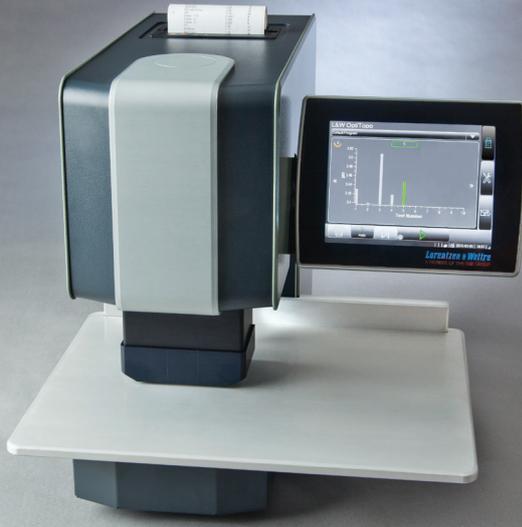


PULP AND PAPER

## L&W OptiTopo

Lorentzen & Wettre Products | Paper Testing



L&W OptiTopo is an instrument for measuring surface roughness and predicting printability of paper. It is a faster, better and yet less expensive instrument compared to traditional optical methods for measuring surface roughness. The measurement method is developed by Innventia and has, for over a decade, proven to be an outstanding technique to assess the correlation between paper surface and print defects.

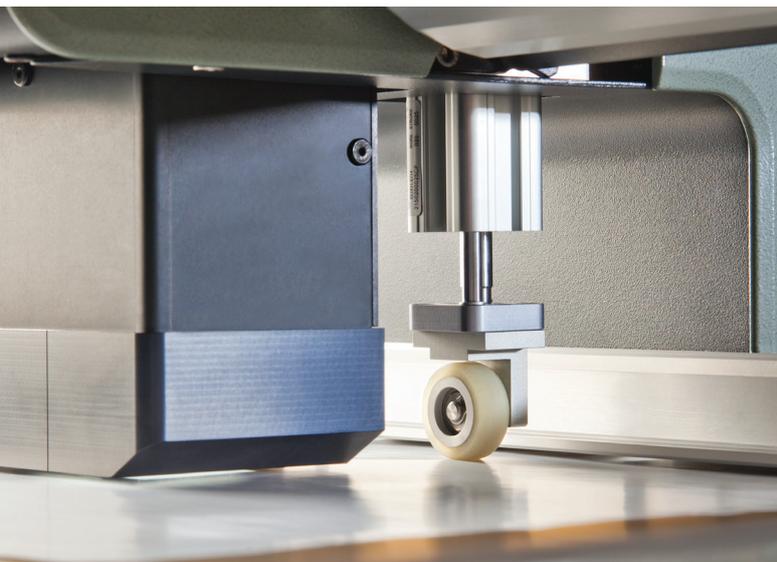
With a measuring area that is 20 times larger than for traditional optical methods (such as laser, confocal, and chromatic aberration) L&W OptiTopo reports much more relevant and representative results. L&W OptiTopo analyzes a 1000 mm<sup>2</sup> large area in approx. 10 seconds and the results are immediately displayed on the touchscreen.

### Measurement technique

L&W OptiTopo uses a high-resolution CMOS camera to take two differently illuminated images of the exact same paper surface, thus revealing shadows formed by the paper's topography. The paper is photographed with light at low angle, first from one side then from the other side, visualized in a gradient map and interpreted into a height map for further analysis.

### Benefits

- Fast optical method – reports in a few seconds
- Comprehensive prediction of printability
- Low-cost measuring equipment
- Extensive measuring area
- High-resolution CMOS camera
- Easy installation and start-up
- Ergonomic, automatic, easy operation
- Touchscreen and user-friendly interface
- Strip feeder for profile measurement
- Minimum of maintenance



Integrated strip feeder.



Optional strip holder, here with L&W Micrometer.

### Measurement results

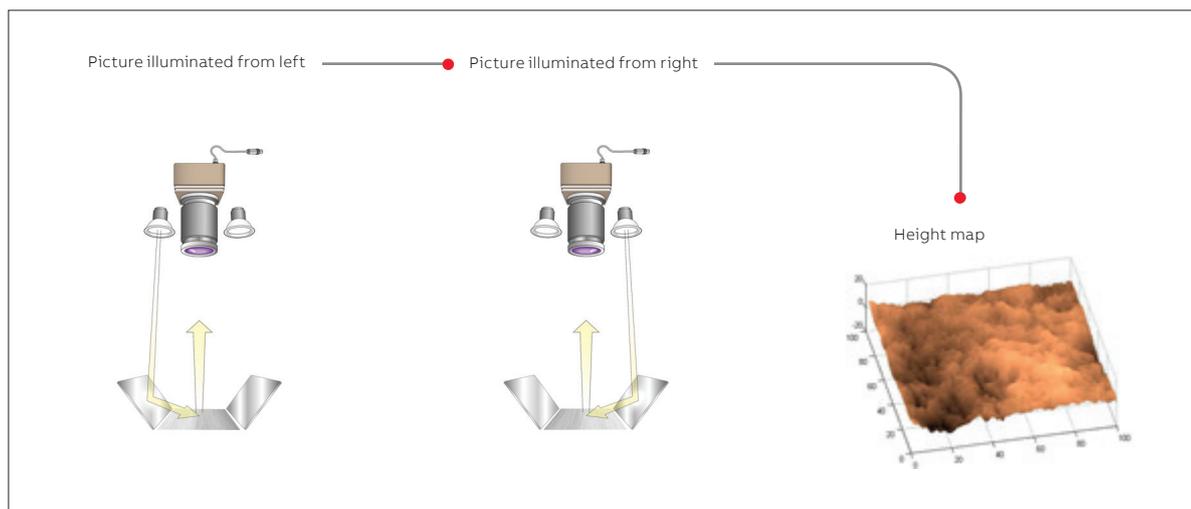
L&W OptiTopo introduces two new values; crater value and OSD value. These values better represents printability and give a more relevant information of the surface topography. Crater value predicts the risk of missing dots and uncovered print area. OSD value is a measurement of fine scale surface variations in an area where traditional air leak methods does not perform well in order to predict printability.

L&W OptiTopo calculates surface topography in several bands, from fine to large scale variations. As an extra feature, estimated values for PPS, Bendtsen, Stylus Roughness and Sheffield can be reported from L&W OptiTopo (needs to be

calibrated for specific paper type). This makes it possible to compare to measurements made with the traditional surface roughness methods and serves as a benchmark for the OSD value.

### Operator friendly

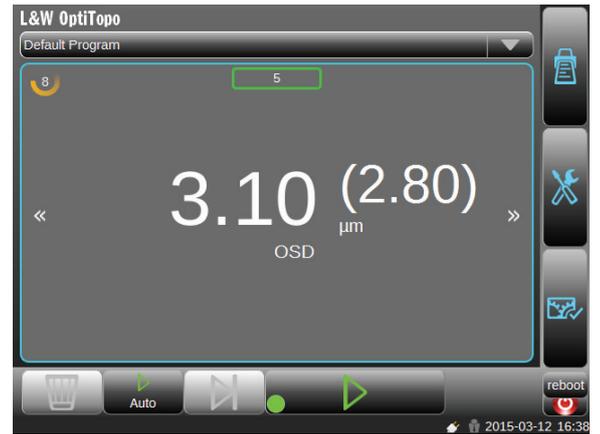
The easy to use touchscreen has intuitive menus and a user-friendly interface. The touchscreen has a protective surface for easy cleaning and durability, with fast response and high resolution. Persistent and durable LED lights ensures a minimum of maintenance that can be managed by the operator. Further a live-view function makes it easy to adjust the sample to analyze the most representative paper area (without defects that could give misleading results).



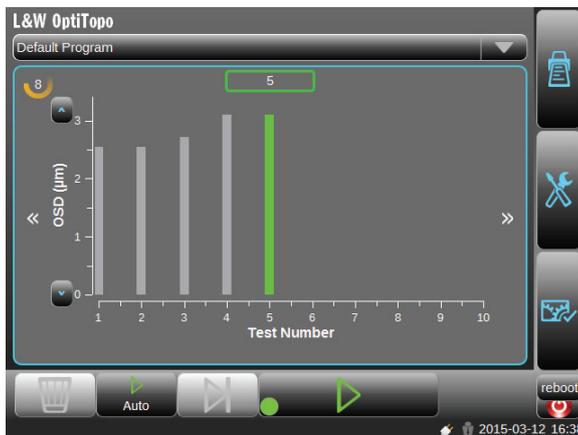
A height map is calculated using a photometric stereo technique revealing the topography of the paper.

#	OSD [ $\mu\text{m}$ ]	Crater -1.5 [%]	Crater -3 [%]	Crater -5 [%]
2	2.55	32.3	18.7	7.21
3	2.71	33.3	19.6	8.09
4	3.10	34.0	20.7	8.84
5	3.10	34.0	20.7	8.84
Mean	2.80	33.4	19.7	8.03
Min	2.54	32.8	18.7	7.18
Max	3.10	34.0	20.7	8.84
Std.Dev.	0.282	0.602	1.00	0.823

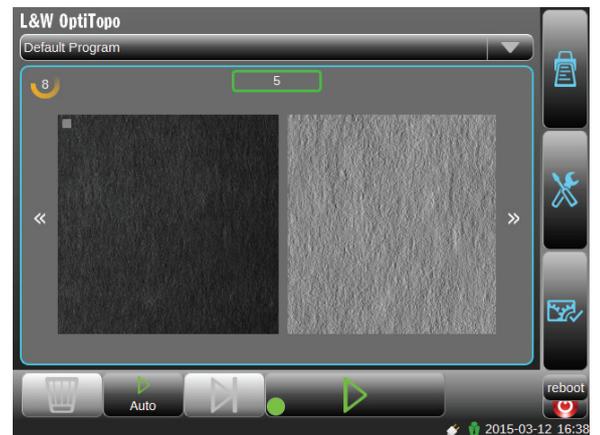
Table values



Numerical values



Graph values



Gradient images

## DEFINITION

### OSD VALUE

L&W OptiTopo measures surface topography in several bands from fine to large scale variations. The OSD value is calculated from fine scale surface variation, which is of great importance for acquiring a value that is relevant for printing.

### CRATER VALUE

Crater value is the amount of the surface consisting of deep craters below a certain depth. Knowing the surface percentage of deep craters helps predict the print quality and reveals the risk for uncovered areas (UCA) and missing dots in flexo and gravure printing, as deep craters in the paper surface will remain unprinted in the printing process. L&W OptiTopo reports three preset crater depths, configurable by the operator, covering the majority of printing grades on the market.

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**Technical specifications – L&W OptiTopo, code 269**

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Inclusive	Check equipment, internal strip feeder, built-in thermo printer.		
Measurement range	OSD value 0.2 – 6 µm Crater (Fine, Medium, Coarse) in 0.2 – 10 %. Calculated estimations for PPS, Bendtsen, Sheffield, and Stylus Roughness Emveco (Needs to be calibrated for the specific paper type)		
Instrument			
Presentation	8.4 in colour touch screen		
Max throat depth	150 mm (from sample edge to centre of measuring head)		
Repetitive measurement	Approximately 15 s for 32 × 32 mm measuring area, and approximately 10 s for 16 × 16 mm measuring area		
Measuring head contact force	28 N		
Measuring area	32 × 32 mm and 16 × 16 mm		
Results			
Measurement values	- OSD, Crater Fine, Crater Medium, Crater Coarse		
Statistics	- mean or median value - standard deviation - coefficient of variation - maximum and minimum values of the series		
Connections	Ethernet (The instrument acts as a FTP-server. Test results can be retrieved by an FTP-client.)		
Installation requirements			
Power	100 W		
Instrument air	>0.2 MPa (30 psi)		
Air consumption			
Dimensions	0.50 × 0.59 × 0.45 m/19.7 × 23.2 × 17.7 in	Volume	0.132m <sup>3</sup> /1.69ft <sup>3</sup>
Net weight	16 kg / 35 lb	Gross weight	26 kg / 57 lb
Applicable standards			
PPS, Sheffield, Bendtsen, Stylus Roughness			

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