

Permi

ON-LINE POROSITY ANALYZER



AN OPPORTUNITY TO OPTIMIZE refining, retention, broke addition, vacuum levels and any of the machine variables that make paper, not just good paper, but the best it can be.

AN OPPORTUNITY TO IMPROVE AND MAINTAIN the stability of the structure of your paper – less broke, lower operation costs and higher quality paper for all YOUR customers.

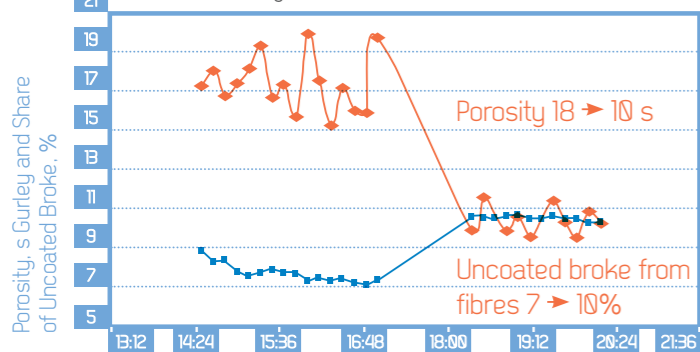
- Production increase of a liquid packaging board machine from 576 ton/day up to 648 ton/day.
- Speed increase of a cigarette paper machine from 3000 m/min to 4000 m/min (25 %).
- Much faster grade changes in production of nonwovens.
- Energy savings up to 10 kWh/ton with better control of refining.

ACA
www.aca.fi

EXCELLENT CORRELATION WITH PROCESS CONDITIONS SUCH AS REFINING, BROKE ADDITION, RETENTION, ETC., MAKING IT EASY TO OPTIMIZE PAPER MACHINE RUNNABILITY.

INCREASED POROSITY

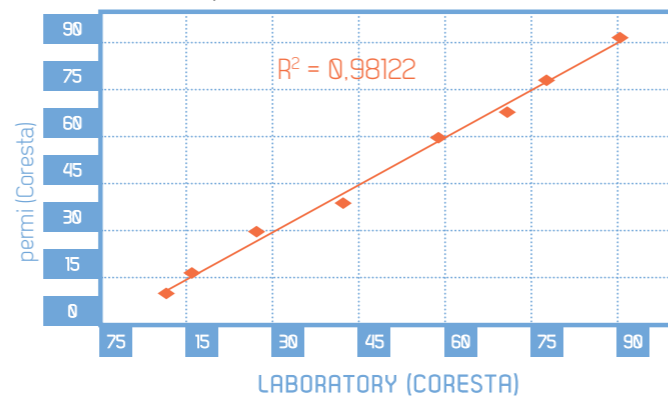
(decrease in Gurley seconds) due to a small addition of uncoated broke.



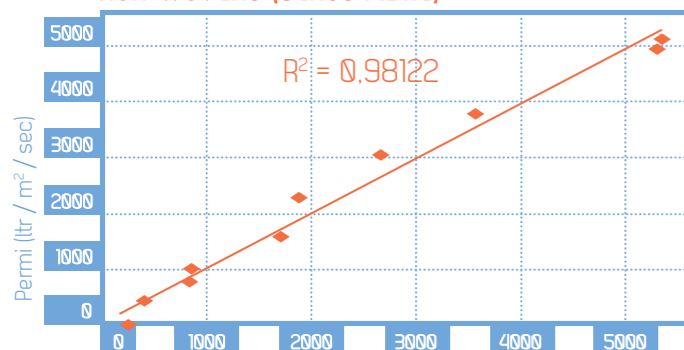
Small changes in the broke levels can have a big effect on paper porosity (increasing or decreasing). In this case addition of uncoated broke has increased porosity.

SIMPLE LINEAR CALIBRATION

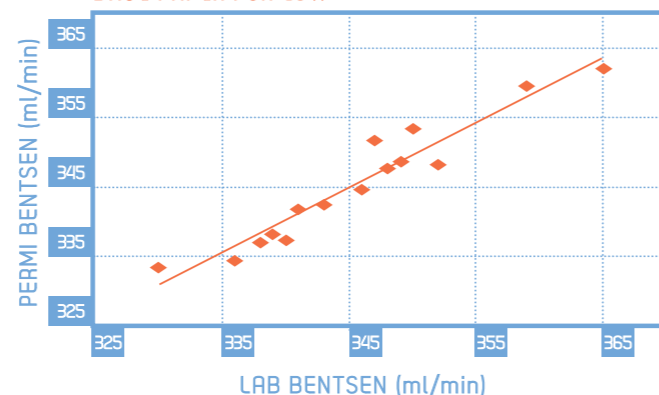
Cigarette Paper



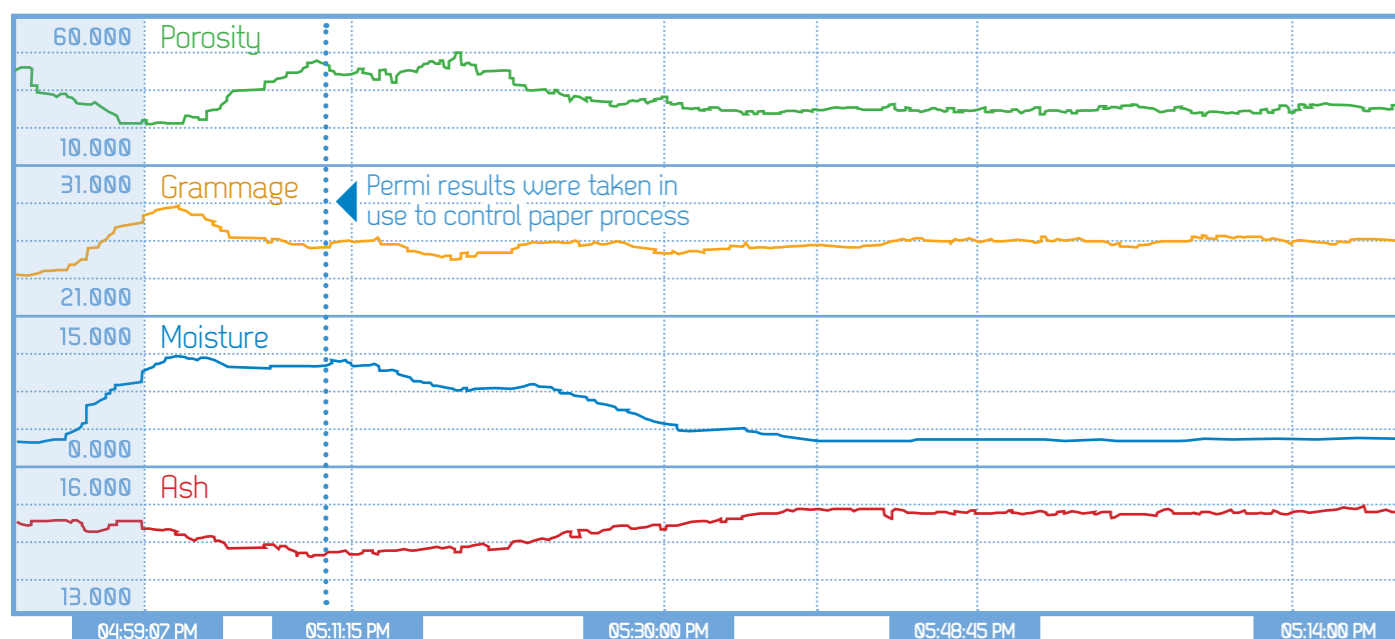
NON-WOVENS (GLASS FIBRE)



BASE PAPER FOR LCW

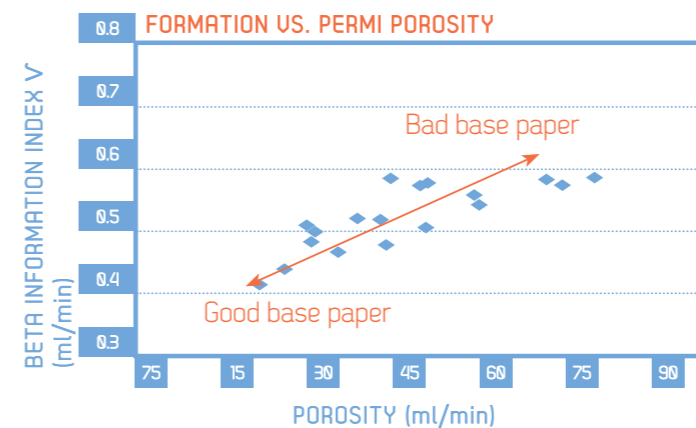


CONTROL REFINING MANUALLY OR AUTOMATICALLY



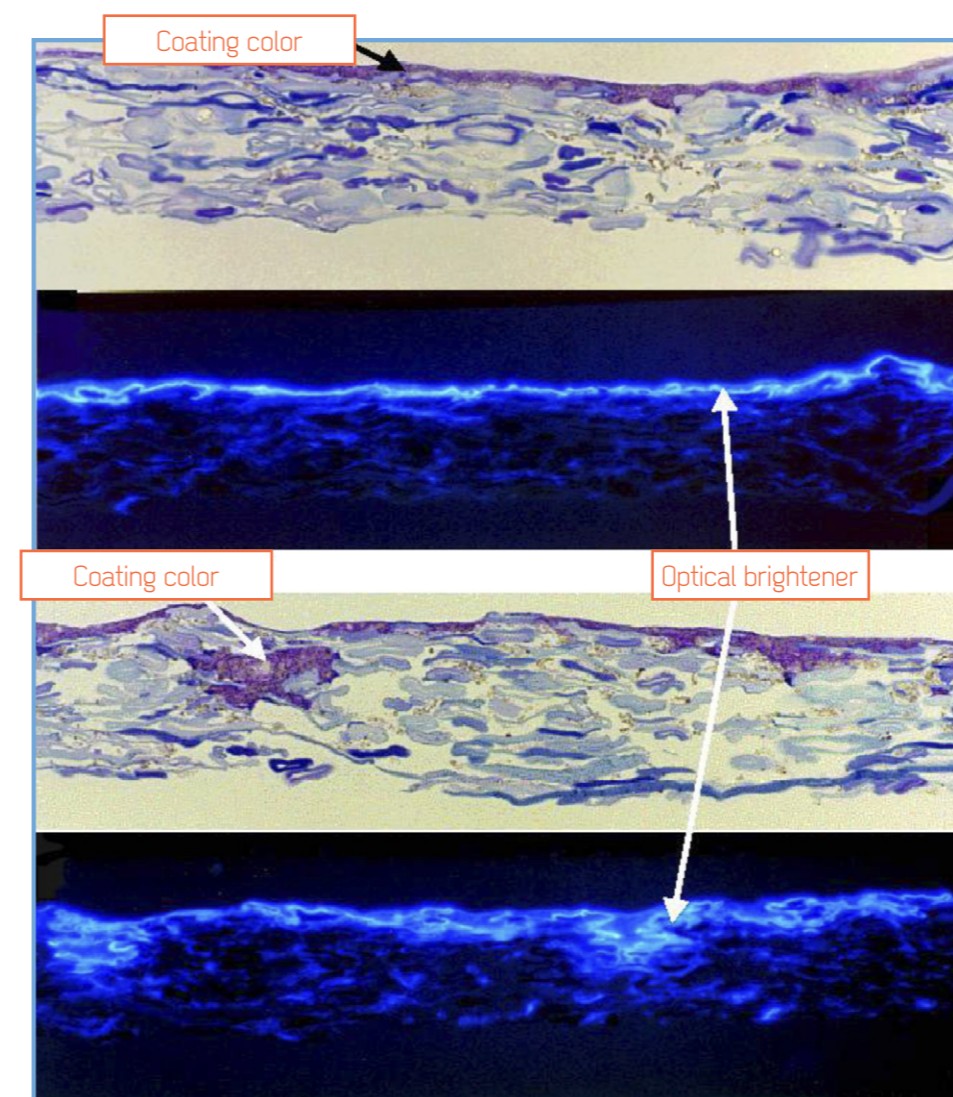
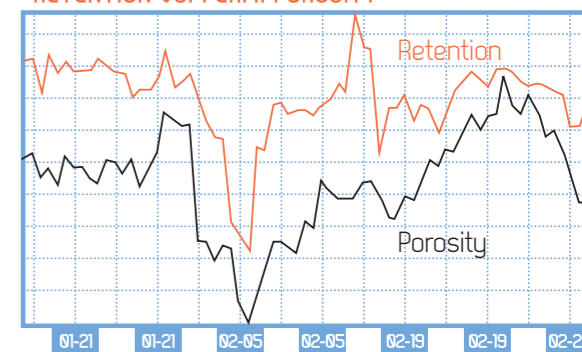
RESULTS IN => STABLE POROSITY => STABLE STRUCTURE OF PAPER WEB!

EXCELLENT CORRELATION TO FORMATION, RETENTION AND COATING QUALITY



Generally the porosity is low when the formation is good. If formation gets worse => porosity would increase.

RETENTION US. PERMI POROSITY



DENSE SHEET
– small penetration of coating color and good coating coverage and gloss.

POROUS SHEET
– deep penetration of coating color and poor coating coverage and gloss. Misting problems in film coating.

Forsström et al. TAPPI Coating Conference, 2002
<http://www.kcl.fi/news/link12004/link12004s4.html>

CORRECT PERMI POROSITY => GOOD QUALITY OF BASE PAPERS => GOOD QUALITY OF COATED PAPERS

SPECIFICATIONS



MEASUREMENT PRINCIPLE

Single side (usually lower side)
- Continuous air flow through the web

OUTPUT TYPE

2-wire, two outputs, 4 - 20 mA & Ethernet

OPERATING TEMPERATURE

Sensing head 130 °C max
Pneumatic Box 70 °C max
Remote Control box 50 °C max

DIMENSIONS

Sensing head 700 x 180 x 180 mm, 18 kg
Pneumatic Box 500 x 295 x 200 mm, 18 kg
Remote Control box 395 x 295 x 260 mm, 10 kg

MEASUREMENT RANGES

1. Gurley 1 - 6 000 sec
2. Bendtsen 10 - 10 000 ml/min
3. Coresta 1 - 10 000 Cu
4. Any other method
Basis weight 10 - 400 g/m²
Machine speed: 0 - 3000 m/min

EXTERNAL CONNECTIONS

Power supply: 100 - 240 VAC, 50/60 Hz or 24 VDC 2A
Air supply: 6 - 10 bar, 200 l/min, clean and dry air (5µm)
Instruments signals: 2 Analog outputs: 4-20 mA
2 Binary Inputs: Break Input
Reel turn up
Ethernet CAT-6 to PC (Optional)

ENCLOSURE CLASS

IP 54

PC SOFTWARE (OPTIONAL)

PermiProcessView made by ACA Systems

MEASUREMENT SAMPLE TIME

2 ms

SPECIAL FEATURES

Automatic self-cleaning cycle (adjustable time)

MAINTENANCE

Filters to be replaced every 4 - 8 weeks

CALIBRATION

Single calibration curve per measurement system