

CASE STUDY

Flight-Ready Innovation: Advancing EPP Components for Drone Success



► Introduction

In 2023, K. K. Nag Private Limited was approached by a global drone organisation to design seven critical Expanded Polypropylene (EPP) components. Our proven expertise in handling intricate and complex-shaped parts made us the preferred choice for this project. However, the challenge was significant – we had to first successfully design and mould the most critical component, the EPP nose foam, before being awarded the remaining six components.

► Key Challenges

1. The EPP nose foam required extremely high precision, with strict tolerances that were considered difficult to achieve in EPP moulding.
2. A reputed raw material supplier from Japan expressed doubts about the feasibility of moulding this component with the required specifications.
3. The design complexity involved intricate undercuts and profiles that demanded advanced moulding techniques.

► Solutions

Despite the challenges, our R&D team embarked on an intensive development process. Within just eight weeks, we:

- Developed a mould featuring five operating cylinders – four strategically placed at angles for the undercut and one for the profile.
- Integrated an air booster into the mould and introduced a vent valve to refine the moulding process.
- Conducted six iterative trials, making adjustments and optimisations to meet the stringent requirements.

► Results

Our persistence and innovation paid off when we successfully moulded the EPP nose foam to the customer's exact specifications. The component was approved, leading to:

- An order for the six additional EPP components.
- Strengthened credibility in high-precision EPP component manufacturing.
- Enhanced morale and motivation within our Design and Engineering team.

Through dedication and technical expertise, K. K. Nag Private Limited transformed an ambitious challenge into a remarkable success, reaffirming our leadership in complex EPP component development for aerospace applications.