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Roll Hardness Measurement

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PAPERmatters 2018!

The
Presentations

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Roll Hardness Measurement

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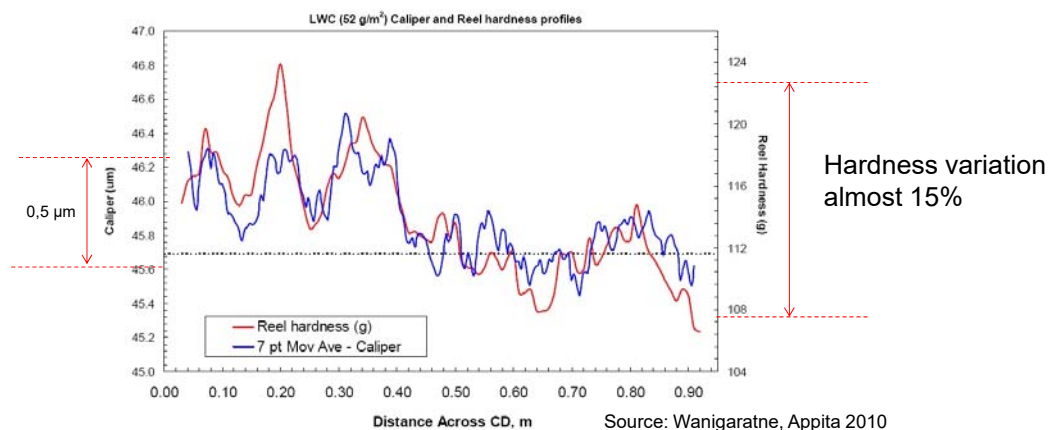
BENEFITS OF HARDNESS MEASUREMENT

- Reeling is a cumulative process where paper layers are set on top of each other.
- Defects like CD profile variation are magnified in paper roll.
- Good control of CD profiles is extremely important for successful reeling.
- Hardness measurement is very sensitive profile measurement. There can be thousands, sometimes even tens of thousands layers in a roll. Microscopic differences in CD profile can add up to big variations.

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HARDNESS VS. CALIPER



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ROLL HARDNESS MEASUREMENT – NEW TECHNOLOGY

- Hammer hits to the surface of the paper roll maximum 50 times per second.
- From every hit there is measured deceleration (g), which is used as a hardness unit.
- Hitting force is controlled real time for every hit individually -> excellent repeatability and reproducibility of the measurement.
- Distance counter reads the distance by 1 mm accuracy.
- Results are displayed as high resolution hardness profiles on integrated touch screen right after measurement.

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ROLL HARDNESS MEASUREMENT – EXAMPLE VIDEO

<http://youtu.be/lx9BP9Gcdzw>



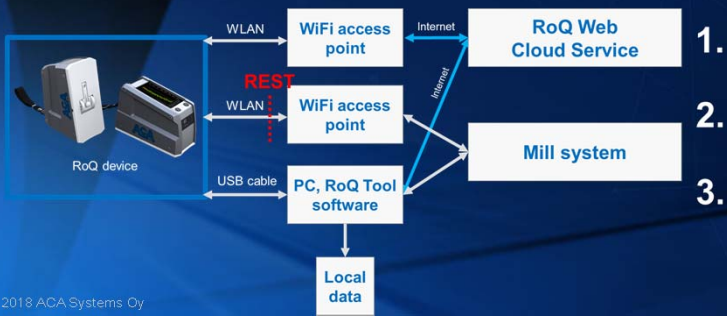
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ROLL HARDNESS MEASUREMENT – NEW TECHNOLOGY

- The measurement data is saved to the flash memory of the device.
- It is identified by barcode information or time stamp.
- For data transfer to mill system or cloud service there is used WiFi or USB.

Data transfer options

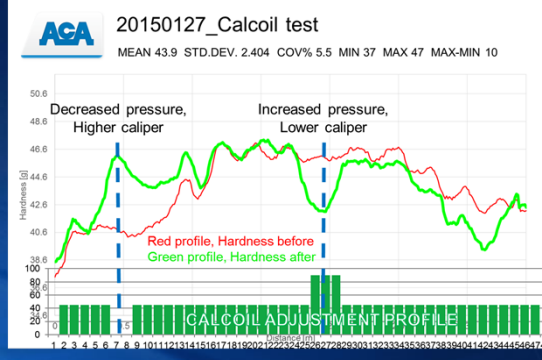


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EXAMPLE: CALENDERING CONTROL BASED ON HARDNESS

- Hardness profile is measured from the parent reel right after it is finished.
- Data is transferred to automation system.
- New control profile is calculated for calendering control system.
- Can be done automatically using closed-loop control or changes are accepted manually by the operator.

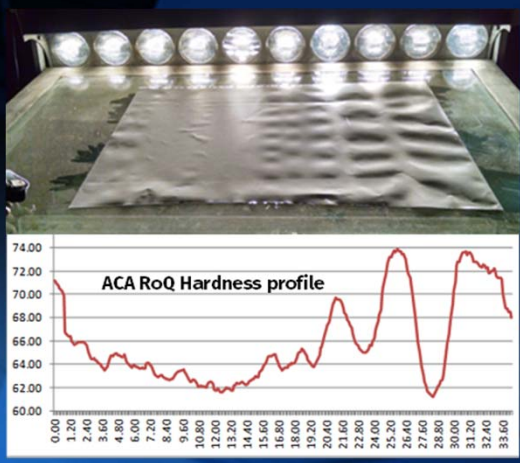


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EXAMPLE: ROLL QUALITY - BAGGINESS

- RoQ defines good and bad roll



ACA RoQ identifies very well for example bagginess

Application note available!

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“We save 100k€ annually by eliminating defected rolls...”

One of the biggest European printing presses: “We save 100k€ annually by eliminating defected rolls before they cause runnability issues in the printing machine. For example we can see baggy rolls in advance”



MEAN g	SD g	COV%	MIN g	MAX g	RANGE g
59.83	3.52	5.88	49.08	69.66	20.57

<http://www.aca.fi/top-european-printing-house-ensures-the-roll-quality/>

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KEY BENEFITS OF HARDNESS MEASUREMENT

- Very accurate profile control.
- Improved runnability.
- Less breaks and reeling problems on a winder.
- Less rejected customer rolls, better production efficiency.
- Better customer rolls quality and less customer complaints.

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