

Case Study D

Company:	Orangebox
Location:	Treforest, Wales
Product:	Ara Task Chair
Type:	OEM
Maturity:	Experienced
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Orangebox is a market-leader in the design and manufacture of office furniture. It is committed to sustainable business practice and aspires to embed circular economy principles throughout its business. This can be seen through its efforts to maintain a local supplier network in Wales and the UK, as well as the use of Life Cycle Assessment (LCA) during product development. It recently undertook a remanufacturing pilot study¹ to explore the potential for remanufacturing within its business.

Motivation for Remanufacturing

Orangebox see a range of benefits of remanufacturing, from benefits to brand value through environmental stewardship to financial revenue generated through sale of remanufactured products. Material costs constitute 45% of Orangebox's total annual spend and therefore remanufacturing presents a great opportunity for cost savings as well as benefiting the environment.

Product Description

Orangebox has been bringing office task chairs (Fig. 6a: Ara) onto the market since 2007. A typical product lifespan of 6-8 years and is sold into Orangebox's key markets including corporate clients, hospitality, education and to the public sector.



Fig. 6a Orangebox Ara Task Chair

Fig. 6b Orangebox Fastener-free disassembly

¹Supported by the UK Innovation agency Innovate UK.

Design for Remanufacturing

Orangebox's products are well suited to remanufacturing, through the selection of durable materials (such as aluminium), streamlining parts and integrating functions, allowing for easy manual disassembly to facilitate efficient remanufacturing. This efficient disassembly and reassembly is allowed for through an innovative design feature (inspired by Tupperware closures: Fig.6b) which allows the chair back to be fixed to the chair frame with limited fasteners. In addition, upholstery and castors (typically product replacement issues) as well as the seat foam can be easily removed and replaced on all Orangebox task chairs. Through the development of Ara and subsequent products (such as the Do chair), Orangebox continually hones its approach to DfRem. It aims to strike a balance between material efficiency without compromising the durability of the products it designs and develops.

Environmental Benefits

Through LCA Orangebox identifies that the key environmental impacts of its task chairs are embedded in its material use during the extraction, product and end-of-life stages of the product life cycle. Remanufacturing can extend the life of the product by 4-6 years, achieving close to a twofold reduction in material and resource intensity.

Economic Benefits

Due to the high material input costs remanufacturing can contribute to significant material and energy savings during production. It can also add brand value as well as open up new markets.

Social Benefits

During a pilot remanufacturing programme undertaken in 2014, Orangebox initiated a partnership with a Welsh social enterprise, creating and upskilling a local workforce. Orangebox states that its remanufacturing and wider sustainability initiatives, instil pride in its workforce creating a positive company culture.

Business Model

Retrieving the chairs is the first part of the remanufacturing process and therefore the business model and process of remanufacturing are critical for success. Having a local supplier base is beneficial and through funding from the UK innovation agency, Innovate UK, Orangebox has recently been able to explore the business model options which can aid in reverse logistics to accelerate its remanufacturing activity.

Future Challenges

After undertaking its pilot activity in 2014-2015, the next step for Orangebox is to scale its remanufacturing activity throughout the business, which will require systemising and automating the process it has developed through initial feasibility tests. Orangebox products comply with UK, EU and US standards of new products, however it believes a certified mark would be beneficial to increase market uptake of remanufactured products.