Refurbishment Resource Efficiency Products Case Study: Carpets, Milliken

Optimising resource efficiency in carpet design & manufacture

This case study focuses on the world’s largest privately-owned textile manufacturer Milliken & Company and highlights the overarching approach that it is taking to address and integrate resource-efficient manufacturing processes within its business.

Key business benefits
- Extended wear life from 10 to 15 years achieved with 85% recycled content polyurethane (PU) backing.
- Waste segregation for recycling has achieved over 90% diversion from landfill to date.
- Optimising resource efficiency grows global business.

Manufacturer description
US-based Milliken & Company claims to be the only certified carbon-negative organisation in the textile and carpet industry. This is achieved through alternative energy use, renewable resources and forestation schemes. It manufactures a wide range of modular carpet tiles for commercial and public sector use at its advanced facility in Wigan in the UK.

In 2004, Milliken Contract Europe became the first carpet manufacturer to achieve BRE Environmental Certification, which was applied two years later across its entire A-rated premium loop pile collection. Suppliers have to meet sustainability guidelines and new vendors are checked to ensure ethical procurement. Committed to sustainable practices and processes, Milliken is a founding member of Carpet Recycling UK.

Materials quantity – minimising resource impact
Design Essential light-weight contract tiles minimise material usage without compromising durability or quality.

85% recycled content in cushion-layer backing achieves contract-rated performance and excellent acoustics, with less yarn. Omni-directional random lay products reduce installation waste by up to 75%

Benefits/savings:
- 3,600 g/m² tile weight is 16% below 4,300 g/m² industry average with less material use.
- Omni tile wastage is less than 1%, compared to a typical 3 - 5% rate.
Materials wastage
Switching from PVC to polyurethane backing with 100% recycled content has reduced material use by 25% since 2002. A unique Millitron process prints bespoke designs and colours directly onto white carpet. Stock control is easier and reduces wastage. Using Life Cycle Data and applying Design for Environment (DFE) principles calculates efficient yarn usage to increase product performance and preserve resources.

Benefits/savings:
- More than 10,000 tonnes of polyurethane (PU) foam now used in cushion backing.

Recycled content
Southern Analog loop pile tiles have a total recycled content of 30%, and use 100% recycled yarn called Econyl which is supplied by Aquafil and is blended from post-industrial and post-consumer content. This yarn offers strength and life cycle comparable to virgin polymer, helping to reduce waste and reduce the environmental footprint of the product.

Benefits/savings:
- 85% recycled cushion backing and 90% recycled primary backing.
- 30% total recycled content by product weight.

Embodied carbon
Milliken & Company claims to be the only carbon-negative manufacturer in the textile sector. Energy consumption is audited and reduced by investment in energy-efficient, cleaner technologies.

More than 138,000 acres of company-owned forests offset 400,000 tonnes of CO₂ each year, with one million trees planted annually. All Milliken modular carpet collections are certified carbon neutral by the respected Leonardo Academy without purchased credits - Cleaner and Greener Energy Emission Standard. Harvesting methane gas from an Atlanta community landfill replaces at least 30% of natural gas usage at one production plant.

Milliken carpet products, such as Southern Analog, contribute points under the the Leadership in Energy and Environmental Design (LEED) Green Building Rating System and other similar building standards. BRE ratings of A+ or A are available on all product ranges.

Benefits/savings:
- Five times more CO₂ is offset than created by global operations – over 5 million tonnes per year.
- UK facility uses green electricity from renewable resources.

Small-scale hydro-electric plants used globally.

Water use
Water consumption/m² has reduced by 42% since 2002 due to rigorous conservation practices, such as re-using water more than once and reducing flows

Benefits/savings:
- Low water-usage Millitron printing process reduces consumption.

Life span – Design for appropriate durability/expected life
The specially-developed cushion backing system can extend carpet life by 50%. The backing protects the carpet from wear, improves appearance retention and reduces noise. More comfortable to walk on, the backing also helps to reduce the need for yarn content without affecting product performance.

Benefits/savings:
- 93% recovery from foot compression improves durability and extends lifespan.
- Significantly improved wear performance with 15-year guarantee.

End of life potential
High-friction lightweight coating, Traction back, eliminates the need for wet adhesives and to seal floors before installation. When used with Omni-directional tiles, these can be uplifted cleanly for second and third lives without adhesive or subfloor contamination. Individual tiles can be replaced if damaged without replacing the entire floor. Milliken’s Carpet Take Back scheme refurbishes returned carpet tiles for re-use.

Benefits/savings:
- Coating improves indoor air quality and reduces harmful volatile organic compounds (VOCs).
- Product designed to look more uniform when re-laid again.
Resource scarcity & security
Maximising recycled content – up to 30% in some products - reduces impact on existing resources and contributes to future material security.

Benefits/savings:
- Aquafil Econyl 100% recycled pile yarn protects against oil-based nylon scarcity.

Inclusion of the third sector

Case study
Through partner organisations in the Milliken Take Back Programme, specifiers can obtain refurbished carpet tiles. Milliken Contract has built excellent links with the carpet recycling industry as a founder member of CRUK.

When Exeter-based South West Water replaced 6000 m² of carpet tiles, Milliken arranged the take-back of the old tiles. After being palletised by the installer, these were taken to carpet re-use organisation Spruce Carpet Tiles for cleaning, sorting and re-use. Local charities, small businesses and the social sector all benefited from re-using this flooring.

A similar take-back scheme operated successfully with London property leasing company, Fountain & Colonnade. Around 400m² of old carpet tiles from the flooring refurbishment project were reclaimed by Spruce Carpet Tiles for further re-use in the third sector. The client was also issued with Carpet Take Back certification as proof that the tiles had been reused and diverted from landfill.

Benefits/savings:
- Waste carpet diverted from landfill gets a useful second life.
- Reduces the need for new carpet production.
- Benefits communities and the environment.

Conclusion
Resource efficiency is core to Milliken culture; a healthy enterprise and a healthy earth are vitally linked. Joe Salley, Milliken’s President and CEO comments: “Milliken has long understood that ethical behaviour is not just the right thing to do, it is key to sustainable growth.”

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