

ACA

SYSTEMS



Performance and quality analyzers

FOR THE PROCESS INDUSTRIES



Online porosity ACA Permi



BENEFITS

- **Enables process optimization and better quality.**
- Increase production / machine speed.
- Reduce raw material and energy costs.
- Decrease rejects and improve quality.
- Reduced need for lab measurements.

How?

- Early warning system for any process variation.
- Triggers process optimization.
- Reduces porosity fluctuation and increases strengths.
- Reduces grade change time.

TECHNOLOGY

- **Single point measurement for machine direction porosity profile.**
- Process fluctuations are detected in MD not in CD
- Calibrated against any lab device Bendsten, Gurley, Coresta... with excellent correlation.

OUR COMPETITIVE EDGE

- All critical components are located in control box, not in sensor.
- Measuring heads are designed for accuracy, reliability and insensitive to speed and roughness variations.

CUSTOMERS

- Sack / kraft, cigarette, filter and Decor papers
- Coated base paper / board
- Nonwoven filter media, Battery separator films and all porosity sensitive grades

”The online information provided by Permi has helped us shorten grade change time by 15 - 20% (Mondi)

”With Permi, we have reduced energy consumption by 10 %. Porosity feedback allows us to control refining - and operators follow it all the time. (Ahlstrom)

”We noticed sometimes very unstable porosity level. This was due to refining and the amount of fines, broke in furnish and many other reasons. But we can't solve this kind of issues, if we didn't have online porosity gauge. (Stora Enso)

Online Porosity ACA Scan



BENEFITS

- CD and MD profile including visual colour map of porosity / permeability.
- Roll to roll data for quality control.
- Decreases need of laboratory measurements.

How?

- Fully automated measurement.
- Scanning speed adjustable.
- No manpower needed.

TECHNOLOGY

- Automated online porosity measurement from moving web.
- Various measurement head designs maximize measurement range.
- LP (vacuum) and HP (over pressure) methods available.

OUR COMPETITIVE EDGE

- Compact construction.
- Quick and simple installation.
- Light mechanical structure.

CUSTOMERS

- Battery separator films
- Technical films and textiles
- Filter media
- Nonwovens

”We get over 15 000 measurement points from each roll. This gives us a very solid statement about roll uniformity and overall porosity fluctuations.”

Roll quality ACA RoQ



BENEFITS

- Identify roll defects.
- Avoid customer complaints.
- Improved efficiency.
- Flexible handheld measurement.
- Can be used for both; parent reels before winder and customer rolls after slitting winder.

How?

- Better CD profile control (especially caliper).
- Hardness is extremely sensitive profile measurement.
- Small variations which can be difficult to detect by thickness measurement are clearly seen in hardness profile.

TECHNOLOGY

- Roll hardness profile measurement.
- Deceleration method with constant collision energy.
- Measuring frequency, adaptive 30-50 hits per second.

OUR COMPETITIVE EDGE

- Excellent measurement accuracy and repeatability.
- Fast measurement.

CUSTOMERS

- **Papermakers**
 - Specialty papers
 - Containerboard
 - Graphic papers
- **Converting industry**
 - Labels
 - Flexible packaging
 - Printing houses
- **Plastic film manufacturers**
 - PE/PP/PVC/PET films
 - Biaxially orientated films (BOPE, BOPP, BOPA)
 - Technical films
 - Specialty films
 - Battery separator films
- **Other roll industries**
 - Aluminum foils
 - Copper foils
 - Nonwovens

” 30% less runnability issues.

” The best and most valuable measuring device investment ever done.

Roll quality ACA RoQ Inline



BENEFITS

- Identify defected rolls.
- Better customer satisfaction and less reclaims.
- Improved roll quality.
- Save costs, higher overall production efficiency in the whole value chain.

How?

- Fully automated measurement, no manpower needed.
- All rolls are measured after winder before packaging.
- Screening bad rolls.

TECHNOLOGY

- Automated roll hardness profile measurement.
- Rolls are measured automatically when they are moving on a conveyor before packaging.
- Deceleration method with constant collision energy.
- Measuring frequency, adaptive 40-60 hits per second.

OUR COMPETITIVE EDGE

- Compact construction.
- Simple installation, no need for modifications to roll handling equipment.
- Fast implementation.
- Flexibility for different roll sizes.

CUSTOMERS

- **Roll manufacturers**
 - Paper and board mills
 - Plastic film production sites
- **Roll converters**
 - Labels
 - Flexible packaging

” High ROI makes investment decision easy.

” Great step forward towards fully automated and digitalized production environment.

Air permeance

ACA Permi Lab



BENEFITS

- Enables fast and accurate testing for packaging material.
- Quality control for packaging materials.
- Protection assessment against moisture, gases and freshness.
- Material development and uniformity / strength enhancement.

How?

- Controlled air permeance in fiber-based packaging is essential for balancing product protection, shelf life, and environmental considerations.
- Air permeance measurement helps to assess the right balance of gases, air and moisture throughout the packaging, extending shelf life and maintaining quality.
- Air permeance of fiber-based materials can also affect their mechanical properties. Materials that are too permeable may be less structurally robust. Reduced air permeance fluctuation increases strengths properties of the packaging.

TECHNOLOGY

- Measures how much air flows through a material under controlled conditions.
- Measurement area: 50 cm²
- Measurement range: 100 – 20 000 pm / Pa s
- Measurement pressure: 20 kPa (or 1-20 kPa)
- Measurement time: 15 sec
- It is suitable for low porous materials

OUR COMPETITIVE EDGE

- Typical air permeability tester are out of range for low porous packaging materials.
- ACA Permi Lab can measure 10 times lower porosity range and thus is suitable for wide range of packaging materials.
- Very high correlation to barrier property tests that are expensive and take a long time.

CUSTOMERS

- Coated paper and board manufacturers
- Coated packaging material manufactures
- Barrier packaging grades
- Grease-proof papers
- Cable papers
- Base paper for silicizing
- Parchment grades
- Technical films
- Breathable films
- Membranes and filters
- Battery separator films

“ We can measure the air permeance fast and easy. It gives us very important data concerning our packaging material quality, gas and moisture resistance and an idea about mechanical properties.

Viscosity

ACA AX-100



BENEFITS

- Enables coating process optimization and better quality.
- Detects coating color rheological fluctuations.
- Raw material quality control.
- Coating color development.

How?

- Coating color undergoes wide variety of stresses in process flow channel.
- AX-100 is capable to simulate these stresses measuring very wide shear rate area (TAPPI T-582) and estimates coating color runnability in process conditions.
- Orifice option measures extensional viscosity (TAPPI T-583) and simulates curtain coating stresses.
- AX-100 measurement is suitable for coating colors, binders, pigment slurries etc.

TECHNOLOGY

- Measures flow rate through narrow capillary.
- Low pressure and high pressure option.
- As capillary dimensions are known the software can calculate viscosity and shear rate.

Orifice option

- Orifice causes accelerating flow and calculates Euler number as an indication of extensional viscosity.

OUR COMPETITIVE EDGE

- Process relevant shear rate area. *Rotational viscometers (Brookfield, Anton Paar, Hercules...) are not suitable for runnability optimization > shear rate too low.
- Very easy and fast measurement.
- Small sample amount (150ml).
- RheoLog software.

CUSTOMERS

- Coated paper and board mills
- Coating machine suppliers
- Coating chemical suppliers
- Research centers and educational labs
- Surface treated grades
- MFC / NFC pulp and other bioproducts, battery slurries, paints, adhesives

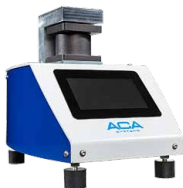
“ Before we had no idea how much fluctuations we had in our coating color. Now we know and also the source of it.

“ Coating material was the last component of our raw material flows that we did not control properly before we purchased AX-100

“ We could save 350 k€ by increasing solids content. This was possible due to AX-100.

Coating color water retention

ACA Flow WR



BENEFITS

- **Enables coating process optimization and better quality.**
- Measures coating color water retention.
- Troubleshoots coating / paper interaction related issues.
- Coating color and additive quality control.
- Coating color development.

How?

- Water retention is a measurement of the water released to the base paper (gsm) under given time and pressure.
- If too much water absorbs to the base, it leads to quality and runnability defects, if too little it leads to drying issues.
- Rheology additives influences greatly the water retention value, thus ACA Flow WR is a great tool for testing these chemicals.
- Also base paper properties can be tested by ACA Flow WR.

TECHNOLOGY

- **The method is based on pressure filtration of coatings under an externally applied air pressure over a certain time period TAPPI T-701.**
- Pressure range: 0-2 bar
- Adjustable time range
- Traveller case

OUR COMPETITIVE EDGE

- Semi-automatic operation, very easy-to-use.
- Modern design and touch screen.

CUSTOMERS

- Coated paper and board mills
- Coating chemical suppliers
- Research centers and educational labs
- Surface treated grades, Starch pick up

”Water retention measurement helped us to determine the critical solids in our coated paper production.

”Water retention value shows us immediately if there is something wrong in our standard recipe.

