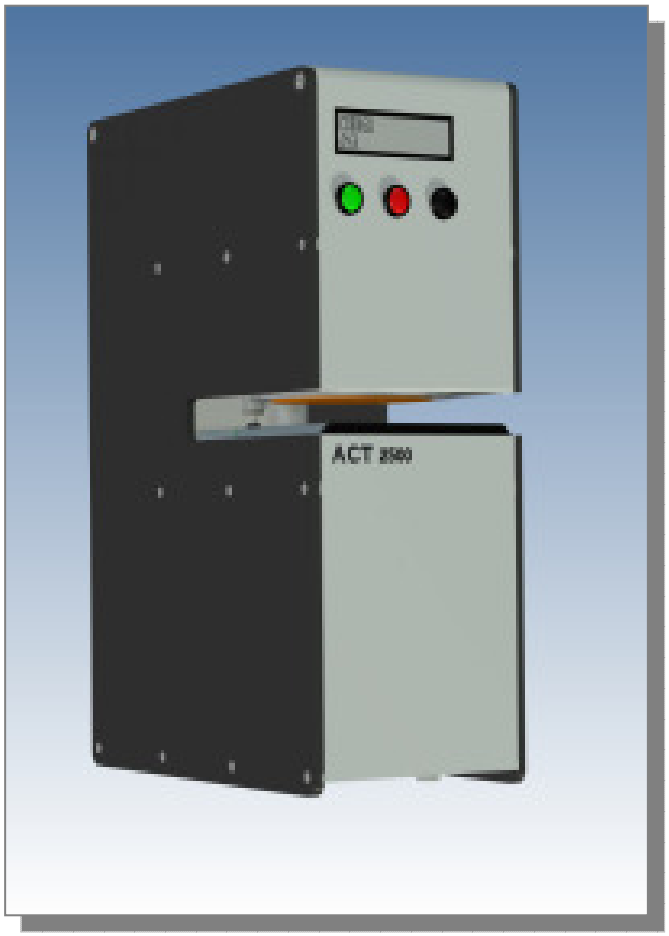


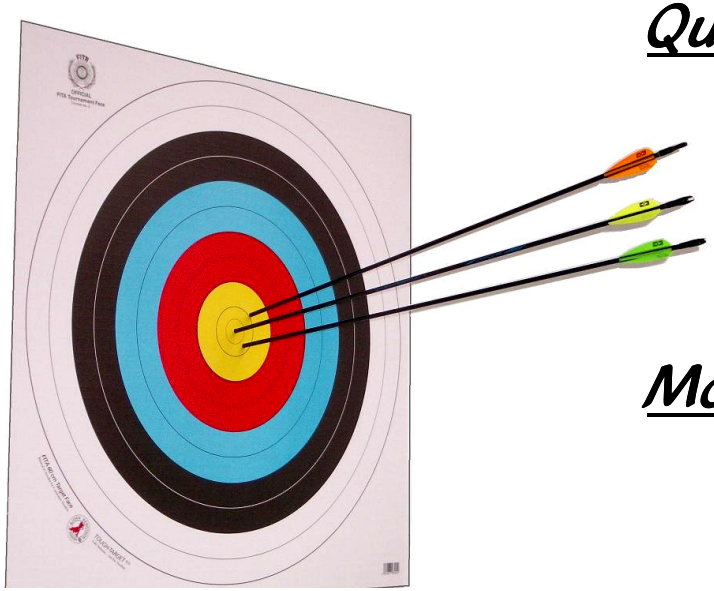
New Innovations

PaperCon 2011

Dynamic Performance of Paper and Board

Bernt Boström
Thwing-Albert Instrument Co.

Predictive Quality Control (PQC)



"Performance"
is our target

Quality Control is usually defined from "static" properties obtained under specified test conditions

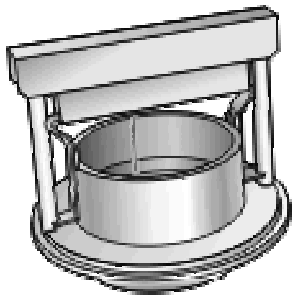
Most processes occur under strict time constraints which in general correlate to "dynamic" properties

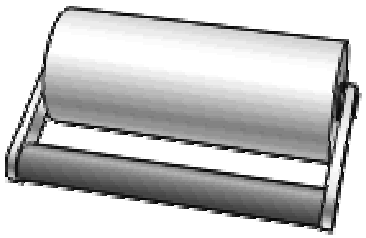
Performance is usually defined from "dynamic" properties obtained as a function of time

ACT2500

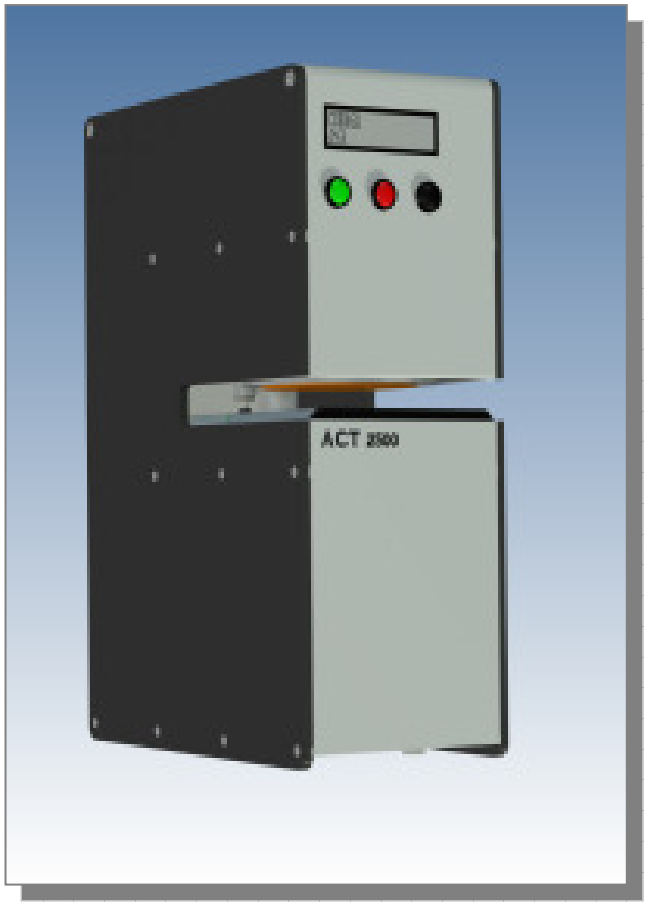
Dynamic Cobb Testing

Turns Minutes into Seconds

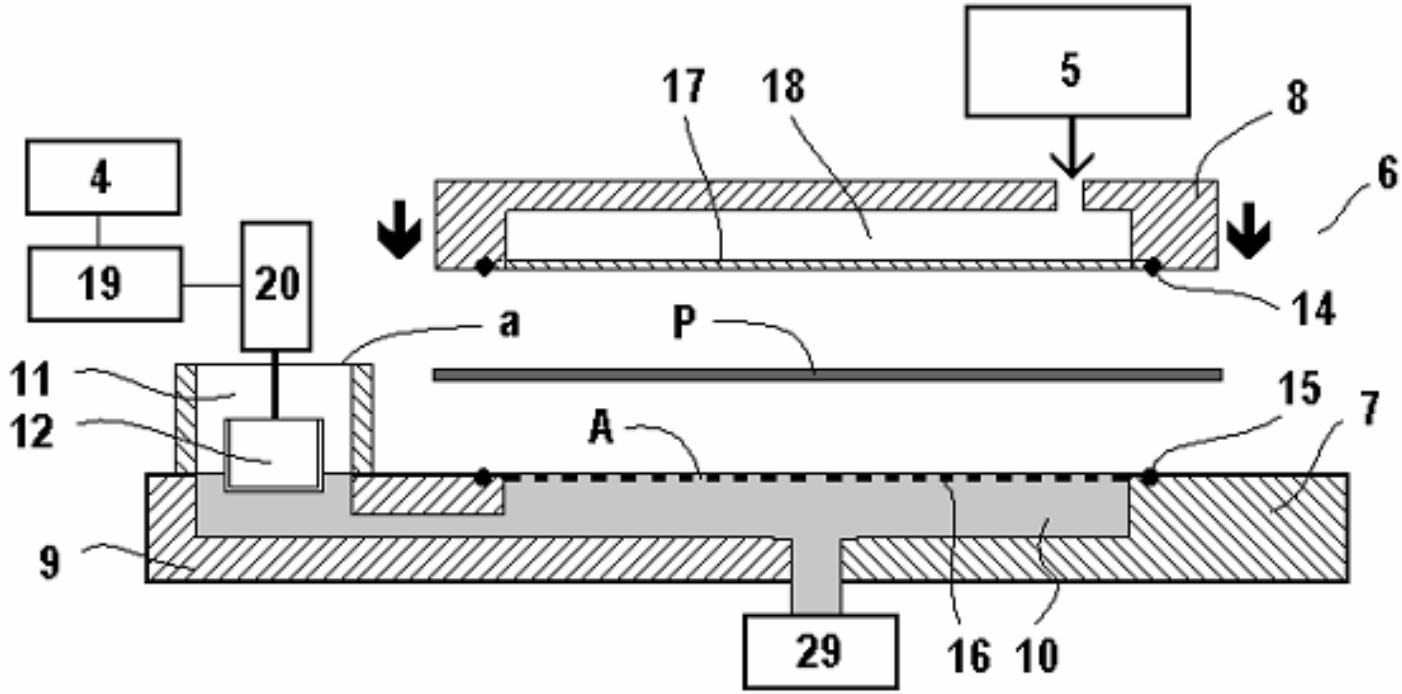




No Scale for weighing!
No Stop Watch!
No Couching Roll!
No Blotting Paper!
No operator bias!
No operator training!

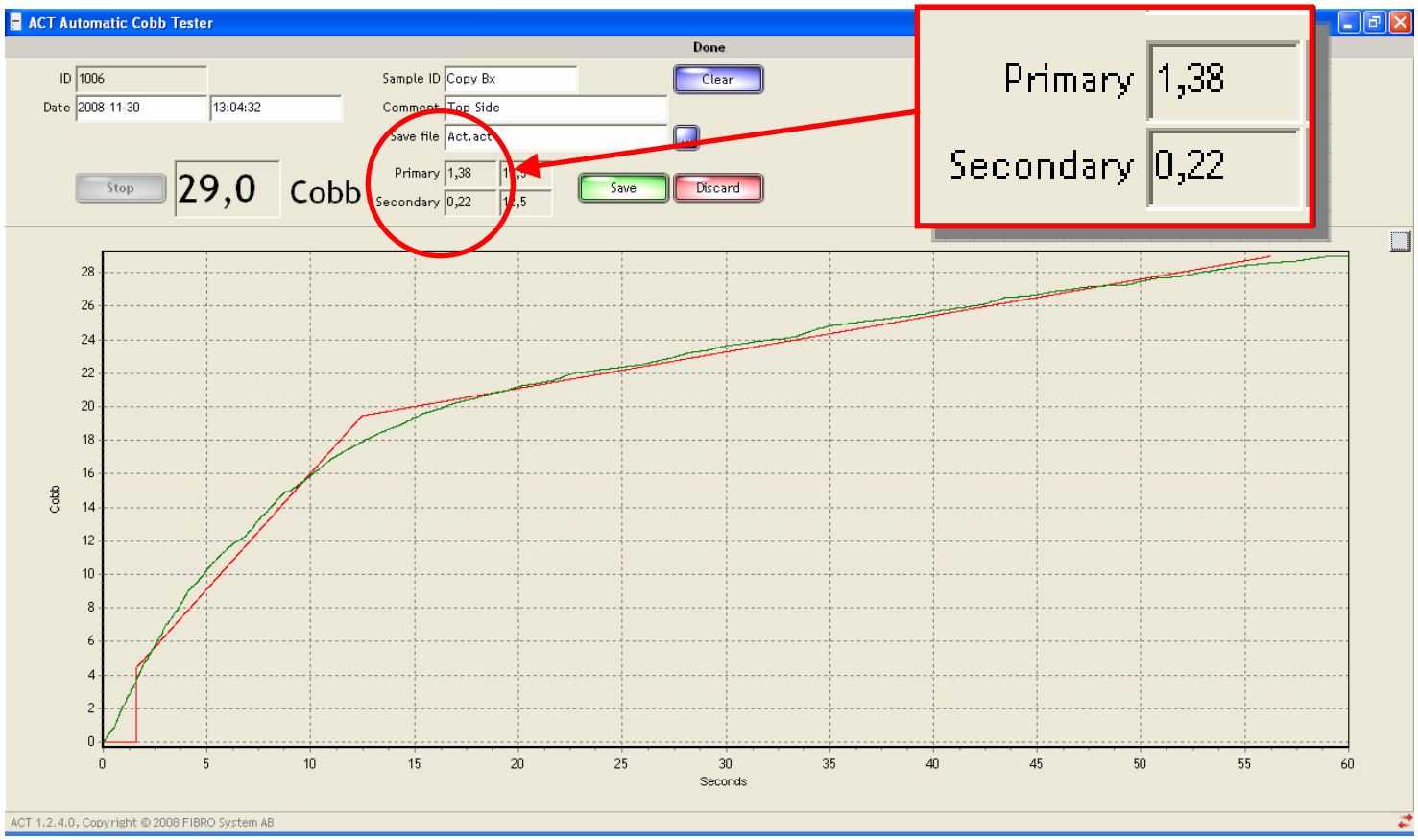


The ACT principle "inside"



Patents pending

Water uptake over 60 seconds



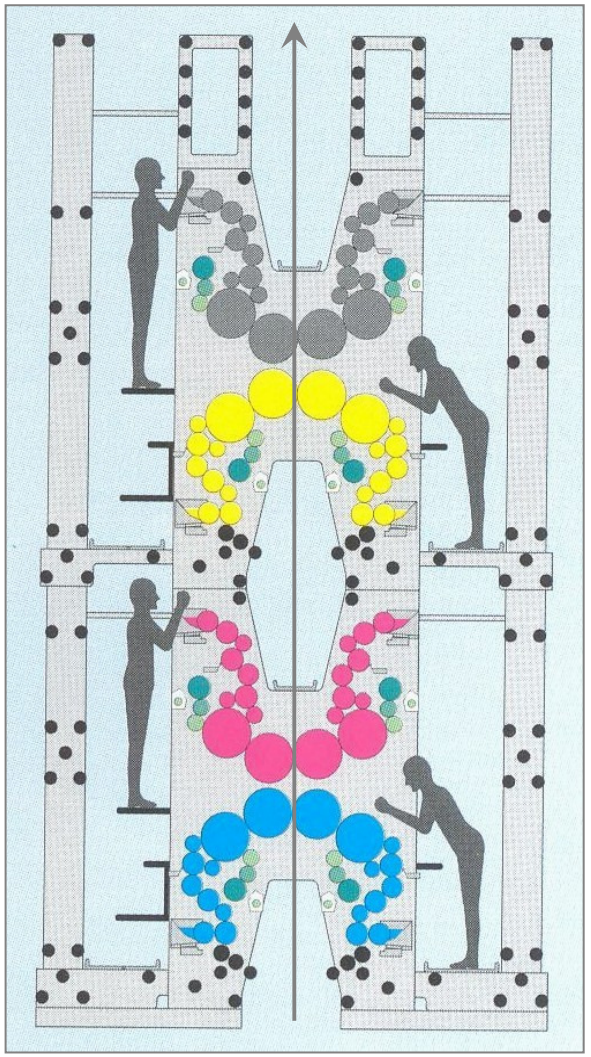
Conclusions from the ACT

- Continuous monitoring of water uptake can save sizing costs
- The ACT can reduce operator time by more than 95%
- Predicted Cobb values can reduce testing time by 75%
- Requires NO operator training

PST 2600

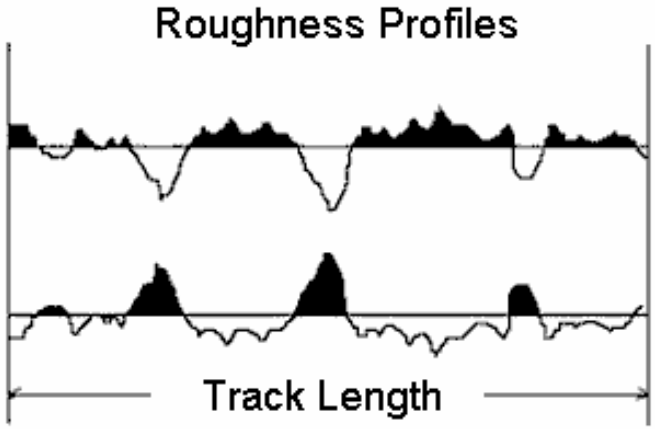
Dynamic Print Simulation

The only genuine printing test without the use of an ink



Surface topography test methods

- Profilers using a stylus (slow, no load)
- Optical camera systems (no load)
- Air-leak systems (lack detail)
  - PPS, Bekk, Bendtsen, Sheffield
- Test printing using inks (tedious)
  - IGT, Prüfbau, press room (ink influence)
- "Chapman tests" (lack correct time)
  - Pira, PTS, KCL, STFI-Innventia

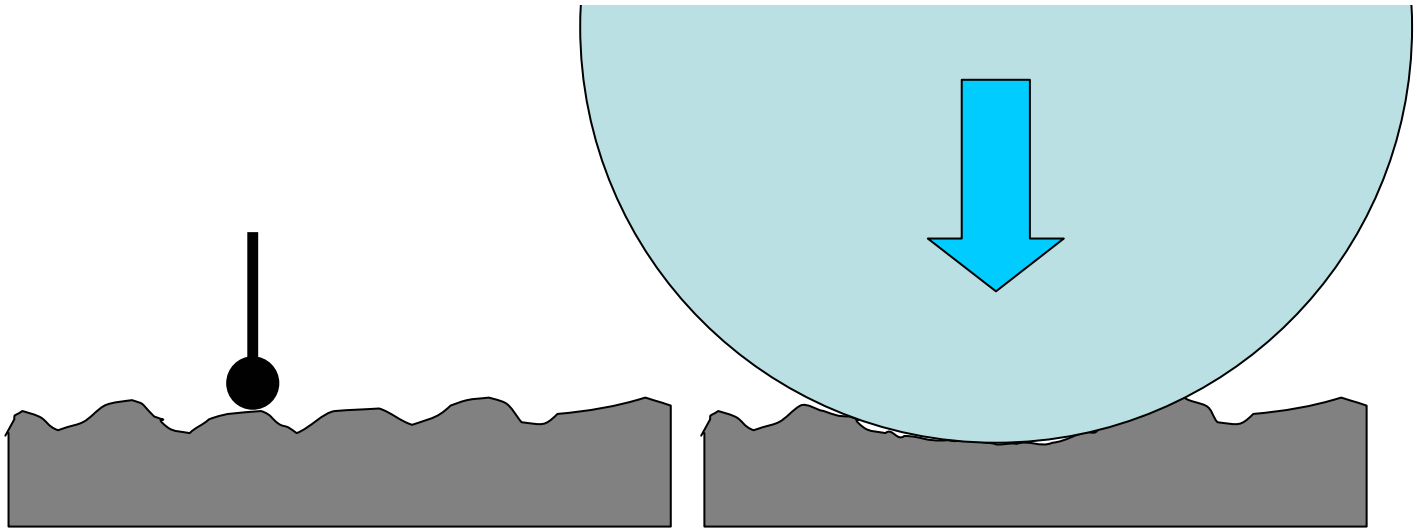


All established methods suffer from incorrect timing!

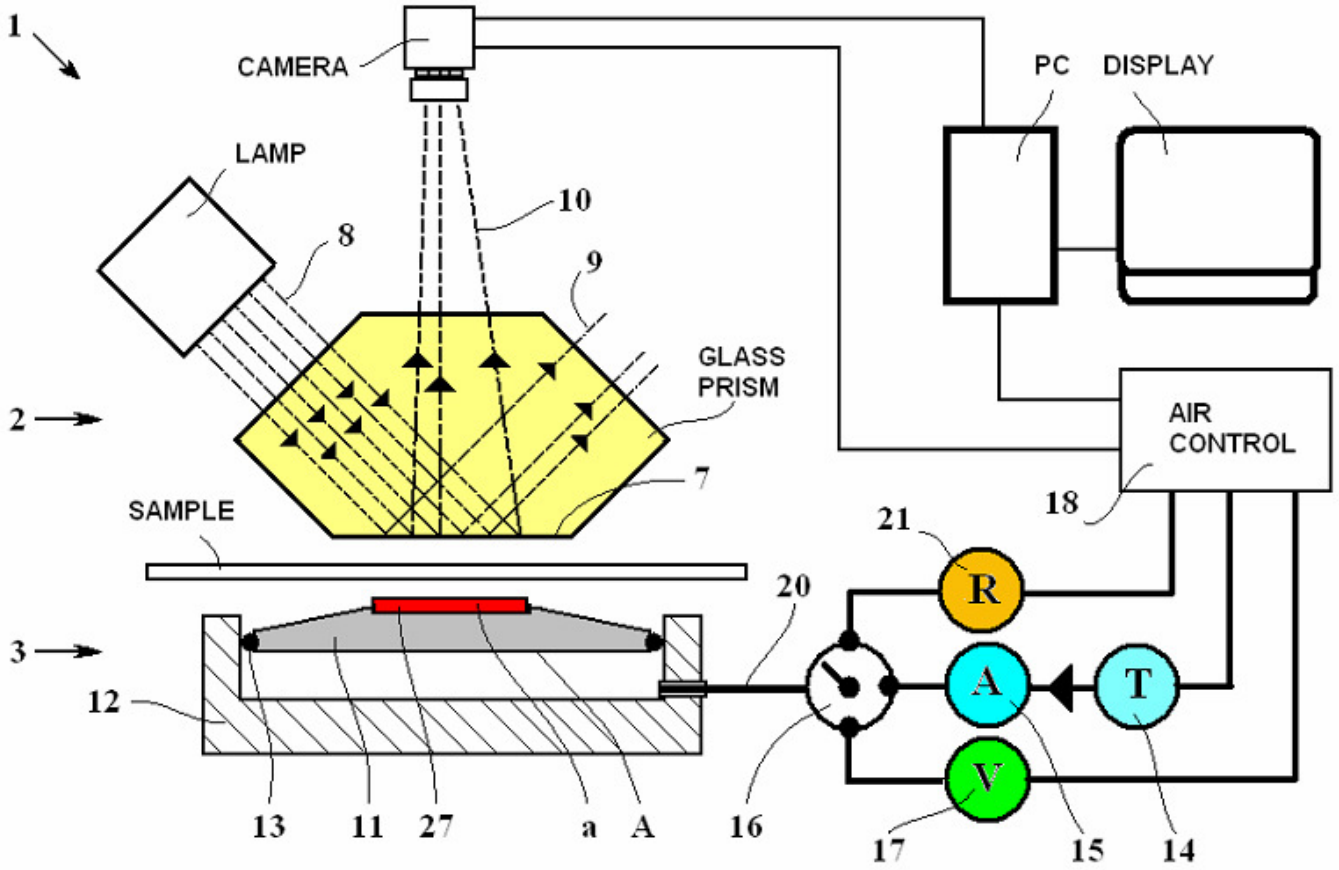
Roughness vs. Smoothness

Static Roughness has no load

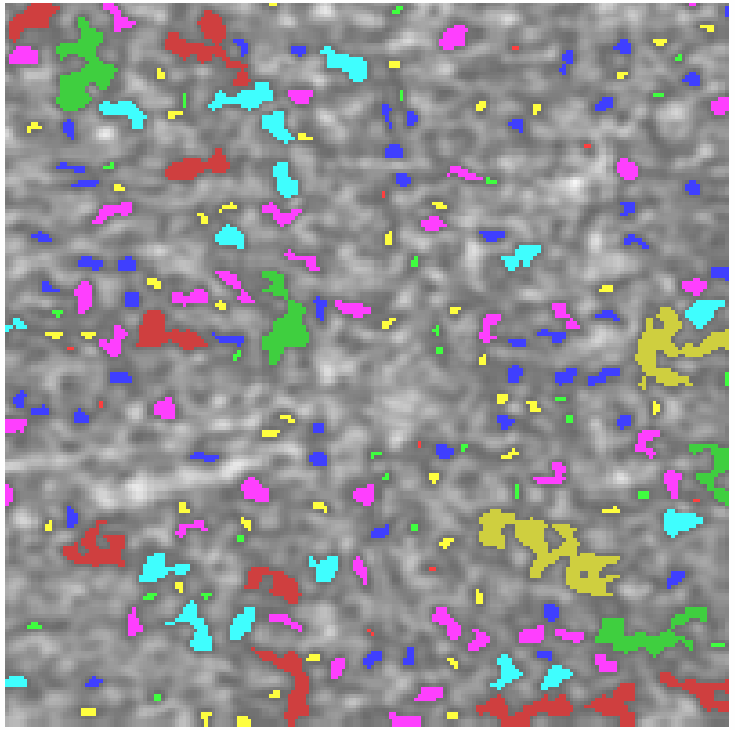
Dynamic smoothness is a function of LOAD and TIME in the nip



The PST principle

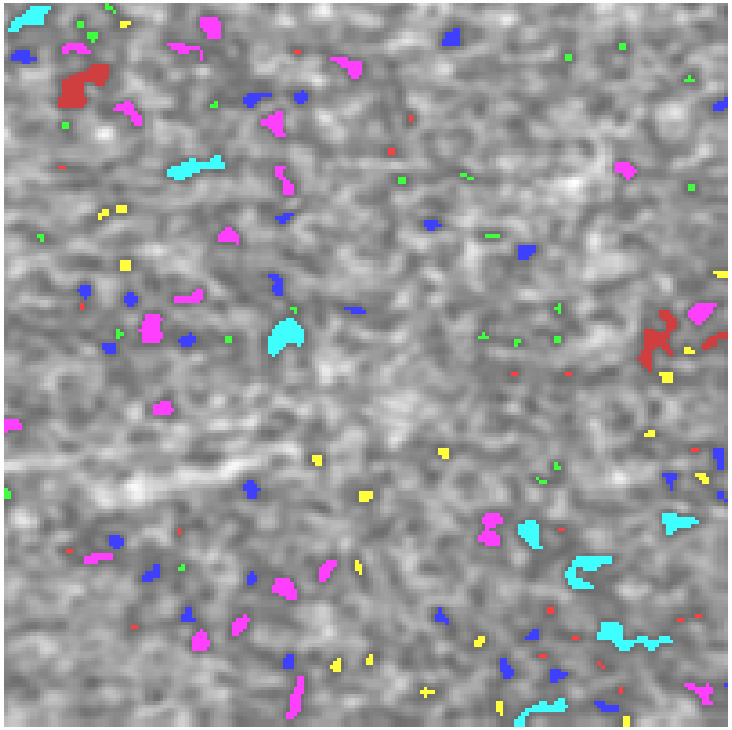


PST colour-coded contact images



at 7.5MPa after 20 ms

13,3% contact area missing

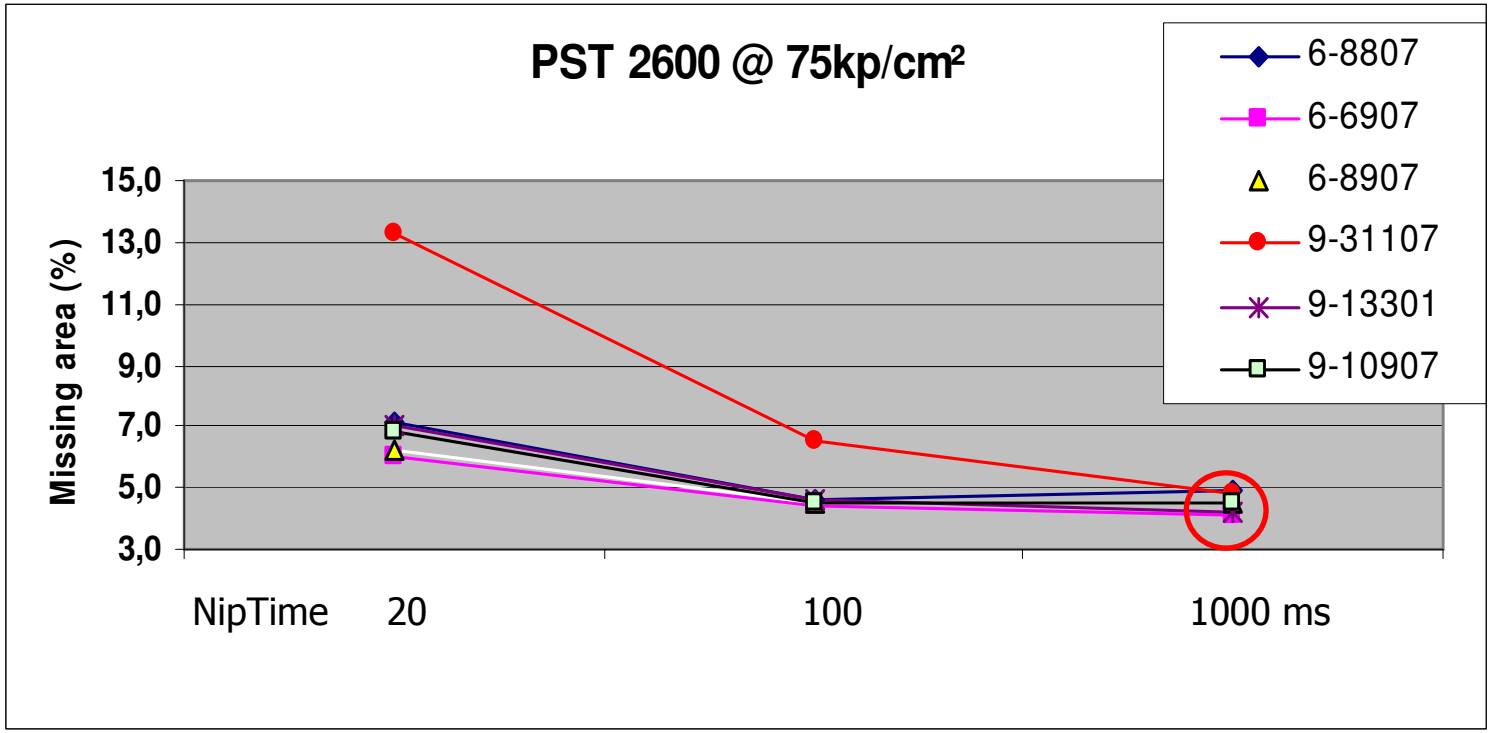


at 7.5MPa after 1000 ms

4,8% contact area missing

Nip Time makes a Difference

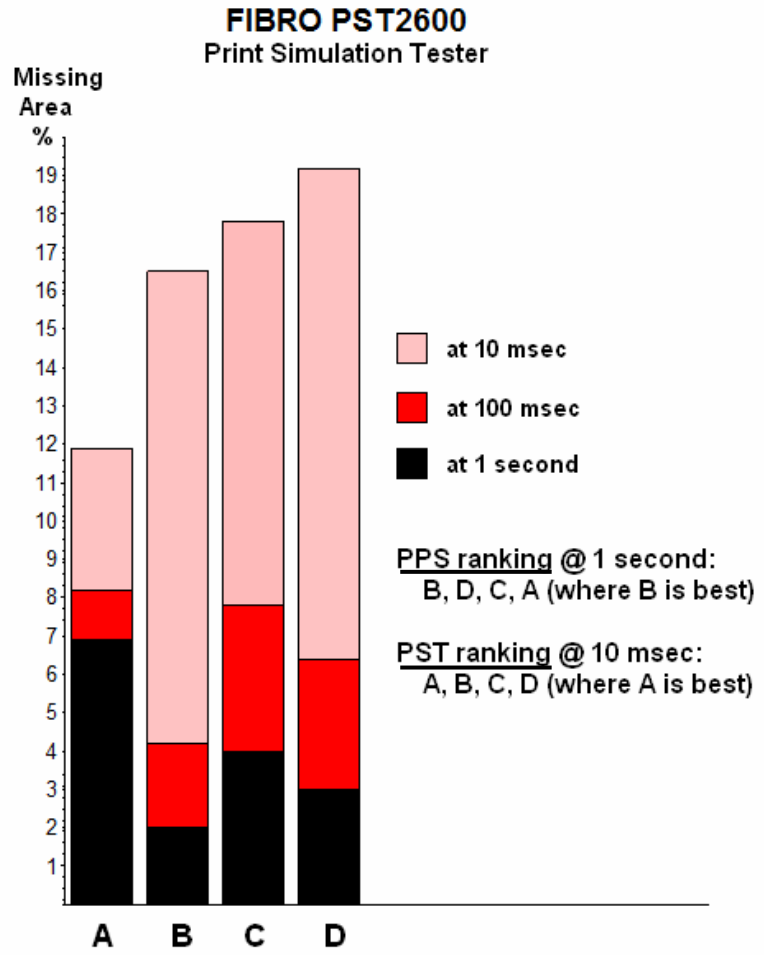
The difference below can not be detected with currently established tests applying the Load during a second or more



Nip Load of 7.5 MPa after 20 / 100 / 1000 ms

Summary of the PST concept

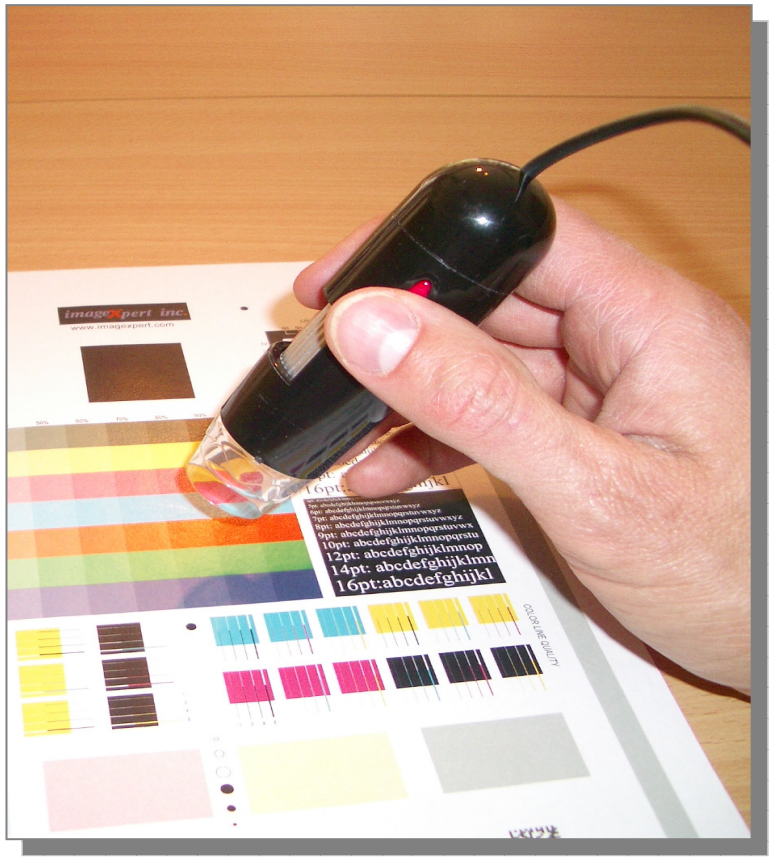
- Simulates printing under different press conditions (offset, flexo, rotogravure)
- Measures Dynamic Compression at relevant nip conditions
- No printing ink is used
- Fast QC test that runs in a second
- No operator bias
- Correlation to print trials (explained by attached diagram)



DPM100 Digital Pocket Microscope

A Low Cost Print Quality Lab

- Includes measurement of Mottling, Colour, Missing Dots and much more
- Calibration/image correction
- Free software updates
- A range of accessories

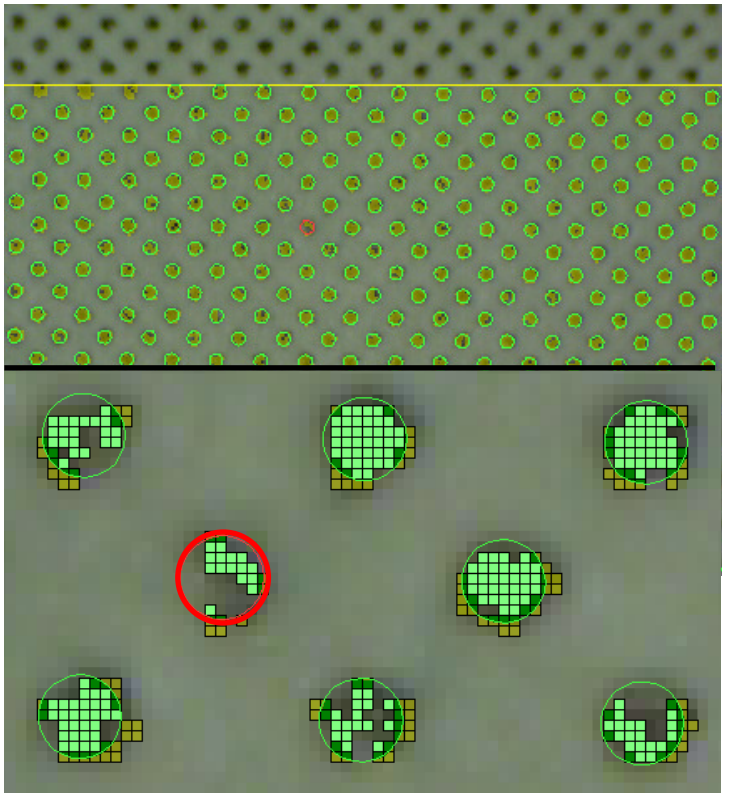


ISO Print Mottle

- Detected as a "cloudy" pattern in halftone areas

Missing Dots

- Measures average dot size and spacing in real-time



- Some are always prepared to go further than others
- As soon as they have achieved one goal, they set up another
- Development through challenge is our story, our reality and our vision
- See more at **www.fibro.se**

Thank you for your attention!