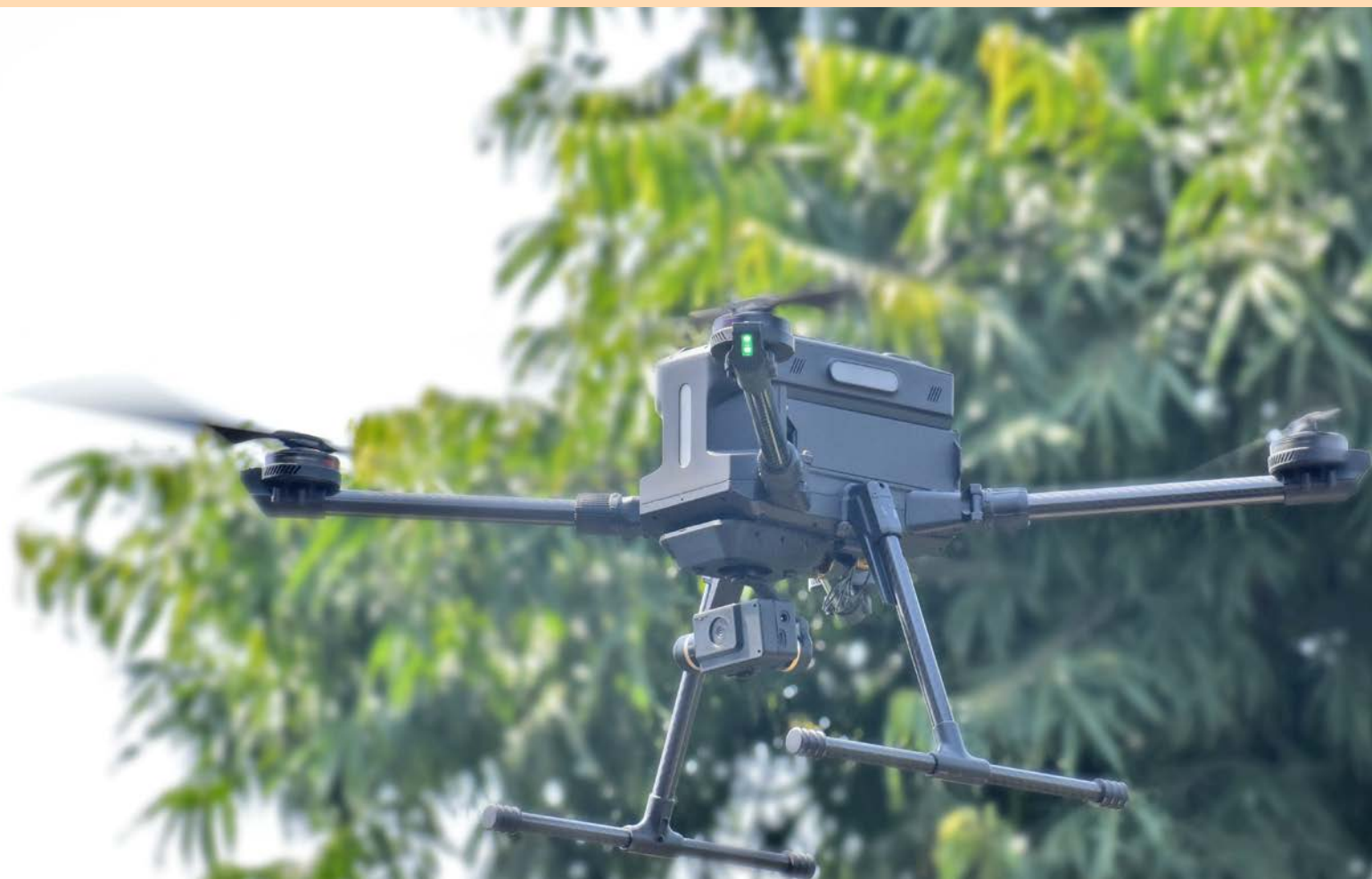


Unleashing the future of VECROS' autonomous flight with HP Multi Jet Fusion technology

VECROS is India's first Spatial AI drone startup. Founded by IIT-Delhi and NIT-Nagpur grads in early 2021, VECROS aims to lead autonomous flight in India by introducing a first-of-its-kind autonomy-level 4 drone called ATHERA¹. The solution demonstrates both hardware and software innovation. Its AI-on-edge capability and versatile payload-mounting system give users the option to mount a range of payloads-such as LIDAR, high resolution thermal and RGB camera, IR cameras, etc.-while also leveraging onboard AI to accomplish tasks quickly, safely, and reliably.



Introduction

The founders of VECROS started developing prototypes while they were students at IIT Delhi. Now, they find themselves at the forefront of drone innovation. The company is revolutionizing aerial robotics by bringing next-level autonomous flight to consumers, enterprises, and government agencies in India. Their vision is to create the world's most intelligent flying machines, powered by breakthroughs in Spatial AI, to operate in GPS-denied environments, autonomously avoiding obstacles in all directions without reliance on existing navigational infrastructures.

Industry

Industrial

Objective

Adopting HP Multi Jet Fusion technology, VECROS aims to optimize and enhance the design and durability of parts used to build ATHERA

Technology | Solution

HP Multi Jet Fusion technology

HP Jet Fusion 5210 3D Printing Solution

Post processing: Painting

Sector

Drones and Robotics

Approach

VECROS uses HP Multi Jet Fusion technology to achieve the flexibility they need for the drones to integrate all the features and mechanisms they need, plus improving its design and making it more appealing

Material

HP 3D High Reusability PA 12



Challenge

ATHERA is a smart and scalable AI-powered UAV (Unmanned Aerial Vehicle) that can autonomously navigate the 3D world around it, detecting and avoiding obstacles, and performing various tasks such as real-time inspections, 2D-3D mapping, accurate data collection, analysis and quick report generation.

Developing ATHERA meant looking far beyond the propulsion aspect of UAVs, which is what most basic drone manufacturers do.

The actual design of the UAV was a key element that they wanted to get right.

“When we started designing ATHERA, we weren't aware of other additive manufacturing techniques apart from FDM. The surface finish of FDM, however, was not up to our expectations,” says Rajeshree Deotalu, CTO of VECROS.

Shortly thereafter, VECROS discovered HP Multi Jet Fusion (MJF) technology and other additive manufacturing (AM) techniques like SLA and SLS. HP MJF is just what they needed. “We focused on HP MJF because the MJF process doesn't require support structures, and it provides high flexibility in terms of build plate dimension,” says Deepak Kumar, head of Hardware at VECROS. “It gives us the flexibility to make our design more aesthetically appealing. For example, the manufactured components have a smoother surface finish with less layer visibility.” He adds, “It is also less brittle.” As part of that design, they're also using PU paint for post-processing.



Solution

According to Rajeshree and Deepak, “HP’s MJF process has given us the flexibility to add all features and working mechanisms we need without spending too much time and money,” which would not be the case had they chosen conventional manufacturing processes.

After several product iterations, VECROS was able to optimize the design of ATHERA.

“This current look and feel are what we initially intended,” says Besta Prem Sai - CEO of VECROS. “This looks quite promising. And we have successfully tested it in the field.”

While they are pleased with the current design, at VECROS will continue looking for ways to further optimize ATHERA’s design using HP Multi Jet Fusion technology.

Even in its current iteration, ATHERA is an ideal tool for addressing inspections, maintenance, and surveillance across industries, such as mining, construction, telecommunications, oil and gas, and more. In addition to its design, other key features, such as the Visual Navigation System and Obstacle Avoidance System, along with real-time object detection, tracking, following, and other analyses are what make the ATHERA product—and VECROS—one of a kind.

Find out more about ATHERA's drone at [here](#).

For more information on VECROS visit

[Vecros.com](https://vecros.com)

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1. Design patented.

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4AA8-3354ENW, October 2023

