



Transforming Line-Side Logistics: From Bottlenecks to Seamless Flow

How Arçelik achieved 100% accuracy and massive efficiency gains with wearable intelligent automation.



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01 | INTRODUCTION

The Criticality of Line-Side Replenishment

As a **global leader** in durable consumer goods, Arçelik's high-paced manufacturing lines demand flawless **continuity**.

The **lifeblood** of this assembly process is **line-side logistics**—the continuous, rapid delivery of precise components to the production floor.

Any **disruption, delay**, or error in internal material flow instantly **threatens overall throughput, quality standards, and production uptime**.

02 | HIDDEN COSTS OF OPERATIONAL INEFFICIENCY

The Systemic Friction of Legacy Handheld Scanners



Micro-Delays Compounding

The repetitive “pick up, aim, scan, put down” sequence adds wasted seconds to every transaction, silently throttling overall throughput.



The Cascade of Inaccuracy

A 1% mispick rate creates a disastrous ripple effect. Delivering the wrong component forces line stoppages, demands costly rework, and creates severe quality defect risks.

1.5 Tons

The Invisible Ergonomic Toll

The cumulative weight lifted by a worker repeatedly picking up a traditional 18oz scanner over a single shift. This drives fatigue, slows processing speed, and elevates Occupational Health and Safety (OHS) liabilities.

02 | DIAGNOSTIC MATRIX

Legacy Paradigm vs. Intelligent Future State

	Handheld Terminals	VEGA-X Intelligent Automation
Workflow Dynamics	Interrupted & Fragmented (Device management required)	Continuous & Seamless (Hands-free part handling)
Error Handling	Reactive (Errors detected post-delivery at assembly line)	Proactive Poka-Yoke (Instant multi-sensory alert blocks error at the source)
Ergonomic Impact	High Physical Strain (Repetitive heavy lifting and awkward postures)	Weightless Operation (Ergonomic, natural movements)
System Interoperability	Siloed Data Capture	Synchronized (Real-time voice and WMS integration)

03 | FROM MANUAL OPERATIONS TO INTELLIGENT AUTOMATION

Engineering Flawless Execution at the Edge



Hands-Free Architecture

Eliminates dead time. Workers bypass device management entirely, utilizing both hands to handle parts with maximum agility.

Proactive Poka-Yoke Error Shielding

Built-in multimodal feedback (haptic vibration, acoustic alerts, optical LEDs) validates scans instantly, achieving a zero-misdelivery standard.

Seamless Interoperability

Communicates silently via Wi-Fi/Bluetooth with Arçelik's existing WMS and Voice-directed systems, guaranteeing live traceability without infrastructure overhauls.



04 | QUANTIFIABLE RESULTS & GAINS

Rapid Deployment, Immediate Enterprise ROI

Operational Velocity

4-5 Sec

Saved per individual scan transaction, eliminating micro-delays and driving a double-digit percentage increase in overall line-feeding efficiency.

Flawless Logistics

100%

Accuracy target achieved. Instant Poka-Yoke validation effectively neutralizes incorrect part deliveries, protecting assembly uptime.

Unprecedented Agility

2 Weeks

Total time to fully deploy 100 VEGA-X units and onboard the workforce into active production environments.

Financial Impact

4-6 Mo.

Projected Return on Investment milestone, driven entirely by recaptured labor hours, increased throughput, and eliminated rework costs.

04 | EMPOWERING THE WORKFORCE

Transforming Ergonomics into an Operational Advantage



**1.5 Tons
Shift Load**

**Weightless
Operation**

Replacing heavy 18-ounce handheld scanners with lightweight wearable technology fundamentally altered the physical demands of line-side logistics.

The 1.5-Ton Elimination

By removing the necessity to lift a device thousands of times per shift, Arçelik eliminated up to 1.5 tons of cumulative lifting per worker.

Sustained Output

Eradicating this physical strain dramatically reduces worker fatigue, elevates Occupational Health and Safety (OHS) standards, and ensures high-speed productivity remains consistent from the first hour of the shift to the last.



05 | STRATEGIC VISION FOR THE FUTURE

Advancing Industry 4.0 Resilience

By neutralizing line-side bottlenecks with wearable Industrial IoT, Arçelik has transformed internal logistics into a hyper-agile, fail-safe operation.

The deployment of VEGA-X secures production uptime and systematically drives failure costs toward zero.

With this foundation of hands-free precision and real-time data synchronization, Arçelik establishes a highly scalable supply chain infrastructure—securing a distinct competitive edge in the global durable goods market.

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