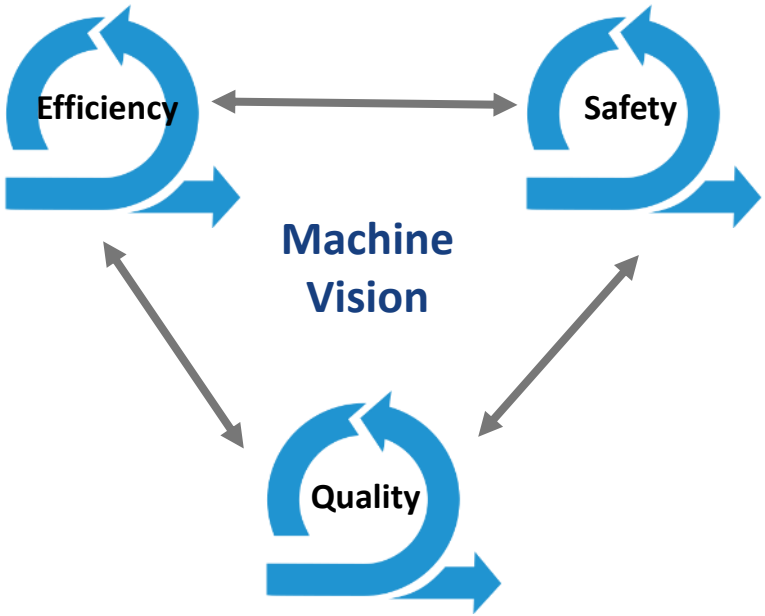
Great Vision *for*
Great Machines

Procemex Machine Vision Solutions

Procemex Machine Vision



- ✓ Procemex Machine Vision applications are designed to ensure superior product quality, improve production efficiency and operator safety.
- ✓ Our Machine Vision tools are based on KuvioVision Software platform, which enables vision users to develop and deploy vision systems in a fraction of the time it takes with conventional methods.
- ✓ The intelligent Procemex Machine Vision Camera runs KuvioVision platform on Linux kernel.

What is Machine Vision?

Vision enables us to see and understand what is around us

Computer Vision enables Computers to see …

Machine Vision enables Machines to see …

Embedded Vision enables Things to see …

. . . and	*Identify*	*Gauge*	*Inspect*	*Guide*	*Track*	*. . .*

. . . for better:	Quality	Efficiency	Safety	Traceability

Application Examples

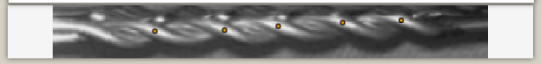
professional flexible precise solid
innovative agile solid outstanding agile

Application Examples

Pulp manufacturing	Pulp handling	Wet end	Roll packaging	Sheeting	Storage	End user
•Bale metal wire twist analysis	•Bale batch number identification	•Turbulence analysis	•Width measurement •Roundness analysis •Eccentricity analysis •Tail positioning •Roll header presence analysis	•Cut quality analysis	•Roll wrap analysis	•Roll wrap analysis

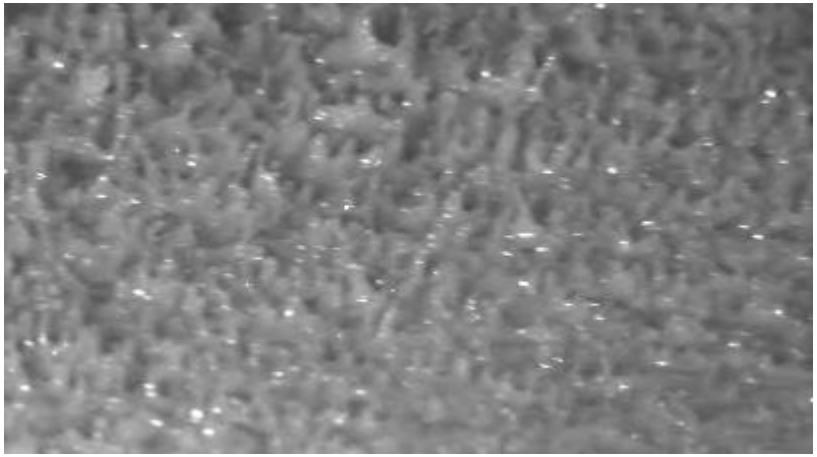
Pulp Bale Metal Wire Twist Analysis

Bale number	31722547 10

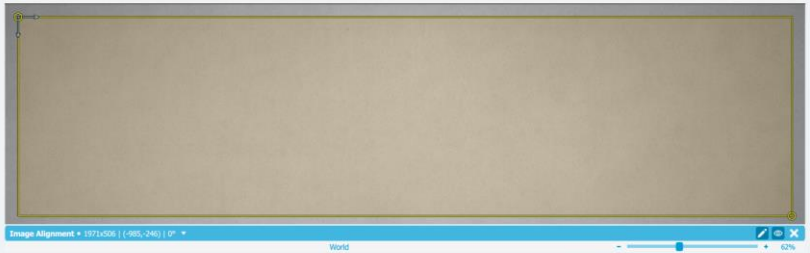
1. wire	2. wire
	
Twist count 5	Twist count 5

Pulp Bale Batch Number Identification

Wet End Turbulence Analysis

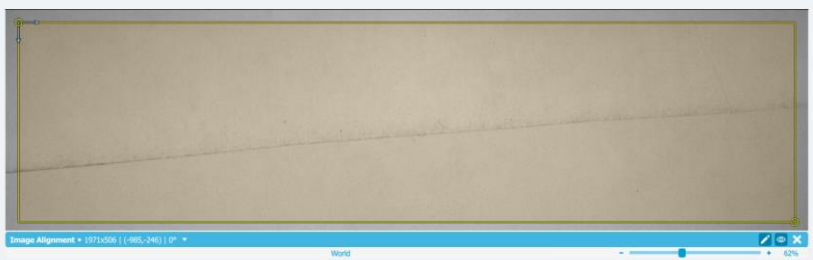


Roll tail positioning



Roll tail status ✗

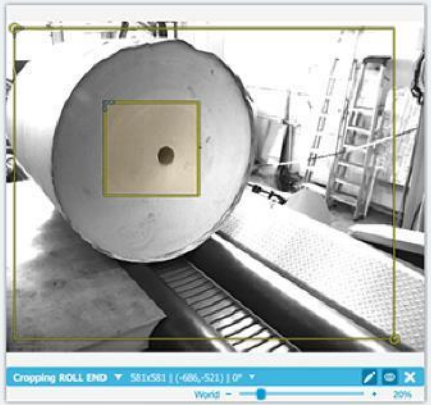
Output triggered ✗



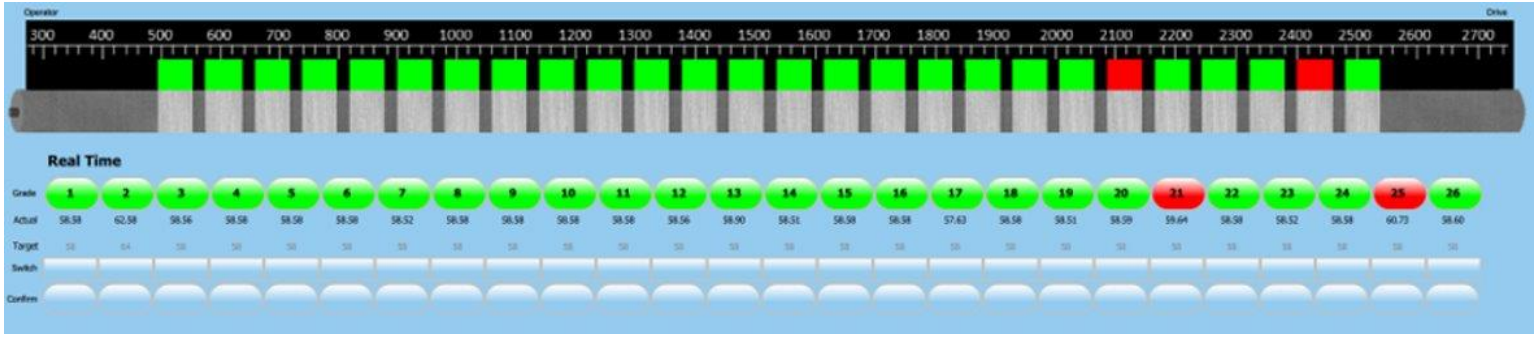
Roll tail status ✓

Output triggered ✓

Roll Header Presence Analysis

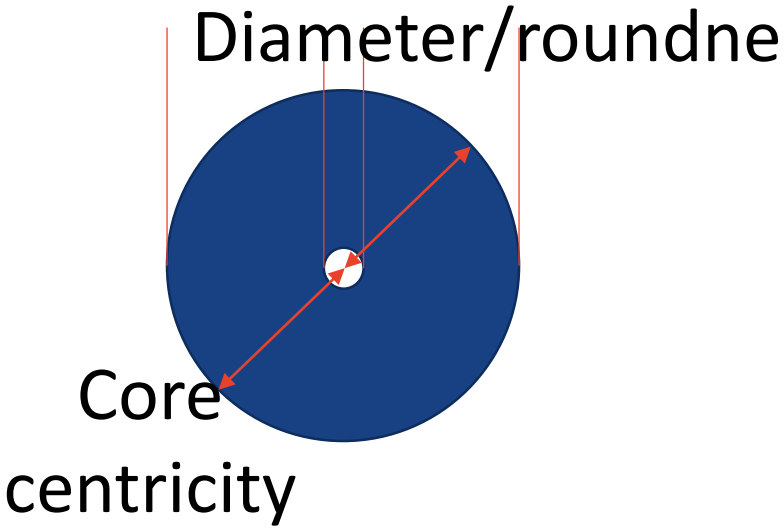


Slit width analysis



Diameter, roundness and core centricity analysis

- Measure overall diameter
- Calculate roundness
- Analyze core centricity
- Analyze core roundness
- Can be deployed for log or cut rolls



Technology

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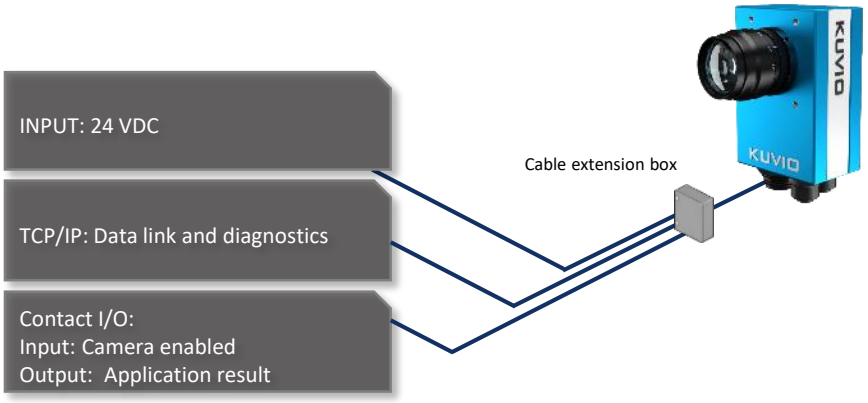
innovative agile solid outstanding agile

Technology – Typical System Architecture



Technology - Camera

- BW matrix camera
  - 2MP 2040x1020 pixels
  - 5MP 2596x2048 pixels
  - 12MP 4080x3060 pixels
- 24 VDC power
- Ethernet connectivity
- Built-in digital I/O
- IP67 protection rating
- Camera controls light
- MIL grade connectors
- Intel Atom powered
- Linux kernel with KuvioVision application software

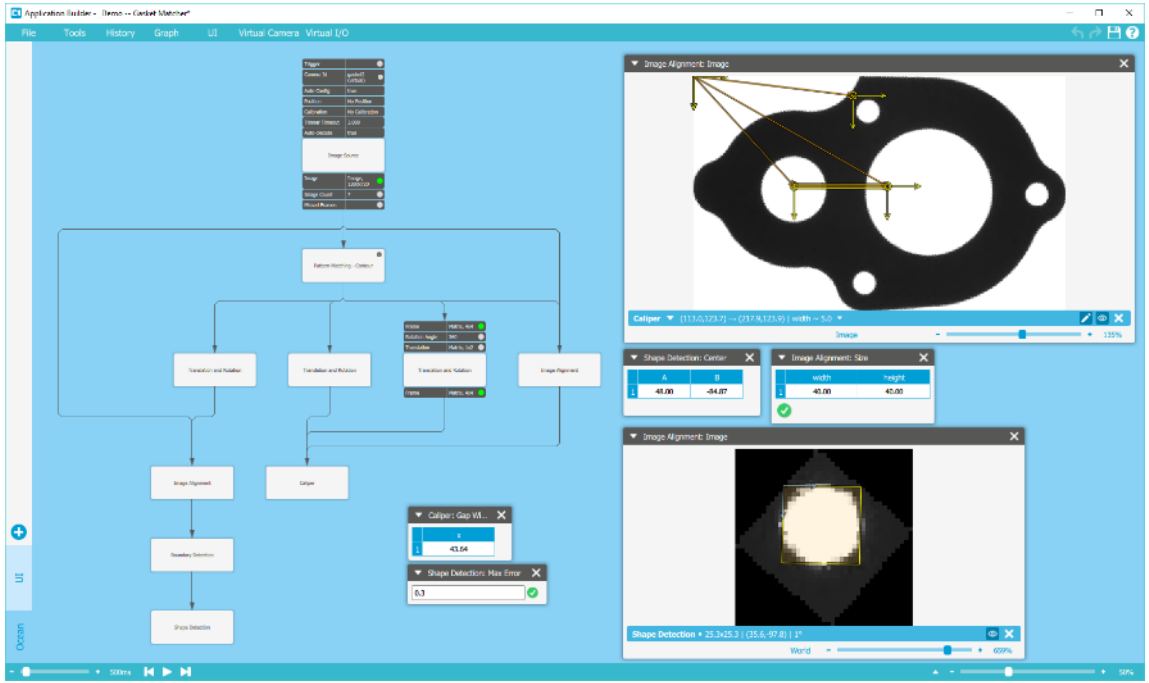
Camera Viewing Area Cleaning

- Pinhole lens enclosure technology is used for this application
- Virtually no cleaning required
- Air requirements:
  - 1 bar compressed air at pinhole head
  - Non-condensing
  - Oil free
  - Filtered to 50 micron

Technology – Software Platform

- **KuvioVision™ Application Builder** - Smart easy to use graphical build and test environment for building **KuvioVision** Apps (Vision Apps and EU GUI Apps).
  - Application Builder runs in any Windows or Linux PC.
- **KuvioVision™ Application Manager** - For managing **KuvioVision** Apps in any network (star, start, stop, control,…) automatically or with a tablet style user interface.
  - All Apps can be executed on various devices and managed from one network PC.
- **KuvioVision™ Tools** - Advanced proprietary primary Machine Vision Tools and future proof strategy for add-ons and integration
  - Image Processing Tools
  - Vision Tools
  - Control Tools
  - Easy addition of your own (compound, C/C++ and JavaScript) tools
- **BlueOcean™ Embedded Vision** - Intelligent real time software engine for automatic optimization and execution of KuvioVision applications.

Technology – Application Development

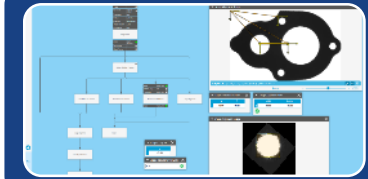


- Build environment freely arranged by the user
- Graphical parameter adjustment and rendering widgets
- Automatic build of Graph describing the application
- Dynamic display of any parameters and images
- World coordinates

Procemex Machine Vision Advantage

Intelligent camera that does it all – no PC required

- Robust IP67 camera for the industrial environment
- Inputs and outputs directly from camera



Software platform that enables fast development and deployment

- Same software regardless of deployment platform
- Runs on camera, vision controller, PC, embedded controller

Procemex is the vision application specialist for pulp, paper and printing

Let us help your success with our tailored solutions!