

DESIGN FOR MANUFACTURE

- 1. Market Research** This gives you a good background of the key elements you must understand to develop and design a fully functional product. Market Segment Analysis, Critical Product Analysis (CPA), Styling, Engineering, Materials & Processes, Ergonomics, Performance, Benchmarking, Target Consumer Profiling/User Observation, and Requirements.
- 2. Design Strategy** With the research complete, the next stage is to develop a strategy for creating the product and what features it will contain. With these features identified, you the client, agree with the strategy with the design team as it is what we all work to from this stage.
- 3. Concept Generation** The concept generation stage is where all sketches, thoughts, ideas, and general options are laid out. These are usually drawn free hand and then worked on until a good 2D or 3D visual sketch is available
- 4. Concept Refinement** After discussing the concepts with you the client and choosing the best one, which may include many features from many ideas, are now refined. All aspects of the design and its interaction with people are examined; it's no good having it look pretty if you cannot use it.
- 5. Design Development** The next stage is where the design idea and intent are transferred from the sketch pad onto the computer. Using the latest 3D software, every facet of the design is built in 3D and developed to be a fully functional 3D model.
- 6. Intellectual Property** The next stage is instigating the Intellectual Property through a good patent attorney. It's essential that the idea of innovation is protected with the protection it deserves.
- 7. Design Appraisal** With the 3D design built, how the product will be manufactured is now examined. We need to know if it will be injection moulded, cast, pressed, machined etc. We also would now carry out specific load analysis of the product to ensure it can withstand the strain it will go through during its life. The working tolerances between mating parts are set up to reduce friction and wear problems.
- 8. Graphic Communication** The graphic communication of the product is essential as you need the colours and graphics to be right. What if James Dyson had made his vacuum cleaner red and purple instead of grey and yellow? Would we recognise it?
- 9. RP/Tooling & Manufacture** With the completed design, it is best to produce a working prototype; it allows any minor snags missed during the intensive design stages to be addressed. This is best discussed then with the toolmakers and the manufacturing engineers. They are the people who will make the products in reality