

MatchIT

Digital Inspection System



Automated Inspection System for Color and Texture

Classification	Color Analysis	Defect Detection
Verification	Texture Analysis	Measurement
Grading	Image Matching	Color Proofing

MatchIT—The Next Generation in Color-Based Automated Inspection!

With MatchIT You Can:

- Monitor appearance based on color and texture
- Analyze **multicolored**, textured samples with high spatial resolution
- Inspect without restrictions on sample size or viewing geometry
- Classify, verify, and find defects with no programming
- Grade samples based on color and texture patterns
- Train by showing
- Accurately match images or image patterns
- Measure color (RGB, HSI, or LAB) and texture
- Rapidly scan large samples with no data analysis required
- Benefit from advanced pattern recognition and learning capabilities



MatchIT combines color video imaging with digital image analysis and is the industry's most advanced **Quality Control** solution for appearance measurement and analysis!

MatchIT Light Box Model

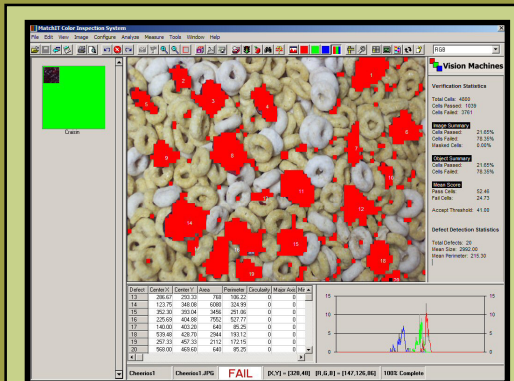


MatchIT Microscope Model



Typical Applications

- **Materials:** textiles, leather, metal, paper, plastics
- **Building:** tile, carpet, granite, marble, wood, shingles, countertops, wallpaper
- **Food:** meat, fruits, vegetables, cheese, baked goods, contaminants
- **Medical:** dermatology, pathology, dentistry, pharmaceuticals
- **Manufacturing:** packaging, thermal analysis, lot matching, material optimization, thin films, wear testing, abrasives, filters and fibrous material
- **Graphic Arts:** color printing and reproduction, proofing
- **Consumer:** cosmetics, jewelry, paint and stain
- **Scientific:** microscopy, fluorescence, material analysis
- **Miscellaneous:** agriculture, horticulture, forensics, museum artwork



Color Blob Analysis



Reference Image



Test Image

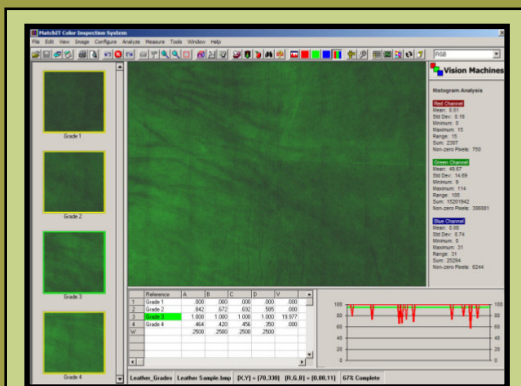


Raw Defect Image



Final Defects

Defect Detection



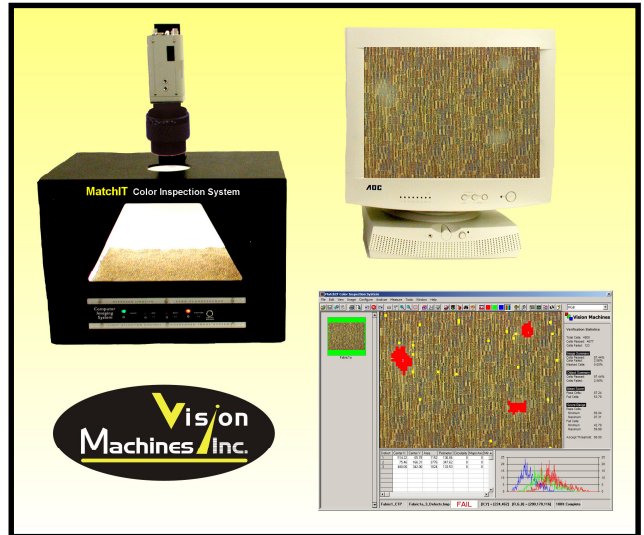
Grading



Color Calibration

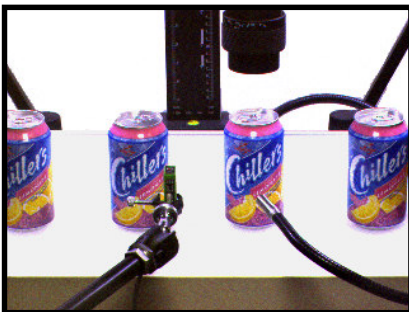
The MatchIT Advantage

Feature	Benefit
Color CCD Camera	Inspect multicolored, patterned and textured objects
Custom Optics and Lighting	No restrictions on sample size or viewing geometry
No Programming/Trains in Minutes by Showing Examples	Quick deployment, anyone can operate
Handles Complex or Noisy Images	Superior to color measurement instruments or sensors
Built in Pattern Recognition and Learning Capabilities	Performs equal to or better than human inspectors
Set of Powerful and Flexible Color Software Tools	Provides inspection and measurement capabilities not previously available



MatchIT Features

- Classify, Grade, or Sort
- Verify Product Appearance
- Measure Color and Texture
- Find Defects
- Assess Visual Similarity



MatchIT Comparison

Task	MatchIT	Colorimeters and Spectrophotometers	Color Sensors
Viewing Area	Small to Large	Small	Small
Scanning Required	No	Usually	N/A
Sample Types	Multicolored, Patterned	Single Color	Single Color
Color Spaces	RGB, HSI, L*a*b*	L*a*b*	RGB
Color/Texture Measurement	Yes/Yes	Yes/No	Yes/No
Pattern Recognition	Yes	No	No
Color/Spatial Resolution	High/High	High/Low	Low/Low
Calibration	Yes	Yes	Yes
Analysis Tools	Many	Few	Few

MatchIT Specifications

Specification	Description
Models	Series 100: Microscope; Series 200: Light Box; Series 300: Camera Stand; Series 400: Online Choice of camera, optics, and lighting within each series
Sample Types	Single color, multicolor, textured, patterned
Camera	Color: 3-CCD or 1-CCD RGB, tristimulus response Numerous analog and digital models available
Lens	10X zoom, field of view range 0.3 to 11.0 inches Optional fixed focal length (various fields of view available)
Light Box	Model 1: 20" x 13" x 13" Light Box, diffuse fluorescent illumination with optional SoLux® artificial daylight, 10" x 12" imaging platform, selective light control, optional motorized platform Model 2: 19" x 15" x 14" Light Box, diffuse 5000° K fluorescent illumination with 5 independently dimmable light banks, 11" x 16" imaging platform, large removable access door
Camera Stand	Adjustable benchtop camera stand, 24" L x 24" W x 36" H, integrated illumination, optional black aluminum enclosure
Microscope	Olympus BX-51 industrial microscope, 50X objective, 100W tungsten halogen illuminator, bright-field cube with cross-polarizing filters, Spectralon diffuse reflectance calibration target
Processor	Intel Dual Core processor E8400 3 GHz or better
Operating System	Windows 2000, Windows XP Professional
Image Capture	FireWire, TWAIN, analog frame grabber
Measurement Time	< 200 msec typical
Color Resolution	16,777,216 (24 bit RGB)
Calibration	X-Rite ColorChecker chart (reflection), Color filter set (transmission) Software color correction with selected models
Display Mode	1024 x 768, 32-bit (True Color)
Number of Training Sets	Unlimited
Maximum References	256 per training set, 10 samples per reference
Color Spaces	RGB, HSI, LAB
Image Formats	Over 20 including TIF, BMP, PNG, JPG
Software	MatchIT Color Analysis (Win32) with Image Management Tools Photoshop or QCapture Pro with selected camera models MatchIT Software also available separately (without hardware)
Analysis Functions	Color matching, texture matching, classification, verification, defect detection, color and texture measurement
Accessory Kit	Camera mount extension bracket, polarizing filter, image resolution target, opaque and transparent ruler set

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