

Recycled glass fibre for cost-effective composites

Our Regenerated Composite Value Reinforcement (ReCoVeR) technology enables cost-effective regeneration of glass fibres for reuse as glass reinforced plastic (GRP) with 80% of the original strength. This game changing technology has the potential to completely transform the economics of recycling GRP composites which currently go to landfill.

Background

It is projected that global production of composite materials will exceed 10 million tons by 2015. About 60% of this volume employs thermosetting matrix materials producing GRP composites which are difficult to recycle cost-effectively. Many GRP sectors, such as wind turbines, have double-digit growth rates with 6 million tons of GRP wind turbine blades to be produced globally over the coming decade. Most of this material is destined for landfill at the end of its 10-25 year lifespan.

The UK already produces around 160,000 tons of GRP waste each year of which 98% goes to landfill. Globally in 2014, there could be over 1 million ton of glass fibre recycled out of end-of-life GRP and in 20 years' time this will grow to 6 million ton. It is no longer viable to dispose to landfill as costs are increasing and the number of holes in the ground are decreasing.

Technology

Thermal recycling is currently the most technologically advanced process for recycling GRP composites. However, nearly all recycling processes create recycled fibres that have a poor performance compared with new materials. Consequently, most recycled fibres are unsuitable for reprocessing and reuse in composites.

Our ReCoVeR technology involves thermally treating reclaimed glass fibre from GRP waste to regenerate a performance level which is almost equivalent to new fibres. Compared to composites manufactured with fresh fibres, composite materials reinforced with ReCoVeR glass fibres can attain over 80% of the performance at a substantially reduced cost. It is suitable for second life applications such as injection moulding and glass-mat thermoplastic (GMT) materials for automotive applications.

Key Benefits

- Creation of recycled glass with 80% of original strength.
- Potential to create fibres at reduced cost.
- Could be used in the existing composites supply chain.
- Reduction in landfill costs.
- Reduction in energy use by the glass fibre industry.

Markets and Applications

- Automotive.
- Recycling of wind turbine blades, boats and other end of use GRP.
- Waste management.

Licensing and Development

This technology is protected by UK patent application No 1313298.0 filed by the University of Strathclyde. We are seeking commercial partners who are interested in developing or licensing this technology, please contact Gillian Fleming on 0141 548 3707 or email rkes@strath.ac.uk.



“

This technology regenerates over 80% of the original strength of recycled glass fibres, enabling the creation of low-cost glass reinforcement products .”

Professor Jim Thomason, Department of Mechanical & Aerospace Engineering, University of Strathclyde

the place of useful learning

www.strath.ac.uk

University of Strathclyde Glasgow G1 1XQ

The University of Strathclyde is a charitable body, registered in Scotland, with registration number SC015263