

CASE STUDY

Transforming Defense Manufacturing with AI-Driven Visibility and Risk Insights

Client Profile

A leading US-based defense manufacturer specializing in the design, development, and production of advanced weapon systems, missile parts, and ammunition.



Aether has fundamentally changed how we interpret and act on manufacturing data. With real-time dashboards, conversational access to complex datasets, and proactive AI-driven task automation, we have enhanced operational precision and accelerated mission-critical decision-making.

— Vice President,
Manufacturing Operations



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CHALLENGES



The client struggled with:

- Limited real-time visibility into production throughput, yield rates, and defect trends across manufacturing plants.
- Delayed detection of material shortages impacting production schedules.
- Difficulty analyzing historical test data and tolerance variations to predict manufacturing deviations.
- Inability to convert operational insights into immediate, structured action.

SOLUTIONS



ITHENA's **Analytics AI Platform, Aether**, empowered the client with:

1

Enterprise-Scale Data Processing:

Processed large volumes of production, testing, and quality data across secure environments, creating a unified, contextual data layer for mission-critical manufacturing.

2

Live Dashboards & Visual Intelligence:

Delivered real-time dashboards and dynamic visualizations tracking throughput, yield performance, defect patterns, and inventory health across secure facilities.

3

Agentic AI with Proactive Suggestions:

Identified anomalies such as tolerance breaches, process drifts, and supply risks, while triggering proactive, workflow-aligned actions to prevent disruptions.

4

AI-Driven Quality, Traceability & Compliance

Analyzed tolerance data, inspection logs, and historical test results to detect early deviations, ensure full traceability, and support stringent defense compliance requirements.

5

Proactive Supply Chain Risk Management

Anticipated material shortages and component risks in advance, enabling better planning and uninterrupted production for time-sensitive defense programs.

OPPORTUNITY FOR IMPACT



26%

Reduction in
production lead time

32%

Improvement in material
shortage detection

4X

Faster operational
decision-making