A New Approach to Quantifying Colour & Appearance

Overall visual appearance is a major feature in the assessment and control of product quality. The Lovibond CAM-System 500 is an imaging colorimeter that presents a new approach to quantifying colour and appearance; it is an innovative QC inspection system that allows the user to decide quickly and objectively whether a product meets acceptable colour and appearance criteria or if it has undesirable defects. Based on digital imaging technology, the CAM-System 500 uses acceptable samples to generate a reference profile for the product, including minimum and maximum limits, then captures quantitative image data, which are compared to a generated from acceptable samples.

Advantages of an Imaging Colorimeter

A digital image records colour data at thousands of points, providing detailed information about colour distribution and variations across a sample. As such, the Lovibond CAM-System 500 is particularly well suited to measuring natural and industrial products with non-uniform or variable colour properties that cannot be measured easily with conventional colorimetric spectrophotometers. It can process the whole image or simultaneously measure multiple colours and regions of interest (up to 32 per product type). The measurement area is also flexible, from small up to 240 mm. Furthermore, the non-contact technology means that sample measurement is unaffected by product consistency or surface texture. For more advanced image processing applications, the system has the added potential for dimension and shape measurement, so in one measurement both the colours and dimensions of a selected sample can be displayed and saved.

Easy for Operators to Use

The Lovibond CAM-System 500 entails separate supervisor and operator modes. The supervisor has access to a set-up menu where they employ actual samples to establish the quality parameters for a particular product, including regions of interest and acceptable threshold limits. All the operator has to do is call up the product settings and measure the sample to generate a pass-fail assessment, without knowledge of colour science or image analysis.

Image Processing for a QC Environment

The hardware components include a digital colour camera, image capture cabinet, controlled sample illumination and an embedded PC, all designed to function within an industrial QC environment. The system quantifies appearance by capturing an image and expressing each pixel in terms of its rgb components; it employs ‘blob extraction’ to isolate regions of interest from the image, allowing the operator to exclude backgrounds or highlight particular product features. A time profile screen allows the user to capture a sequence of images at set intervals and to display the results in a line chart. A reports screen displays the results of previous tests in tabular format. The results may be sorted in product type, test or date order.

Technical Specification

- Measuring principle: Digital image processing
- Measurement time: 1 - 2 seconds
- Calibration: Colour checker card
- Camera: Colour, auto focus, SVHS camera with 8 bit per channel colour depth, 752 * 582 pixel resolution, USB interface
- Lighting: Diffused, full spectral, simulated daylight
- Sample size (height dependent): Approx 240 x 180 x 120 (height) mm
- Approvals: CE
- Computer system: Embedded PC with Windows XP
- Data storage: Internal 20 GB hard drive and DVD writer
- Keyboard/mouse: USB/PS2
- Monitor: Capable of 1280 x 1024 at 32-bit colour
- Dimensions: Width 440 mm, depth 484 mm, height 550 mm
- Weight: 30 kg

For information on colour measurement, visit our website at www.tintometer.com

Application Examples

- Food processing: Browning of baked goods, QA of fresh produce
- Textiles: Measurement of fabric staining
- Pharmaceutical: QA of tablets

The Tintometer Ltd • Waterloo Road • Salisbury • SP1 2JY • UK • Lo-Call Tel: 08452 264654 • Tel: +44 1722 327242
Fax: +44 1722 412322 • Email: sales@tintometer.com • Website: www.tintometer.com
Lovibond & Tintometer are registered trademarks of The Tintometer Limited. Specifications and design are subject to change without notice.