

# Technical Technical Note



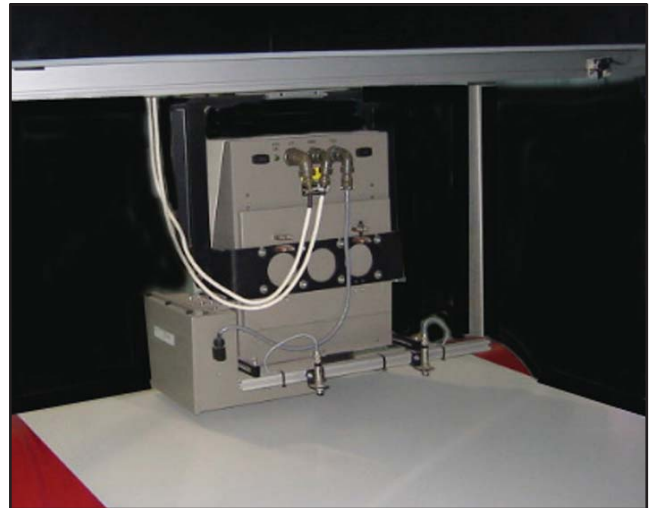
SpectraProbe® XE

## How to Measure:

## Coated Coil

The SpectraProbe XE online color measurement system can be used to measure the color of painted metal on coil coating lines. With paint lines running well in excess of 300 FPM, it is essential that a coil coater know the color of the product as early in the process as possible. Having this information, adjustments can be made to increase or decrease the film thickness of the paint or the bake time required to get the desired color. The product can be compared to an unlimited number of numerical or physical standards. For new products, an Ad Hoc 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 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 line process variables. Some parameters potentially controlled by this output data

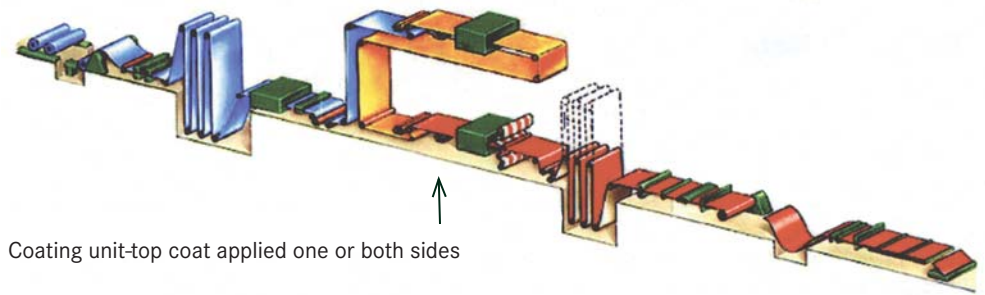


are chemical feeds to the line for cleaning, pretreatment, and painting; sprays; oven temperatures; and line speed. The SpectraProbe XE color management system is an essential component of a closed loop control system for coil coating. Additionally, with the temperature compensation option, the effects of thermochromism are eliminated because colorimetric data is automatically corrected based upon changes in product temperature. Other process variables from the line can be displayed onscreen along 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 batch reports. Detailed and summary reports are available for the run including event logs, alarm conditions, and process variable information.

HunterLab is a world leader in online color measurement of painted metals, with a wide variety of substrates. HunterLab has successful installations on coil coating lines spanning five continents.

## Method of presentation of the coil to the sensor:

Depiction of a typical coil coating line



The SpectraProbe XE sensor is typically mounted on a traversing rail over the coated metal just before the exit accumulator stack. Popular options for the SpectraProbe XE system on coil coating lines include extended edge detectors, sheet break option, analog output board, alarm relay board, and temperature compensation package.

Typical Color Scale Used: CIELAB or Hunter Lab

Typical Single No. Indices Used:  $dE^*$  or  $dE$  (measurement of overall shade difference from standard)

## 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 or Hunter Lab  
Optional Index:  $dE^*$  or  $dE$   
Data Collection Units: Feet/Meters  
Data Collection Frequency: 25 readings per second (depending upon range speed)  
Secondary Calibration: Every 30 minutes  
Illuminant: D65 or C  
Observer: 10 degrees or 2 degrees

### Page 2:

Product Standard: Numeric for existing products  
Ad Hoc for new products  
Offset Correction: For use in hitching the SpectraProbe XE to a benchtop system on which product standards have been measured, particularly the LabScan XE. Product specific.  
Tolerances: (Center to Standard and Cross Shading): Typically 0.5 for each component of the color scale

### Page 3:

CMC Parameters – Not used  
Tolerance Alarm Deadband – 5%  
Shade Sorting – Off  
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  
Optional Parameters – Not used  
Scan Parameter – Not used  
Scan Pattern – Typically, coil coaters purchase the extended edge detectors, meaning they must utilize one of the scan patterns that incorporates edges, rather than programmed positions along the rail.  
Traversing Type – CS-LC-RL

### Page 4:

Page Titles and Descriptors: Unique to installation

### Page 5:

Shade Space Parameters – Not used  
Switchable Run – Not used

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.