

Reducing Waste in a Converting Operation



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7 Potential Areas of Waste

According to the principles of Lean Manufacturing

- Transport
- Inventory
- Motion
- Waiting
- Over-processing
- Overproduction
- Defects



Table A: Defects and Detection Methods

Defect Type	Detection Method
All discrete defects such as holes and spots. All visible surface variations such as streaks and lumps.	Full Web Inspection System
Print defects and pattern defects.	Print Inspection System
Thickness, color and coat weight variations.	Beta Gauge or other quality scanner
Process upsets and changes such as make ready, grade changes and raw material run-outs.	Output monitoring of mill PLC or DCS
Operator induced defects such as sample taking, roll cleaning and manual machine adjustments.	Operator report via push button or log

The Ideal Defect Tracking and Removal System

Step 1: Collect ALL Defect Data

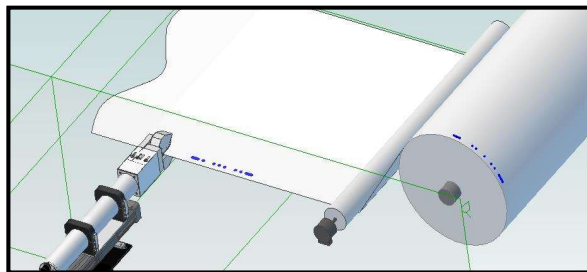
- Include in Data;
 - Defect Type
 - Location
 - Machine Direction Start/Stop points
 - Cross Machine Direction
 - Downstream Corrective Action (Default)
 - Slow
 - Stop
 - Ignore
 - Any other data such as time, temp, operator, etc.
- Store Data in SQL type database such as RYECO's Rollsync

The Ideal Defect Tracking and Removal System (Con't)

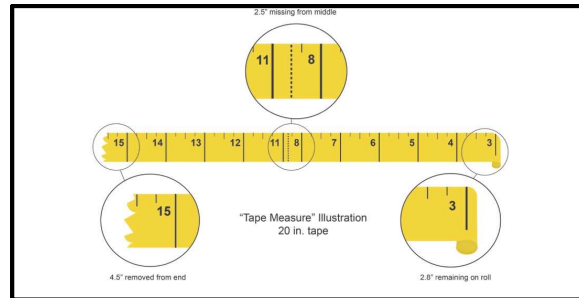
Step 2: Synchronize the Data.

- Place position Marks on Web during Inspection (Rollsync)
- Transfer quality data with roll to downstream operation
 - Server based with Roll ID
 - Can be another plant
- Read Position from Moving Web
- Show Current Position (even a partial roll)
- Display Next Defect requiring Action

Printing Position Codes on the Moving Web



The “Tape Measure” Illustration

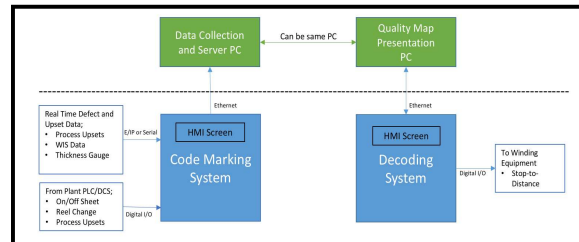


The Ideal Defect Tracking and Removal System (Con't)

Step 3: Take Corrective Action

- Allow Auto-stopping of line for removing defects.
- Operator can override the default of Slow, Stop or Ignore.
- With Position Codes the system can also;
 - Track every inch of removed product
 - Be used to make Sets according to length
 - Measure any Stretch or shrinkage in roll
 - Auto Stop for End of Roll
- The data and results from all processed rolls is saved for analysis and historical reference.

Figure 2. Rollsync Block Diagram



Conclusion

The keys to reducing waste in a converting operation:

1. To collect and record all quality information
2. To synchronize that quality information to the web
3. Remove only the bad product and sell only the good product

¿Questions?

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