

Q1 Product development is a fundamental concept for any process. FEA can be utilised to evaluate the performance of a design concept without the costs of producing 3D CAD within the CAD software. Unlike the traditional approach to product development, whereby each proposed design change would have resulted in a new prototype being generated, FEA allows for these design concepts to be altered before the design has been made and primary CAD model altered. Additionally, the manufacture of various prototypes to achieve the optimum design is not only costly but also time consuming. Although considerations to the variables during FE modelling such as element type and element size, even so the time taken to generate an accurate FEA outweighs that of generating numerous prototypes to achieve the same outcome. The design phase for product development is highly dependent on customer / supplier relations, however customer led design changes are a common occurrence. This can be challenging during the design phase with multiple of revision amendments, however FEA allows for a fast answer on the success or failure of the change.

FEA also allows for changes to the condition of the process such as stresses exposed on certain features, allowing for changes virtual changes as opposed to physical ones and additional prototyping manufacture.

FEA also enables optimisation of product using tools such as topology, effectively designing a solution with greater efficiency.