(Un)Conventional Problem Solving – an HMA Member Panel

Panel:

• Josh Green, Plant Manager - Middle Tennessee Lumber Co.
• David Bailey, VP of Operations - New River Hardwoods
• Wayne Law, President - New River Hardwoods
• Brian Schilling, VP of Engineering - Pike Lumber Co., Inc.

Moderated by:
Bob Miller, Frank Miller Lumber Co.

Sponsored by: Frank Miller Lumber Company
Question #1

What measurements influenced your company’s powers-to-be to move forward with the project?
MIDDLE TENNESSEE LUMBER
NEW ROUGH MILL

- REDUCED MATERIAL HANDLING
- INCREASED PRODUCT FLEXIBILITY
- INCREASED PRODUCTION
  - 2013 = 3,600 BDFT/HR
  - 2014 PROJECTION = 6,000 BDFT/HR
- IMPROVED COST ALLOCATIONS
  - 2013 = 274 BDFT/LABOR HR ($59/MBFT)
  - 2014 PROJECTION = 340 BDFT/LABOR HR ($48/MBFT)
- ELIMINATION OF UNDERUTILIZED COST CENTER
  - $175,000 LABOR COST REDUCTION
  - $15/MBFT COST ALLOCATION REDUCTION IN STACKING OPERATION
MIDDLE TENNESSEE LUMBER
2013 – FLOW CHART
Slabber Head Addition
What factors lead us down this path?

• Increase production with low risk equipment addition
• No need to add personnel
• Proven technology and performance at similar Appalachian hardwood sawmills
• Low risk of headsaw downtime from slabber head
• Quick anticipated payback
Pike Lumber Co. - Lumber Stacker
Timeline

• 2011 increased mill production capacity 25%

• 2012 conducted studies of 1974 Irvington-Moore stacker
  • Concluded we could meet increased demand
Timeline

• 2014 considering additional 20% increase mill production
  • Considered new increased demand
  • Considered process interruption risk
  • Considered rising labor costs/availability
  • Began research on automatic stick placement stackers

• 2015 Made decision to proceed with new Moco stacker
  • Machinery lead time 15 months
  • Built new building in the fall of 2015
  • Installed machinery in the spring of 2016
  • Pike Lumber staff and local contractors

• 2016 Start up May/June
Question #2

What were the keys for the successful implementation of the project?
MIDDLE TENNESSEE LUMBER
KEYS TO SUCCESS

• VISION
  – ONE PIECE FLOW
  – MAXIMIZING VALUE

• DEFINITION
  – CLEAR GOALS
  – REALISTIC TIMELINE

• COLLABORATION
  – MULTIPLE SUPPLIERS
  – MULTIPLE LAYOUTS

• PATIENCE

• HARD WORK
Implementation
Successes and Issues

• Factors for Successes
  • Project design fully analyzed before implementation with vendors.
  • Experience installer with knowledge of equipment
  • Equipment manufacturers on site at start-up
  • Employee buy-in

• Unanticipated Issues
  • Force of 300HP slabber head against carriage
  • Issues with by-product handling
  • Retrofitting issues
Important Considerations

• Quality of Product/Process

• Production capacity

• Employee Work Environment

• Safety
Automatic Stick Placement
Question #3

Production increases and efficiencies that have been realized versus the original projections?
MIDDLE TENNESSEE LUMBER RESULTS VS PROJECTIONS

• INCREASED PRODUCTION
  • 2013 = 3,600 BDFT/HR
  • 2014 PROJECTION = 6,000 BDFT/HR
  • 2014 ACTUAL = 5,400 BDFT/HR

• IMPROVED COST ALLOCATIONS
  • 2013 = 274 BDFT/LABOR HOUR ($59/MBFT)
  • 2014 PROJECTION = 340 BDFT/LABOR HR ($48/MBFT)
  • 2014 ACTUAL = 360 BDFT/LABOR HR ($45/MBFT)

• ELIMINATION OF UNDERUTILIZED COST CENTER
  • DID NOT ELIMINATE (UNREALIZED $175K SAVINGS)
  • REPURPOSED COST CENTER TO GRADE MORE GREEN LUMBER
MIDDLE TENNESSEE LUMBER PRODUCTION RESULTS

- 30% - 1st year increase
- 60% - 4 year increase

Rough Mill Production

BDFT/HR & BDFT/Labor HR

- 30% - 1st year increase
- 60% - 4 year increase
MIDDLE TENNESSEE LUMBER
UNEXPECTED RESULTS

7% INCREASE IN FLOORING PRODUCTION BOTH BDFT/HR & BDFT/LABOR HR

FLOORING PRODUCTION

<table>
<thead>
<tr>
<th>Year</th>
<th>BDFT/MAN HR (BDFT/HR)</th>
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<tbody>
<tr>
<td>2013</td>
<td>155</td>
</tr>
<tr>
<td>2014</td>
<td>180</td>
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Operating Results

- Increased 1,000 bdft/hr or a 28% increase in production
- Decreased milling rate by greater than $40/mbft
- Pay Back of 7 to 8 months
- Little to no downtime
- Takes load off of chipper
- Moved production limitations from headsaw to resaw, which created our next project!
<table>
<thead>
<tr>
<th>Old Stacker</th>
<th>New Stacker</th>
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<tbody>
<tr>
<td>7000 Ft/Hr</td>
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<td>2235 Ft/M-Hr</td>
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<tr>
<td>$18.52/M</td>
<td>$11.19/M</td>
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- 45% of all production costs are associated with labor
  - Labor
  - Health Insurance
  - Payroll taxes
  - Worker’s Comp Insurance
Important Considerations

• Start-up Troubleshooting

• 10 % Contingency Budget
  • Catwalk, Stairs, Railing
  • Replaced 25% of Stick Inventory

• 5% Administration Budget
Looking back, what would you recommend someone do differently to make the job easier or realize a greater return?
MIDDLE TENNESSEE LUMBER
AFTER ACTION REVIEW

• PROJECT RESPONSIBILITIES
• BY PRODUCT MATERIAL HANDLING
• BETTER EXAMINATION OF IMPACT ON WHOLE PLANT PROCESS
• CALIBRATE EXPECTATIONS OF FUTURE PROJECTS
Recommendations

• We still fully support decision
• Redesign of by-product material handling
• Understanding potential impact to up and downstream processes
• Handling of swollen or deformed logs
2018 National Conference & Expo
Greenville, SC