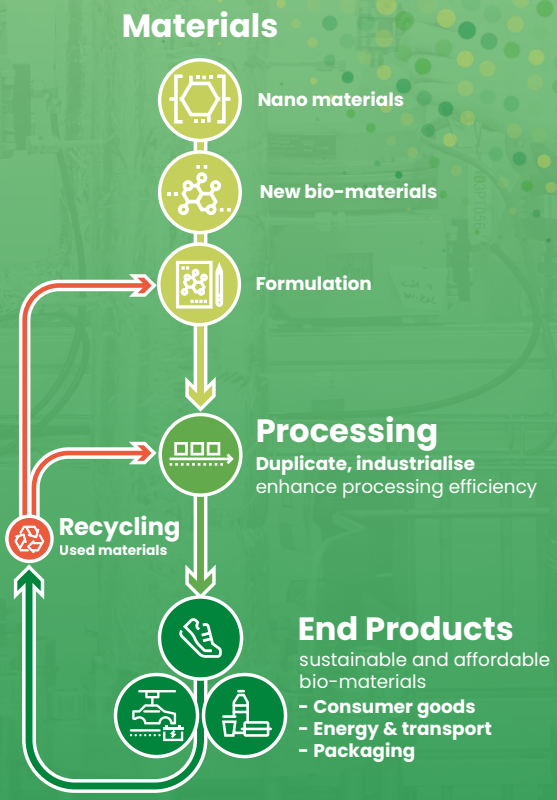
INN PRESSME

Open Innovation Test Bed

NEW INDUSTRIAL SOLUTIONS FOR BIO-MATERIALS



Replacing fossil plastics with bio-materials across the whole production chain – 27 partners adopt an Open Innovation Test Bed approach to ensure efficiency and sustainability in industrial processes.

THE PROJECT

The aim of the INN-PRESSME Open Innovation Test Bed is to develop services along the entire value chain to help industry integrate sustainable bio-materials into its processes.

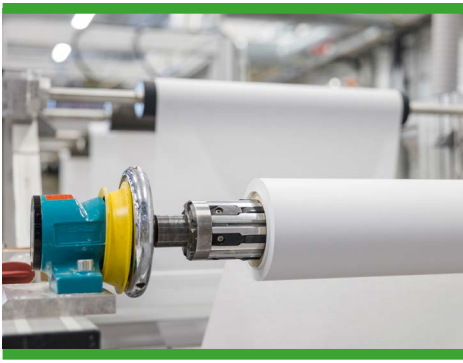
INN-PRESSME is supporting European SMEs and companies to develop bio-based solutions in the packaging, energy, transport, and consumer goods sectors.

Key Innovations in 16 Pilot Lines

The pilot lines will be upgraded during the project with process monitoring and functionalities together with online quality control.

On the Real Test Bench

9 real-scale test cases are used to validate the performance of the improved materials. Their expected impacts will be demonstrated, with emphasis on circularity.



Process and data optimisation in the surface treatment concept
Source: VTT

THE MATERIALS

Bio-based materials from biological sources (e.g. plants) as sustainable alternatives to fossil-based counterparts are growing in importance for industries such as packaging, transport, and consumer goods. Plants are an important bio-based feedstock and one of the main "factories" for technical materials.

Nano Materials

Four pilot lines cover the extraction from plants and functionalisation of the starting materials:

- Cellulose nanofibrils and nanocrystals
- Graphene and carbon-based bio-nanomaterials, also combined with metal oxide nanoparticles
- Hybrid bionanomaterials with inorganic nanoparticles

Bio-Based Materials

Plants are an important bio-based feedstock and they are sources of:

- Natural microfibres (hemp, jute, bamboo, flax, sisal, etc.)
- Microfibrillated cellulose (wood or agro based)
- Bio-based dispersion, like starch-based PLAX
- Biopolyester from marine bacteria (PHA)

TOGETHER TO THE GOAL

How does that work?

The INN-PRESSME project is an Open Innovation Test Bed (OITB).

What does that mean?

An OITB provides entities with shared access to facilities and services so they can develop, test and upscale nanotechnology and advanced materials in industrial settings.

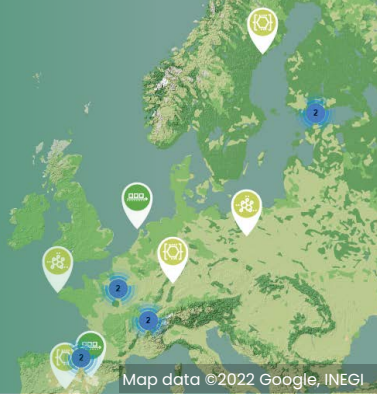
Pilot Line 1: Efficient industrial use of Cellulose NanoFibril
Source: VTT

INN-PRESSME OITB gathers capability in one place for SMEs and companies. This ensures development and testing of nano-enabled bio-based materials before investment. It also reduces time-to-market by addressing regulations and the needs of supply chains. Other services are available such as training and access to funding.

YOU CAN BE A PART OF IT!

1.6 Mio € - for open calls. This amount is provided by the European Commission so that 8 to 13 SMEs and large companies can apply to benefit from the developments and services of the INN-PRESSME project.

9 APPLICATION CASES



All new bio-material developments, formulations and processes are tested in 9 real application cases:

Packaging
(VTT)

- Bio-based adhesive smart labels for food and cosmetics
- Fibre-based heat-sealable stand-up pouches with high barrier performance
- Bio-based boxes replacing the current material with bio-foam
- Bio-based tubes for cosmetics with focus on laminated structures

Energy & Transport
(CIDETEC)

- Bio-based automotive components with nano-enabled functionalities
- Bio-based automotive parts as structural/ aesthetic components
- Bio-based ultracapacitors

Consumer Goods
(FRAUNHOFER ICT)

- Fully bio-based fungicidal complete footwear with superior performance and wear resistance
- Bio-based sporting goods, replacement of current material with bio-foam with high mechanical strength and antimicrobial properties

16
PILOT LINES
SUSTAINABLE DEVELOPMENT AND APPLICATION

APPLICATIONS / DEVELOPMENTS	CONSUMER GOODS	PACKAGING	ENERGY & TRANSPORT
NEW BIO-MATERIALS		PLA Barrier Dispersion	
	Natural Microfibres		
	PHA Powder from Marine Bacteria		
NANO MATERIALS	Lacquers of Bio-inorganic Particles		
			Carbon Based Materials / Graphene
		Cellulose Nano Crystals	
	Cellulose NanoFibrils, Microfibrillated Cellulose		

CONSUMER GOODS	PACKAGING	ENERGY & TRANSPORT	APPLICATIONS / DEVELOPMENTS
Foam Extrusion			FORMULATION
Preparation and Application of Lacquers			
Compounding and Processing Filaments			
Compounding			
	Preparation of Inks and Slurries		
Additive Manufacturing			PROCESSING
	Coextrusion/ Multi-nanolayering	Dispersion Coating	
	Dispersion Coating		
	Sheet to Sheet Printing		

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°952972