

EXPECTED RESULTS

Main project outputs

Novel bio-based materials

- Bio-based PUR (Polyurethane), PUR-PIR (Polyurethane-Polyisocyanurate) and PUR-IPU (Polyurethane-Indirect Polyurea) rigid moulded; spray foams and soft foams
- NCC-NF (Nanocrystalline Cellulose-Natural Fibres) based soft foams
- Poly (furfuryl alcohol) impregnated NCC-NF based rigid foams

Components and additives for the insulation systems

- PFA and/or IPU based NFRP (Natural Fibre Reinforced Polymer) nanocomposite laminates for sandwich structures
- Lignocellulosic adhesives and/or adhesion promoters
- Phosphorus containing bio-polyol to improve the flame resistance of new cellular and composite products
- Lignocellulosic and bio-silica Nanoparticles as nucleation precursors and reinforcing nanofillers for foam and resin components
- Bio-polyol-grafted Nanoparticles for controlling the morphologies of bio-PUR based foams

Seven new bio-based products

- 4 for the construction industry: insulation sandwich panels, insulation spray foams, structural sandwich parts (composite floor slabs and bridge decks, and pre-insulated pipes
- 3 for the automotive industry: car ceilings, dashboards, and seat covers.



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Acronym: ReInvent
Project Number: 792049
Starting Date: June 2018
Project Duration: 48 Months
BBI JU contribution:
€ 6,525,275
Coordinator:
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This project has received funding from Bio Based Industries Joint Undertaking, Grant Agreement no. 792049-ReInvent



Novel Products for Construction and Automotive Industries Based on Bio Materials and Natural Fibres

The automotive industry is constantly looking for new materials in order to reduce the vehicle weight and comply with sustainability related legislation.

Buildings consume large amounts of resources to construct and operate. Europe's construction and automotive industries are seen as having strong potential when it comes to implementing the EU's Bio economy for Europe action plan.

The ReInvent project aims to deliver novel bio based rigid moulded and spraying insulation foam systems for the construction industry and novel bio based soft and semi-rigid foams for the automotive industry. The products derived in the ReInvent project will be validated for their enhanced properties, sustainability and low cost, and compared to currently available petroleum- and bio-based counterparts. To enhance the sustainability of these products and materials, new energy and cost-efficient recycling technologies will be developed.



OBJECTIVES

The overarching objective of the Relvent project is to develop and combine bio-based materials and fibres that can replace the petroleum-based polyurethane (PUR) insulation and structural products used in buildings and soft foams for vehicle interior products. Specifically it sets out to:

- Deliver specifications and requirements to the fibre and foam composites to be used in construction and automotive industries.
- Develop a portfolio of bio-based, multifunctional, sustainable and low-cost rigid and soft foams with high insulating effectiveness and an exploitation property profile as per the end user's requirements.
- Develop bio-based components for the formulation and production of novelcellular materials and products.
- Up-scale production of the newly developed materials to be used in the novel bio-based foam formulations.
- Up-scale production of bio-based novel rigid and soft foams and NFRP nanocomposites for the construction and automotive industries.
- Demonstrate novel products as alternatives to available petroleum and bio-based insulation materials.
- Develop recycling technologies using cost-efficient chemical and enzymatic processes for the developed materials allowing re-use in various industrial sectors.

The concept of Relvent



PROJECT PARTNERS

Coordinator

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<p>Netcomposites Limited</p>  <p>United Kingdom</p>	<p>Adler Evo SRL</p>  <p>Italy</p>	<p>The Kroppenstedter Ölmühle Walter Döpelheuer GmbH</p>  <p>Germany</p>
<p>Ritols</p>  <p>Latvia</p>	<p>Silcart SPA</p>  <p>Italy</p>	<p>AEP Polymers SRL</p>  <p>Italy</p>
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