

SUSTAINABILITY: CIRCULARITY

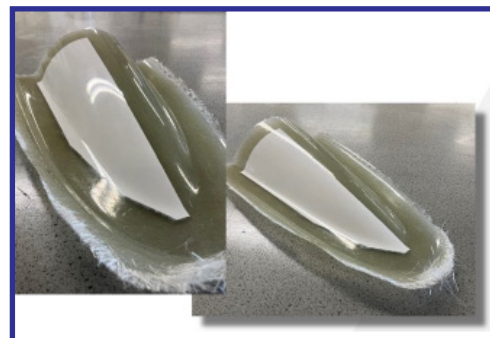
FINALIST: B&M Longworth with Scott Bader

Longworth, in collaboration with Scott Bader, has pioneered a breakthrough in composite circularity, achieving true reclamation of both fibre and polymer components. Traditional recycling efforts in composites have focused almost exclusively on fibre recovery, leaving up to 50% of material, typically the polymer matrix, discarded. DEECOM®, Longworth's novel pressolysis process, separates fibres from the polymer matrix and recovers pristine fibres alongside monomers or oligomers from the polymer, creating a fully reusable feedstock.

The project targeted heavily contaminated polyester (PET) waste slurry from polymer filter cleaning, a complex, "worst-case" feedstock containing impurities, metals, and inconsistent chemistry. Scott Bader successfully processed this stream to produce variants of their high-performance Crystic 272 resin. By combining purified terephthalic acid (TPA) recovered from the pressolysis process with renewable alcohols, they created formulations containing up to 34% recycled and renewable content. Performance testing demonstrated comparable thermomechanical properties to standard resins, both in cast forms and hand lay-up laminates, with discolouration mitigated by gelcoat application.

This innovation is highly original, representing one of the first industrially validated approaches to recover and reuse both fibre and polymer components in composites. It establishes a pathway for full material circularity, rather than partial fibre recovery, addressing a longstanding sustainability challenge across the composites sector.

The impact on end-users is significant. Customers in the wind, marine, and industrial composites markets can now integrate recycled polymer content without compromising performance, meeting increasing demands for environmentally responsible materials. By demonstrating that previously discarded polymer "soup" can be converted into high-value resin, the project opens opportunities for large-scale industrial implementation, reducing waste streams, and providing a reliable supply of green feedstock. Future plans include extending the process to epoxy-derived BPA and other polymers, supporting multi-generation recyclability and a genuinely circular composites industry.



Learn more at: www.bmlongworth.com | www.scottbader.com