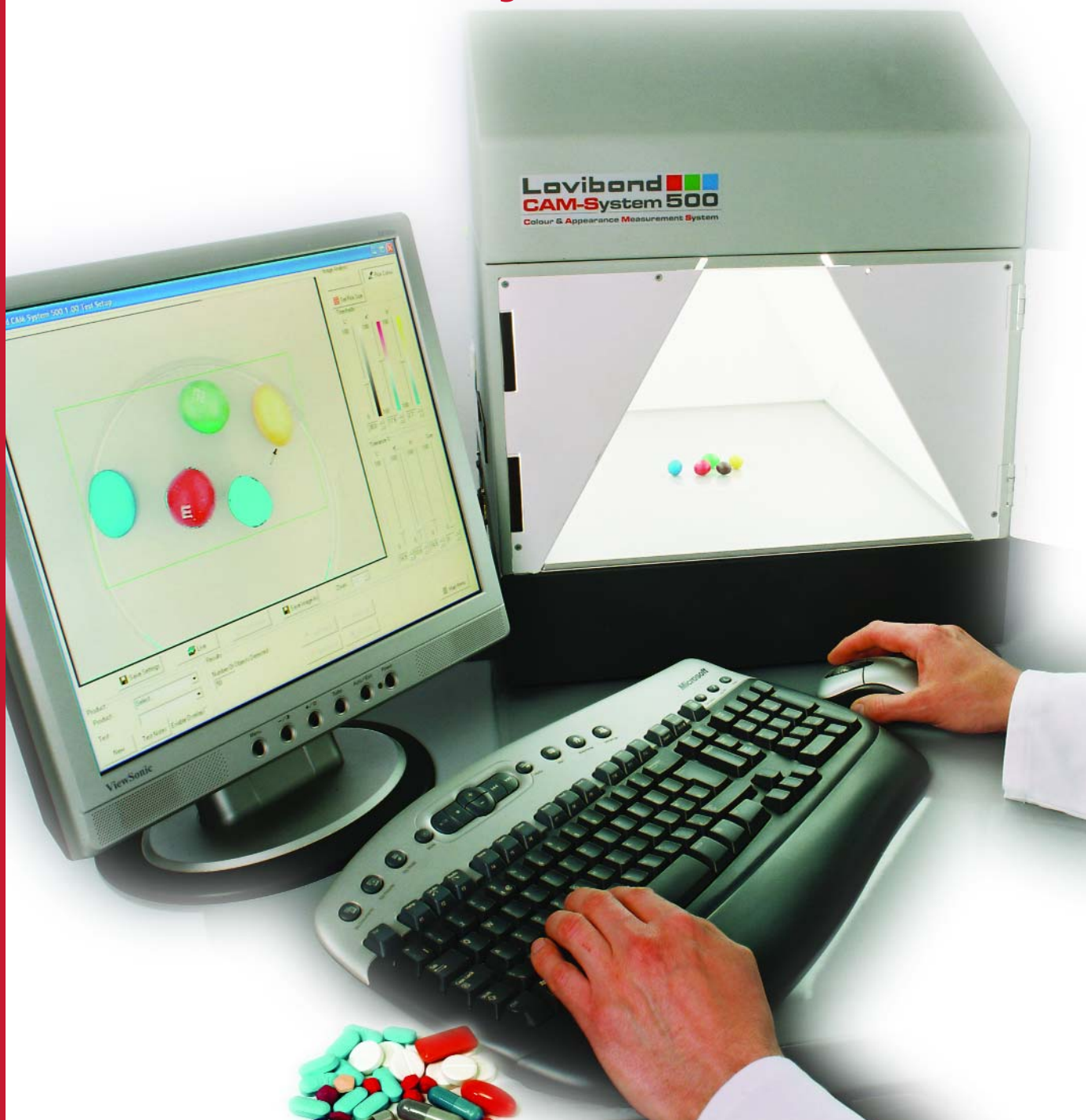




Image based colour & appearance measurement

High performance camera-based imaging colorimeter

Lovibond® CAM-System



Lovibond® CAM-System 500

- *Generates an objective, pass-fail assessment for QC in seconds*
- *Ideal for natural & industrial products with non-uniform colour variation*
- *Simultaneously assesses the whole image or multiple areas of interest*
- *Non contact technology that is unaffected by product consistency or texture*
- *Operated without knowledge of colour science or image analysis*
- *Includes controlled environment for sample illumination and viewing*

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 quantitative reference profile for the product, including minimum and maximum limits, which is subsequently used for a pass-fail assessment of product 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. 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.

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 system includes digital colour camera, controlled sample illumination and embedded PC pre-installed with image processing software, all integrated into the image capture cabinet. Appearance is quantified by capturing an image and expressing each pixel in terms of its rgb or CIELAB components; 'Blob extraction' is employed 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.

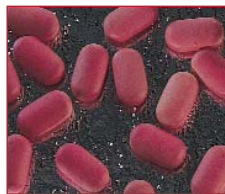
Application Examples



Food processing:
browning of baked goods, QA of fresh produce



Textiles:
measurement of fabric staining



Pharmaceutical:
QA of tablets

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
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 (not supplied)	USB/PS2
Monitor (not supplied)	Capable of 1024 x 768 at 32-bit colour
Instructions	Multimedia CD
Instrument housing	Fabricated steel with tough textured paint finish
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