

Govt. Polytechnic Students Pursue Practical Insights into Agri-Tech Drone Manufacturing

Case Study...

Blending innovation and grassroots application, Softech Coderz IT Solutions, Malkapur, Dist. Buldhana, - a reputed firm engaged in drone design, manufacturing, and Agri-tech applications - has conducted a 12-week industrial internship program for fourth-semester diploma students of Mechanical Engineering of Government



Polytechnic, Khamgaon. The focus of this industrial internship was Agri-Tech Drone Manufacturing—a field that carries immense potential in transforming Indian agriculture. Prof. Ankush Dawand, guided the internship which aimed to bridge the gap between classroom knowledge and real-world industry needs by offering students hands-on experience with cutting-edge drone technologies. The resource persons from Softech Coderz ensured that students not only gain technical knowledge but also develop problem-solving abilities and innovative thinking in this field. The program is part of the students' curriculum and commenced right after semester exams.



The students have responded with great enthusiasm, valuing the opportunity to engage with cutting-edge technology that holds significant potential not only in agriculture but across various industries. The Department of Mechanical Engineering at Government Polytechnic, Khamgaon, expressed strong confidence that this industry-linked training will greatly enhance students' employability and entrepreneurial abilities. From the perspective of Softech Coderz IT Solutions, the primary goal was to help young engineers understand the real-life challenges faced by farmers and inspire them to explore how technology can offer practical, sustainable solutions. Throughout the internship, students were encouraged to analyse on-field problems critically and apply innovative thinking to develop effective technological interventions.

Inside the Training: Key Concepts & Skills Explored

During the training, students are introduced to:

- Fundamentals of drone structure, design, and assembly
- Working of drone propulsion and control systems
- Applications of drones in agriculture (crop monitoring, spraying, mapping, and precision farming)
- Basics of drone manufacturing and emerging trends in drone technology
- Demonstrations and hands-on sessions for better industry-oriented learning.

Learning Begins in the Field

The internship program began not in front of computer screens, but out in the fields of Malkapur and nearby villages, where students interacted directly with local farmers. This first-hand exposure allowed them to understand agricultural challenges in

reality rather than in theory. During the visits, farmers openly shared their concerns, many of which were common and recurring:

- Manual spraying of pesticides is both exhausting and harmful to health.
- The process is time-consuming and difficult when labour availability is limited.
- Uneven spraying often results in significant crop losses.
- Affordable and effective technological solutions are still lacking.

These ground-level conversations gave the students valuable insights into the practical difficulties faced by farmers. They realized that agriculture still carries many **pain points** where simple, innovative technologies can bring transformative change. These ground-level insights laid the foundation for meaningful problem-solving.

From Research to Prototyping Agri Drones

After gathering valuable insights from farmers, the student team began exploring possible technological solutions. Their attention was drawn to agriculture spraying drones, which are already in use in certain parts of the country but remain rare and costly in rural Maharashtra. Over the



following weeks, students conducted in-depth research on how these drones' function — studying aspects such as flight balance, nozzle design, battery performance, spray angles, and land coverage per flight. This exercise allowed them to connect theoretical learning with practical applications.

While a complete drone has not yet been built, the team successfully achieved the following milestones:

- Development of a working prototype design
- Basic R&D planning covering components, cost, and assembly
- Creation of digital models to test flight paths and spray coverage

With this preparatory work completed, the team is now ready to move into the implementation stage. Over the next 6–7 months, they plan to begin building and testing a fully functional Agri-drone tailored to the needs of farmers. This research journey has provided the students with valuable confidence for applying innovative technologies to address real-world agricultural challenges faced by our farmers.

Moving Forward: Empowering Future Engineers

At Softech Coderz IT Solutions, we firmly believe that big changes start with small but meaningful steps — and this internship marks one such step toward driving innovation in agriculture. Building on the valuable experience gained, our next focus is to further advance drone development through close collaboration with institutes, local experts, and farmers.

Looking ahead, we are committed to conducting similar internship programs annually, ensuring that students not only acquire technical knowledge but also develop a deep understanding of how technology can create tangible benefits for society. Our vision is to empower local talent to develop local solutions, making a lasting positive impact — one project at a time.