Adding value to remanufacturing: Operationalising a reverse logistics system for the collection of WEEE

Menzies Distribution Ltd, CCL North, and Heriot Watt University

A Scottish Institute for Remanufacture Case Study

Project background

Heriot Watt University (HWU), Menzies Distribution Limited (Menzies) and CCL (North) Limited (CCL), embarked on a collaborative 6 month project to pilot a bespoke reverse supply chain for the recovery of small mixed household WEEE for remanufacturing activity. The aim of the research was to investigate the feasibility of integrating the collection of small WEEE within Menzies existing logistics network, and to assess whether the new system could improve the remanufacturing and reuse rate of end of life electricals.

The research builds upon a previous SIR-funded project between Menzies and HWU which developed the concept and initial design of the system.

CCL (North) Ltd. is one of the UK's leading and most trusted IT Asset Disposal companies, providing a secure, safe and environmentally compliant service for the collection and recycling of redundant IT equipment, data storage devices and WEEE.

Menzies operates an integrated forward and reverse logistics model, i.e. the delivery of new products is combined with a collection of old products. The company's existing distribution network includes 33,000 retailers and convenience stores across the UK. Most of these stores are serviced by Menzies on a daily basis.

A collaborative approach

The project team worked collaboratively to design a community based WEEE collection system that is conveniently located close to the end user of household small WEEE. The network structure of this collection system includes Menzies's network of retailers and convenience stores (i.e. grouping centre), a centralised consolidation centre (Menzies's warehouse), and a centralised recovery centre (CCL North facility).

Menzies reached out to their network of local, independent newsagents and asked them to volunteer as WEEE collection points because 1) they were typically located in community, residential setting where small household WEEE arisings are generated; and
2) to contribute to the local economy and potentially increase footfall and sales for the newsagents, at a time of falling newsprint sales.

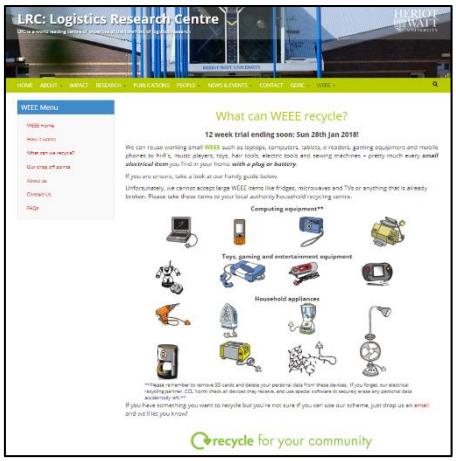
Menzies identified two areas which they considered had the right demographic mix for the pilot. They provided a Menzies customer representative to engage with retailers, and HWU supported the Menzies representative to recruit independent newsagents to serve as collection point.

The live pilot ran for 12 weeks and followed five key steps to collect, retrieve and transport the WEEE for value recovery:

1. The end user bringing their unwanted WEEE
2. Newsagent taking receipt of the WEEE
3. Menzies collecting the WEEE from retailers
4. Menzies consolidating the WEEE at their warehouse and onwards delivery to CCL
5. CCL carrying out value recovery activities

Generating awareness

HWU designed, coordinated and implemented a promotional plan to encourage members of the public to use the scheme. The team undertook graphic design of the door step drop leaflets and shop posters. The leaflets were distributed to 33,000 households in one of the pilot areas.



The team also designed and ran a Facebook targeted advertising campaign which was seen by over 60,000 people across the Greater Glasgow area over the 12 week pilot. A Facebook project group was established and maintained, which accrued circa 120 followers by the end of the 12 week pilot. HWU also hosted and created a bespoke project website (www.lrc.hw.ac.uk/weee) which received circa 1200 individual visitors during the pilot. A series of press releases were also issued to raise public awareness of the WEEE collection scheme.

Project outcomes

Over the 12 weeks, 692kg of WEEE was deposited at the 12 collecting newsagents. Menzies carried out 17 WEEE uplifts and CCL were able to treat all the WEEE appropriately so that nothing went to landfill. Had the pilot not been available, it is assumed that the 692Kg of WEEE would have eventually resulted in landfilling. Instead, through their processing activities, CCL were able to move the materials up the waste hierarchy to achieve the following:

- Reused = 2%
- Stripped for components = 37%
- Shredded for recyclates = 58%
- Non-WEEE (alternative disposal route) = 3%
- Landfill = 0%

The WEEE material also generated a revenue of £602 through the sale of reuse items/components and recyclate material. The data collected allowed the research team to build economic cost models to evaluate the economic benefits of the collaborative WEEE supply chain to the partners, and gained significantly detailed insights into the value recovery potential of mixed small household WEEE.

Next steps

The project has shown that the WEEE products inputted into the system are currently not suited for high value remanufacturing activities so were predominately sent down the component reuse and recycling stream. The value recovered (revenue) was insufficient to cover CCL and Menzies operating costs resulting in a loss of approximately £30 per week for the partners. This excludes promotional and retailer subsidy costs. As it stands, both Menzies and CCL have the capability and capacity to operate a WEEE collection system, but there is little commercial incentive to do so unless a way is found to cover the losses e.g. securing subsidies through a Distributor Take back Scheme, or proactively targeting WEEE items for remanufacturing.

The funding provided by the Scottish Institute for Remanufacture enabled the project team to conduct a financial assessment of the system and detailed insights into the value recovery pathways for mixed small household WEEE. A number of operational improvements have been outlined for Menzies to support the creation of a more robust collection system, and strategies that might obtain higher WEEE inputs in the future.