

Hello Students,

The note below is intended to help you check the suitability of your product concept. It would also be of benefit to re-read the assignment brief in detail, particularly the Q&A section.

Please also see the slides and recordings from Week 1's workshop. In particular, see the list of products proposed by students in previous semesters.

Is my product innovative?

The innovation may be in the process used to create the product, in the waste materials selected, or in the design of the product itself. Please see the information regarding this in the assignment brief, and review Week 1's workshop where the concept of innovation is covered. I expect that most products will be a common item with an existing market but produced using waste materials.

Is your product predominately made from waste materials?

It's important that a significant majority of the materials used in your product are from waste materials, so it can be marketed as a recycled product.

Have you proposed a specific product that could be sold to a customer?

It's important to be quite specific in what your final product is. This will also clarify who the customer is and if there is a market for this product. Being specific about your product will also assist you in Part 2 of this assignment when you will consider how to mass produce the product.

Do not propose multiple final products, one is sufficient.

Do the waste materials in the product undergo significant engineering transformation?

It is not sufficient to simply collect waste materials or break waste products into their components. You are expected to propose a product concept that requires significant engineering transformation to achieve. The definition of a significant engineering transformation will vary by product type, but it typically includes manufacturing and assembly, a chemical or physical transformation, or a significant construction and installation process.

Could your product be mass produced or manufactured at scale?

It must be possible to create your product using a consistent and repeatable process. This is particularly important for Part 2 of this assignment, where you will consider how to produce your product at scale. What does "at scale" mean? Depending on the product, this might involve the production of 1,000 or 10,000 units. This implies that a labour intensive, handicraft, custom product is unsuitable.

A smaller number of units may be reasonable for larger final products. Let's use the example of a metal bus frame. You do not need to propose how to produce 10,000 bus frames, but rather 100 frames may be more reasonable. In this situation, it is acceptable to instead focus on the large amount of waste metal that may be required, demonstrating that this is a process that will need to be undertaken at scale in an engineering factory or workshop.

Can I use remanufacturing?

Remanufacturing may be used as long as the product meets the requirement for significant engineering transformation, and the process used is not a handicraft, labour intensive, custom process. With remanufacturing, it can be more difficult to show how your product is innovative, as you are transforming "like" into "like", so do take special care to demonstrate how your product or process is innovative.

Referencing

Ensure you use IEEE referencing for this assignment. Ensure you have sufficient in-text references to support the claims you make in your rationale.

What is a commercial rationale?

Consider if there is a commercial benefit to selling the product to the company producing it. Is there a decent sized market to sell it to? Can the company potentially make money or profit from the sale of the product? It is very likely the product is only profitable when manufactured at scale, and not in small quantities, due to fixed manufacturing overheads. A detailed analysis is not expected here, but you should consider, at a high level, does the product make sense commercially?

Can my product contain digital technologies?

In 2023, it is unlikely any digital system contained in a product manufactured at scale is going to be made from recycled materials. It's ok for products to include digital technologies, if the product still meets the assignment requirement of being made predominately from waste materials.

I have had students propose products that meet the requirements, for example:

- Products to produce cabling / insulation from waste cables.
- Outdoor shelter built using recycled solar panels and solar panel mounts.
- Refurbished e-cigarette batteries connected together in a recycled casing to create a power bank (This was accepted although it is dubious it could produce a reliable product at scale).

Examples of products that don't meet the criteria:

- AI rubbish sorting system (it's not made from waste materials).
- A robot that can plant seeds and water them (it is not made from waste materials).
- An app that helps identify waste products (the software clearly can't be made from waste products).
- A server motherboard made from recycled phone motherboards (it is unlikely this could be done at scale in an automated made, each construction would be custom).

Kind Regards

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