

WSO™ Production Planning Optimization Quick Overview

What is WSO™?

WSO™ is a production planning optimization system. WSO™ determines the mill's optimal production mix, and the machine center optimizer parameters (including prices and penalty costs) required to produce that mix.

How does WSO™ work?

WSO™ combines a SAWSIM® model of the mill with *linear programming* optimization, in a proprietary iterative technique. The iteration is required because sawmill operations are non-linear (for example, the volume of 2x4x12' does not change linearly with its optimizer decision value).

WSO™ determines the operating plan that maximizes "*the metric that matters*" ... profit. It does this considering:

- The log mix to be processed
- Current market prices
- Sales mix constraints; these may be general market constraints, or may be determined from current orders or longer-term program sales commitments. Products are considered separately by size, length, and grade (e.g., "premium" products separately from #2 or stud).
- Mill flow and bottlenecking machines

WSO™ can also determine the mill's optimal bucking policy, including control of in-woods cut-to-length bucking operations.

How do people use WSO™?

At most mills WSO™ is run weekly, to make the production plan for the following week. On Thursday afternoon or Friday morning, a run is made with current data:

- Updated prices from the sales department
- Any new product mix constraints
- Logs to be processed (either from a log scale database, or simply the logs run in the mill this week)

The WSO™ run results are provided to management in the form of a KPI report. It becomes *the plan* to which everyone is working the following week: upper management knows the plan, sales knows the production mix to expect and hence how they should target their sales, the mill knows their production target (production rate, product mix, and recovery/overrun).

Late Friday or early Monday, mill personnel enter the new optimizer parameters in the optimizers.

Benefits?

WSO™ maximizes profit by resolving the trade-offs between recovery (overrun), production rate, and average selling price.

- Sales average is increased by producing a high-value mix that satisfies market constraints. This also reduces lumber inventory (and the sales average hit from price cuts to clear inventory).
- Production rate is increased by determining the production mix - and how to make it - that uses the mill bottleneck machines in the most efficient way.
- Recovery is increased, primarily by eliminating the need to "do crazy things" to satisfy orders, rebalance inventory, etc.

Thus far, every company that has implemented WSO™ at one mill has gone on to place orders for additional systems at 2nd, 3rd, and 4th sites.