

A Head of the Game

Kittiwig & University of Strathclyde

A Scottish Institute for Remanufacture Case Study

Hair raising industry

Globally, wigs, weaves, wefts and hair extensions are a 'growing' industry!



In 2017, the North American market alone was worth an estimated \$346M. There are two important factors driving this growth; an increase of medical hair loss, and cosmetic enhancement.

Size of markets

According to National Alopecia Areata Foundation, 147 million worldwide have or will develop alopecia areata at some point in their lives. In addition, Paxman cooling systems report an estimated 4 million patients (per annum) will lose their hair due to cancer treatments, raising to 6.7 million by 2030

Industry name

The industry has many names as does its products. Collectively this project refers to them as 'False hair industry or products' (FHI/Ps)

Kittiwig, a UK start-up manufacturer in the False Hair industry, wanted to investigate the opportunity for introducing a remanufacturing model within this product space.



Supply chains

The false hair industry is a global trade, with source materials originating in countries such as India (supply of human hair) and Japan (supply of synthetic fibres) before manufactured in the Far East (often China). These products are then distributed globally to Western markets (UK and USA) but also to African countries such as Nigeria, which have a growing demand for FHPs.



Lifecycle Analysis

The first phase of the project involved conducting a detailed life cycle analysis, to understand current use of materials, manufacture, and supply chain practices, here within the UK and globally.

Survey

The project had detailed discussions with a range of user groups (consumers) from the NHS, wig banks and theatre groups.



Surveys were carried out with three user-groups labelled 'long term alopecia', 'short term alopecia' and 'no hair loss'. Each group identified user trends, needs, perception of reuse/recycle of FHPs, current methods of disposal and motivations for purchase. Helping Kittiwig identify opportunities to implement a remanufacturing model into their business.

Research findings

The findings showed that most FHPs lasted less than 12 months, with 74% of users currently disposing of their false hair product in landfill.

Given the complexities behind the global supply chain for FHP and the fragility of sourcing of human hair from individuals, plus the environmental issues and longevity of using petroleum based synthetic fibres and transporting them globally, there is a clear need to adopt reuse, recycle and remanufacture principles to extend their life cycle, help minimise waste and reduce carbon footprint. For innovators, there are potential opportunities to **'Get a head of the game'** by adopting a closed loop model (circular economy) with cradle to cradle design principles to help build a sustainable future for the False hair industry.

Opportunities to reuse and remanufacturing FHPs

Synthetic fibres are cheap to produce but are not easy to recycle. Currently, most users dispose of their false hair products in domestic waste (landfill). This research has identified the opportunity to capture waste for reuse and remanufacture to reduce this demand for raw materials and to reduce landfill waste. There are also opportunities for the reuse of human hair for alternative purposes, to further reduce the volume of waste when a product has reached its end of life. For example, felted human hair can be used as oil filters or matting for plants. Hair's protein (*L-cysteine*) can be used as a food flavoring, and is found in dog food, bread and baked snacks. Alternatively, it can be used as a fertiliser for agriculture.

The reuse and remanufacture of false hair products will reduce the demand for raw materials on a global scale, thus reducing the associated carbon emissions of this global trade. The ability to reuse and remanufacture products within the UK will also create a local circular economy. The economic saving made from the reuse of materials and reduction in the supply chain will be passed onto customers. This research identified cost issues associated with many prescribed wigs on the NHS, who provided patients with over 13,000 wigs in 2015/16.

Results and Next Steps

Since starting the SIR project Kittiwig has invested in machinery for production of false hair products. Using the outcomes of the project, the company is now able to identify materials and processes suitable for remanufacturing, and how this will affect revenue streams moving forward. In addition, Kittiwig has realised potential opportunities for repurposing materials whilst introducing a new product line specifically for remanufacturing.



For more information on the funding opportunities available through SIR visit our website www.scot-reman.ac.uk, email us sir-enquiries@strath.ac.uk or follow us on twitter [@SIRemanaufacture](https://twitter.com/SIRemanaufacture)