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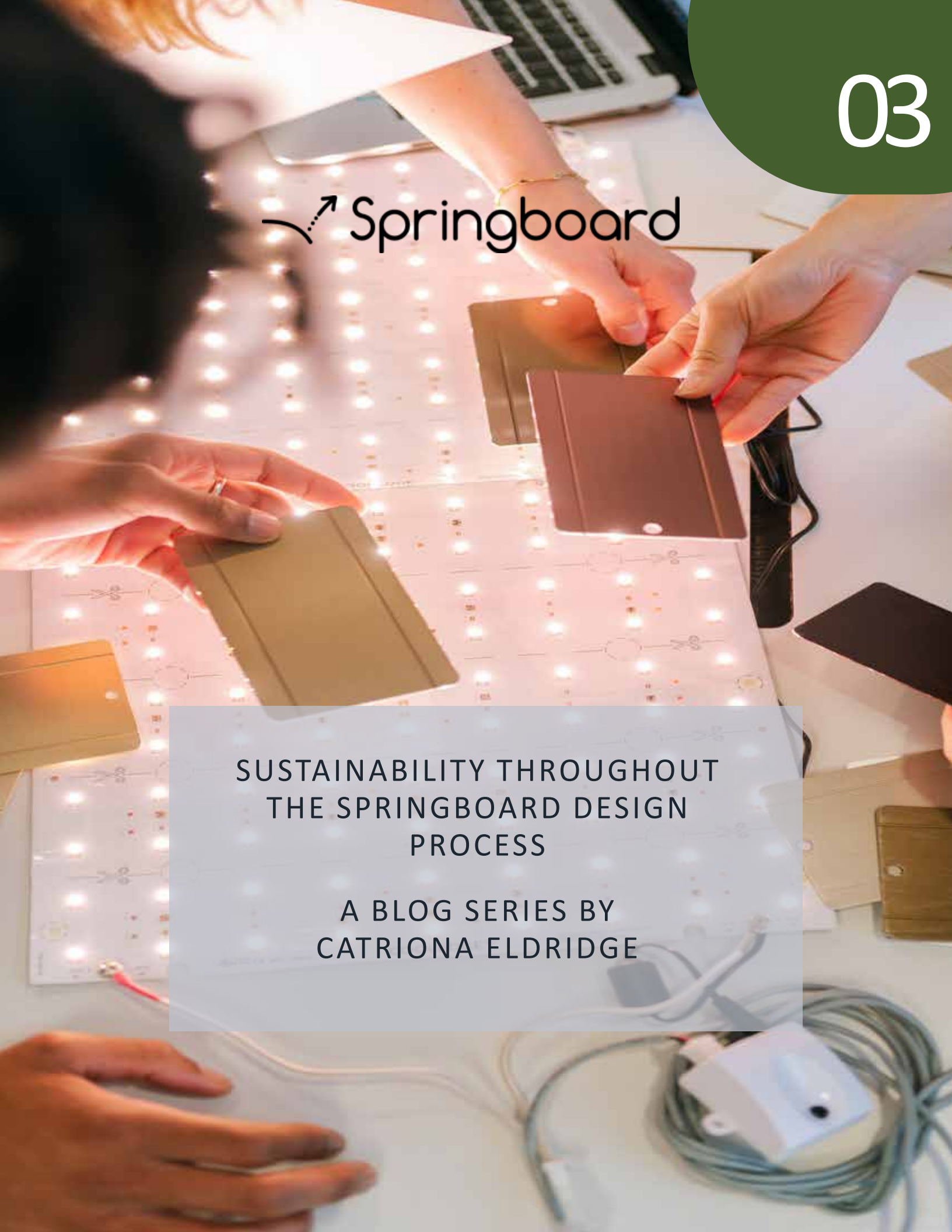


Springboard

SUSTAINABILITY THROUGHOUT THE SPRINGBOARD DESIGN PROCESS

A BLOG SERIES BY
CATRIONA ELDRIDGE

INTRODUCTION

Springboard Pro uses a 5-stage development process:

1. **Opportunity and Research**
2. **Concept and Feasibility**
3. **Design and Verification**
4. **Validation and Preparation for Launch**
5. **Launch and Post-launch**

Like many other companies, we are aware of the growing climate crisis, and the increasing pressures from legislation and consumers to develop sustainable, environmentally friendly products. This article series explores how to design for sustainability at each of our five product development stages.

Increasingly, patients, purchasers, users, government bodies and medical device companies themselves are actively seeking to reduce the climate impact of medical devices, and improve their sustainability.

This 5-part blog series aims to discuss how sustainability can be built into the product development process.

SUSTAINABILITY AT STAGE 3: DESIGN AND VERIFICATION

Stage 3, Design and Verification, builds on Stages 1 and 2 , as the chosen design concept is worked up into a detailed design.

This stage involves building prototypes, finely detailed and tolerance design, and if necessary detailed mathematical modelling. The prototypes can be tested against the design requirements that were established in the earlier stages.

The risk management plan from the earlier stages is also used here. Design for manufacture and assembly is carried out now, including designing and verifying tooled parts. For more complex devices, manufacturers may be selected at this stage.

Sustainable design in Stage 3, like the rest of the stage, is focused on manufacture: what is the most efficient way to produce this device? This can take the form of manufacturing methods that use the least material, or produce the least scrap. It can take the form of materials selection- selecting low mass materials, for example, if the device has to travel long distances, or selecting materials with low embodied carbon such as choosing steel or plastic over aluminum.

These manufacturing choices will have knock-on effects on lifecycle management of the device, and are also likely to reduce the overall cost of manufacture as efficient design saves on material and fuel costs.

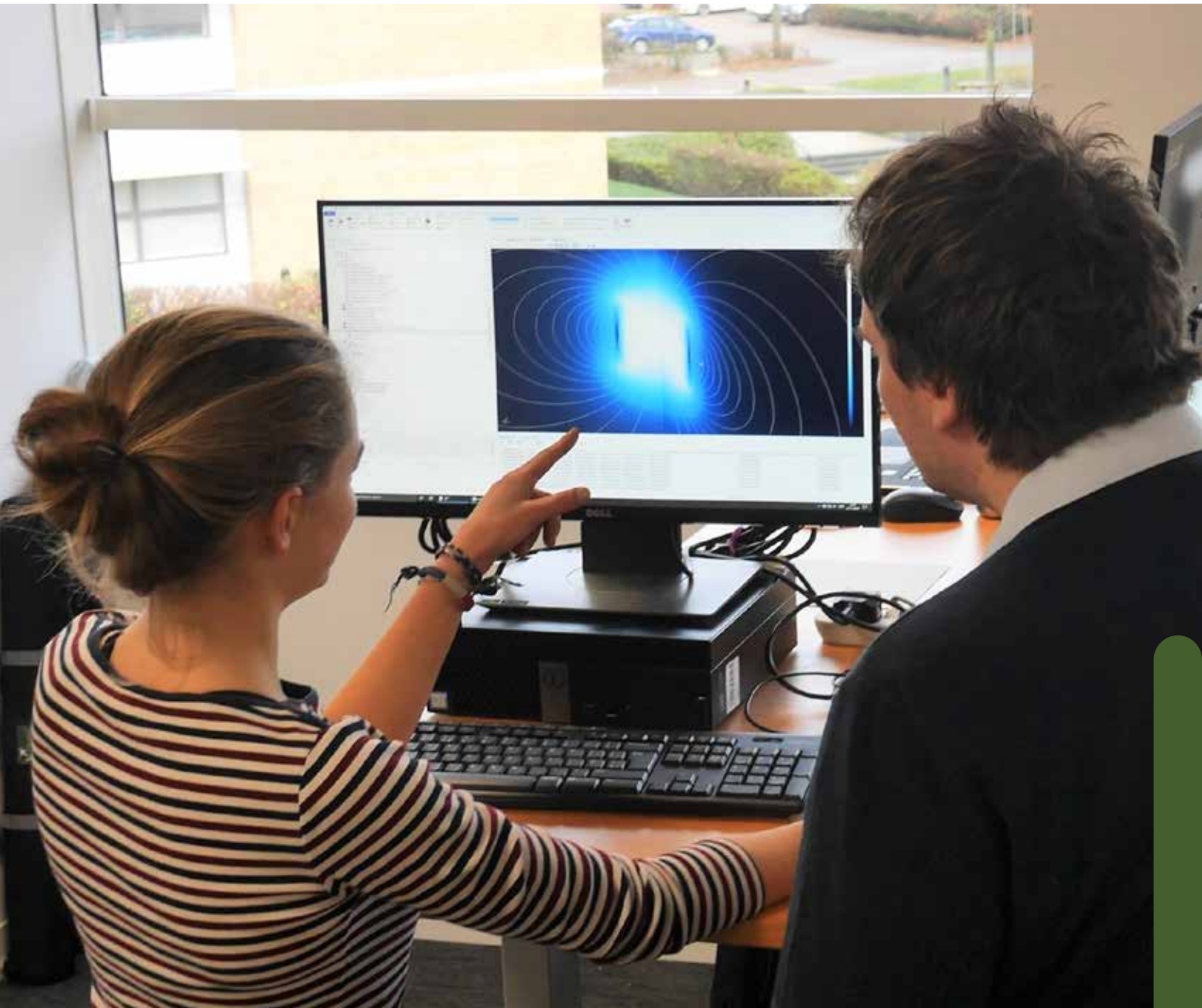
Recycling and recyclability are worth considering in detail when designing for manufacture; medical devices require extremely high quality, traceable polymer components. This generally makes recycled polymer feedstock unsuitable for manufacturing such devices, but conversely it means that the polymer material within these devices is very suitable for recycling, as it is a specific grade, clean, and with reliable, known properties. Obvious pitfalls to avoid are using complex polymer blends, or using epoxy to fix parts together.

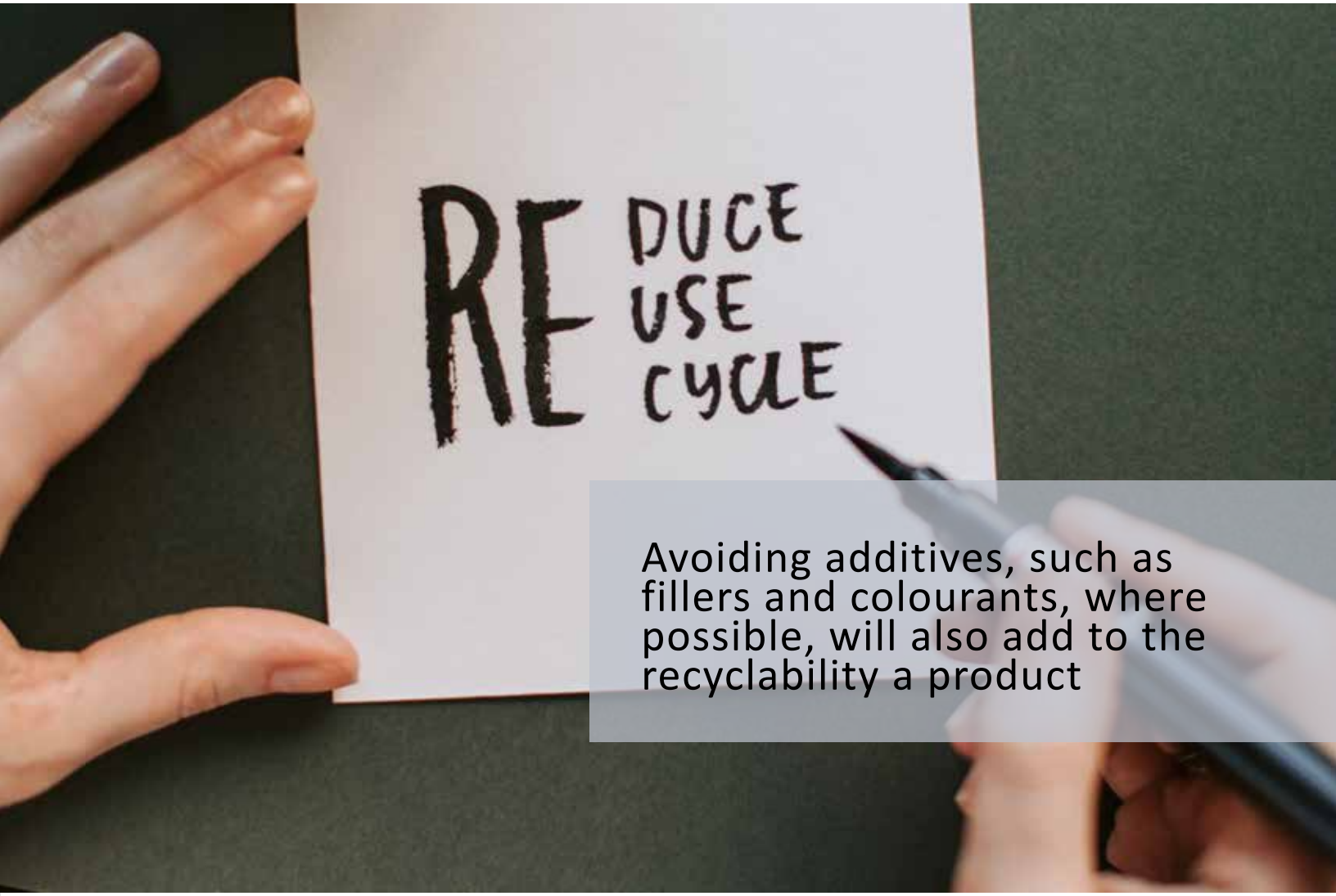
Avoiding additives, such as fillers and colourants, where possible, will also add to the recyclability of such polymers, and so will designing for disassembly. A good piece of recyclable material is generally a single piece of one, known, material, with no other additives, colourants or blended polymer additions- so designing a device to be relatively easily disassembled down to single polymer components will aid recycling.

We can also construct a manufacturing process that is as low-emissions as possible, for example by reducing distances, and thus transport emissions, between factory and consumer, or selecting manufacturers in companies with large proportions of renewable energy in their energy mixes.

CONCLUSION

Stage 3 is the most design-heavy stage, and sustainability efforts at this stage focus on designing in efficiency, functionality, and designing for end-of-life. This is done through design, material, and manufacturing choices.





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COMING NEXT:

STAGE 4 - VALIDATION AND PREPARATION FOR LAUNCH

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