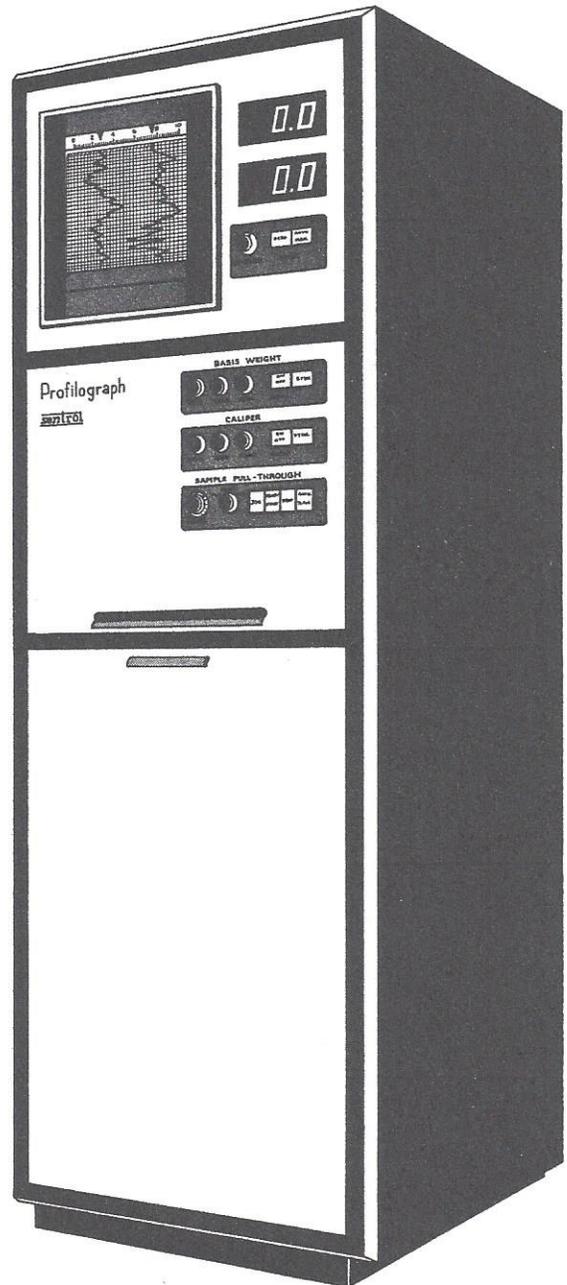
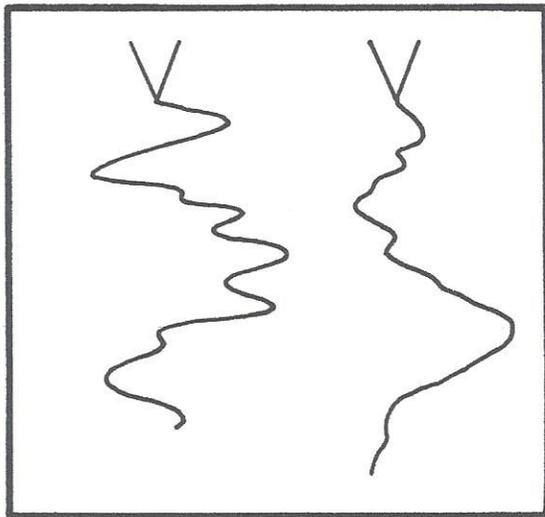


5001, 5002

Profilograph®

Off-line Basis Weight and Caliper Measurement



sentrol

Process Control Systems for the
Pulp and Paper Industry

Profilograph® – More Uniform Quality and Reduced Culls

Paper quality uniformity and good reel build are constant concerns of the paper maker.

The process of paper making can be subject to many instabilities – resulting in random or recurring variations in paper properties – particularly in basis weight and caliper.

Measurement and Record of Basis Weight and Caliper

Sentrol's Profilograph provides a simultaneous off-line measurement and record of the basis weight and/or caliper of a paper sample.

An excellent definition of paper quality uniformity and machine performance is produced by the Profilograph: information normally available only from large on-line systems. And it does it at a fraction of the cost.

Cross-machine Profiles

Composite cross-machine profiles of basis weight and/or caliper are beneficial for routine control as well as for machine study.

Economic benefits can result if an exact definition of cross-machine profile data is available for basis weight. Smooth profiles permit selection of more optimum operation targets while maintaining paper specifications.

Profiles used for quality control may be posted near the machine for the benefit of the operating crew.

Machine Efficiency and Reduced Culls

Information of the relationship of basis weight and caliper can be used to improve reel building to reduce soft roll culls. The operator may use the Profilograph's measurements to control the individual calender air showers.

Within minutes of a sample being taken the operator can make adjustments to the machine such as the slice screws on the headbox. Resulting reductions in the number of breaks and less culled paper due to quality rejects provide more production for the same amount of costly resources.

These returns alone can very quickly pay for the original cost of the instrument.

Rewinder and Coater Efficiency

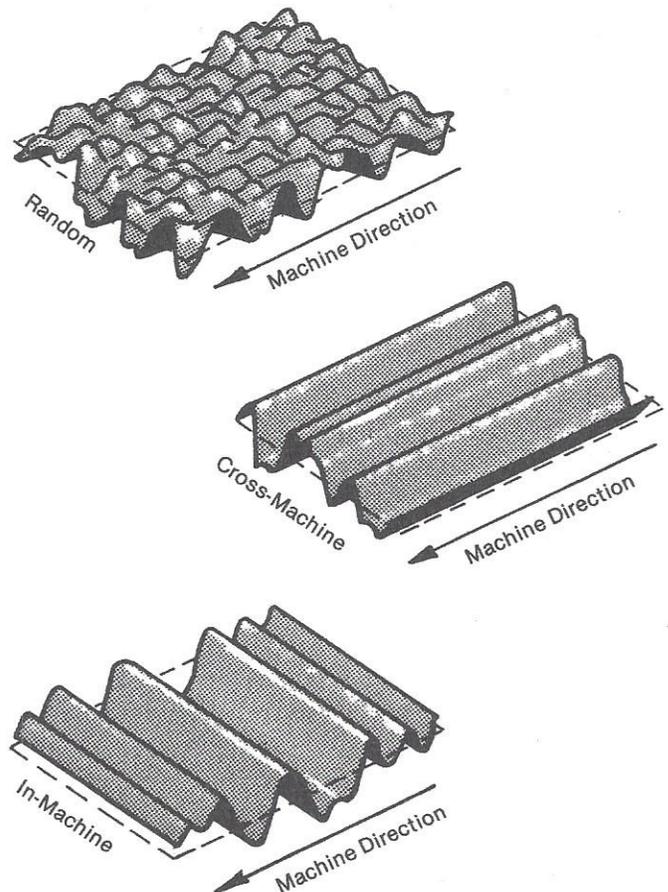
Corrugations, soft spots and soft culls at the rewinder can be reduced with the Profilograph.

Smooth caliper and basis weight profiles also provide the best sheet condition for uniform coating and size application.

Machine Direction Variation Analysis

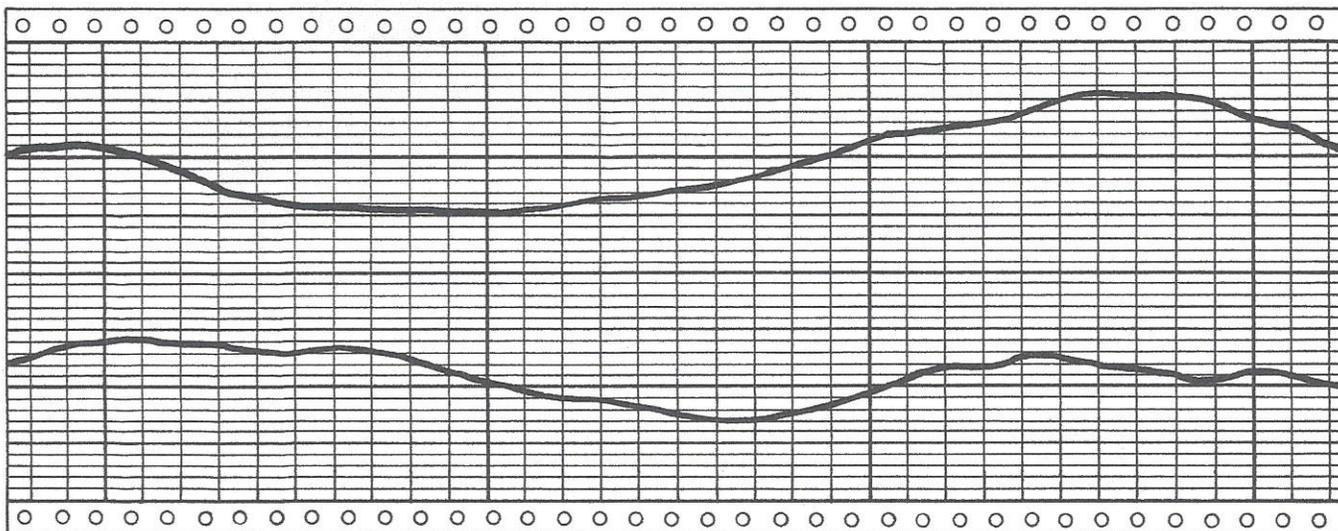
Profilograph can analyse long machine direction samples. Using a high speed pull through, it is possible to run a thousand feet machine direction paper sample in 50 minutes. The chart recorder displays basis weight variations. They may be used for the analysis of problems due to such factors as head box and wire pit levels, distributor roll speed and other non-random irregularities.

Combining a good machine direction analysis with a series of cross-machine samples provides an excellent definition of paper uniformity – which is normally only available from large computer-based digital systems.



Right. Continuous random variations in basis weight are often attributed to large scale turbulence in the head box.

Recurring variations may be small scale such as wire and felt marks or may be due to machine cyclic behaviour such as headbox variations and consistency instabilities or due to rotating elements such as the distributor roll. A sufficiently extensive sample will adequately define average behaviour.



Above: Basis weight and caliper are presented simultaneously.

Precise Basis Weight and Caliper Measurement

The Profilograph combines the basis weight and caliper measurement principles currently used with Sentrol's Betameter and Calitel on-line sensors with a specially designed sample handling system and pull through mechanism. Both measuring units and the pull-through are in line. Subsequently, the measurements of basis weight and caliper are of the same point.

The Betameter uses the absorption of beta energy to measure weight per unit area. It consists of a rugged ionization chamber and radioactive source. Solid state electronics are used throughout the Profilograph.

Calitel is a contact caliper gauge using the magnetic reluctance principle. The paper separates a reference plate and a contact measuring head thus providing a variation in magnetic reluctance which corresponds to the paper thickness. Contact pressure is adjustable to suit the application.

Two Pen Strip Chart Recorder

Presentation of the basis weight and caliper information is on a two pen 7 inch (17.75 cm) strip chart recorder. The recorder chart speed is synchronized with the sample pull-through. The Profilograph records the weight and caliper as the sample passes through the instrument. Upon completion of the measurement the drive mechanism automatically shuts off and the recorder advances the information beyond a tear-off bar. The removed chart record may now be used for visual comparison or posting.

Range and sensitivity adjustments for both basis weight and caliper ensure an effective recorder presentation.

Low Cost

Cost Effective Measurement

As the costs of raw materials, energy, and labor continue to rise, management is looking to additional means to reduce costs and increase output – while improving product quality.

Profilograph can provide you with considerable economic benefits. It provides information which is unequalled short of large on-line measurement systems. And it does it at much less cost.

For Smaller Production Machines

Profilograph is particularly attractive to those paper machines which cannot justify the cost of computer based systems. It is even more attractive since the unit can service several machines with a minimum of sampling and handling.

Sentrol Sensors

25 Years of Measurement Experience

Sentrol has over 25 years of experience in the field of paper measurement as well as process control.

Our process and applications engineers can provide you with the knowledge and skills so that you can obtain maximum benefits from a Profilograph.

Also, Sentrol's extensive service organization is available to ensure prompt routine and "as required" maintenance. Or, if you prefer, we can train your personnel in exactly the same manner as we train our own personnel.

Call Sentrol Today

Sentrol has the people, know-how and equipment to fulfill many measurement as well as control needs for the processes of pulp and paper making. If you want experience and the best of equipment, you should call Sentrol today.

Profilograph

Technical Specifications

<p>Performance Specifications Weight: $\pm .25$ lb./3000 ft² (0.4 g/m²) or $\pm .5\%$ of weight measured whichever is greater.</p> <p>Caliper: $\pm .0001$ in. (.0025 mm.) or $\pm 1\%$ of caliper measured whichever is greater.</p> <p>Multi-ply Samples Not to exceed either the weight maximum or caliper maximum.</p> <p>Basis Weight Range Krypton 85: 20-400 lb/3000 ft.² (32-640 g/m²) Strontium 90: 350-2500 lb/3000 ft.² (560-4000 g/m²)</p> <p>Caliper Range .001 in (.025 mm.) to .030 in. (0.76 mm.) maximum.</p> <p>Output Calibration The recorder chart is precalibrated for the measurement range of a specific grade using secondary standards.</p>	<p>Measurement Stability The instrument will maintain the reading of a secondary standard to within the quoted accuracy over a 24 hour period without recalibration.</p> <p>Sample Width Dimensions 10 in (250 mm.) maximum 6 in (150 mm.) minimum</p> <p>Recording Presentation 7 in. (17.75 cm.) wide strip chart recorder, two speed chart drive, and two color presentation.</p> <p>Sample Pull-through Speeds 2 ft. (61 cm.) per minute to 20 ft. (610 cm.) per minute.</p> <p>Recorder Chart Speeds 2 in. (5.08 cm.) per minute 12 in. (30.5 cm.) per hour</p> <p>Cabinet Dimensions 74 in. (188 cm.) high x 24 in. (61 cm.) wide x 24 in. (61 cm.) deep.</p>
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Profilograph is also available with a single basis weight or caliper measurement.

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