2D F-SENSOR

INNOVATION FOR PAPER - LAB FORMATION SENSOR

The 2D Lab Sensor is based on the 2D On-line Formation Sensor using the same optics, electronics and results algorithm. Therefore, the lab system will provide the same analysis and give the same results as those obtained by the on-line system.

A CCD camera takes look-through images of a sample backlit by a stroboscope. The intensity of the light is regulated by the computer to obtain a constant homogeneous tone as well as a constant grey level average of the image. By automatically controlling the light intensity, formation of sheets with varying basis weights, colors or opacities can be compared.

The basis weight range is very large, from 5 g/m2, tissue, non woven, printing and writing, up to testliner, virgin board (even dyed) over 600 g/m2. The system can also be used for white paper over 1000 g/m2.

The images are analyzed by a powerful integrated computer and the results are displayed on a large 19" flat screen monitor. The algorithm was developed by CTP* and tested by many papermakers before validation. The treatment process is by far the best available thanks to CTP and its 25 plus years of experience in paper and board look-through analysis.

* Centre Technique du Papier. Grenoble, France

The Device

The device is ruggedly built with an integrated stroboscope, light regulation board, reflection mirror, sheet support, camera, computer, hard disk, CD and floppy drivers.

The stroboscope lamp is not a wear part, average life expectancy of this lamp is 10 years. The 2D system will also automatically compensate for lamp aging.

Techpap can deliver two types of sheet supports:

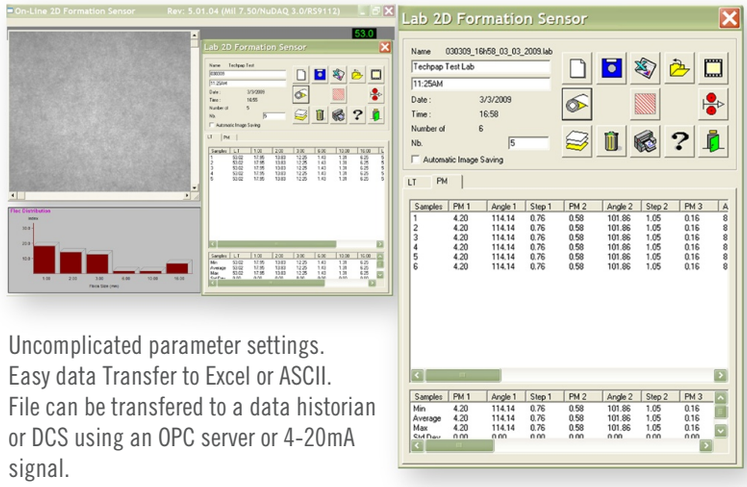
- A support with milk glass for fine papers to 50 g/m2
- Normal glass for current grades through heavy grades

A push button control is conveniently placed on the front allowing the operator to start an analysis with automatic incrementation.

As an option Techpap can provide an automatic feeder system. This allows the operator to run cross directional profile.

Friendly User Interface

The software runs under WINDOWS 2000 Pro or XP Pro with only one window measurement.



Uncomplicated parameter settings.
Easy data Transfer to Excel or ASCII.
File can be transfered to a data historian or DCS using an OPC server or 4-20mA signal.

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All functions are accessible with a simple icon click

Periodic marks: 10 different wire of felt markings are automatically detected and classified from higher to lower intensity. The angle and the spacing for the periodic marks are also recorded.

Image saving: images can be captured automatically or manually and saved to a tif file.

Formation Index & Distribution Output:

> A 4.7"x 4.7" (120 x 120mm) display of the look-through images provided
> A global formation index number with excellent visual test correlation
> Floc size distribution in 6 classes (1, 2, 3, 6, 10 and 16 mm).
> Floc anisotropy (average Lx, Ly and Angle)
> Statistical results for all measurements
> Periodic marks: 10 marks, angle, intensity and spacing down to 0.5 mm

Export of results to Excel or using OPC server.

IN SUMMARY...

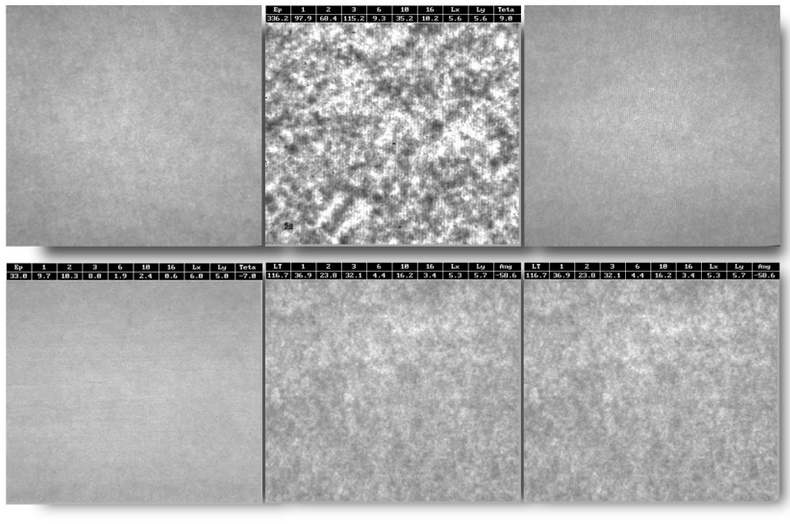
The interface is easy to use and clearly understood with data that can be exported to Excel or a data historian. The sheet image display allows the user to view the current measurement.

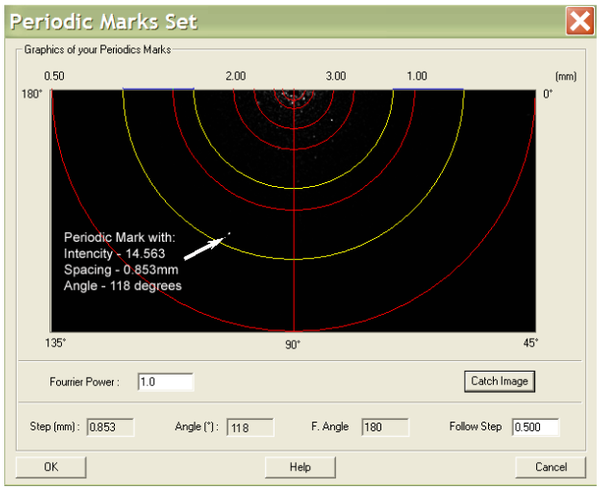
In summary the 2D F-sensor is:

> **A ready to use sensor** (the equipment is pre adjusted and tested at the Techpap facility).
> The perfect tool to track and control paper, board or tissue formation and look-through.
> A process control view of the global formation index, as well as floc distribution and average floc anisotropy.
> An efficient way to track periodic marks on paper (shadow marking, web mark, felt mark).

CREATE YOUR OWN PAPER IMAGE LIBRARY:

The system allows paper test images including the recorded data to be saved and stored to a hard drive system or other network source.





Measurement

* Measured Area	4.75” x 4.75” 120 x 120 mm
* Measurement Frequency	2 images per second
* Basis Weight of the Sheet (Depending also of Opacity)	5 to 1000 g/m²
* Resolution	0,25 mm
* Repeatability	< 1 %

Sensor

* Weight	84 lbs (38 kg)
* Dimensions	21.7” x 9.8” x 25.6” 55 x 25 x 65 cm

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