TAKING OFF WITH PLM

Discover how today's Aerospace and Defense leaders are accelerating production and innovating at scale.

Aerospace and defense manufacturers are under relentless pressure to deliver at Mach speed. The stakes have never been higher: evolving strategic priorities, shorter delivery timeframes, and geopolitical volatility are reshaping the industry's demands. To stay competitive, leaders must accelerate production while navigating a maze of technical complexities, regulatory requirements, and siloed systems.

Despite this need for speed, outdated technologies and processes frequently hold back production velocity. Siloed teams and legacy processes often result in fragmented data, delays, costly rework, and compliance risks. The result? It takes even longer to deliver products to customers and convert backlogs into revenue.

In response, aerospace and defense leaders are rethinking how products move from design to full-scale production. They are leveraging product lifecycle management (PLM) solutions not only to eliminate silos but to orchestrate collaboration between engineering, manufacturing, and suppliers—ultimately ensuring that production can scale to meet surging demand.

By adopting a **PLM-centric approach to manufacturing**, organizations create a single source of truth for product and process data, enabling faster time-to-industrialization and reducing costly rework. PLM platforms that integrate with enterprise systems like MES and ERP provide end-to-end traceability and real-time visibility across the extended supply chain. This digital continuity accelerates production rates, improves quality, and ensures compliance—all while fostering the agility needed to deliver complex products at scale.

Discover how three industry leaders have harnessed PLM to overcome their most pressing challenges. From boosting productivity to enabling secure collaboration, these examples highlight the real-world impact of a well-implemented PLM strategy in achieving strategic goals.

Lufthansa Technik

Lufthansa Technik, one of the world's leaders in the maintenance, repair, and overhaul (MRO) space since 1951, sustains more than 4,200 aircraft under contract worldwide. Its scale reaches far beyond its reputation as a leading MRO company: Lufthansa Technik provides technical aircraft services and cabin customizations to a wide array of fleets and specialty aircraft, including those manufactured by Boeing, Airbus, Embraer, and Bombardier.

CHALLENGE:

Lufthansa faced mounting challenges in integrating advanced digital solutions across its diverse business units. As it sought to expand into new products and drive innovation, the company struggled to redefine entrenched processes to enhance efficiency, elevate customer satisfaction, and uphold its strong quality standards. Adding to the complexity, the post-pandemic recovery of the supply chain introduced new dynamics, making it imperative for MRO leaders to adopt powerful, innovative solutions to stay ahead in an increasingly high-stakes industry.

SOLUTION:

Lufthansa established its "Digitize the Core" strategy to "evolve the efficiency of [its] production systems through fully digital processes." PTC's Windchill has been a central aspect of this strategy, with the PLM solution serving as a single source of truth in which all data is centralized and made accessible to stakeholders across manufacturing, service, and the supply chain. By transitioning from a regulation-driven and document-based PDM system to a model-based PLM system, Lufthansa can standardize parts and processes, increase transparency across departments and business units, and fuel data-driven decision-making.

OUTCOME:

Built on Windchill, "Digitize the Core" has allowed Lufthansa to rethink the production pipeline to deliver maximum value while maintaining high quality standards and customer satisfaction. Since the program's start, the number of projects being executed has increased from 10-20 to over 300 in less than three years. This remarkable growth highlights PLM's ability to scale operations, drive innovation, and rapidly respond to market demands. With this impactful transformation, Lufthansa is setting new industry benchmarks for operational excellence and customer-centric innovation.

MBDA MISSILE SYSTEMS

MBDA is a world leader in missile systems, delivering highly complex, critical products to support armed forces around the world. With global defense needs calling for a ramp-up of missile production, MBDA has experienced significant business growth in recent years. Governments are investing heavily in next-generation missile platforms to strengthen national security and modernize defense capabilities. MBDA's ability to scale production while maintaining precision and compliance has positioned it as a key partner in meeting this surge in demand.

CHALLENGE:

As global defense needs evolved, MBDA faced the dual pressure of accelerating development timelines and managing increasingly complex products. The company aimed to cut its typical 10-year development programs by as much as 50%, requiring a significant leap in efficiency. This involved scaling the business and its workforce—without compromising performance. A key obstacle was managing and sharing data securely across sovereign nations, which is fundamental to MBDA's collaborative programs. The organization needed a robust, scalable digital foundation to collaborate securely, improve data reuse, streamline workflows, and enable more advanced engineering techniques.

SOLUTION:

MBDA implemented PTC's Windchill PLM solution to create a unified, controlled digital environment. This platform became part of the core toolset for its engineering teams, allowing for the secure synchronization of data across different countries and classification levels and providing the structure needed to manage product data effectively for thousands of users. MBDA extended this digital thread by leveraging MPMLink to create its digital industrialization platform, enabling the manipulation of 3D models in the manufacturing environment and establishing a bidirectional link for control characteristics. The same technology underpins their support solutions, giving service engineers the tools to meet customer needs effectively.

OUTCOME:

With Windchill as its digital backbone, MBDA successfully supports collaborative, sovereign defense programs by sharing data in a controlled, secure manner. Windchill's ability to accelerate development and production is helping the company work toward its goal of scaling the business while halving program timelines. By extending its digital capabilities into manufacturing and customer support with MPMLink, MBDA has enhanced efficiency from initial design through to manufacturing and in-field service. This integrated approach allows engineers to deliver more effectively under pressure, ensuring manufacturing and support teams can respond critically to customer needs, and ultimately solidifies MBDA's ability to deliver more advanced products to more customers worldwide.

HILL

Hill Helicopters—the start-up behind the world's first truly private helicopter—recognized that a digital foundation for product development and data management was essential for delivering safe performance and first-class designs at scale. With over 1,300 helicopters on order, Hill needed a scalable digital foundation to ramp up production and deliver to customers faster. To meet rising demand and maintain its commitment to innovation, the organization set out to reimagine how modern technology could support its bold vision.

CHALLENGE:

As Hill Helicopters advanced its ambitious manufacturing goals, it encountered persistent obstacles that threatened efficiency. Demand for the aircraft surged, creating intense pressure to scale production while maintaining uncompromising quality standards. Hill pursued a vertical integration strategy, manufacturing components in-house to control costs. This approach introduced new complexities: developing new processes for precision manufacturing, ensuring regulatory compliance, and managing design data across teams. Without a unified approach, these challenges risked delays, rework, and missed delivery targets—threatening Hill's ability to convert its growing backlog into revenue.

SOLUTION:

PLM became the backbone of Hill Helicopters' transformation, providing a unified digital environment that connects engineering and manufacturing teams. With PTC's Windchill PLM at the core of the effort, Hill broke down silos and enabled real-time collaboration so that product data, requirements, and design changes could flow seamlessly throughout the organization. Engineers developed simulation-verified 3D models in Creo, with all design iterations and test results managed and tracked in Windchill. This integrated PLM approach streamlines change management, automates traceability, and supports regulatory compliance.

OUTCOME:

With Creo and Windchill serving as the focal point, Hill Helicopters achieved full interoperability between its CAD and PLM systems—critical for scaling production to meet unprecedented demand. Instant audit trails supported strict regulatory compliance, while simplified data sharing across previously siloed systems improved collaboration and reduced risk. As a result, Hill increased surfacing modeling speed by 20%, improved large assembly stability from 80% to 100% reliability, and enabled every capability needed to design and manufacture efficient, safe products.

UNDERSTANDING THE CRITERIA FOR PLM SUCCESS

With a wide array of PLM solutions available, each offering different capabilities, integrations, and scalability options, it's essential for decision-makers to understand what truly drives value in their unique operational context. Whether supporting legacy systems or enabling digital thread continuity, the right solution should align with both current needs and future growth. Knowing what to look for—and what to avoid—can make all the difference in choosing a platform that delivers measurable impact. Armed with the right insights, organizations can move forward with confidence, equipped to make decisions that shape the future of aerospace and defense.

EMPOWER YOUR DECISION-MAKING WITH THE PLM BUYER'S GUIDE

Understanding how PLM solutions drive value is key to unlocking your most impactful digital transformation strategy. Discover how the latest aerospace and defense sector trends affect the essential criteria for evaluating PLM technologies—as well as how industry leaders are already experiencing a measurable impact—in Tech-Clarity's buyer's guide

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