

Finite Element Analysis | Ansys Discovery

Technology: Ansys Discovery

Use: To simulate and analyse product performance under real-world conditions – virtually - prior to manufacture. Using a CAD model as the foundation, Ansys Discovery allows the 3M BIC Tech Team to test structural integrity, fluid behaviour, thermal performance, vibration response, and more, reducing the need for costly physical prototypes.

About: Finite Element Analysis (FEA) is an essential tool in the product development lifecycle. It enables engineering teams to evaluate whether a design is fit for purpose by simulating operational and environmental forces before committing to production.

Ansys Discovery transforms simulation into an interactive design tool by combining rapid, real-time physics with trusted high-fidelity solvers. This integration empowers designers and engineers to make informed decisions early, accelerate innovation, and minimise design risks.

- ✓ **Early Concept Evaluation:** Quickly test design feasibility before investing in further time and resources
- ✓ **Iterative Product Improvement:** Use simulation insights to continuously refine and evolve a product
- ✓ **Informed Material Selection:** Assess the impact of different materials on performance and suitability
- ✓ **Research & Development:** Support advanced analysis in academic or industrial research contexts

- ✓ **Virtual Testing for Harsh Environments:** Simulate real-world conditions to ensure designs can withstand extreme use
- ✓ **Design Validation Prior to Manufacture:** Confirm fitness-for-purpose before committing to tooling or production

Key specifications:

- ✓ **Structural & Modal Analysis:** Investigate stress, strain, and natural frequency responses in real time
- ✓ **Topology Optimisation:** Discover lightweight, structurally efficient geometries through real-time generative design algorithms
- ✓ **Fluid Dynamics:** Simulate internal and external fluid flow using live physics
- ✓ **Thermal & Thermal-Fluid Analysis:** Analyse heat transfer within solids and fluids, including temperature distribution, thermal expansion, and cooling efficiency
- ✓ **Parameter Studies:** Run simulations across design variables to explore trade-offs and optimise outcomes

Advantages:

- ✓ Tests designs virtually before committing to manufacture
- ✓ Improves reliability and performance through early simulation
- ✓ Combines CAD modelling and FEA in a single intuitive platform
- ✓ Supports both concept-level and high-fidelity analysis
- ✓ Accelerates product development cycles and reduces prototyping costs

For further enquiries or to schedule a demonstration, contact the 3M BIC Technology Team on 01484 505601 or email technology@3mbic.com.

3M | BUCKLEY
INNOVATION
CENTRE