

Digital thread helps
Lockheed Martin
Aeronautics modernize
aircraft manufacturing

CUSTOMER
Lockheed Martin Aeronautics

LOCATION
Fort Worth, Texas

INDUSTRY
Aerospace & Defense



Lockheed Martin Aeronautics needed a next-generation manufacturing execution system to support its vision for smart factories based on Industry 4.0 principles.



Challenge

- Implement next-gen manufacturing execution system for aircraft production
- Improve processes and fully modernize the digital thread
- Streamline production and enable advanced technology



Solution

- DXC Smart Factory services for modernizing A&D manufacturing operations
- Digital Thread solution to integrate operations and systems throughout the product lifecycle
- Agile techniques and design thinking approaches to modernize the shop floor with a next-generation MES



Expected Results

- Improve the flow of information and streamlined manufacturing processes
- Enable advanced digital technology such as 3D work instructions
- Increase visibility of shop floor operations



Digital thread helps Lockheed Martin Aeronautics modernize aircraft manufacturing

Lockheed Martin Aeronautics, a major unit of Lockheed Martin and maker of military aircraft including the F-35 Lightning II, C-130J Super Hercules and F-16 Fighting Falcon, is constantly pushing the envelope when it comes to advanced technology.

“Because of the scale of our operations, we couldn’t do what we do without a manufacturing execution system.”

— **Jeff Gleeson**
Senior manager of Manufacturing Systems, Lockheed Martin Aeronautics

Transforming traditional approaches to manufacturing

Across the company, Lockheed Martin is transforming with urgency to deliver the speed, agility and insights its customers need to stay ahead of rapidly evolving threats.

As part of that work, the Aeronautics team is partnering with DXC Technology to transform traditional approaches to manufacturing and modernize the shop floor.

Using a next-generation digital manufacturing execution system (MES) tied together with the digital thread, these solutions are playing a central role in producing the world’s most advanced aircraft.

The digital thread, a framework that integrates the digital assets describing a product into every aspect of the manufacturing process, enables Lockheed Martin Aeronautics to optimize the manufacturing process, by weaving data flows together to provide clear visibility into all aspects of the product lifecycle.

A fine-tuned MES is foundational to digital threads and smart factory systems because it allows for an uninterrupted flow of information.

With net sales of more than \$65 billion, Lockheed Martin is the largest defense contractor in the United States. Aeronautics accounts for 40 percent of Lockheed Martin’s sales and leads the U.S. Department of Defense’s largest program, the F-35 Lightning II fighter jet.



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The business case for transformation

Jeff Gleeson, senior manager of Manufacturing Systems for Lockheed Martin Aeronautics, says the new MES plays an integral role in aircraft manufacturing. “Because of the scale of our operations, we couldn’t do what we do without a manufacturing execution system.”

Like many aerospace manufacturing companies, Lockheed Martin is continually investing in its manufacturing systems and factories. The digital thread is a key facet that will give Lockheed Martin Aeronautics the ability to integrate people, processes, technology and data to holistically optimize the entire product development, manufacturing and sustainment lifecycle.

The company needed a next-generation MES to support its vision for smart factories based on Industry 4.0 principles. To justify the MES modernization — and not just its replacement — the company built a compelling business case to show the benefits of such a modernization effort. In the end, Lockheed Martin Aeronautics identified benefits resulting from:

- Improved quality of internally produced and supplier sourced parts

- Improved capabilities in production engineering, planning, tooling and shop floor execution
- Improved data handoff to the sustainment side of the business

Smoothing the manufacturing process

DXC Technology has a long history of successful MES implementations and Smart Factory services for leading aerospace and defense companies.

A key to military aircraft production is maintaining a smooth flow of shop orders through the MES. Gleeson says, “We build incredibly complex aircraft with an unwavering focus on precision and quality.” He adds, “Engineering changes are part of cutting-edge aerospace, and our MES must be able to incorporate those in the most optimal manner.”

To support the Aeronautics team’s vision, DXC is tapping into its extensive experience delivering innovative digital manufacturing solutions for the industry. DXC is applying proven design thinking principles to ensure the Aeronautics modernization goals and objectives are being clearly articulated.

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Senior manager of Manufacturing Systems, Lockheed Martin Aeronautics

Employing agile techniques with integrated product teams optimizes development work, resources and risk, while eliminating steps in the process that do not add value.



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Manufacturing Systems,
Lockheed Martin
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Innovative approaches

Core to the digital thread is having a modern MES solution that can manage multiple data inputs with a common output.

Gleeson says, “This solution is foundational and serves as the connection point between our Product Lifecycle Management and Enterprise Resource Management systems and the industrial internet of things (IIoT).”

With the new MES, employees will be able to use 3D work instructions from engineering through production and ultimately to sustainment.

MES modernization simplifies the integration among design, planning and manufacturing. Employing agile

techniques with integrated product teams optimizes development work, resources and risk, while eliminating steps in the process that do not add value.

“Lockheed Martin Aeronautics is an example of how DXC brings the entire stack of solutions,” says John Rassieur, managing partner, digital manufacturing consulting, DXC Technology. “Led by our consulting team, we assisted Lockheed Martin in meeting and exceeding their business objectives for current and future programs. In Lockheed Martin terms, next-gen manufacturing is the future!”

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