**Eco design**

As a Design Consultancy we design products and services that satisfy those pre‐requisites such as the

fit‐form‐function requirements, the ergonomic and aesthetic requirements of the consumer, and the

commercial requirements of the marketplace, but we also need to keep an eye on trends, which can

add another dimension that your product and service will need to satisfy in order to make it a

success.

There is no argument that ‘Environmentally Friendly’ products have a place in today’s marketplace

and coveted by many consumers, so if ‘Eco Design’ can be incorporated without determinant to the

product, then it may provide a welcome edge over the competition, and also do ‘your bit’ for future

generations.

The only product with no environmental impact is one that does not get produced, and although we

do not advocate turning away business, questioning the need for the product, and the problem it is

trying to resolve, or the gap in the market it is trying to fill is a valid one, and will reduce the

hundreds of products designed and sold each year that end up at the back of cupboards, or

discarded before the end of their natural life.

Once the criteria has been met, the next stage is to understand its environmental impact, with the aim to reduce it, which can best be done by understanding the ‘Life Cycle’ of the product or service from

the cradle‐to‐the‐grave. The product ‘Life Cycle’ takes in many elements, but the main ones are:

**Raw Materials**

In essence there are no environmentally sounds materials, even ‘Natural’material such as wood require energy to cut and process, add paint or preservatives to protect it, so a man‐made material optimised during the design process could have a smaller impact.

**Recycled Materials**

Normally considered at the end of the products life but a design that uses recycled material or material that can be recycled, can drive down the material cost in the short and long term.

**Manufacturing**

With an understanding of the raw material impact, such as the amount of oil used to produce 1kg of plastic, or the energy required to produce 1 tonne of aluminium and the amount of oil needed to generate that energy, will enable the designer to evaluate the most cost effective manufacturing process, where a bent steel bracket, could have a smaller impact on the environment than a moulded plastic, or cast aluminium version.

**Packaging**

To constant bemusement is paying 5p for a carrier bag to be more ecologically responsible, only to transport home shopping of which 30% of its volume is packaging. With a requirement to protect the goods during transit, in a uniform size and shape, along with the need to provide a visual impact and brand recognition to the consumer will never remove the demand for packaging, however the product can be designed to reduce the amount needed, reducing the product size, utilising flat pack principles for large volume products, removing individual packaging and shipping the products in communal containers, which can be hung on a display at the point of sale, and utilising recycled materials such as papers and boards, over styrene’s and foams.

**Transportation**

The size and weight of a product and the distance they need to travel relates directly to the amount of pollution produced, so understanding the origins of the raw materials or components, where they are assembled to a final product, and there intended market has a direct relationship to the green credentials of the product, for example a milk processing plant was transporting in thousands of plastic milk containers per week, until they approached the container manufacturer to build a blow moulding processing line on‐site and the containers are produced as required ‘just in time’ on-site removing a complete transport loop, reducing the environmental impact and increasing profit.

**Consumer Use**

Emphasis is placed at the design stage on the energy consumption to produce the product, however, by focusing on the product ‘Life Cycle’ will enable the energy consumption of the product through its life to be considered, which normally far outweighs that used during the production process, so energy efficiency savings during the ‘Life Cycle’ of the product will yield far greater results, for example a washing machine may use 15kWh to produce but uses 400kWh during it life time, so designing products with more efficient motors, power save features, energy capture technology, renewable forms of energy such as solar/wind, will reduce the products overall environmental impact.

**Product Life Span**

Making a product that last longer will have less environmental impact than one that need to be replaced, and making products that can be refilled with consumables, or upgraded with new programmes or technology will further increase a products life span. Not only that, many products get replaced not because they come to the end of their natural life, or become broken, but purely as a result of the owner becoming bored of it, or it has fulfilled the latest fad, so through the design process the product should inspire the user, where it becomes more than a product and less likely to become discarded.

**Disposal**

Probably the thing most people associate with a product being ‘Green’ is choosing materials that can be readily recycled is vital, and ensuring plastics are thermoplastic not thermo sets and are free from paints, lacquers and adhesive labels are key, but also it is ensuring through the design process that dissimilar materials are kept to a minimum improving yield, and that the products can be easily dismantled ensuring they are commercial viable to recycle.

An example which a product trades on its ‘Green Credentials’ is the Toyota Prius, cutting out a niche where consumers are getting better fuel consumption, which is better for the environment, however, taking the product ‘Life Cycle’ into consideration, addressing the raw materials alone, such as the nickel used in the batteries that is mined and smelted in Canada, refined in Europe, turned to

nickel foam in China, and then assembled in Japan, before finally being sent as a finished product in the car to a globally market, adds a great deal in terms of cost and pollution, without even considering the environmental impact of disposing those batteries at the end of their life, which undermines to some degree the true ‘Green Credentials’ of the Pruis.

*‘ all the production costs in mind -- the Prius costs about $3.25 per mile and is expected to last*

*about 100,000 miles. The Hummer, on the other hand, with all the same factors counted, costs*

*about $1.95 per mile and is expected to last about 300,000 mile’.*