

AXLDRONE INDIA PVT. LTD.

ACCELERATING UNMANNED DRONE DEVELOPMENT WITH SOLIDWORKS AND 3DEXPERIENCE WORKS SOLUTIONS

Case Study



By adding modeling, design, data management, simulation, collaboration, and communication solutions from the 3DEXPERIENCE Works portfolio, which operate on the cloud-based 3DEXPERIENCE platform, to its existing SOLIDWORKS installation, axldrone cut design cycles, shortened time to market, reduced development costs, and slashed manufacturing costs while developing its innovative unmanned drones.

Challenge:

Quickly and cost-effectively develop, manufacture, and market unmanned drones with their own comprehensive logistics tracking technology and drone management platform to meet a variety of needs, ranging from agricultural and cinematographic applications to surveillance, police, military, and relief operations.

Solution:

CAD modeling, design, data management, simulation, collaboration, and communication solutions from the 3DEXPERIENCE Works portfolio, which operate on the cloud-based 3DEXPERIENCE platform—including 3DEXPERIENCE SOLIDWORKS Premium, 3D Creator, 3D Sculptor, SIMULIA Durability and Mechanics Engineer, 3DEXPERIENCE SOLIDWORKS Simulation Designer, Collaborative Industry Innovator, Manufacturing Definition Creator, 3DEXPERIENCE platform storage expanded by 25 GB, and 3DSwymer roles—to its existing SOLIDWORKS installation of SOLIDWORKS CAD design software.

Results:

- Cut design cycles by 30 percent
- Shortened time to market by 20 percent
- Reduced development costs by 25 to 30 percent
- Slashed manufacturing costs by 50 percent

axldrone specializes in the design and manufacture of unmanned drones ranging in size from micro to medium. The Indian company engineers and produces fully integrated, autonomous drone solutions to meet needs ranging from agricultural and cinematographic applications to surveillance, police, military, and relief operations. These fully customized drones offer superb control and flexibility as a result of the company's comprehensive logistics tracking technology.

axldrone is an end-to-end drone management platform that provides complete control over a drone fleet to achieve autonomous inspections, reporting, and data collection. This platform is integrated with axldrone autonomy for data exchange. It provides data processing and analysis, and



"With tight revision controls, the 3DEXPERIENCE platform ensures that all employees, suppliers, and partners are able to work with the latest, up-to-date product data. The ability to view, annotate, manage, and share designs from anywhere, at any time, and on any device—all without having to worry about using the wrong revision or mismanaging the data—not only speeds time to market by collaborating with other design disciplines early in the development process but also improves quality overall."

— Mr. Abhilash K.J, CTO

integrates with most enterprise resource planning (ERP) and existing customer systems. The axldrone platform provides accurate, high-resolution data and in-depth analysis while maintaining a safe environment in and around customer locations.

When axldrone was founded in 2019, company management realized that its designers and engineers would need access to leading solutions to overcome the many engineering challenges associated with drone development. These challenges include identifying and preserving the best shape, weight, and surfaces for peak aerodynamic performance while ensuring the fitment of parts and durability of every drone. To overcome these challenges, axldrone initially acquired the SOLIDWORKS® Premium 3D product development solution, according to Mr. Abhilash K.J., CTO. "We started using the SOLIDWORKS solution in early 2023 because we needed a robust solution with a short learning curve," Abhilash recalls.

"After evaluating multiple CAD solutions, we finalized on SOLIDWORKS," Abhilash adds. "However, we soon realized that there are various challenges related to other departments requiring access to product design data. For example, the Quality Department should have access to the 3D model and 2D manufacturing drawings to perform

the dimensioning needed for quality control. Project planning and meeting our delivery schedule are also critical components for our process, as is the need to conduct FEA [finite element analysis] simulations to minimize physical prototyping.

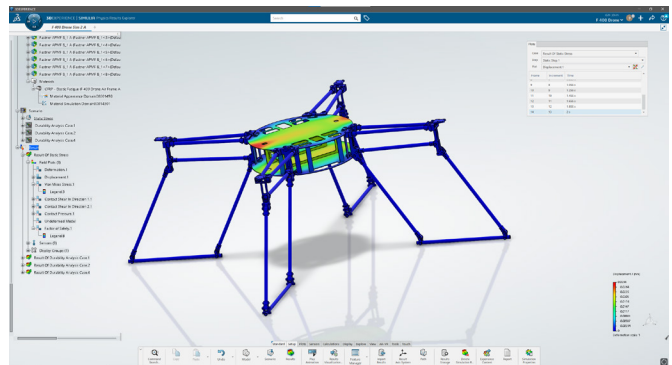
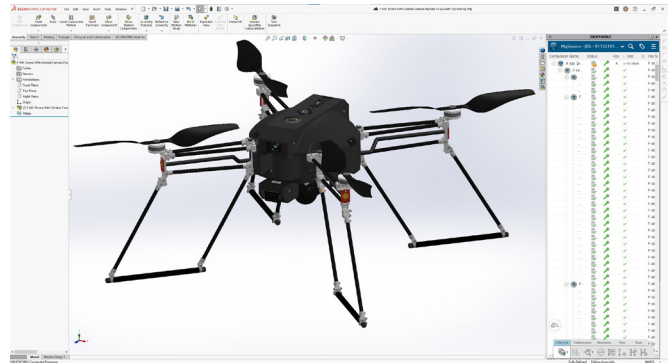
“In short, we needed a cloud-based solution to support better collaboration between different teams—and among different departments—and better data management across the organization to maintain data and information access control and design data security, revision control, change management processes, project planning and management, product release processes, and standardization across the organization,” Abhilash says.

axldrone chose to add modeling, design, data management, simulation, collaboration, and communication solutions from the **3DEXPERIENCE**® Works portfolio, which operate on the cloud-based **3DEXPERIENCE** platform—including **3DEXPERIENCE SOLIDWORKS** Premium, 3D Creator, 3D Sculptor, SIMULIA® Durability and Mechanics Engineer, **3DEXPERIENCE SOLIDWORKS** Simulation Designer, Collaborative Industry Innovator, Manufacturing Definition Creator, **3DEXPERIENCE** platform storage expanded by 25 GB, and 3DSwymer roles—to its existing SOLIDWORKS installation.

“The key reason that we chose **3DEXPERIENCE** Works solutions is the **3DEXPERIENCE** platform is a cloud-based solution for collaborative, powerful, connected PLM [product lifecycle management], which connects our complete organization’s most vital resources—people, software tools, and data—in a unified, secure place to collaborate on designs while more easily keeping projects and people on track.”

CLOUD-DRIVEN COLLABORATION SPEEDS DEVELOPMENT

Since adding **3DEXPERIENCE** Works solutions to its SOLIDWORKS implementation, axldrone has shortened its design cycles by 30 percent, enabling the company to cut time to market by 20 percent, through the combination of greater collaboration and cloud-based data and process management. “With SOLIDWORKS CAD, we made our team capable of thinking and innovating independently,



Leveraging the cloud-driven collaboration and transparent data management capabilities of the **3DEXPERIENCE** platform—along with SIMULIA and SOLIDWORKS simulation tools—axldrone designers and engineers saved time and money while simultaneously improving product quality.

which helps us to develop our designs quickly,” Abhilash notes.

“Moving forward with the **3DEXPERIENCE** platform, we expect to realize additional improvements in the overall process,” Abhilash continues. “We are able to save time and work more efficiently because data is now available to support downstream departments; teams can plan, execute, and monitor project status in real time; team members can easily share tasks and define deliverables, dependencies, and key milestones; and team members can efficiently collaborate from anywhere, at any time, and on any device.”

TRANSPARENT DATA AND PROCESS MANAGEMENT BOOSTS QUALITY

Using **3DEXPERIENCE** Works solutions, axldrone has formalized both its data management and product development processes, resulting in fewer design errors and improved product quality. “The

quality of our product is one of the key challenges for obtaining and maintaining a top market position,” Abhilash explains. “The **3DEXPERIENCE** Works data management solution helps us address this challenge by reducing the number of design errors and rework required.

“With tight revision controls, the **3DEXPERIENCE** platform ensures that all employees, suppliers, and partners are able to work with the latest, up-to-date product data,” Abhilash stresses. “The ability to view, annotate, manage, and share designs from anywhere, at any time, and on any device—all without having to worry about using the wrong revision or mismanaging the data—not only speeds time to market by collaborating with other design disciplines early in the development process but also improves quality overall.”

SLASHING DEVELOPMENT AND MANUFACTURING COSTS

In addition to saving time and improving quality, **3DEXPERIENCE** Works solutions have helped axldrone reduce both development and manufacturing costs, cutting development costs by 25 to 30 percent and manufacturing costs by 50 percent. “Shorter design cycles and improved quality are not the only areas where

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we’ve seen development cost savings,” Abhilash stresses. “Using SOLIDWORKS DFM [design for manufacturability], configuration, and fitment tools, along with SOLIDWORKS and SIMULIA simulation capabilities, we’ve reduced both the cost of physical prototyping and testing as well as the amount of rework required and scrap produced,” Abhilash points out.

“When you combine the reduced infrastructure costs, IT overhead, software maintenance, and complexity associated with secure cloud technology with more efficient machining and 3D printing processes, we’re seeing cost reductions throughout the product development and manufacturing process,” Abhilash says.

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