The PEP Engineering Partnership Process – From Concept to Production

Precision Engineering Plastics (PEP) follows a structured, engineering-led process designed to reduce technical risk, optimise manufacturability, and ensure reliable production supply. Our approach is built around proactive engineering insight, structured project management, and transparent communication. This roadmap outlines how we support customers from the first technical discussion through to full production and ongoing supply.

1. Initial Engineering Conversation (Discovery & Insight)

- Technical discussion to understand the application, operating environment, material requirements, volumes and constraints.
- Challenger methodology: introduce insight around manufacturability, cost drivers and potential design risks early.
- Where beneficial, arrange an on-site technical meeting or invite the customer to visit PEP facilities.

2. Manufacturing Risk Assessment

- Early identification of potential tooling, material, tolerance or process risks.
- Assessment of production scalability, assembly considerations and long-term supply requirements.
- Proactive recommendations to reduce downstream engineering or production challenges.

3. Concept & Design Review

- Engineering review of part geometry, wall thickness, ribbing, draft angles and assembly interfaces.
- Initial Design-for-Manufacture (DFM) feedback to optimise mouldability.
- Early identification of opportunities to simplify tooling and improve production efficiency.

4. Technical Proposal & Quotation

- Detailed quotation covering tooling strategy, moulding process, materials and production approach.
- Technical proposal presentation (often on-site) to review engineering recommendations and project scope.
- Alignment on timelines, expectations and commercial framework.

5. Project Kick-Off (Purchase Order Received)

- Customer issues Purchase Order for tooling and project initiation.
- Internal project launch meeting at PEP.
- Dedicated project manager assigned to oversee technical and commercial progress.

6. Engineering Development Phase

- Detailed Design-for-Manufacture (DFM) analysis.
- Mouldflow simulation to optimise filling, cooling and gating strategies.
- Collaborative design iterations with the customer until the optimal design is achieved.

7. Cost Optimisation Review

- Evaluation of design features influencing tooling complexity, cycle time and long-term production cost.
- Engineering recommendations to improve efficiency and reduce lifecycle manufacturing cost.

8. Design Freeze & Tooling Plan

- Formal design freeze agreed with the customer.
- Tool design finalised and detailed tooling production plan established.
- Project Gantt chart shared outlining key milestones and delivery timings.

9. Tool Manufacture & Weekly Project Updates

- Tool manufacture managed through PEP's toolroom capability and trusted partners.
- Weekly project update communication with the customer.
- Active schedule monitoring and proactive risk management.

10. Tool Trials & Process Validation

- T0 / T1 tool trials performed.
- Initial moulded samples produced.
- Customer evaluation and feedback.
- If required, further optimisation and additional trial stages (T2).

11. Quality & Approval Stage

- Initial Sample Inspection Report (ISIR) or PPAP-style documentation where required.
- Capability studies (Cp/Cpk) where appropriate.
- Quality processes aligned with IATF16949 standards.

12. Production Readiness

- Final sample approval and master sample retained at PEP.
- First-Off / Last-Off inspection procedures implemented.
- Production work instructions and quality control matrix established.

13. Production Launch & Supply

- Production scheduling aligned with customer demand forecasts.
- Flexible supply models including Just-in-Time (JIT), Kanban or consignment stock.
- Full traceability and batch control maintained.

14. Ongoing Partnership & Continuous Improvement

- Regular supply reviews and performance monitoring.
- Tool maintenance planning and lifecycle support.
- Continuous improvement opportunities identified throughout the program.

PEP's customers benefit from a structured engineering partnership that proactively manages risk, optimises manufacturability, and delivers reliable long-term production supply.