Wood Manufacturing 2010

Material Handling Developments for High Speed Planer Mills

Presented by Ron Hougen
Technical Sales Manager
Mill Tech Industries
5061 Auto Road S.E.
Salmon Arm, BC, Canada V1E 0B1
Phone: 250-832-2586 / Fax: 250-832-2596
Email: rnh@mill-tech-ind.com

Agenda

- Mill Tech Industries Introduction
- Developments in:
  - Lug Loaders
  - Turn Transfers
  - Positioning Fences
  - Multi-Saw Trimmers
  - Cut-in-Two Systems
  - Stackers and Lath Placers

Pan Pac Forest Products Limited – Napier New Zealand
Tray Sorter System
About Mill Tech Industries

- A privately owned Canadian company located in Salmon Arm, British Columbia, Canada.
- Founded in 2000.
- Provider of lumber handling equipment for Sawmills and Planer mills.

Lug Loaders

- Early generation lug loaders generally used a pneumatically actuated ducker, a speed-up wheel and pressure from the upstream boards to accelerate the board into the lug. This works well to approximately 110 lugs per minute but, beyond that, requires additional means of getting a hold of the board.

- The latest generation models, capable of 200+ lugs per minute, use overhead means (belts, shoes) or clamping fingers to better grab the board. In addition, improved control of the in-feed chains with VFD’s and servos, as well as cam actuated duckers and rotary disks for exact timing, allow these lug loaders to achieve higher speeds.
Turn Transfers

• In applications requiring turn transfers with inside lumber lines, boards will drift out and often skew as the speed increases. In these applications, banked turn transfers can be used to maintain the inside lumber line, often eliminating the need for even ending rolls after the turn transfer.

Positioning Fences

• Older model positioning fences used fixed fences or pop-up fences, resulting in limited positioning resolution. This worked fine for manual grading systems, but with the introduction of planer mill optimizers a much finer resolution is required.

• Similarly used in the saw mill, the staged fence is a solution which uses hydraulic or electric positioners to locate the board to 1/10". Depending on the required speed and amount of fencing, additional stages can be added. Although effective, these fences require lift skids in the roll case requiring large volumes of air and accuracy can drop off quickly if the timing is not maintained.

• The latest generation fence, the recirculating paddle fence, uses independently position-able paddles travelling with the board to create the set. These fences offer good accuracy and no lift skids are required in the roll case.
Multi-Saw Trimmers

- Older trimmers used larger diameter saws, i.e. 24", and therefore wider lug spacing contained in trimmers with difficult access and slow moving, poorly cushioned cylinders.

- Current generation trimmers use smaller diameter saws, i.e. 16", with tighter lug spacing and dramatically improved cylinder speed and cushioning. In addition, the trimmer is designed for quicker and safer access with opening hoods, integrated walkways, built-in hand rails and safety gates.

Drop Out Gates

- The traditional drop out gates or chain gate contained a driven chain on each individual gate. Due to the mass and size of the gate they were speed limited to 130 lugs per minute.

- In applications exceeding 130 lugs per minute, overhead pusher lug gates are required. An overhead chain and lug, similar to a sorter, pushes the board over a small, lighter and quicker acting gate allowing for the higher speeds.

- In certain applications, when dropping into a single belt or splitting the flow, i.e. cut-in-two, overhead wheel gates can be used. This option offers the benefit of rigid pusher arms, and therefore no chain to stretch, and fewer moving components.
Cut-In-Two Systems

- The traditional cut-in-two system requires the creation of an empty lug upstream of the board determined, by a grade optimizer or grade station, to be a cut-in-two. Known as a skip-a-lug, this is achieved by briefly slowing all equipment between the lug loader and the skip-a-lug transfer (see below) and ramping back to full speed once the empty lug is created. The ‘cut-in-two determined’ board then proceeds through the trimmer, followed by the empty lug, to be cut-in-two. These two pieces, in the same lug, proceed out of the trimmer to have one set back into the newly created lug by the cut-in-two arms. Depending on the amount of cut-in-two, this method can dramatically reduce throughput due to slowing the line to create the empty lug.

![Traditional Cut-In-Two System Diagram]

Cut-In-Two Systems continued

- A similar approach, not requiring the skip-a-lug and cut-in-two skids, is an overhead carousel after the trimmer with a divider gate that sends one of the two boards into the carousel. Once a cut-in-two board is determined, the lug loader deals an empty lug at an appropriate time to allow the cut-in-two piece within the carousel to drop into that empty lug. Due to the creation of empty lugs this method can also dramatically reduce throughput.

![Cut-In-Two to a Carousel Diagram]
Cut-In-Two Systems continued

- An alternate and increasingly more popular approach is to separate the two pieces upon going through the trimmer, with a cut-in-two separation gate. This allows for one piece to carry on to the main sorter and the second to be directed down a decline through a bias or turn transfer to a second sorter. In addition, precision end trimming can be added to both lines, allowing for precision end trimming of each piece created. This is a good method for throughput as the system is not being slowed to create a cut-in-two but is more expensive.

Stackers & Lath Placers

- Current generation stackers have gone to fully electric, as opposed to hydraulic, due to environmental issues and limited hydraulic expertise. Pre-tier forming into duckers and, more recently, lug chains have allowed for higher stacking capacity. In addition, dual fork stackers offer high stacking capacity with the benefit of keeping the fork speed down.

- Most Lath placers today offer end tamping and therefore no longer require an end press.
Mill Tech Industries Products

- Tilt Hoists
- Unscramblers
- Lug Loaders
- Positioning Fences
- trimmers
- Cut-in-Two Systems
- Sorters – Pusher Lug, Drag Chain and J-Hook
- Stackers
- Lath Placers
- Stick Placers
- Dunnage Placers
- Paper Feeder / Cutter

A Few Of Our Recent Customers:

- Canfor
- Pan Pac Forest Products
- Gorman Brothers Lumber Ltd.
- International Forest Products Ltd.
- Weyerhaeuser Company
- West Fraser Mills Ltd.
- Tolko Industries Ltd.
- Wynndel Box & Lumber
- Hampton Lumber Mills Inc.
- Simpson Timber