

One Wrong AI Answer = \$100K+ Per Hour of Down- time

How structural decomposition eliminates AI hallucinations in manufacturing — with real incidents, real costs, and a proven architectural solution.

AI in Manufacturing Market: \$34.18B (2025) ' \$155.04B by 2030 (CAGR 35.3%)

THE PROBLEM

Why General-Purpose LLMs Fail in Manufacturing

REAL INCIDENTS

Kroger booked \$2.6B impairment after AI-driven automated fulfillment centers missed volume forecasts catastrophically. Amazon abandoned its Blue Jay robot pilot within months due to AI integration failures.

\$2.6B

\$2.6B Kroger impairment from AI forecast failures

\$100K+ cost per hour of unplanned downtime

KEY PAIN POINTS

AI generating incorrect fault codes leads to wrong repairs and extended downtime

Predictive maintenance false positives waste technician hours and delay real fixes

Safety-critical systems require zero tolerance for hallucinated repair procedures

A single cascading quality failure from a wrong AI recommendation can shut down an entire line

THE SOLUTION

Structural Decomposition: Specialists Beat Generalists

Manufacturing queries span equipment diagnostics, repair procedures, parts identification, safety protocols, and quality specifications — each requiring different source documentation that varies by equipment make, model, and vintage.

dhisolve routes fault code queries to models trained on your specific equipment manuals. Safety procedure lookups are verified against official SOPs before display. Parts queries connect to your actual inventory system.

Each model is independently validated against its source documentation, so a diagnostic model can't hallucinate a repair step that isn't in the manual, and a parts model can't recommend a component that doesn't exist in inventory.

COST COMPARISON

DHISOLVE

\$0.10–\$0.50

per 1M tokens

BIG LLMS

\$10–\$60

per 1M tokens

OUTCOMES

Measurable Results

Zero hallucinated repair procedures — every step verified against official manuals

10×faster SOP lookup than manual search through paper documentation

90%lower AI inference costs than general-purpose LLMs

Independently auditable models for ISO 9001/OSHA compliance

ROI CASE

Reducing unplanned downtime by 10% saves \$200K–1M+ per year per facility in heavy manufacturing. Eliminating hallucinated repair procedures prevents cascading quality failures that can cost millions. Faster SOP lookup reduces mean time to repair (MTTR) by 50%+.

With dhisolve:

- Every repair procedure verified against actual equipment manuals
- Parts recommendations verified against real inventory
- MTTR reduction: 50%+ through instant, accurate SOP access
- AI cost: 90% less than general-purpose LLMs

REGULATORY COMPLIANCE

Built for Compliance, Not Bolted On

ISO 9001 quality management — documented procedures and audit trails

OSHA safety standards — accurate safety procedures are legally required

IATF 16949 (automotive) / AS9100 (aerospace) — industry-specific certifications

Equipment-specific compliance requirements vary by manufacturer

ACADEMIC & INDUSTRY BACKING

Compound AI systems outperform monolithic models on domain-specific tasks (Berkeley BAIR, 2024)

RAG-grounded models eliminate fabricated technical procedures

MoE: up to 70% lower computation costs vs dense LLMs of similar size (IBM research)

LLMSelector: 5–70% performance gains from specialized routing (2025)

MARKET OPPORTUNITY

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