

Refurbishment Resource Efficiency Products Case Study: Carpets, Forbo

Re-thinking carpet waste as a new resource

This case study focuses on global flooring solutions manufacturer, Forbo Flooring Systems and highlights the overarching approach that it is taking to address and integrate resource-efficient manufacturing processes within its business.

Business benefits

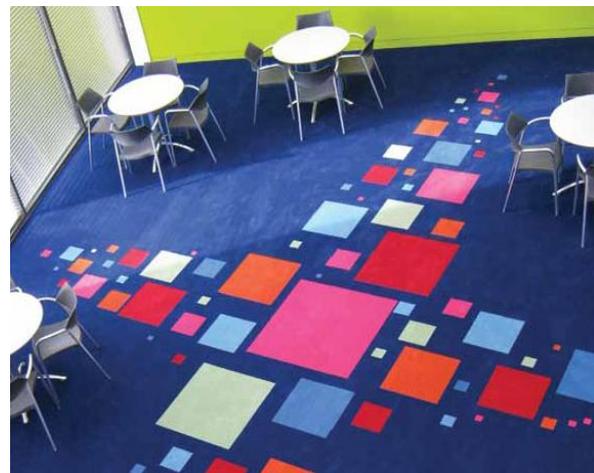
- More than 22,000 tonnes of waste material diverted from landfill since 2001.
- Innovative re-use schemes benefits to individuals, communities and the environment.
- Green Design principles conserve resources and build businesses.

Manufacturer description

Forbo Flooring Systems is part of the Forbo Group employing more than 500 staff at five UK manufacturing plants. Forbo offers a wide range of carpet tile, carpet sheet and entrance mat systems. The company is working to achieve a 25% reduction in the environmental impacts of its operations by the end of 2015, as measured by the weighted categories in their independently verified Life Cycle Assessment. Re-engineering of many product lines is also underway to reduce the raw materials used at the outset.

This 'green design' culture is now driving environmental/product improvements and has led to Forbo completely rethinking the concept of 'waste' and treating it as a raw material. Recycled material, including production waste from sites in France, UK and Holland is now incorporated into new Westbond and Flotex carpet tiles made in the UK.

Waste carpet is recycled or reused in Take-Back schemes from selected clients, including projects involving third sector reuse organisations.



Forbo Westbond Carpet Tile

Materials quantity – minimising resource impact

In 2001, Forbo pioneered a quality recycled PVC backing for its Flotex tiles by granulating, extruding and pelletising post-industrial PVC waste from its production facilities in the UK, Holland and France. Pellets are melted and compressed to form the sheet backing.

The 2008 purchase of Bonar Floors with its Westbond carpet tile brand enhanced the opportunity for recycled PVC backing, which expanding the intake of post-industrial waste from its European sites, plus post-installation waste from MoD projects has increased feedstock for the recycling processes, while reducing waste to landfill and the amount of virgin material needed.

Benefits/savings:

- Post-industrial & post-consumer waste recycling reduces need for virgin material in new products.
- Green design principles now integrated across all product development.

- Recycled PVC content over 50% in Flotex tiles and over 40% in Westbond carpet tiles.

Materials wastage

Production waste is used as a raw material in carpet tile backing. All staff participated in educational sustainability programmes to reinforce the company's 'Creating Better Environments' ethos, which significantly reduces waste to landfill.

Benefits/savings:

- Flotex tiles produced after the year 2000 could be recycled for the second time.
- Externally-sourced waste materials for recycling divert other manufacturers' waste from landfill.

Recycled content

Recycled content comes from Forbo's own production waste as well as from other sources. Core green design initiatives include sourcing recycled materials, such as yarns and fillers. Adjusting the yarn colour selection maximises the use of recycled material, such as the Tessera Inline range of carpet tiles that contains up to 55% recycled yarns.

Only recycled aluminium is used in the flooring entrance systems products; many ranges allow for double-sided use which extends the product's life by 100%.

Benefits/savings:

- Westbond carpet tiles' backing comprises 74% recycled materials.
- 40% of recycled post- industrial PVC waste is used in Eternal and Step products' backing layers.
- 100% recycled aluminium used in rigid entrance systems.

Embodied carbon

Forbo bases its LCA calculation on the weighted mass of all its manufactured products, including worldwide energy consumption in offices and warehouses. Calculations show continued improved performance from 2007 - 2010 across all production facilities.

Benefits/savings:

- Over 90% of electricity in 12 plants comes from renewable resources.



Forbo Tessera Circulate

Water use

Although most production processes do not use water, data is gathered to monitor overall water usage and determine a baseline from which to measure improvements in conservation. The use of mainly solution-dyed yarns minimises water use.

Life span – Design for appropriate durability/expected life

Principles of green design include attention to aesthetics and developing products whose longevity in use is not compromised by short-lived design trends.

Benefits/savings:

- Design and colour is selected for long-term appeal on the floor.

End of life potential

A Take-Back scheme with selected clients recovers post-installation waste for recycling back into new products. This waste will either be recycled into the production processes or reused, reducing the amount of virgin material needed.

Through its Carpet Recycling UK membership, Forbo accesses a recycling network which can help to provide end-of-life solutions for carpet waste.

Benefits/savings:

- Production waste from internal and external sources is re-used in tile backings.

Resource scarcity & security

A new tufting technique technology for carpet tiles requires fewer raw materials, conserving resources and reducing cost.

Benefits/Savings:

- Yarn yields up 14% through better edge control on textiles.
- Ultrasonic cutting technology reduces trimming waste in carpet tiles by 85%.
- Bio-based material compositions offer renewable alternatives to traditional materials

Carpet take-back case study

When Britannia, part of The Co-operative Financial Services (CFS) refurbished its offices near Leek, Staffordshire, a key aspect of the project was to minimise its environmental impact and re-use uplifted carpet tiles.

Forbo worked with main contractor Leverton UK Ltd in supplying 1,000m² of new carpet tiles and local reclamation contractor Anglo Recycling Technology Ltd to recover old tiles for re-use in a nearby church. Simon Macaulay, Anglo's Managing Director, said:

"Shared environmental values are a glowing example of how mutual efforts can provide the key supply chain links and ensure that material is available to be recycled".

Benefits/savings:

- Waste carpet tiles diverted from landfill and given a useful second life.
- Transport miles eliminated due to local re-use.

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- Meets sustainability objectives with additional social benefits.

Inclusion of the third sector

Forbo helped to set up two new carpet recyclers – Anglo Social, part of Anglo Recycling Technology Ltd, and Square Deal Flooring – to provide solutions to end-of-life material. Anglo Social, founded by Simon Macaulay, trains people with poor access to the labour market in carpet tile re-use and resale to low-income families and charities. The fledgling social enterprise supplies reclaimed tiles at affordable prices to communities most in need, while offering suitable, supported employment to autistic adults. Simon, whose teenage son James is autistic, said: "Given that only 15% of autistic adults have jobs, this scheme offers great potential to provide meaningful employment with sustainable benefits for all."

Benefits/savings:

- Ethical scheme that benefits individuals, communities and the environment.
- Diversion of useable carpets from landfill.

Conclusion

Environmental responsibility begins with the way products are designed and raw materials are sourced. The use of internally and externally generated PVC has led to high recycled content backings.

In manufacturing the use of recycled content pile yarns along with modifications to manufacturing procedures has significantly reduced waste. Take back of carpet tiles has given new employment opportunities as well as material recovery for a second life.

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