Product Tracking Using Vision and RFID Applications

Introduction

- Zdenek Kulle
  - 26 years experience in the Lumber Industry

- Z-Tec Automation Systems, Inc.
  - Z-Tec in business since 1992
  - Specializing in Product ID and Traceability systems
Why Is Product Tracking Important?

- **Tangible Benefits**
  - Easily measured and calculated

- **Intangible Benefits**
  - Not easily measured, but important

How Do We Track Product?

- **Manual Systems**
  - Paper Records
  - Shift Reports

- **Automated Systems**
  - Barcode Readers
  - Vision Systems
  - RFID
Manual Systems

- Not reliable
- Difficult to organize
- Require additional labor to track, summarize, graph, etc.

Barcode Readers

- Mature technology
- Very high success rate (readability)
- Inexpensive, but very reliable
- Easily implemented
Vision Systems

- Rapidly improving in capabilities
- Lower success rate than barcode readers
- Dependent on image lighting
- Success rate can be improved by using different inks
- Can improve by “learning” over time

Vision System Types

- OCR (Optical character recognition)
- Binary patterns
- Graphic images
RFID

- Active or Passive
- High cost
- Reliability issues
  - Industrial environment uncertainties
  - Site specific solutions

Tying the Technologies Together

- None of the discussed technologies provide the “perfect” solution
- “Off-the-shelf” equipment requires customized integration to provide best results for each project
- Co-operation among all parties is critical to providing meaningful results
- Projects require clearly defined goals and targets
Product Tracking Applications

- Examples of real world problems
- Proven solutions
- Innovative approaches

Log Decks

- Objective:
  - ID each log and track into primary breakdown equipment in the mill to provide feedback mechanism

- Solution:
  - Robotic system using large character inkjet and/or barcode tag
  - Vision system or barcode reader to pick up log after log decks
Primary Breakdown

Objective:
- ID each cant in multiple pass systems to ensure proper cant orientation on second pass

Solution:
- Large character inkjet
- Manual input or vision system to set up equipment for second pass

Sawmill Outfeed

Objective:
- Uniquely ID each package for updating rough inventory and enable product tracking through the kilns

Solution:
- Automatically or manually apply a unique barcode tag to each package
- Barcode tag must withstand the high temperatures in the kilns
Kilns

**Objective:**
- Tie each package in the kiln charge to the kiln schedule

**Solution:**
- Scan package tag with long range scanner from the forklift when building kiln charge
- Could be wireless real-time or batch

Planer Infeed

**Objective:**
- Tie package ID to downstream equipment for drying defect analysis and updating of rough inventory

**Solution:**
- Automatically or manually scan package tag with long range scanner at the planer infeed
Grade Stamping I

- **Objective:**
  - Verification of correct stamp and stamp quality
- **Solution:**
  - Vision system to inspect stamp and detect incorrect stamp as well as poor quality stamp

Grade Stamping II

- **Objective:**
  - Automating stacker, strapper, paper wrap and package tag operations to eliminate human error
- **Solution:**
  - Use inkjet to print barcode or OCR characters to allow later detection for equipment control
Stacker, Strapper, Paper Wrap

- **Objective:**
  - Automate stacker, strapper, paper wrap and package tag operations to eliminate human error

- **Solution:**
  - Use barcode reader or vision system to pick up package details to allow automated control of downstream machinery

Package Tag Area

- **Objective:**
  - Automate package tag operations to eliminate human error and update finished inventory

- **Solution:**
  - Automatically produce and apply package tag from information received at the stacker and update finished inventory
Questions and Answers

Thank You

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