IVA

WEB INSPECTION

Machine Vision Systems

WIS1000 - SYSTEM

Introduction

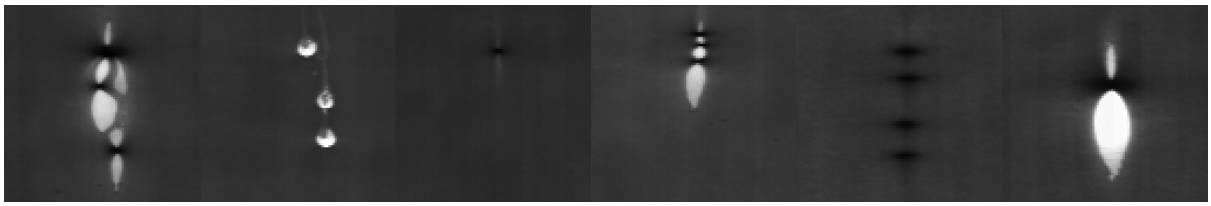
The WIS1000-system performs real time 100 % automatic inspection on continuous web products.

Application areas include:

- Paper & Pulp (Dirt Counter)
- Plastic Film (Gel Counter)
- Metal film
- Glass sheet
- Coating
- Cables & tubes

A common barrier to the implementation of web inspection has been the high cost associated with installation and operation of these types of systems. The WIS1000-system can be offered at a price which will open the market for many new applications.

Based on the latest line scan CCD camera technology it uses advanced hardware image processing functions. Up to 16 digital line scan cameras capture images of the moving web. The system processes these images in hardware (FPGA-circuits) and verifies the product for presence of possible defects: gels, contaminants, dirt, holes, coating voids, bubbles, streaks, repeating defects,...These defects will be detected and classified upon contrast, shape, width, length, surface and density measurements. After classification they are displayed and stored in data-bases.



Features:

- Inspected web width range from 5 mm to 4 m. (up to 16 line scan cameras, 4096 pixels / camera)
- Web speeds up to 1000 m/min.
- Up to 4 webs can be defined and separately reported.
- Automatic gain control, flat field correction ,automatic edge tracking and opacity control on all webs.
- Detection and classification of defects as small as 10 micron (dependent upon # of cameras and web width to be inspected).
- Classification based on contrast, model recognition, width, length, surface and density measurements.
- Repeating defect detection and analisys.
- Supports up to 32 user definable defect categories.
- Operates in transmission, reflection or any combination of any angles.
- Fully programmable lane structure with a max. of 2048 lanes (slitter applications).
- Real time or distance delayed alarm outputs triggered on discrete defects or density exceedings (sheeter applications, tab throwers, spray markers).
- Defect data and images are visualised and stored in databases for review.
  (Extremely usefull for system tuning and quality analysis).
- Simple and user friendly operator interface with password protected access levels and on-line item sensitive help.

System components:

- Industrial PC chassis IPC-610

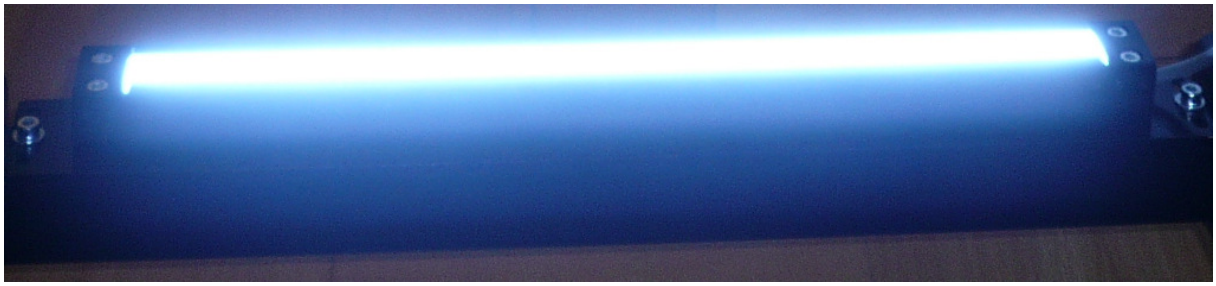
  - Rugged, all steel chassis meeting the EIA RS-310C 19" rackmount standard.
  - The unit contains a 14 slot PCI-bus compatible passive backplane with various plug-in cards such as processor board and camera interfaces.
  - Processor board with Intel Pentium at 3 GHz and 512MB DRAM

- Digital line scan camera type Dalsa SP-2 (up to 16 cameras can be connected)

  - standard resolutions : 2048 - 4096 pixels (14x14µm)
  - 10 bit digitisation, output through Camera Link
  - high responsivity (136 nJ/cm²)
  - 40 MHz (18K scans/sec)
  - antiblooming
  - exposure and gain control
  - flat field correction
  - IP54 enclosure

- VHO apertured fluorescent light source (up to 8 light sources can be controlled) or led light source (for smaller web widths)

  - high intensity
  - high uniformity
  - 75 kHz for ripple-less light output
  - aperture lamp with internal reflective coating
  - programmable light intensity with feed-back regulation
  - compact IP54 enclosure
  - lamp lengths from 0.3 up to 2.5 m
  - lamp replacement from the side (sliders) so alignment stays intact



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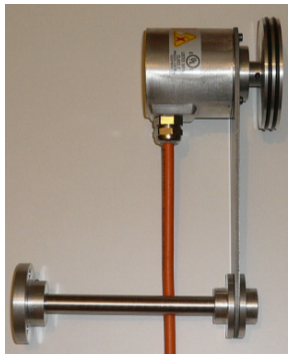
- Encoder system for length measurement
  - incremental encoder
  - 5000 pulses/m
  - web speeds from 0 to 1000 m/min

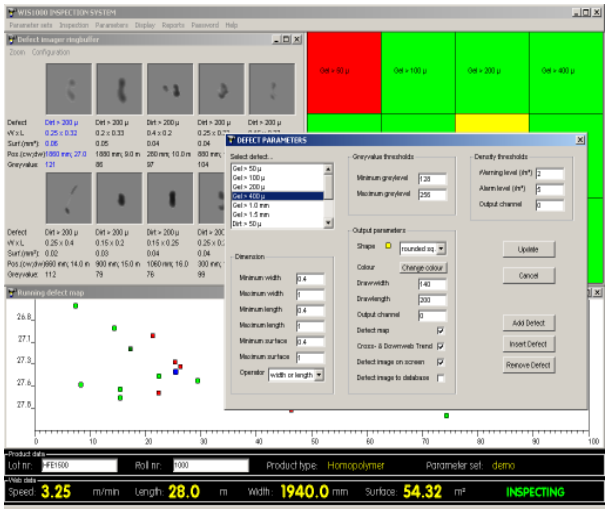


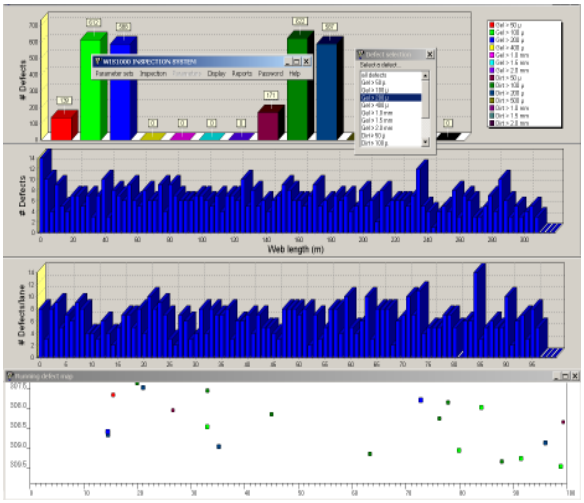
- Interfacing
  - 16 opto-isolated in- and outputs (real-time or distance delayed for spray-markers or tab-throwers)
  - 16 opto-isolated analog in- and outputs (0-10V)
  - RS232-RS422-link
  - TCP-IP-link
  - Remote access (network or modem)

System operation

The WIS1000 realtime displays are available as separate sizable windows that can be combined freely:

- Running defect map
- Defect histogram & summaries
- Cross direction defect distribution trend
- Downweb defect distribution trend
- Defect density alarms
- Defect imager ringbuffer
- Status window
- Defect database explorer





All the parameters that determine the inspection task, including defect definitions, camera parameters and display configuration, are stored in so called parameter sets. The operator does not have to be familiar with these settings, he only selects a product type (parameter set) from a list to set-up the entire inspection system.
Due to the high degree of software modularity, special customer demands can always be considered.

Reports

- Detailed defect data lists
- Roll summaries
- Production campaign reports

Installation

Cameras and light sources are mounted on a solid frame to avoid heavy vibrations (some reflection set-ups are susceptible to this).
Installation of the system and set-up for inspection can be done in a very short time (1-2 days).

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