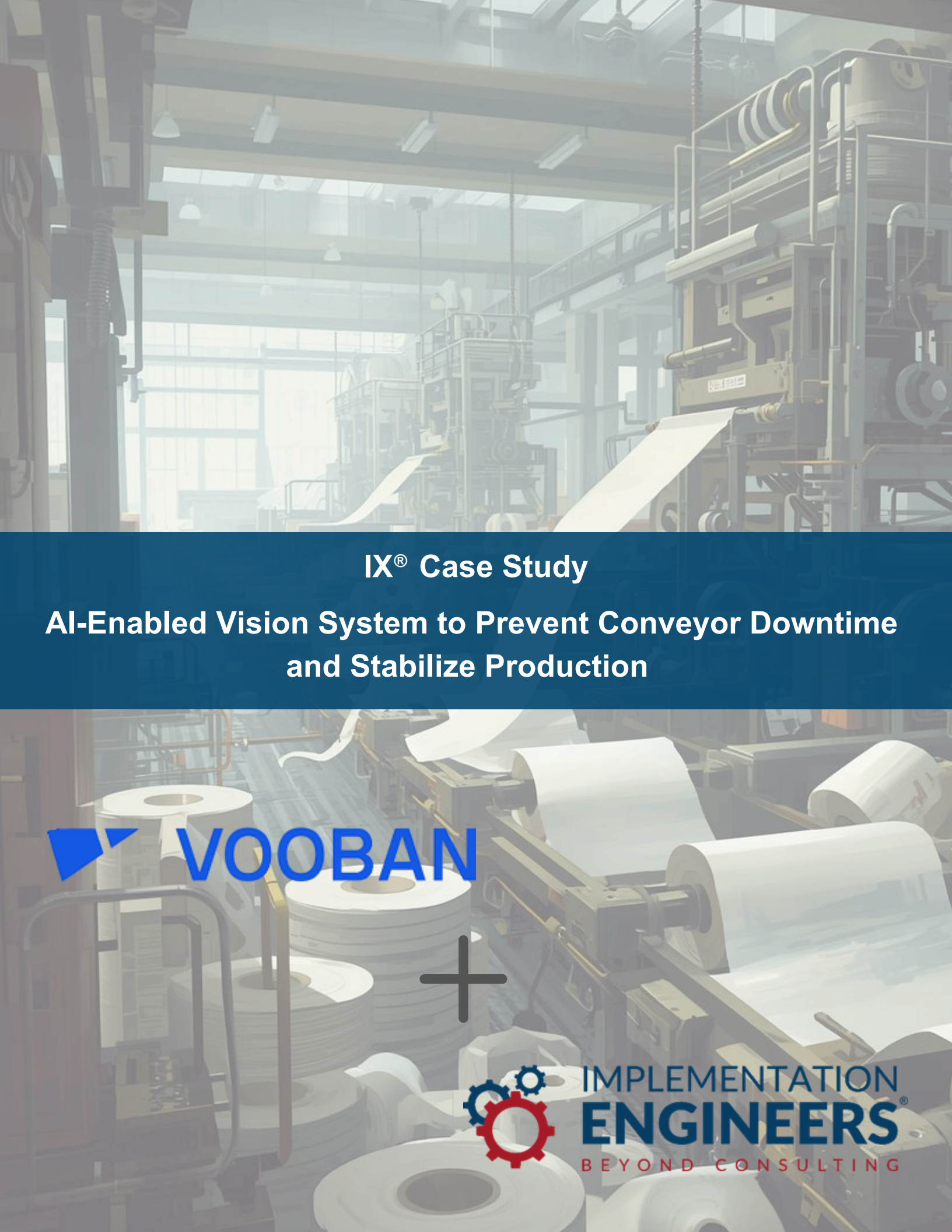


The background of the entire slide is a photograph of a paper mill. In the upper half, a conveyor belt system is visible, with long sheets of paper being processed by machinery. The lower half shows large rolls of paper stacked and being processed by machines. The lighting is industrial, with overhead lights and large windows in the background.

IX[®] Case Study

AI-Enabled Vision System to Prevent Conveyor Downtime and Stabilize Production

 **VOOBAN**



**IMPLEMENTATION
ENGINEERS[®]**
BEYOND CONSULTING

**\$30K+****Capital Avoided per Line (No
Traditional Vision System)****< 5 Seconds****Detection-to-Alert Response****30–60%****Reduction in Unplanned
Conveyor Stops**

Preventing Line Shutdowns Before They Happen

The client is a leading North American pulp and paper manufacturer producing packaging, cardboard, and specialty products across high-volume production lines.

Finished goods are transported continuously along extended conveyor systems throughout the facility. Because many sections are elevated or difficult to access, even small disruptions can quickly escalate into production losses.

While parts of the factory were automated, production planning and sequencing remained manual.

During daily operations, cases would occasionally:

- Fall from conveyors
- Become skewed or misaligned
- Rotate sideways or upside down
- Jam transfer points

When not detected immediately, these events forced **unplanned line stoppages**, resulting in:

- Lost throughput
- Manual intervention
- Labor inefficiencies
- Avoidable downtime costs

The plant had previously installed height sensors to detect fallen cases. However, these sensors could not identify angled or improperly positioned boxes, leaving many issues undetected and requiring operators to manually monitor camera feeds.

Leadership engaged Implementation Engineers and Vooban to move from reactive monitoring to a **real-time, AI-enabled detection system** capable of identifying anomalies before they impacted production.

AI Implementation

The joint team embedded computer vision and AI directly into the operating environment — leveraging existing infrastructure rather than installing costly new equipment.

Vision-Based Anomaly Detection

- AI models continuously analyze live video feeds to detect fallen, skewed, or misaligned cases.

Existing Infrastructure Leverage

- Connected directly to current surveillance cameras, eliminating the need for specialized hardware investments.

Real-Time Alerting

- Operators receive immediate notifications when anomalies occur, enabling rapid intervention before jams develop.

Edge Processing

- Local processing ensures fast response without network latency.

Operational Workflow Integration

- Standard response procedures were embedded into daily work practices to ensure consistent adoption and sustained results.

Scalable Architecture

- The solution can be replicated across additional lines and facilities with minimal incremental cost.

Results

The AI deployment delivered measurable operational and economic impact:

Reduced Unplanned Downtime: Issues are detected and corrected before forcing line shutdowns.

Faster Operator Response: Real-time alerts eliminate manual camera monitoring.

Lower Capital Spend: No need for traditional \$30K+ vision systems or specialized equipment.

Improved Throughput Stability: Conveyors operate with fewer disruptions and smoother material flow.

Increased Labor Productivity: Operators focus on higher-value activities rather than surveillance tasks.

Rapid Deployment: The system was implemented quickly using infrastructure already in place.

This Applies Anywhere That...

- Conveyors or material handling drive production
- Small disruptions create large downtime costs
- Operators manually watch camera feeds
- Legacy sensors miss real-world variability
- Vision systems seem too expensive
- Reliability improvements directly impact EBITDA

Let's Turn Your Vision Into Results

At Implementation Engineers, we don't just execute projects - we transform your vision into operational reality. Our proven 3-phase approach - **Align, Design, Execute** - delivers lasting value, from aligning your team on strategic goals to optimizing operations and driving measurable outcomes. Whether you're aiming to lead your market, boost efficiency, or maximize shareholder value, we're here to make it happen, step-by-step, side-by-side.

Ready to Get Started?

Let's explore how we can bring your vision to life. Contact us today to schedule a conversation. Together, we'll chart the path to your success.

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