



TOYOTA BOSHOKU CASE STUDY

Accelerating Just-in-Time Manufacturing: Achieving **+30%** Speed and Zero Errors

Transforming assembly line feeding
with VEGA-X smart wearables and
full digital traceability.





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Introduction: The Criticality of JIT Manufacturing

Company: Toyota Boshoku (A Toyota Group Company)

Scale: Top 300 Industrial Enterprise in Turkey; critical European production hub.

Output: Premium automotive components (seating, door panels, front consoles).

In automotive manufacturing, Just-in-Time (JIT) delivery is non-negotiable. Continuous assembly line operation relies entirely on extracting exact parts from the logistics warehouse and feeding them to the line with absolute precision. Any friction in this material flow threatens severe line stoppages.

Hidden Costs of Operational Inefficiency

Drag Factor

1. Speed Degradation

Clunky handheld devices and manual scanning protocols created severe bottlenecks, slowing down crucial time-sensitive picking operations.

Drag Factor

2. Quality Risk

Human error in manual visual checks carried the constant risk of incorrect parts reaching the assembly line, threatening secondary quality control failures and production halts.

Drag Factor

3. Workforce Strain

Heavy, non-ergonomic hand scanners restricted operator mobility, increasing physical fatigue and reducing overall operational agility.

From Manual Operations to Intelligent Automation



Action	Legacy Process	Intelligent Operation (VEGA-X)
Instruction	Paper lists & handheld screens	Real-time digital instruction on the wrist.
Mobility	One hand occupied by heavy scanner	100% hands-free agility.
Validation	Secondary human visual check	Built-in Poka-Yoke: Haptic, acoustic, and optical alerts block incorrect scans instantly.
System Sync	Batch updates or delayed entry	Seamless Wi-Fi integration with existing production software for real-time data loops.

Flawless Assembly Line Feeding

Velocity (+30%)

Product picking times improved by over 30%, yielding a saving of approximately 4 seconds per transaction.

Precision (Zero Errors)

Poka-Yoke achieved. Instant multi-sensory feedback entirely eliminated incorrect part picking, safeguarding the assembly line without secondary checks.

Traceability (100% Digital)

Every material movement is logged in real-time from source to line, providing management with instant visibility and bottleneck detection.

Workforce (Optimized OHS)

Elimination of heavy scanners maximized worker comfort, reduced physical strain, and granted total operational freedom.

A Strategic Step Towards Smart Industry



End-to-End Excellence

By synchronizing physical logistics with real-time digital oversight, Toyota Boshoku transformed a logistical vulnerability into a massive competitive advantage.



Industry 4.0 Alignment

The elimination of paper and manual hardware perfectly aligns with smart-factory principles, ensuring maximum agility in a demanding market.



A Scalable Foundation

The flawless integration with existing systems and immediate ROI establishes a robust blueprint for sustainable growth and continued operational leadership.

