



Transforming HVAC Manufacturing: Enhancing Takt Time and Ergonomics with Wearable Technology

A Daikin Success Story

THREAD IN MOTION

How the world leader in HVAC eliminated an assembly bottleneck, achieving near-zero defect traceability and a **30-50% productivity boost** in a single-day deployment.

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01 Introduction | The Context of Climate Leadership

Daikin is the global leader in heating, ventilation, and air conditioning (HVAC). To maintain this position, serial production lines must operate with absolute precision and uninterrupted momentum.

Key Insight: Every air conditioning unit contains numerous sub-components that require strict traceability during installation. Unbroken tracking through barcode verification is essential to guarantee the industry-leading quality Daikin is known for.



02 The Hidden Costs of Operational Inefficiency

The conventional pick up, scan, put down cycle acted as a systemic bottleneck, dragging down target Takt Times and exposing the line to critical traceability gaps.

	Legacy Process (Handhelds)	Target State (Wearables)
Workflow Fluidity	<ul style="list-style-type: none">• Stop-and-go operation (Requires two hands)	<ul style="list-style-type: none">▶ Continuous fluid motion (Hands-free)
Physical Load	<ul style="list-style-type: none">• High repetitive strain / fatigue	<ul style="list-style-type: none">▶ Ergonomic & weightless
Error Feedback	<ul style="list-style-type: none">• Unidimensional (Small visual red light only)	<ul style="list-style-type: none">▶ Multi-sensory cognitive prevention
Time Waste	<ul style="list-style-type: none">• Wasted seconds per cycle (up to 4M seconds daily industry-wide)	<ul style="list-style-type: none">▶ Zero friction

03 From Manual Operations to Intelligent Automation

The VEGA Smart Wearable Scanner

Plug-and-Play Architecture

Zero complex IT integration required.
Compatible with standard ERP/WMS
or standalone deployment.



Rapid Deployment

Fully operational across a 50+
worker pilot in approximately 1 day.

Intelligent Automation

Bypasses manual terminal data
entry, pushing scans directly to
the central system in real time.

04 Seamless Workflows: The Power of Hands-Free Assembly



Uninterrupted Momentum

Operators scan parts with a simple, fluid motion while keeping both hands completely free for assembly work.



Ergonomic Supremacy

Eliminating the repetitive juggling of a heavy scanner device significantly reduces physical strain and fatigue on the line.



Takt Time Optimization

Collapsing part-handling and scanning into a single, seamless action accelerates the overall cycle time of the production line.



05 Multi-Sensory Quality Assurance

Shifting the burden of quality control from the worker's active attention to the system's automated feedback. If an incorrect component is matched to a unit, the operator is warned instantly.



Business Outcome: Mistakes are caught and corrected on the spot, preventing assembly errors from propagating down the line.

06 Measurable Impact: Speed, Quality, and Ergonomics

4 Seconds

Throughput

Saved per scan on average. In high-volume manufacturing, this scales to an estimated 30-50% overall productivity boost.

Near-Zero

Quality

Defect traceability. Industry benchmarks show a ~33% reduction in error rates through smart wearable feedback.

100%

Human Capital

Worker mobility. Total hands-free operation vastly improves occupational health and safety (OHS) by reducing physical load.

~1 Day

Agility

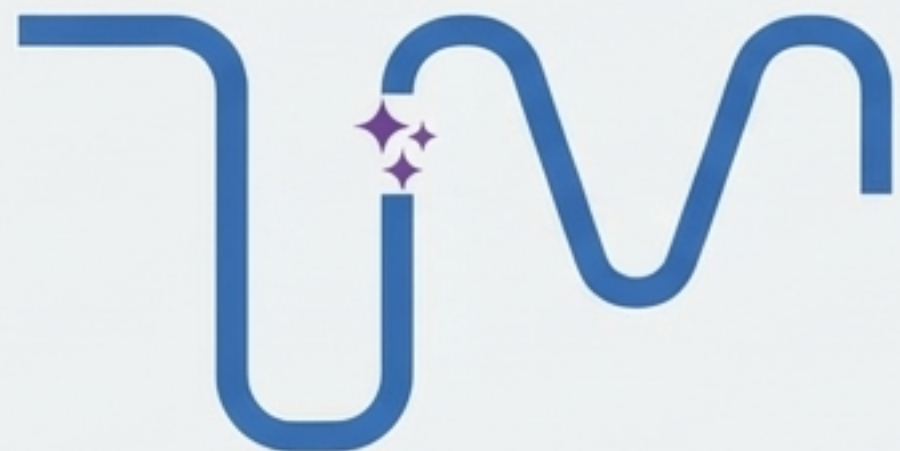
Deployment speed for over 50 operators, deployed without pausing production for lengthy IT integration.

07 A Strategic Step Towards Industry 4.0

By replacing legacy handhelds with the VEGA intelligent wearable platform, Daikin did more than eliminate a localized workflow bottleneck. They elevated accuracy, agility, and accountability across the entire assembly floor.

This plug-and-play transformation represents a foundational shift toward smart, connected factories—equipping Daikin’s human workforce with the precise digital augmentation needed to maintain their global standard of excellence.





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