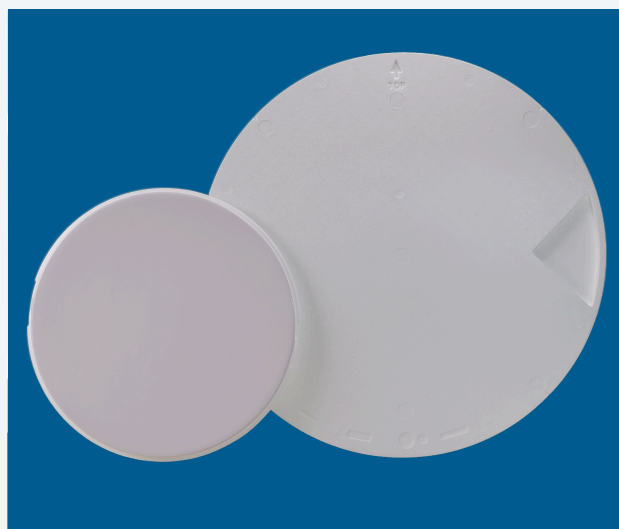


CASE STUDY

From Import Dependence to Indigenous Innovation: The Radome Success Story



► Introduction

In 2021, when a global telecommunications leader needed a cost-effective alternative to imported 2-foot radomes, they partnered with us to develop a high-performance, locally manufactured solution in India.

Until then, radomes were imported from Austria, which drove up costs, extended lead times and complicated logistics. The goal was to establish a reliable local solution that matched international performance standards while reducing dependency on imports.

With our expertise in EPS product development and thermoforming technology, we set out to engineer a solution designed to withstand the rigorous requirements of telecommunication applications.

► Key Challenges

- The radome needed to withstand harsh outdoor environments while meeting mechanical, electrical and RFID performance standards.
- The product was critical for the customer's Outdoor Wireless Network (OWN) and Distributed Antenna Systems (DAS), making precision and durability non-negotiable.
- The overseas supplier used specialised machinery that combined moulding and in-mould film lining in a single process, making it difficult to replicate locally.
- The customer required precise dimensional control within very tight specifications.
- The customer required that there be no core vent marks on the A surface, which was a significant challenge since core vents are a critical feature in EPS moulding.

► Solutions

We began by analysing the technical requirements and designing a hybrid solution using EPS with a thermoformed PC + PP (Polycarbonate and Polypropylene) film for strength and durability. Since vents on the visible surface were unacceptable, a special mould was developed for a clean finish. After over 60 unsuccessful trials to combine film lining and EPS moulding in one step, we adopted a post-mould thermoforming approach.

Working with a local supplier, we developed custom moulds and ran 100+ trials to achieve reliable bonding. Early attempts demonstrated bonding success but there were dimensional deviations and defects such as surface marks and inconsistent repeatability. A root cause analysis revealed equipment limitations, which we resolved by engaging a new supplier with advanced thermoforming machinery and modifying both the EPS and thermoforming moulds.

Once product performance stabilised, we improved handling and transport with specialised trolleys and packaging. The EPS cores were produced in-house, with thermoforming outsourced to a trusted partner. The integrated process delivered radomes with enhanced durability, finish and weather resistance, successfully meeting stringent benchmarks for RF transparency, mechanical strength and outdoor reliability in field trials.

► Results

- Localised radome production in India (Make in India), reducing import reliance
- Achieved all mechanical, electrical and RFID performance standards
- Scaled to 2,500 units/month post field approval
- Proven capability in high-performance telecom components with EPS and thermoforming

► Conclusion

This project demonstrated our ability to manufacture complex EPS-based radome structures locally, reducing costs and lead times while maintaining global quality standards. Building on the success of the 2-foot radome, we secured the 3-foot radome project in 2023, for which mass production has already begun. In parallel, we have also developed the 1-foot radome and are currently in the process of obtaining customer approvals. These milestones further strengthen our position as a trusted partner in advanced telecom infrastructure solutions.