Fabric Density Measurement and Control

Measure and control fabric shrinkage directly, continuously and accurately on a sanforizer . . .

. . . eliminate operator measurement and adjustment errors.

Measure and control fabric density . . .

. . . obtain uniform residual shrinkage.

And, get the data required to improve your operation and fabric quality.

Automation Partners Inc.

Density and Shrinkage Measurement and Control

Measure fabric density and speed on a sanforizer and control for desired machine shrinkage or finished fabric density using feedforward control at the entry.

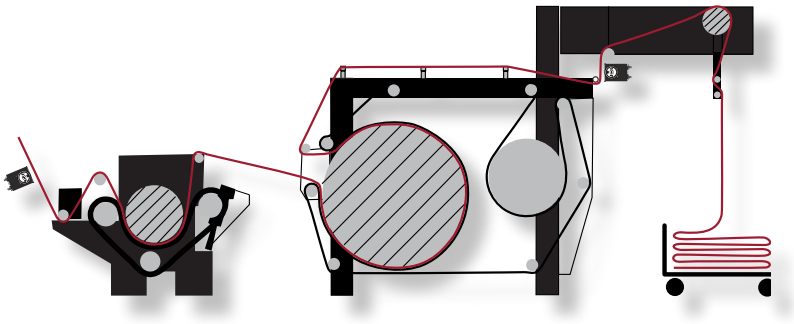
Manual or "automatic" marking of the fabric to determine machine shrinkage wastes fabric and time. Many meters of fabric are processed before the result is known.

The SMS-400 Shrinkage Monitor and Control System eliminates manual checking of machine shrinkage and provides the additional benefit of real-time fabric data.

If **machine shrinkage** is the desired function, the SMS System will control to the target shrinkage set point.

If **fabric weight** is the desired goal, the SMS System will control to the target finished fabric density.

If finished fabric **residual shrinkage** is the objective, then the data from the SMS System can be used to correlate initial and final fabric density with machine shrinkage and wash-test shrinkage results.



The Facts

. . . Residual shrinkage is the amount of shrinkage remaining in a fabric after finishing.

. . . As the percent of machine shrinkage is increased, the fabric weight and density increases, and the residual shrinkage decreases.

. . . Residual shrinkage cannot be measured on the sanforizer. But, the residual shrinkage will be uniform if the fabric density is uniform.

The Problem

Processes prior to the sanforizer cause variations in fabric density. These variations will also be in the finished fabric if the sanforizer machine shrinkage is held constant. The result is variation of residual shrinkage within the same roll of fabric.

These variations can be removed by controlling the machine shrinkage to obtain uniform fabric density.

The Solution

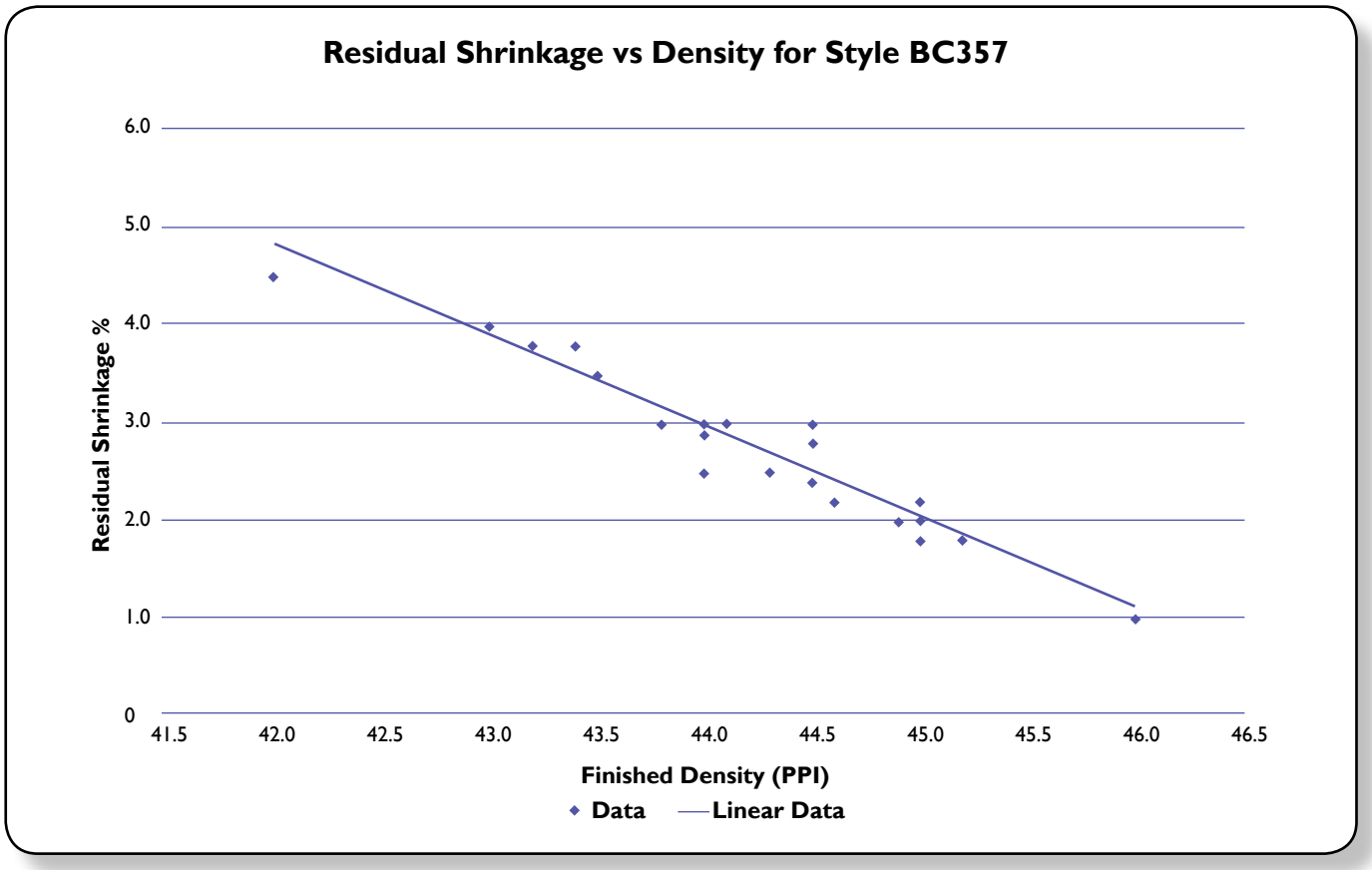
The SMS system will automatically control machine shrinkage to obtain uniform fabric density. And, the system will provide data needed to further improve the process.

The first step is to collect data to determine the correlation between density and residual shrinkage. The density data is provided by the SMS System, and the residual shrinkage data is obtained form laboratory wash tests.

The chart below shows the correlation determined from the data collected for Style BC357.

In this example, finishing Style BC357 to 44 PPI will yield a residual shrinkage of approximately 3%.

With this information, it may be possible to reduce the number of wash test required to check residual shrinkage. In this case, the additional benefit is a **reduction of water and electricity usage and lower operating costs.**



The Functions

Two PSM-200 Sensors measure fabric density (PPI) and speed—one at the entry and one at the exit of the sanforizer.

The SMS Processor uses the fabric speeds to determine the exact machine shrinkage of the fabric.

The processor is a dedicated microprocessor-based system built to withstand the sometimes harsh textile environment.

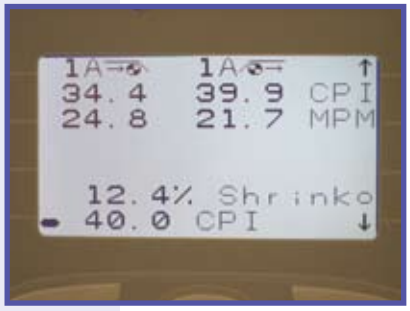
The large LCD displays fabric density and speed at the entry and exit of the sanforizer and percent of machine shrinkage.

The system can be installed in a few hours and is easy to use. Operators are fully trained in the system operation within 5-to-10 minutes.

Two Modes of Control

Control output signals from the SMS Processor adjust the rubber belt pressure to obtain the desired process result, either percent of machine shrinkage or finished fabric density.

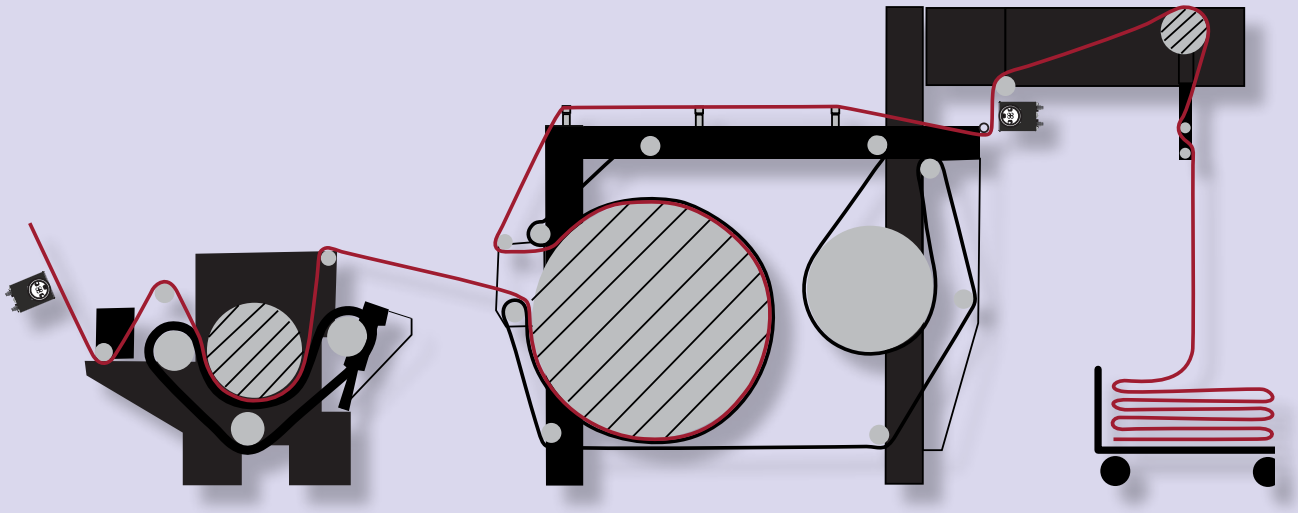
If machine shrinkage is the control target, the rubber belt pressure is adjusted to obtain the desired value. In the display at the left, the target is 12.0% shrinkage.



If finished fabric density is the control target, the entry fabric density is compared to the target (40 PPI in this example), the required shrinkage is calculated, and the rubber belt pressure is adjusted so the actual shrinkage equals the required shrinkage.

This feedforward control strategy assures all of the fabric is uniform in density—and in residual shrinkage.

The SMS-400 System includes a printer to provide printed reports. A data collection computer can be connected to the standard RS-232 serial communication port to capture data for further analysis or archiving.



The Advantages of Fabric Density Measurement and Control

Uniform fabric density results in:

- Uniform fabric weight
- Uniform residual shrinkage
- Uniform printing patterns and colors
- Uniform color shading of napped and fleeced fabrics

The better your fabric, the better your competitive advantage.

Automation Partners Inc. has provided electronic solutions to the textile industry since 1990. With thousands of sensor systems and control systems installed worldwide, API is the market leader in this technology.

You can count on this experience and performance to be assured of getting the best product—and the best service—at a fair price.

Contact Us

Sales

Tel: +1 951 698 9901 or 1 800 466 1203
Fax: +1 951 698 9932

info@automationpartners.com
www.automationpartners.com

Mailing address:
Automation Partners Inc.
364 Blodgett Street, Suite B
Cotati, California 94931-8701
USA

Automation Partners Inc.