Design4

Product design and development consultants

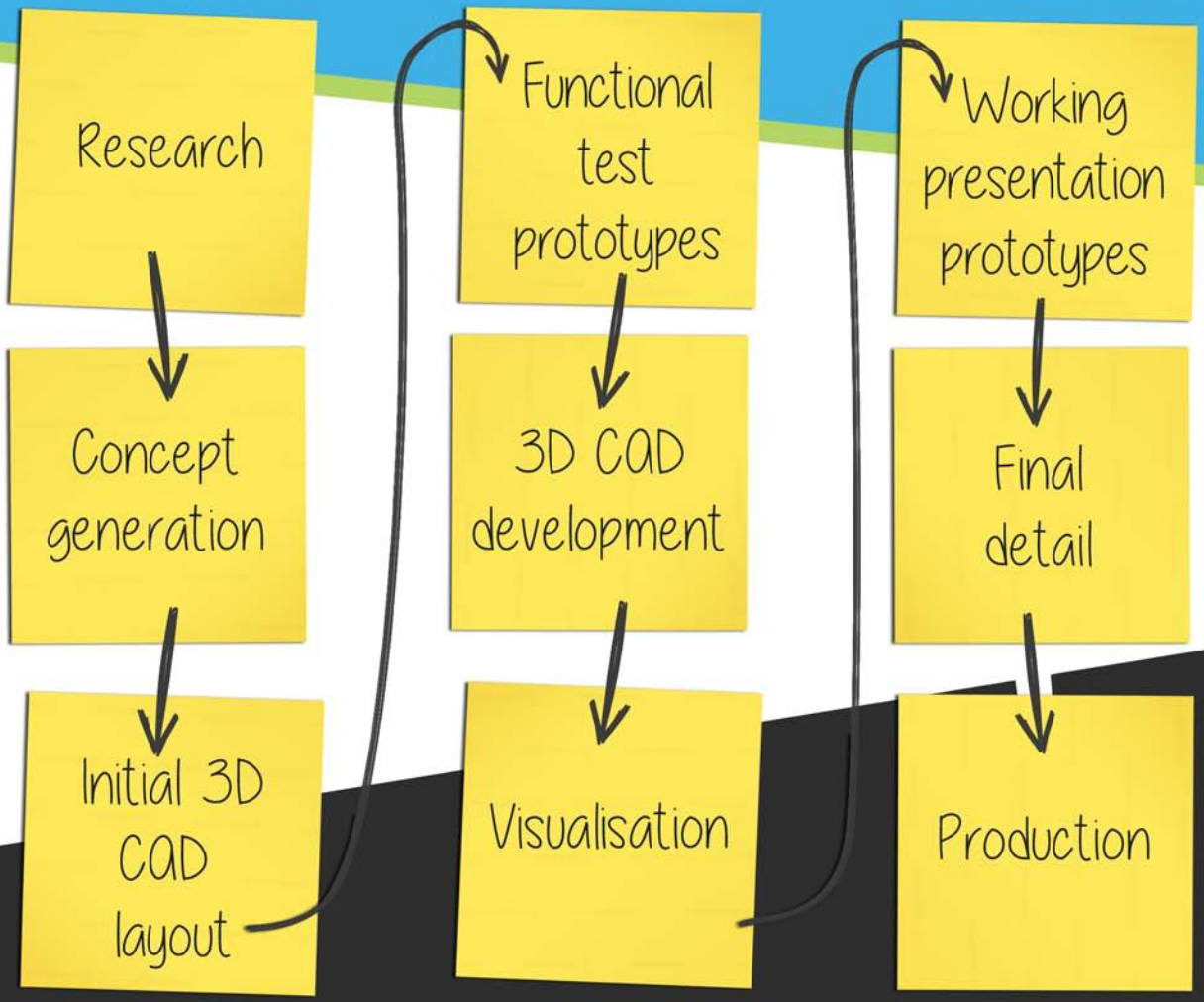
EST 1979

About us

At design 4 we have over 30 years' experience in designing and developing innovative and successful new products many of which are patented.

We offer a complete product design and development service tailored to suit your individual project requirements, developing your product from the generation of initial concept designs through to the procurement of production tooling and components.

There are often many design solutions to any problem. Our role is to identify the most appropriate of these to suit your market objectives and manufacturing capabilities. We aim to deliver practical, attractive and commercially effective products using some or all of the stages below.



Concept Design

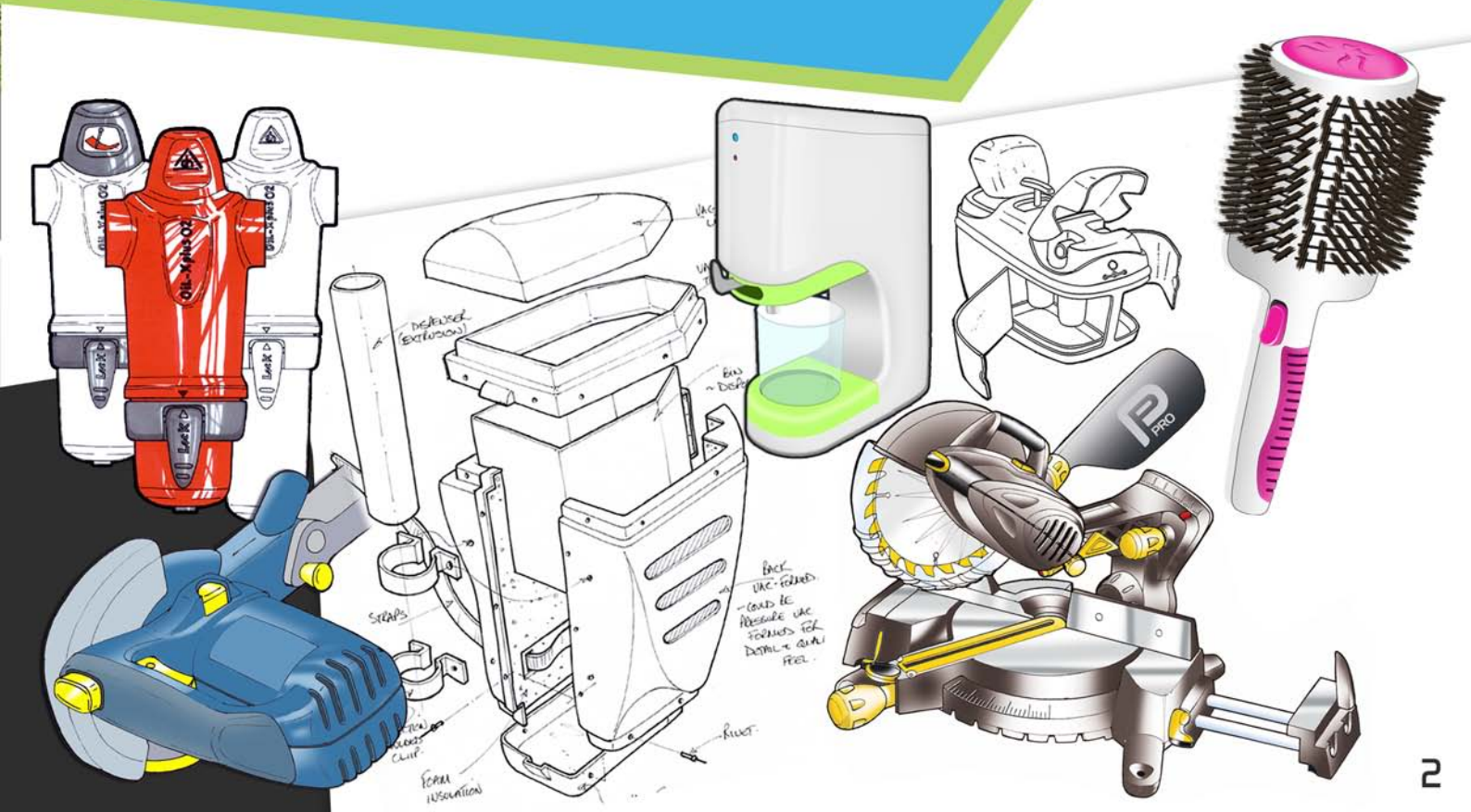
Following the initial product briefing we submit the "design brief" that defines our understanding of your development goals.

We will then propose a development program detailing the various design stages that most appropriately address your project. This sets out budget costs, time scales and terms of business.

Considering the research gathered and the objectives of the design brief we apply creative lateral thinking to come up with alternative approaches to the design challenges.

Together we will select the most promising ideas and work through a series of sketch concepts exploring options for how your product could look, feel, work, be used, be manufactured and assembled.

This stage may be shown as line drawings, colour visuals, block models or initial CAD layout images presented in a report that establishes the design direction for the next development phase. Our pursuit of original and innovative ideas often results in patentable features for your product.

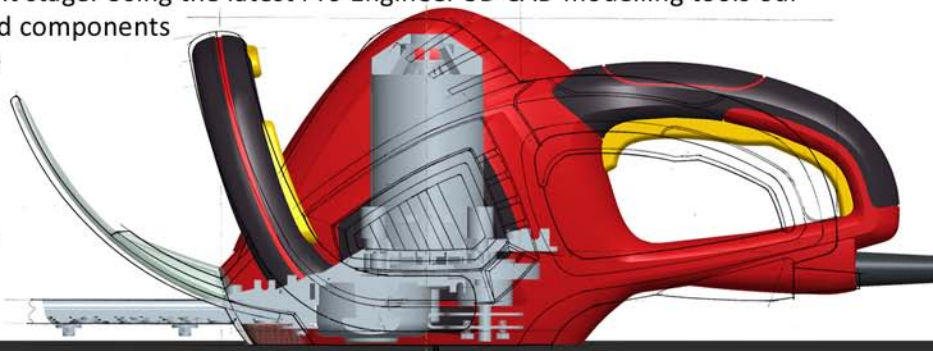


Design Development

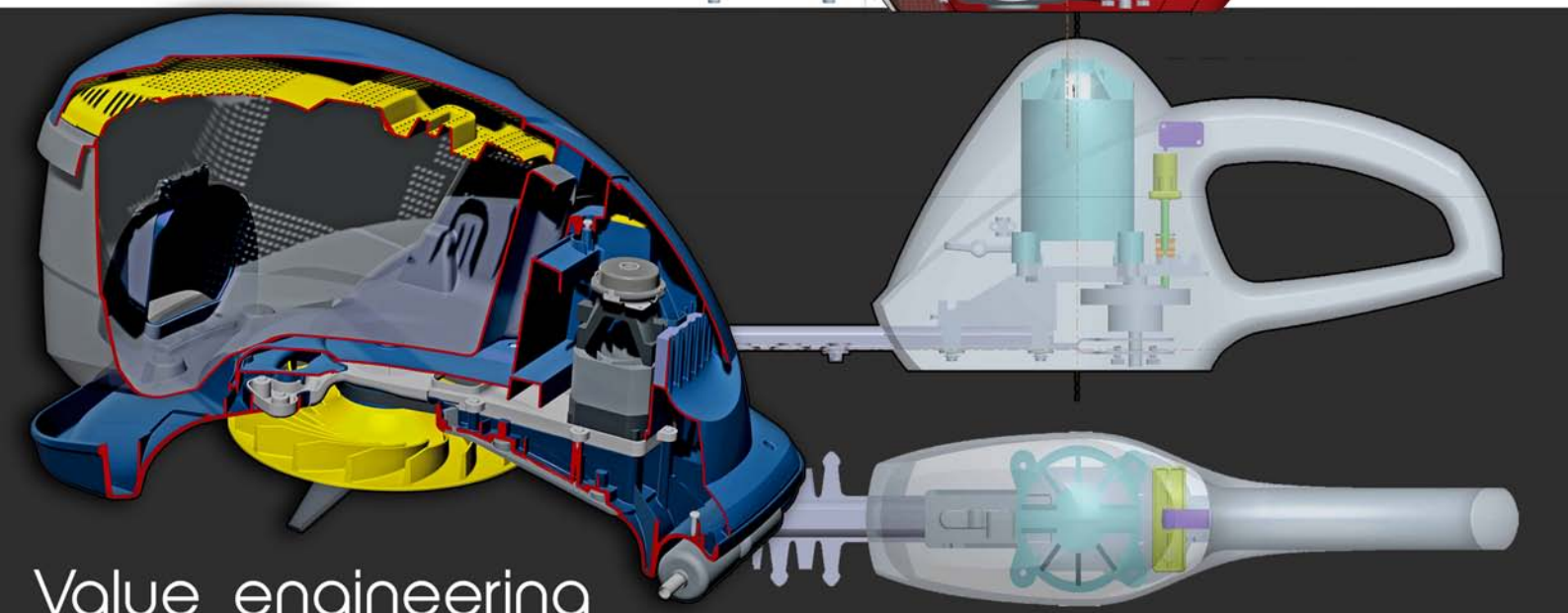
Once the preferred design direction is established the chosen solution can be developed in more detail.

We have a thorough understanding of the wide range of manufacturing and assembly processes available which is why we place great importance of keeping up to date with emerging technologies.

CAD plays a vital role in the design and development stage. Using the latest Pro Engineer 3D CAD modelling tools our qualified design team can effectively create detailed components and assemblies in many materials. Throughout the development process we explore alternative design details continually refining the 3D CAD model to achieve the best solution.



The 3D CAD models developed at this stage can be used to provide initial budget production tooling, component costs and data for prototyping.



Value engineering

We can provide a cost analysis of your existing product and propose alternative manufacturing strategies addressing function, rationalisation of components, material selection and manufacturing processes. This can lead to significant design improvements and cost savings.

Visualisation

Using our advanced computer visualisation tools, we create photo realistic renderings placing your product in its intended environment to achieve a heightened level of realism clearly communicating how it will look or be used.

These images provide an ideal resource for your marketing activities prior to the availability of presentation prototypes or production samples.

Prototypes

We can provide prototypes in various forms, from hand built functional test rigs to photographic appearance models.

Using 3D CAD data generated in previous stages, rapid prototypes (SLA, SLS, FDM*) can be created. These provide a true representation in every detail of the design, enabling a full assessment of both the production appearance and function before committing to production tooling.

Using an SLA master multiple prototypes can be produced in cast resin. The resin used can be specified to be a close representation of the production material. These can be used for marketing trials, packaging design or for pre production line testing.

The 3D date can also be used to produce CNC machined parts for appearance models, vacuum forming tools, metal and sand casting patterns and for masters for rotational moulding tools.

**SLS - Selective Laser Sintering, SLA - Stereolithography, FDM - Fused Deposition Modelling.*

ABS prototype
CNC machined

Painted SLS functional prototype

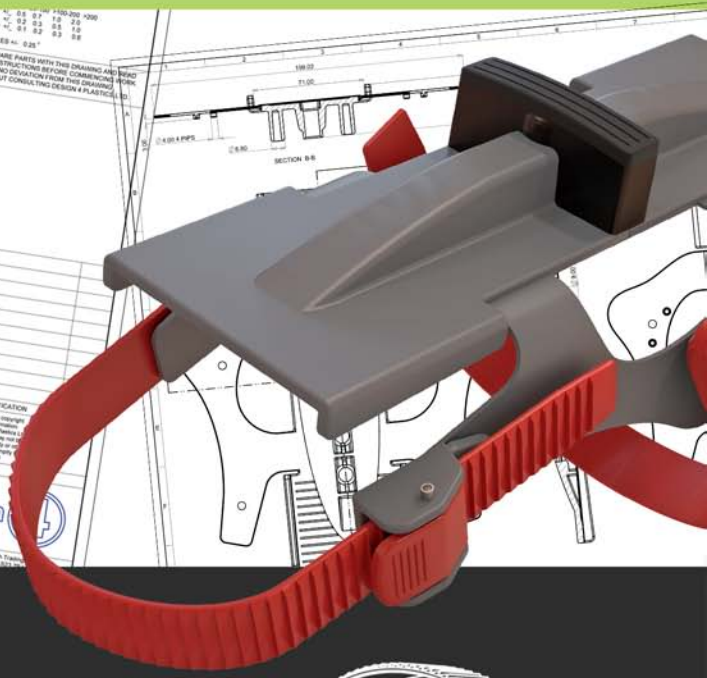
Painted vacuum fromed functional prototype

SLS functional switchbox with electronics

Painted SLS functional prototype

Painted SLS /SLA functional prototype

Detail Specification

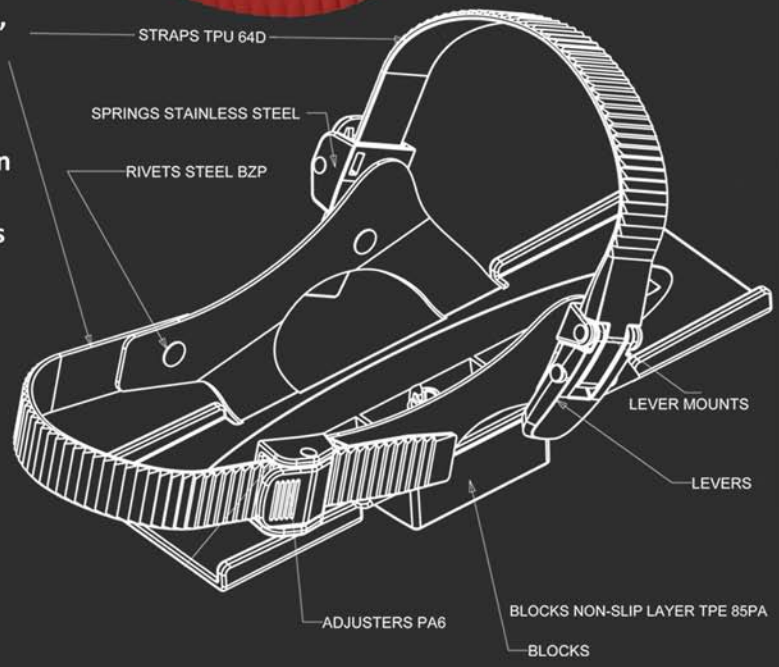


Following evaluation and approval of the prototypes we complete the final specification for manufacture. At this stage, the 3D CAD models are updated with any improvements or modifications from the prototype testing.

We produce a complete package of manufacturing information including 3D data files, material specifications, bills of materials, assembly drawings and instructions, tooling layouts and configurations and fully dimensioned and toleranced production drawings where necessary.

We can further assist providing illustrations for user manuals and development of graphics for on-product labels or print.

We also offer support for IP protection, preparing explanatory drawings and descriptions of inventions for your patent or registered design application. At the conclusion of this stage your product is ready for production.



Production

We can source, supply and manage production of your tooling, components, assemblies and finished products from our network of UK and international manufacturers.

Many clients benefit from this service preferring a single point of contact for all their product supply requirements from single moulded components to complex assemblies involving multiple processes.

Our in-depth knowledge of your product means we are best placed to quickly react to any production, supply or quality issues that may arise, minimising potential disruption to your delivery schedules.

Our extensive experience of materials, manufacturing and assembly processes ensures that your investment in new product development with Design 4 Plastics delivers a great product on time and within budget.

Case Study

GoKart

We worked closely with GoKart to design and develop a new version of their powered golf trolley.

The new design incorporates a new drive mechanism, improved ergonomics and re styling of the trolley to reflect the technical improvements. There was also a requirement to use many of the existing parts and keep tool modifications to a minimum.

We produced several working prototypes of the new golf trolley which uses existing trolley parts SLS prototype parts and T1 moulded samples.

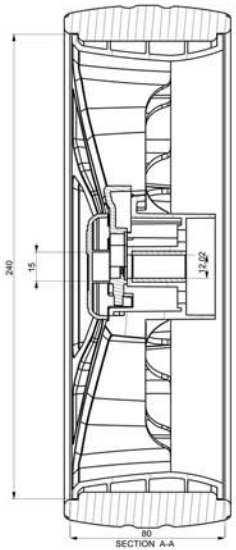
The new trolley can be powered by either a lead acid or new lithium ion battery, both batteries slide and clip into the trolley with ease.

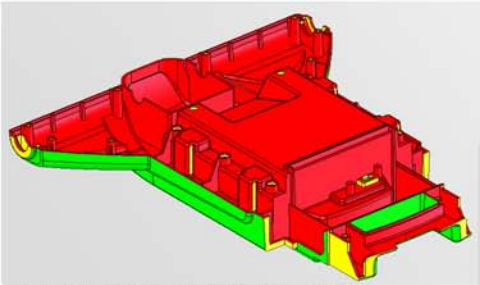
Original trolley evaluated against the brief for the new GoKart.

The trolley was modified to accomodate the new mouldings developed using CAD & sketch models.

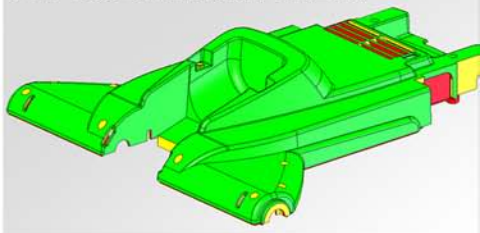
T1 mouldings of the battery housing assembled to the original GoKart trolley arms.

DEVELOPMENT CAD





PRE TOOLING DRAFT CHECK

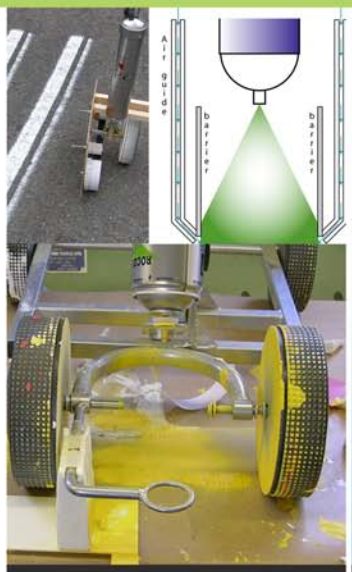


Case Study

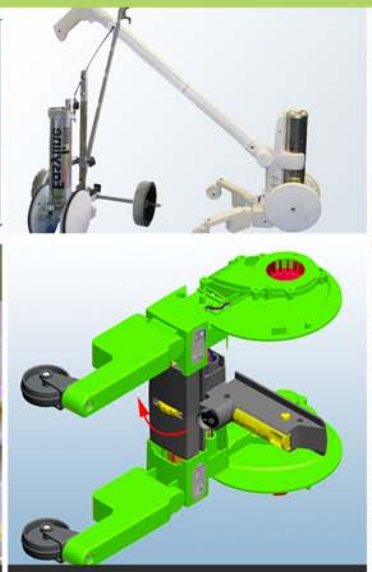
ITW Rocol Line Marker

Starting with an open brief to develop a replacement for ITW ROCOL's aerosol spray line applicator we designed an innovative, patented solution that offers many advantages over anything else on the market.

Easyline Edge can produce 50, 75 or 100mm wide lines from a single aerosol can thanks to our clever spray nozzle design and easily variable applicator geometry. The lines produced are kept clean and crisp with replaceable spray masks and a battery powered airflow system that directs paint over-spray back within the line. The handle adjusts to suit the user and the rear legs can be folded in to allow marking close to walls and racking.



Diagrams, sketches and early test rigs which were used to test methods of masking and spraying paint straight lines.



Prototypes were produced from 3D CAD files for further testing and evaluation. The 3D CAD is updated during testing.

Final product visual created using 3D Rendering package Maxwell Render. These images are often useful for marketing purposes prior to producton

Development Testing

We developed the design from concepts, through test rigs, fully detailed 3D CAD models, rapid prototypes and development injection mould tools to fine tune the spray nozzle. We managed manufacture of all the injection mould tools and product assembly for the initial production batches.

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