



FISC

Foundation
Industries
Sustainability
Consortium



ECONOMISER CASE STUDY

Accelerating agile performance improvements in a cutting-edge sustainable packaging technology with Pulpex

Keywords: Sustainable Materials | Scale Up | Sample Production | Paper

BACKGROUND

1.3 trillion glass and plastic bottles are produced globally each year, resulting in a significant volume of carbon emissions throughout the manufacturing, circularity and supply chains of these materials.

Pulpex have developed a renewable, recyclable and biodegradable fibre pulp bottle which has the potential to deliver significant improvements against the carbon footprint of glass and PET packaging, while also addressing recycling rates and access to recycling infrastructure.

This new technology is sustainable, scalable, and can incorporate single-mould branded designs without material compromise, but a supportive innovation ecosystem is needed to de-risk new product development and to match the pace of scale-up demanded by investors.

EconoMISER has helped to de-risk the scale-up process for this new sustainable product by providing agile product development support

ABOUT PULPEX

Pulpex is a first-of-its-kind fibre packaging solution that uses technological innovation to deliver an eco-packaging category change. The product is made from sustainably sourced wood pulp, is PET-free and entirely recyclable without the need for new infrastructure.

Pulpex collaborated with the EconoMISER team at the Henry Royce Institute on a sprint project to develop proof-of-concept samples, delivering the expertise and equipment needed to deliver a minimum viable demonstrator of the product at scale.



ABOUT THE ECONOMISER PROJECT

In this EconoMISER sprint project, Pulpex collaborated with the Henry Royce institute at the University of Manchester in order to carry out a standard pulp evaluation of the fibre material used in the company's product.

This analysis addressed non-uniform distribution of fibres and coating performance within the material, which was ultimately affecting both the shelf-life and aesthetics of the finished product. The work also helped the collaborators to understand the effect of pulp beating applied in the manufacturing process on the barrier coating performance, which has led to further work to enhance smoothness and stiffness in the packaging.

Through the unique expertise and capability made available by the EconoMISER programme, Royce were able to manufacture handsheet samples of the product material rapidly and at scale using a well established laboratory process. Pulpex and the Application Scientist from the Royce team were then able to then undertake an evaluation on the influence of pulp beating times on the performance of their material system.

RESULTS

This agile research and development project enabled through the EconoMISER programme has successfully delivered product samples and data which has informed Pulpex's scale up process - with the potential to significantly reduce the reliance on plastics for packaging solutions.

Through projects such as this collaboration with Pulpex, EconoMISER has demonstrated how Application Scientists based in the Henry Royce Institute can support businesses of any size including those in the transnational scale up space. These projects have successfully addressed de-risking challenges associated with new product development in the Foundation Industries, improving the sector landscape around EconoMISER research themes including process optimisation, circular economy and sustainable materials.

The capability enabled by EconoMISER provided measurable performance improvements and delivered product samples at scale for Pulpex

Visit pulpex.com to find out more about the company's innovative packaging solutions.

Visit ukfisc.org to find out more about the Foundation Industries Sustainability Consortium

Visit royce.ac.uk to find out more about equipment available to access through the Henry Royce Institute.

"We recently collaborated with Royce on an EconoMISER sprint project. The Royce team provided expert assistance in researching and understanding how the mechanical properties of our fibre bottle can be adjusted to suit different applications. High-performance raw materials and advanced processing techniques are critical for the future of high-performance fibre-based packaging.

The research conducted by the team within the Royce Facilities at the University of Manchester will help design the next generation of fibre bottles. We are excited to continue collaborating with FISC."

Justin O'Keefe | Innovation / Technology Partnerships Lead, Pulpex

