



Mercedes-Benz

SUCCESS STORY

Transforming Automotive Seat Manufacturing with Intelligent Traceability

How Mercedes-Benz achieved 100% end-to-end visibility and zero-defect assembly using wearable technology and AI-driven workflows.

2025

THREAD IN MOTION



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01 | INTRODUCTION

The Complexity of Custom Seat Manufacturing

Mercedes-Benz stands as a global leader in premium commercial vehicle production. Unique to their operational model, the company fabricates highly customized bus seating systems entirely in-house across dedicated textile and manufacturing workshops.

The Scale of Variability

Modern commercial buses house up to 50 individual seats per vehicle. Each order demands highly specific configurations—ranging from VIP styling and customized color fabrics to specialized structural equipment.

The Precision Mandate

Managing this immense variability requires extraordinary precision. Guaranteeing that the right component reaches the right production stage, and ultimately the correct vehicle position, is critical to maintaining the brand's uncompromising standard of quality.

The Cascading Impact of Operational Blind Spots

Prior to digital intervention, the seat manufacturing lifecycle relied on fragmented, manual tracking. This lack of a unified digital thread created vulnerabilities across three critical phases:



Production Blind Spots

The Issue: Relying on manual tracking for thousands of unique, customized components.

The Impact: Hindered proactive supply chain management, making it impossible to maintain live visibility into the exact production stage of specific seat variants.



Assembly Vulnerabilities

The Issue: Validating complex, 50-seat configurations manually on the final assembly line.

The Impact: Elevated risk of human error—such as mistakenly installing a highly customized 'Seat 13A' into the incorrect vehicle position, leading to costly rework.



Post-Sale Friction

The Issue: No central, accessible history for individual seats once a vehicle was delivered.

The Impact: Diagnosing post-delivery defects required extensive manual investigation. Resolving component-specific issues often triggered generalized replacements rather than targeted fixes.

Establishing the 'Digital Twin' via TIM FLOW

To eliminate operational blind spots, Mercedes-Benz deployed TIM FLOW, an intelligent traceability platform tailored for highly variable manufacturing environments.



Hands-Free Precision with VEGA-X Wearables

To capture production data flawlessly without impeding worker agility, Mercedes-Benz replaced cumbersome handheld terminals with VEGA-X Industrial IoT smart gloves.



● Hands-Free Agility

Ergonomic, lightweight design eliminates physical strain and terminal-juggling, allowing assembly workers to utilize both hands for complex, heavy fabrication tasks.

● Error-Proof Assembly (Haptic Feedback)

Provides instant visual and haptic verification. If an operator attempts to match the wrong custom seat to a vehicle position, the glove vibrates instantly —preventing the error before installation.

● Accelerated Throughput

Integrated Wi-Fi automatically syncs every scan with TIM FLOW in real time, drastically reducing scan times and seamlessly matching the speed of agile Kanban workflows.



Driving Operational Excellence and Hard ROI

The integration of TIM FLOW and VEGA-X fundamentally transformed Mercedes-Benz's seat manufacturing operations, driving immediate financial and operational returns.

100%

End-to-End Traceability

Complete, unbroken visibility from the initial fabric cutting in the textile shop to the final installed vehicle.

ZERO

Assembly Errors

Achieved flawless seat-to-vehicle matching, entirely eliminating mixed-up configurations and costly rework.

\$1.7M

Estimated Cost Savings

Significant financial recovery driven by automated process optimization, error prevention, and streamlined quality control.

50%

Scan Time Reduction

Hands-free wearable technology drastically accelerated task completion while improving worker ergonomics and safety.



06 | VISION FOR THE FUTURE

Elevating After-Sales & Customer Experience

Lifelong Post-Sale Traceability

The impact of this transformation extends far beyond the factory floor. Because each seat houses a permanent, embedded RFID identifier, Mercedes-Benz has fundamentally revolutionized its after-sales service architecture. Every seat's origins and build details are permanently stored and instantly accessible via a simple scan.

Precision Maintenance & Rapid Resolution

If a customer reports an issue years after delivery, service teams bypass generalized investigations. Using TIM FLOW, they instantly retrieve the seat's exact production history, component specifications, and material batch. This enables the targeted production and replacement of specific micro-components rather than initiating costly, large-scale recalls—setting a new benchmark for smart automotive maintenance.

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