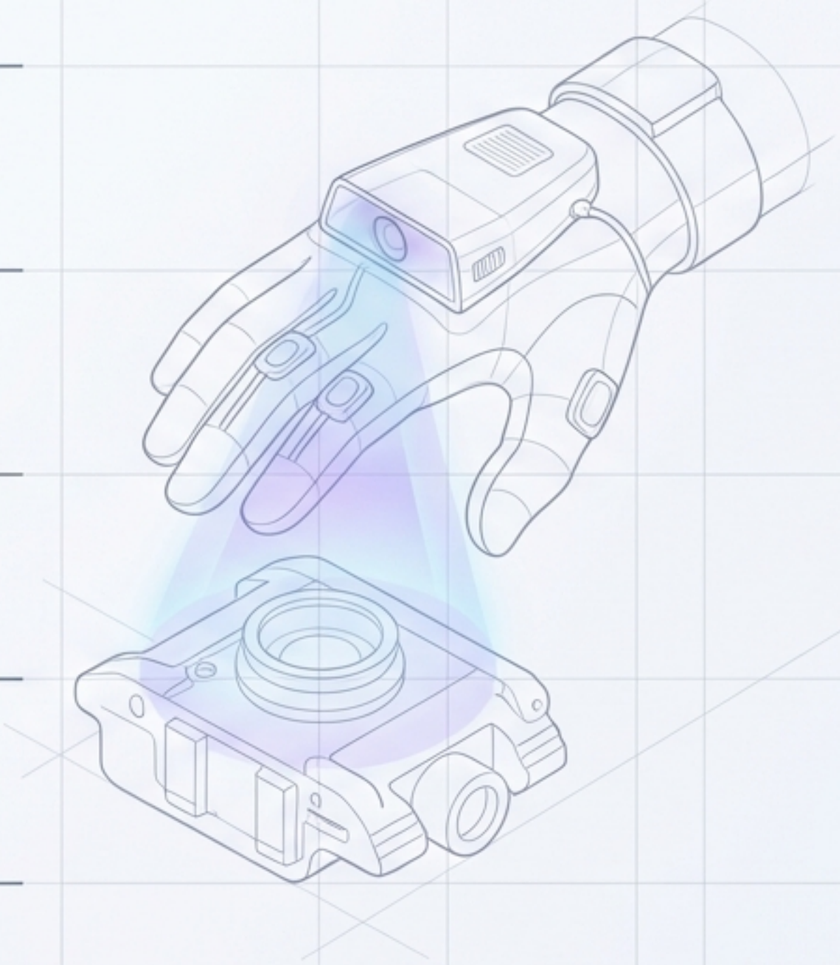
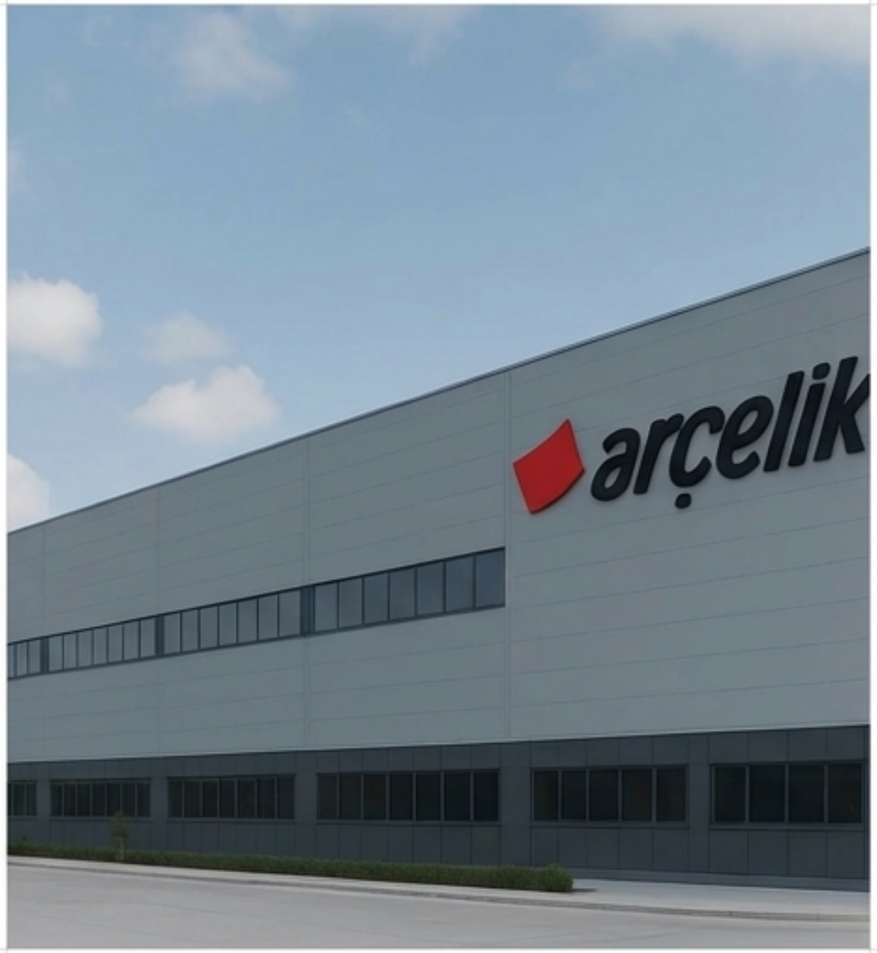

arçelik
ARÇELİK CASE STUDY
REVOLUTIONIZING ASSEMBLY LINE ERGONOMICS AND THROUGHPUT
A Strategic Transition to Hands-Free Traceability and Intelligent Automation
THREAD IN MOTION



01 INTRODUCTION

ARÇELIK SUCCESS STORY



THE CONTEXT

Arçelik, a global pioneer in durable consumer goods, operates high-speed manufacturing lines. In this environment, ensuring precise part traceability across complex product assemblies—such as washing machines and refrigerators—is a non-negotiable requirement for quality control.

THE IMPERATIVE

Sustaining production velocity while executing mandatory barcode verifications at every station required a paradigm shift.
The objective: achieve seamless, 100% traceability without compromising Takt Time or operator well-being.

02 THE HIDDEN COSTS OF OPERATIONAL INEFFICIENCY

BEYOND THE SCANNER: THE COMPOUNDING FRICTION OF LEGACY SYSTEMS

Traditional handheld scanners introduced a repetitive pick-up, put-down, verify cycle. Across hundreds of cycles per shift, these micro-delays compounded into severe macro-level inefficiencies.

OPERATIONAL DRAG (TIME)

The manual handling of scanners added up to 4 seconds of non-value-added time per scan, creating artificial bottlenecks at critical assembly stations.

ERGONOMIC STRAIN (WORKFORCE)

Repeatedly lifting cumbersome handheld devices forced operators to absorb the physical equivalent of lifting 1.5 metric tons per shift, accelerating fatigue and safety risks.

QUALITY VULNERABILITY (ERROR RISK)

Forcing operators to shift their visual focus from the assembly task to a secondary verification screen introduced a critical vulnerability for human error and missed defect signals.

03 FROM MANUAL OPERATIONS TO INTELLIGENT AUTOMATION

DEPLOYING VEGA: WEARABLE TECHNOLOGY AS A WORKFLOW CATALYST

Hands-Free Architecture

TIM deployed the VEGA wearable scanning ecosystem, transforming data capture from a disruptive task into a fluid, hands-free gesture. Operators scan components instantly without relinquishing physical control of the assembly parts.

Frictionless Integration

Deployed comprehensively across key stations in just two weeks with zero production downtime. The VEGA onboard OS interfaced directly with Arçelik's existing Manufacturing Execution System (MES)—requiring no middleware, complex calibration, or wired infrastructure.

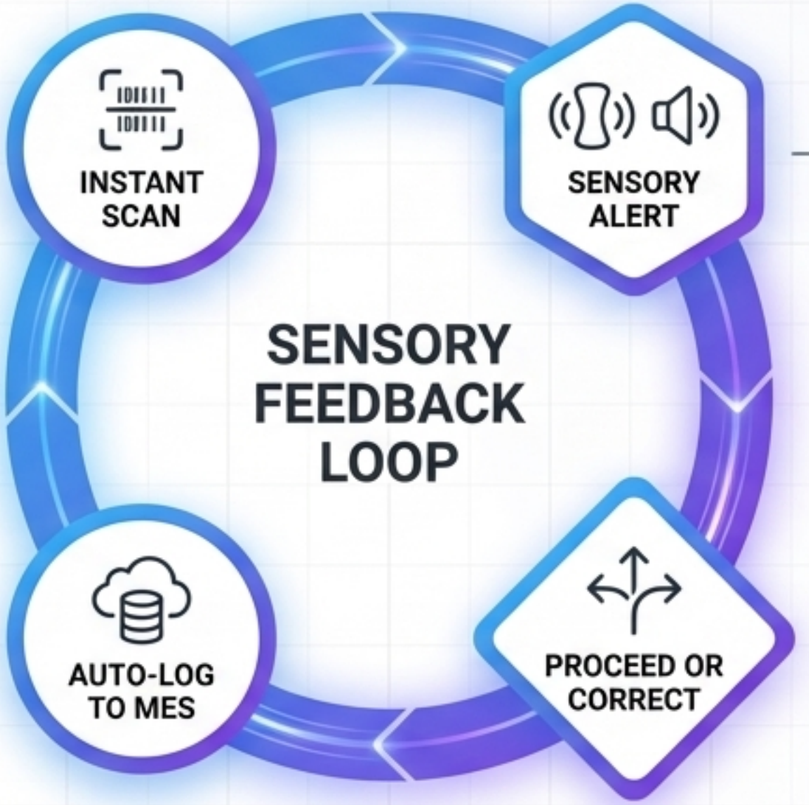
04 FLAWLESS ASSEMBLY & REAL-TIME QUALITY CONTROL

EMBEDDED POKA-YOKE: ELIMINATING THE VERIFICATION LAG

The VEGA ecosystem replaced external screen-checking with an intuitive, on-body sensory feedback loop, virtually eliminating human error at the source.

MULTI-SENSORY ALERTS

Integrated haptic (vibration), acoustic, and optical feedback instantly validates correct part selection or immediately flags an anomaly.



COGNITIVE RELIEF

Operators are freed from constant screen monitoring, allowing 100% visual focus on the physical assembly process, bolstering both speed and confidence.

AUTOMATED TRACEABILITY

Every successful interaction is automatically logged into the MES, ensuring airtight, real-time component-to-product traceability without manual data entry.

05 QUANTIFIABLE RESULTS & OPERATIONAL GAINS

MEASURING THE IMPACT: SPEED, ACCURACY, AND WELL-BEING

THROUGHPUT

75% REDUCTION

In scan cycle time, saving 3–4 seconds per transaction and yielding approximately 2 hours of recovered production time per day across pilot stations.

QUALITY CONTROL

100% ACCURACY

Near-zero assembly errors achieved. Real-time feedback completely eradicated the installation of incorrect components.

ERGONOMIC RELIEF

1.5 TONS ELIMINATED

Of cumulative lifting weight removed per operator per shift, drastically reducing physical strain and OHS risks.

TIME-TO-VALUE

14 DAYS TO DEPLOY

Rapid, plug-and-play MES integration achieved without interrupting high-speed manufacturing operations.

06 STRATEGIC IMPACT & VISION FOR THE FUTURE

A DECISIVE STEP TOWARDS INDUSTRY 4.0 MATURITY

By transitioning from manual to wearable automated scanning, Arçelik optimized one of the most critical micro-interactions on the assembly line. The deployment of TIM's VEGA technology proved that productivity gains and operator well-being are not mutually exclusive—they are complementary drivers of operational excellence.

This successful digital transformation establishes a highly scalable, human-centric blueprint. With a robust, frictionless infrastructure now embedded in the workflow, Arçelik is strategically positioned to expand intelligent automation across its global manufacturing footprint, setting new benchmarks for smart factory operations.

THREAD IN MOTION

GET IN TOUCH WITH US

Website

www.threadinmotion.com

Phone

+44 20 4587 4397

E-mail

info@threadinmotion.com

HQ address

7 Henrietta Street,
WC2E 8PS, London,
United Kingdom