

Mattress collection and take back from households for recycling

Airsprung is one of the largest British mattress manufacturers, producing around 650,000 mattresses and 150,000 divan beds each year. They offered a takeback service in partnership with JBS Fibre Recovery¹.



Mattress takeback system: Trowbridge, England

This is an example of the collection of post-consumer mattresses from households. The collection is undertaken by Airsprung. As part of new delivery, old mattresses are brought back to the Airsprung site in Trowbridge for deconstruction. Mattresses from HWRCs are also collected for reprocessing.

¹ This scheme terminated in August 2013 due to scrapped mattress availability volumes.

Key facts

Organisation: Airsprung Group

Type of business: Mattress manufacturer

Location: Trowbridge, Wiltshire

Type of non-textile: Post-consumer mattresses from domestic sources

Type of collection: Collection and takeback scheme

Tonnes collected: Approximately 40 tonnes per month at present, some through third parties

Recycling rate (2012): 60-80%

Disposal rate (2012): 20-40%

Number of employees: Up to 6 working on mattress stripping.

Introduction and background

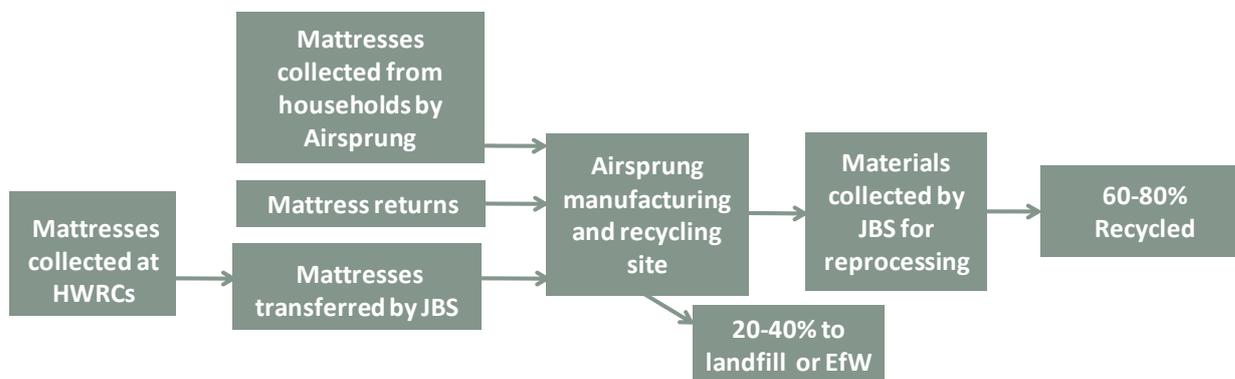
Airsprung first started manufacturing mattresses in 1871. Today it is one of the biggest mattress manufacturers in the UK, employing over 600 people nationwide. It prides itself on continually improving its designs and always investing in research and development to stay at the forefront of the industry.

Following demand from customers, and anticipating possible producer responsibility legislation, Airsprung developed a "collect and recycle" service to its customers in 2012. It entered into a partnership with JBS Fibre Recovery in order to facilitate the collection and recycling of mattress materials from Airsprung's home collection takeback scheme.

Description of the operation

Mattresses are brought to Airsprung's recycling facility in Trowbridge through a number of routes. The largest proportion comes from HWRCs, collected by JBS' articulated lorries and delivered to the Airsprung site for deconstruction.

Other routes include retailer takeback (retailer removing old mattress when a new one is delivered) and new product returns. If the packaging is intact (e.g. if the mattress isn't the right size for the customer's requirements), mattresses are either reallocated to stock if still a current product or are sent to resellers to be sold on to other retailers e.g. as end of line items. If the packaging has been opened they are deconstructed for recycling or sold as a "used mattress" into the second hand market.



10% of mattresses handled come from Airsprung's own "collect and recycle" service, where Airsprung's delivery crew and vehicles collect old mattresses whilst delivering new ones. When customers are buying a new mattress from Airsprung they can opt to pay an extra fee and have their old mattress collected for recycling at the same time. Airsprung sends the customer a plastic cover in advance to package the mattress before collection. This allows them to use the same vehicle to collect and deliver mattresses whilst ensuring that old and new mattresses do not come into contact with each other.

Mattresses are brought back to the Airsprung site in Trowbridge where they are manually deconstructed in the recycling unit of the site by staff. The different materials are separated and bulked before baling. The springs are bulked in a container and sent off for recycling as scrap metal. The baled mattress materials (except the tick (cover)) are transported by JBS, in the same vehicles that deliver mattresses from HWRCs, to their facilities. The textile materials are sanitised and recycled into a variety of other textile products such as automotive acoustic soundproofing textiles whilst the foam is recycled into chipped foam.

Airsprung sends approximately 20 - 40% of material to landfill. This is based on whether the springs are open coils (sent for reprocessing) or pocket springs (no market found). The covers are sent to landfill, as well as the coir (coconut husk) fibre if the mattress contains any. JBS does not collect the covers or pocket springs from Airsprung, however it does have local bulk agreements (for its own mattress reprocessing) for pocket springs and is able to send the covers and coir on for the production of refuse-derived fuel.

Figure 1 Springs in a container after deconstruction



A small proportion of mattresses (2%) are too contaminated to be recycled and have to be disposed of to landfill.

Innovation/good practice

As a mattress manufacturer who also undertakes mattress recycling Airsprung has been working on its mattress design to facilitate deconstruction. These changes, alongside the establishment of the takeback scheme, will help them capture more end of life materials and deal with them more efficiently in future. By using a sealable bag which can be sent to customers in advance, enabling more efficient collections as vehicles can carry old and new mattresses simultaneously. Airsprung has also been working with its supply base to find end markets for recycled mattress materials, especially for the cover which is the most difficult material to deal with.

Description of costs and revenues

This box provides a summary of the main annual costs and revenues (detail given where provided).

Costs:

Licensing/set up costs: None as using existing facilities.

Collection/delivery vehicles: Six 3.5 tonne vehicles and six 7.5 tonne vehicles, estimated cost of each vehicle £15,000-£25,000.

Buildings: Use of warehouse space within existing site for stripping and holding materials (~5,000ft²).

Equipment: A vertical baler (second hand, ~£6,000).

Dedicated staff: Up to six full time employees working exclusively on mattress deconstruction over two shifts.

Transfer costs: The baled materials are collected by JBS Fibre Recovery using the same articulated lorries used to deliver mattresses to the site.

Revenues:

Fee charged for collection and recycling (£5-£10 per mattress)

Sale of materials for recycling

Performance/outcomes

- Number of collections/deliveries: Around 100 per month from households, expected to increase
- Non-clothing textiles collected: 40 tonnes each month (~4 tonnes collected by Airsprung and ~36 tonnes delivered by JBS)
- Recycling rate (2012): 60-80%
- Disposal rate (2012): 20-40%

Figure 2 Bales of materials after deconstruction



Conclusions/key learning points

Airsprung and JBS's partnership provides an example of how manufacturers and textile reprocessors can work together to increase the recycling of non-clothing textile products. By using a sealable bag which can be sent to customers in advance, this allows for more efficient collections, as the same vehicle can be used to collect old mattresses and deliver new mattresses. The service also provides customers with an effective recycling service at a cost lower than a bulky waste collection.

Mattress deconstruction is undertaken at its own site using existing facilities and the materials are backhauled to the JBS site by JBS vehicles. Backhauling ensures transport collection costs are dramatically reduced. The scheme allows Airsprung to capture end of life mattresses for recycling at minimal cost, displaying responsible producer behaviour and reducing the impact of its products on the environment.

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