Technical Note

SpectraProbe® XE

How to Measure: Fabric - Textile Finishing Range

The SpectraProbe XE online color measurement system can be used to measure the color of fabric as it exits in a textile finishing range (typically after the drying cans or tenter oven). The product can be compared to an unlimited number of numerical or physical standards. For new products, an adhoc standard can be used, meaning that the first data point in the run is used as the standard, or some averaging of a defined number of data points. The sensor traverses over the surface of the fabric so side-center-side shading differences can be assessed and immediate adjustments made to the range based upon these values. The colorimetric results are displayed on screen and users are alarmed when the tolerances for these are exceeded.

The system has provision for analog/digital outputs, which serve to report color data to a plant DCS or PLC control system, allowing color measurement data to be used in the control of range process variables. Some parameters potentially controlled by this output data are range speed; chemical feeds to the range; dyebox/washbox levels and temperatures; nip roll pressures; drying can temperatures/pressures; and tenter oven and steamer temperatures. The SpectraProbe XE color management system is an essential component of a closed loop control system for piece dyeing.

Additionally, other process variables can be displayed onscreen with colorimetric data via DDE, NT Public Interface Socket, or user entry. This data can be stored in the database along with the corresponding measurement data and included in roll/dye lot reports, thereby aiding the customer in determining correlations between shade and other range parameters and in identifying cause when off-shade conditions occur. Detailed and summary reports are available for each roll and lot, including event logs, alarm conditions, and process variable information.

HunterLab has successful installations for this application on open width wash ranges, denim ranges, tenter frames, and other textile finishing ranges used in pigment, fiber reactive, and sulfur dyeing.

HunterLab
Measure Color...Measure Quality

ISO 9001:2000 Certified

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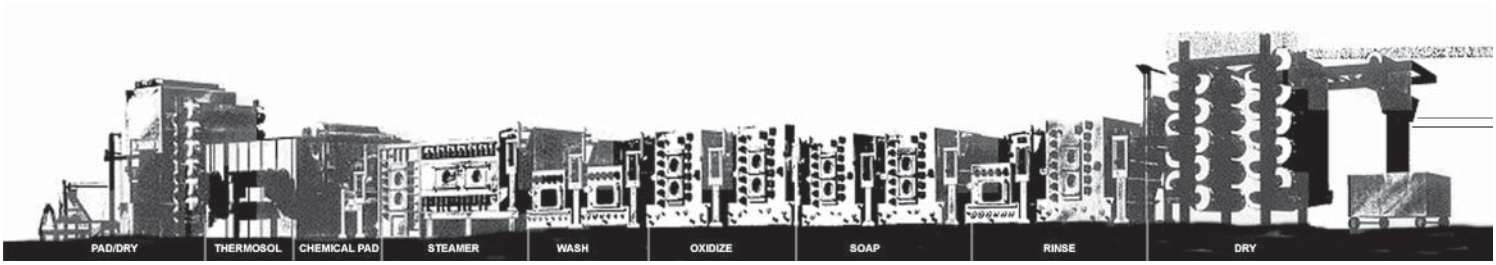
Method of presentation of the fabric to the sensor:

Depiction of a finishing range



The SpectraProbe XE sensor is mounted over the fabric using a rail which allows the sensor to traverse over the surface of the fabric in a user-selected scan pattern. The sensor is typically installed near the exit scray/wind-up roll at a point where the fabric is in continual motion.

Typical Color Scale Used:	CIELAB, CIELCH
Typical Single No. Indices Used:	dEcmc (measurement of overall shade difference from standard) SSC (555 Shade Sort Coding)

Measurement Method:

Using HunterLab's EasyMatch OnLine software, a system and product setup must be defined.

1. The System Setup is located under the System/System Configuration menu and these system settings are unique to each installation. Some parameters defined here are whether the system is traversing or fixed point, communications settings, rail position settings, data output settings, calibration requirements, activation of run options, and configuration of tile positions.

2. The Product Setup can be found under the Run Menu and is typically as follows:

Page 1:
Color Scale: CIELAB
Optional Index: dEcmc
Data Collection Units: Yards/Meters
Data Collection Frequency: 25 readings per second (depending upon range speed, traversing speed and scan pattern selected)
Secondary Calibration: Every 30 minutes
Illuminant: D65 (selectable)
Observer: 10 degrees

Page 2:
Product Standard: Numeric for existing products
Adhoc/Physical for new products
3 CMC Auto-Tolerance

Page 3:
CMC Parameters –
Commercial Factor: 1
l: 2
c: 1
Tolerance Alarm Deadband – 5%
Scan Pattern: B (A-R available - varies depending upon customer objectives)
3 Output to Lot File – If in addition to saving data in the database and to a job file, the customer would like to save lot data as a text file
3 Analog Outputs – If this option is purchased and customer would like to output colorimetric data to a PLC or DCS system

Page 4:
Page Titles and Descriptors: Unique to installation

Page 5:
Shade Space Parameters Type: 555
Shade Sorting: On with Trend

3. After selecting the Product Setup as active, defining it, and saving it under the applicable System, select Begin Run from either the toolbar or the Run Menu.