Latest planer technologies

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What are the latest features in planer technology

- Pull through design.
- Modular design.
- Speeds in excess of 1200 meters per minutes.
- Scan & set capability.
- Positioning system.
- Electric drives.
- Cutterheads with Hydrogrip system on shafts and knives.
- Aggressive Pineapples that do not damage the fiber.
Greatest innovation in planer technology

*Pull Through Design*

Benefits of this breakthrough

- No more overlapping in planer that creates jams.
- Limited breakages in planer because there is no need to close gap.
- Less trim loss, every piece independent of its end shape, can be processed.
- Higher efficiency.
- No need to “butt up “ pieces in long Bridge, very small or no bridge required.
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Double balanced rolls

- Air bag design.
- Absorbs chocks created by running with a gap and prevents damages to air cylinder.
- Very smooth operation.
- Constant pressure on boards.
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Modular design

- Frame built for a lifetime, moving parts move on linear or dovetail.
- Can add modules to adapt to changing markets.
- Built with higher precision so speeds in excess of 1200 meters per minute can be achieved.
- Ease of adjustment, scan & set capability
Optimisation effect on planer / Scan & Set

FORINTEK an Eastern Canadian Research Lab as evaluated the optimization potential of planing operation, in order to quantify revenues corresponding to several planer improvement scenarios:

- Conventional Planing (no setworks)
- Conventional Planing (4-axis setworks)
- Planing with lumber turner (5-axis setworks)
- Optimized 4-side planing (optimized 5-axis setworks)
Conventional Planing

0.035 inches = approximately 1 mm
Conventional Planing with Setworks (4-axis system)

0.035 inches = approximately 1 mm
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Planing and Minimum Depth of Cut
(5-axis system/turned lumber)

0.035 inches = approximately 1 mm
Optimized 4-side planing (optimized 5-axis system)

0.035 inches = approximately 1 mm
Target Dimensions used for simulation

2x4 No.2
1.5” x 3.5”
Wane 66% x 50%

Wane Thickness
66%

(935mm) 3,685 Width (Rough Dry)

(965mm) 3,800 Sawn Width (Rough Green)

(990mm) 3,500 Dressed Width

Wane Width
20%

Wane Width
30%

(428mm) 1.697 Thickness (Rough Green)

(458mm) 1.696 Thickness (Rough Dry)

(500mm) 1.969 (500mmx1010mm)

(380mm) 1.500 (380mmx890mm)
Upgrade Progression (1.719")

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Upgrade Progression (1.687") (428mm)

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## Conclusions

The major simulation results are shown in the following table

<table>
<thead>
<tr>
<th>Planer improvement scenario</th>
<th>Revenue uplift</th>
<th>Relative gain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[$/Mfbm]</td>
<td>($m³)</td>
</tr>
<tr>
<td>Conventional planing (no setworks)</td>
<td>-</td>
<td>(-)</td>
</tr>
<tr>
<td>Conventional planing (4-axis setworks)</td>
<td>2</td>
<td>(0.85)</td>
</tr>
<tr>
<td>Planing with lumber turner (5-axis setworks)</td>
<td>5 to 7</td>
<td>(2.12 to 2.97)</td>
</tr>
<tr>
<td>Optimized 4-side planing (opt. 5-axis setworks)</td>
<td>8 to 10</td>
<td>(3.39 to 4.24)</td>
</tr>
</tbody>
</table>

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The study shows that significant gains are achieved simply by adding a 4-axis setworks to a conventional planer to improve adjustment accuracy.

The better adjustment of a conventional planer may allow for a reduction in the number of light skips leading to improved lumber quality, hence increased recovery of higher grades.

We estimated a .5% gain, corresponding to a revenue increase of 0.93$/m³.
Optimization of the planing process leads to significant value gains.

At the first optimization level, a conventional planer may be used as long as it is possible to turn the boards wany side up before planing a 5-axis setworks is installed.

With this system, the face planing process can be improved up to a point.

With wany faces on top and minimum depth of cut for the bottom head, the quality of some boards can be improved (1 to 2%) and some additional volume can even be recovered.

Value gains of 2.12 to 2.97 $/m³ are achievable depending on target thickness, as compared to conventional planing where all adjustment are performed manually by the operator.
At the second level, where depths of cut are optimized simultaneously on faces and edges, value gains can reach close to 4.24 $/m³ with a target thickness of 1.719” and 3.56$/m³ with 1.687, still by comparison with the base scenario.

Complete optimization of the planing operation requires purchasing a new machine that allows for all elements (cutterheads and bedplate) to be accurately adjusted on the run.

The benefits of optimized planing or improved adjustments with a control system are mostly realized through the production of high grades.

Gains from planer optimization are greater when target sizes are larger, however, it is more advantageous for the mill to minimize target sizes in order to increase recovery at the breakdown stage.
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Automatic Positioning System

- No need of "Superstar" to adjust and set planer
- Positioning system / ease of operation
- Quick return to production after wood jams
- Quick and easy changes of products,
- Always know the position of cutterheads and how much each is removing.
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Electric motorisation

- High efficiency, low operating cost
- 1 motors drives multiples rolls, less KW required
- No lead in planer, straight line bar, less force required, therefore less KW.
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Electric motorization
Hydrogrip on shaft and for knives

- Ease of maintenance
- Safer, no longer necessary to change knives on planer
- Extremely rapid change of Cutterhead for rapid return to production
- No gibs required, knife held with knife holder only.
- Very quick change of knives
- Extremely precise mounting of knives for limited jointing after installation
- Uses straight knives, no need for corrugated, cheaper and of better quality
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Pressure Rolls

- Lateral pressure rolls keeps wood against line bar.
- Eliminates skip, no rebound

- Pressure rolls between side heads, maintains ease edges to preventdowngrading of the wood
Pineapple technology

- Specially constructed in a spherical form so that it does not damage the fiber
- Lots of traction to accelerate from 0-1300 meter per minutes
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Infeed table and Powered Bridge
Slow down belt for new high speeds

- Fully adjustable by product and length to get perfect landing on deck.
- Overhead brushes to prevent boards being airborne too long.
The end

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