



IX[®] Case Study

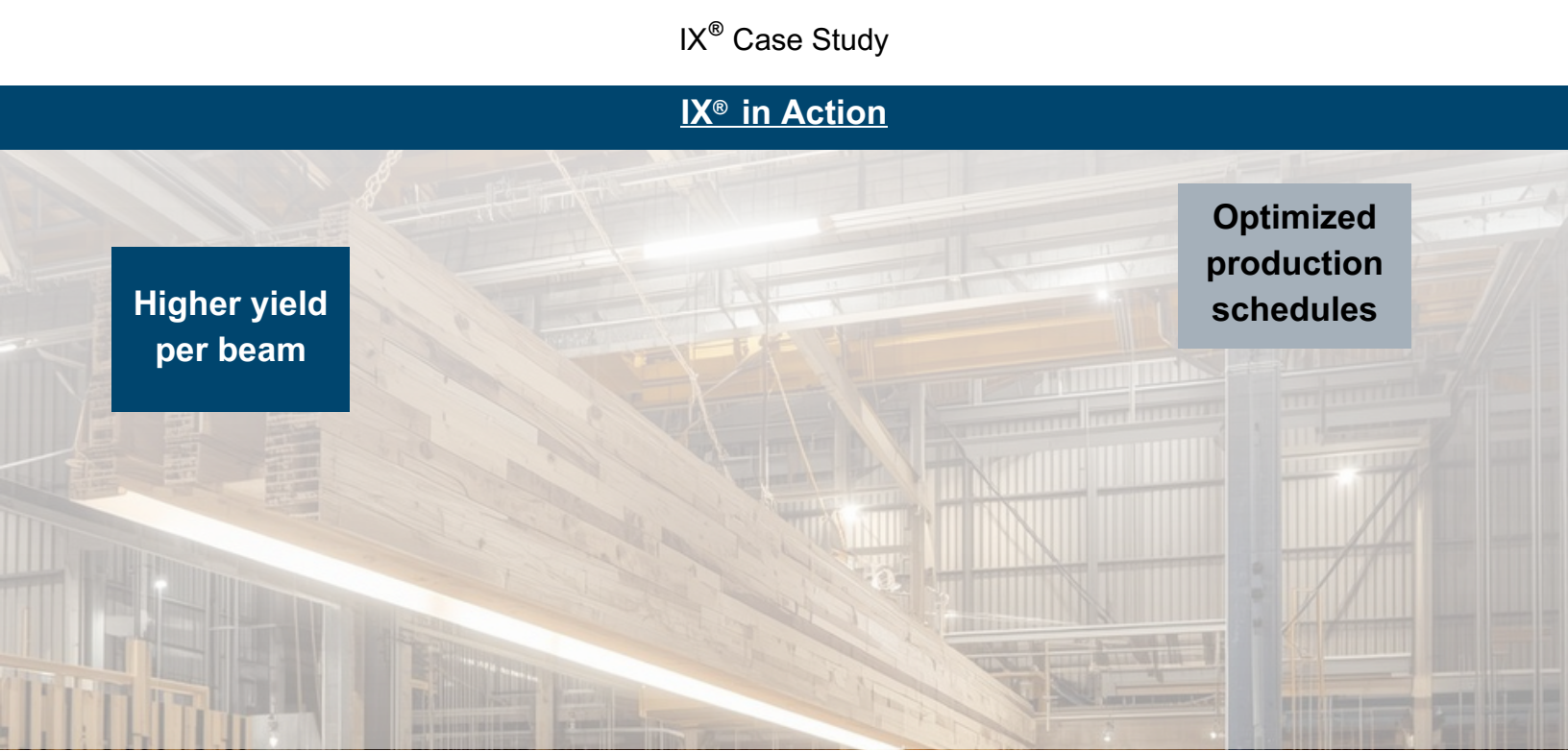
AI-Powered Production Planning: Turning Complexity into Competitive Margin



VOOBAN



**IMPLEMENTATION
ENGINEERS[®]**
BEYOND CONSULTING



Higher yield
per beam

Optimized
production
schedules

A leading North American producer of high-performance engineered wood products — glulam beams, cross-laminated timber (CLT), and architectural panels — serves the most demanding commercial, institutional, and infrastructure projects on the continent. Operating one of the largest and most sophisticated wood-manufacturing campuses in the industry, the company converts millions of board-feet of raw timber annually into structural components that must meet exacting strength, aesthetic, and sustainability standards.

The Challenge

Explosive volume growth and proliferating product mix had broken the legacy manual planning process. Experienced planners using spreadsheets and tribal knowledge could no longer keep pace, resulting in:

- High raw-material waste from sub-optimal cutting patterns
- Frequent schedule changes and missed delivery dates
- Under-utilized machines and unpredictable inventory
- Margin erosion in an industry where every percentage point of yield matters

Our client needed a system that could replace — not assist — manual planning with repeatable, real-time optimization.

The Solution: Plant-Wide AI Optimization Platform Running Full Production

Implementation Engineers and Vooban jointly designed and deployed a fully automated, AI-driven production planning and optimization platform that now runs plant-wide and directly controls every stage of shop-floor execution—from raw-material nesting to final packaging.

Core Capabilities

- Combinatorial optimization engine that schedules every production stage (sawing → treatment → machining → assembly → packaging)
- AI beam and panel nesting algorithms that maximize yield from each raw log and board
- Real-time re-optimization triggered by new orders, material arrivals, or equipment status
- Single source of truth dashboard replacing dozens of spreadsheets
- All constraints modeled for thousands of variables (machine capabilities, crew skills, order priority, drying times, etc.)

Results

The AI-driven planning system produced operational improvements that extended well beyond scheduling:

Waste Reduction Through Precision Cutting

- Optimized cut plans significantly reduced raw material loss and maximized yield.

Improved Delivery Reliability

- Lead times became predictable, improving customer confidence and on-time delivery performance.

Higher Throughput Without New Equipment

- Production output increased by optimizing existing capacity — not by adding assets.

Reduced Planning Dependency on Individuals

- Critical knowledge was embedded into systems, reducing operational risk tied to individual planners.

Improved Inventory Flow

- Raw materials and finished goods moved more predictably through the system, reducing chaos and working capital pressure.

Scalable Growth Platform

- Management gained a decision platform capable of supporting future expansion and product diversification.

This Solution Wins Wherever...

- Material yield is the biggest margin lever
- Product mix and customer orders change daily
- Manual scheduling has become the ceiling on growth
- Waste is treated as “normal”
- You want to grow volume without growing headcount or chaos

Let's Turn Your Vision Into Results

Implementation Engineers and Vooban deliver together — turning strategy into operational reality through AI-enabled execution.

Our proven **Align-Design-Execute** framework ensures your strategy doesn't stall at planning. From aligning leadership around priorities, to designing AI-driven operating models, to executing change inside your operations, we work side-by-side to deliver results that scale.

Ready to Get Started?

Let's explore how we deliver together. Contact us today to schedule a conversation. Together, we'll chart the path from vision to execution.

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