

PRESS RELEASE

May 2024

PENGUIN project officially launches to revolutionize sustainable outdoor textiles through biomimicry

A multidisciplinary consortium of 10 leading organizations across 5 European countries has officially kicked off the PENGUIN project (Bioinspired and advanced fibres and materials for sustainable outdoor textiles with biomimetic functionalities). Backed by a €7.63 million budget from the European Union's Horizon Europe research and innovation programme, the 48-month initiative aims to reshape the outdoor apparel industry through nature-inspired science.

Inspired by the remarkable natural mechanisms penguins use to protect themselves against extreme cold and moisture, the PENGUIN project seeks to eliminate the textile industry's reliance on animal-based down and non-recyclable synthetic materials. Instead, the initiative will leverage wood-cellulose to develop advanced, eco-friendly, and fully recyclable fibres, insulation materials, and outdoor garments.

By employing cutting-edge biomimetic chemistries and the Safe-and-Sustainable-by-Design (SSbD) framework, the project will deliver high-performance insulation offering superior moisture resistance, quicker drying times, and enhanced durability—all without compromising environmental standards or material performance.

Bringing together a powerful collaboration of top European research institutions, technological experts, and industry leaders, the project focuses on several key objectives during its lifecycle:

- **Bio-Based Raw Material Innovation:** Developing functionalized wood-cellulose fibres with tailored morphology and enhanced hydrophobicity to replace conventional synthetics and down.
- **Advanced Circularity & Recycling:** Implementing innovative end-of-life options, eco-friendly recycling technologies, and sustainable chemistries to eliminate landfill waste.
- **Digital & Computational Integration:** Utilizing multi-scale material modeling and in-silico tools to accelerate development times and validate textile-integrated sensor platforms.

The PENGUIN project runs from May 2024 through April 2028, uniting partners including VTT, Idener.ai, OrganoClick, Pangaia Grado Zero, Rina Consulting, CITEVE, and other key industry stakeholders.

To follow the progress of the project, explore partnership opportunities, or learn more about sustainable textile innovations, visit <https://penguin-project.eu/> or follow the project on LinkedIn, X, and Instagram.

About the PENGUIN Project

PENGUIN is a Horizon Europe research and innovation initiative dedicated to transforming the outdoor garment sector. By uniting 10 organizations across 5 European countries, the project combines advanced materials science, biomimicry, and circular design principles to deliver commercially viable, eco-friendly alternatives for high-performance textiles.

Follow us in our social media channels: [Instagram](#), [X](#) and [LinkedIn](#).

For more information about PENGUIN, please contact alejandra.hidalgo@idener.ai and sara.gil@idener.ai