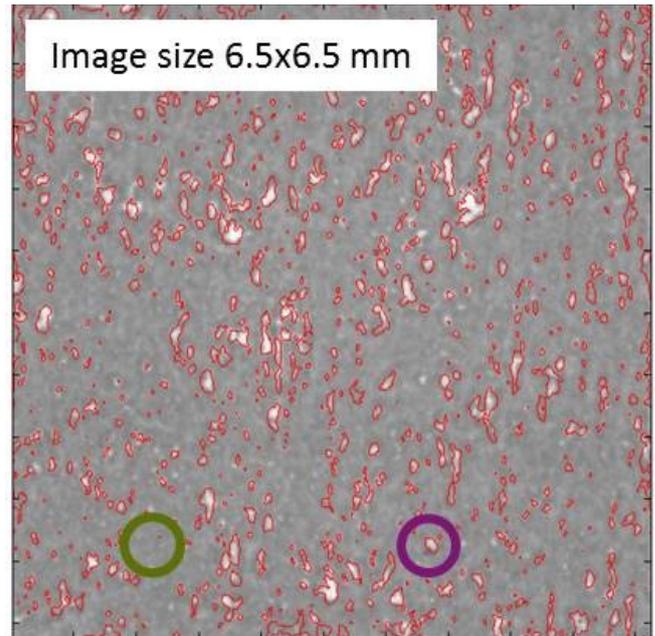
- Is there a match between topography variations and print defects?
- How is the surface topography affected by different calendering, coatings and base papers?
- Are topography differences between centre- and edge rolls acceptable?

OptiTopo will help you answering these questions by providing additional information when compared to classical air-leak devices (e.g. PPS, Bendtsen, Sheffield). Acquisition and processing time are much faster than current mechanical stylus or laser instruments.

### Example (right image)

Flexography print defects (uncovered areas in full tones) on carton board. The uncovered areas correlate well to valleys deeper than  $-1.5 \mu\text{m}$  from the average height (see the red contours). Valleys wider than  $0.25 \text{ mm}$  are excluded.

Note: Normally the measurements are made on unprinted paper or paper board.



Flexo printed paper where a height track shows that deep craters will have no cyan ink and shallow craters too much ink

### For more information and prices contact

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The L&W OptiTopo instrument and the Expert kit (PC and screen)

## How this is done

Two images of the same exact region of a paper sample are acquired, illuminated in low angles from opposite directions. Advanced image analysis is used to calculate a height map using a “photometric stereo” technique. Frequency analysis is applied on the height map to separate the small-, medium- and large scale variations and their respective contributions when predicting print quality. It is currently possible to measure areas from 16x16 mm up to 32x32 mm. Normally 4-8 areas are evaluated for better statistics.

## Standard L&W OptiTopo instrument

The L&W OptiTopo is well suited for daily quality control, very easy to use and calculates the important fine scale variation (OSD-value) as well as three different crater amount values. Depending on the roughness of the measured product, one of the three crater amount values is well suited. Also variations in different size classes are measured.

The L&W OptiTopo is sold by L&W, part of the ABB group.

## The OptiTopo Expert unit

For users who also want to use the instrument for research and development we offer an Expert unit consisting of advanced software and a powerful PC.

The Expert unit offers the following images and figures:

The surface as a gradient image (upper image). Image areas: 6.5x6.5 mm.

The height map colour scaled in microns (middle image). The image has been filtered to remove irrelevant large scale variation.

The crater map (lower image). A variable depth threshold is used to find the relevant structure defects, illustrated with red outlines.

The fingerprint of the detailed surface roughness in the fine, medium and large scales (the figure). The fine scale roughness is the most important to predict the print results.

A very detailed surface variation (spectra) revealing periodic variation like wire marks.

A tool making it possible to plot the height profile along a line selected by the user.

