

Horizon Europe Cluster 4



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**International Networking
Event**

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AIMPLAS

INSTITUTO TECNOLÓGICO
DEL PLÁSTICO

Description of the Organization

- AIMPLAS is a non-profit Research Centre. Technological Institute of Plastics (Spain).
- + 700 associated companies. +200 highly skilled professionals and 30 years expertise
- Technological research and development on thermoplastic and thermosetting materials from TLR3 to TRL8. Synthesis of breakthrough materials from TRL1 to TRL3.
- Since year 2000, AIMPLAS has participated in more than 100 EC funded projects (FP5, FP6, FP7, LIFE+, EcoInnov, EUREKA & H2020), among others, coordinating several of them (~40%).
- AIMPLAS has state-of-the-art 10,000 m² facilities, including thermoplastics & thermoset pilot plants, coatings, synthesis, clean rooms and testing laboratories and training areas.

Description of your research interest

AIMPLAS has a broad expertise in the fields of:

- Recycling
- Plastic blends, new compounds formulations
- Reactive extrusion, synthesis and processing of biopolymers and renewable source materials
- Special assisted processing technologies (microwaves, supercritical CO₂)
- CO₂ capture and conversion systems
- Catalyst development
- Plastronics
- Materials & technologies for additive Manufacturing
- High performance coatings
- Polymer nanocomposites, functionalization of nanoparticles,
- Multilayer structures
- Development of plastic products



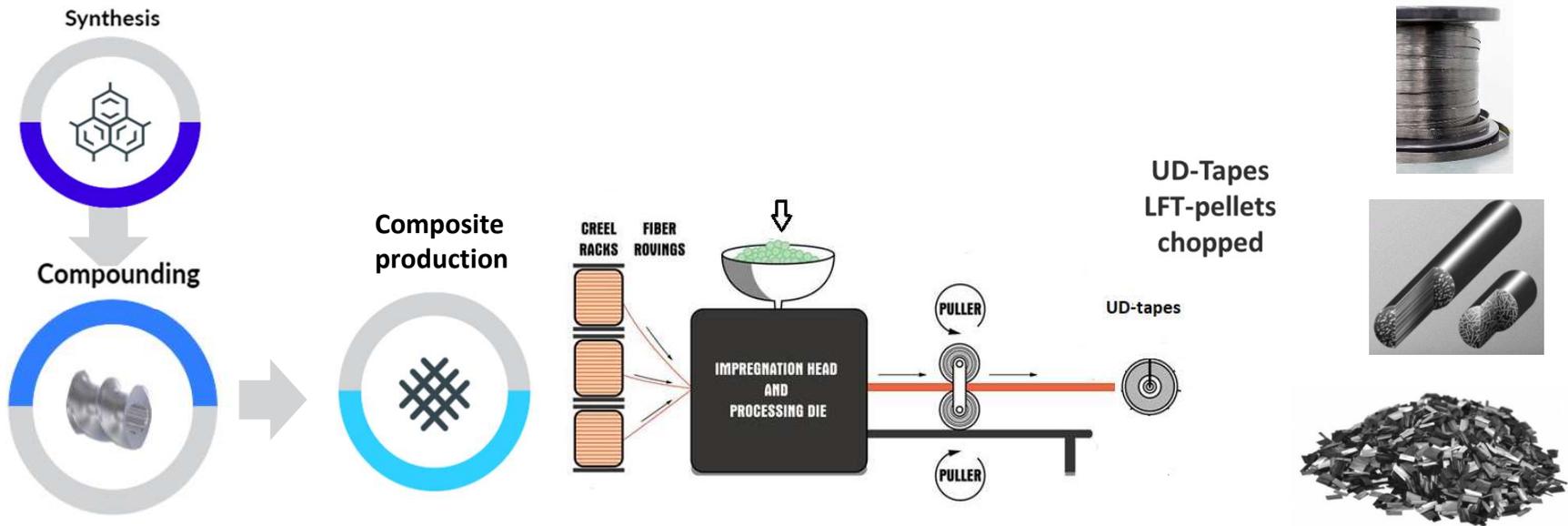
Project Idea

HORIZON-CL4-2022-RESILIENCE-01-12: components and structures (RIA)

Functional

multi-material

- High productivity manufacturing process with composite materials
- Lightweight and recyclability
- Zero-waste manufacturing process
- Weldability
- Hybrid performance. Thermoplastic based formulations easily combined in multimaterial structures.
- Applicability in automotive, aerospace, maritime & railway sectors (mainly)

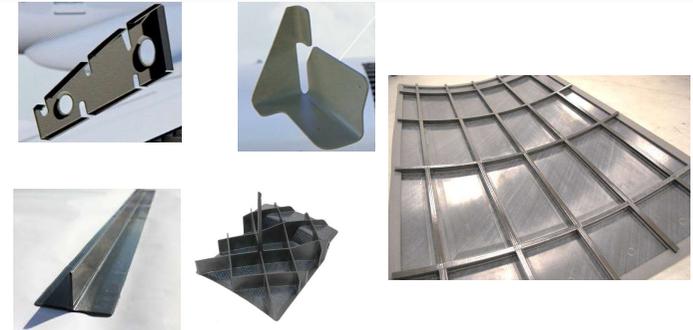


Project Idea

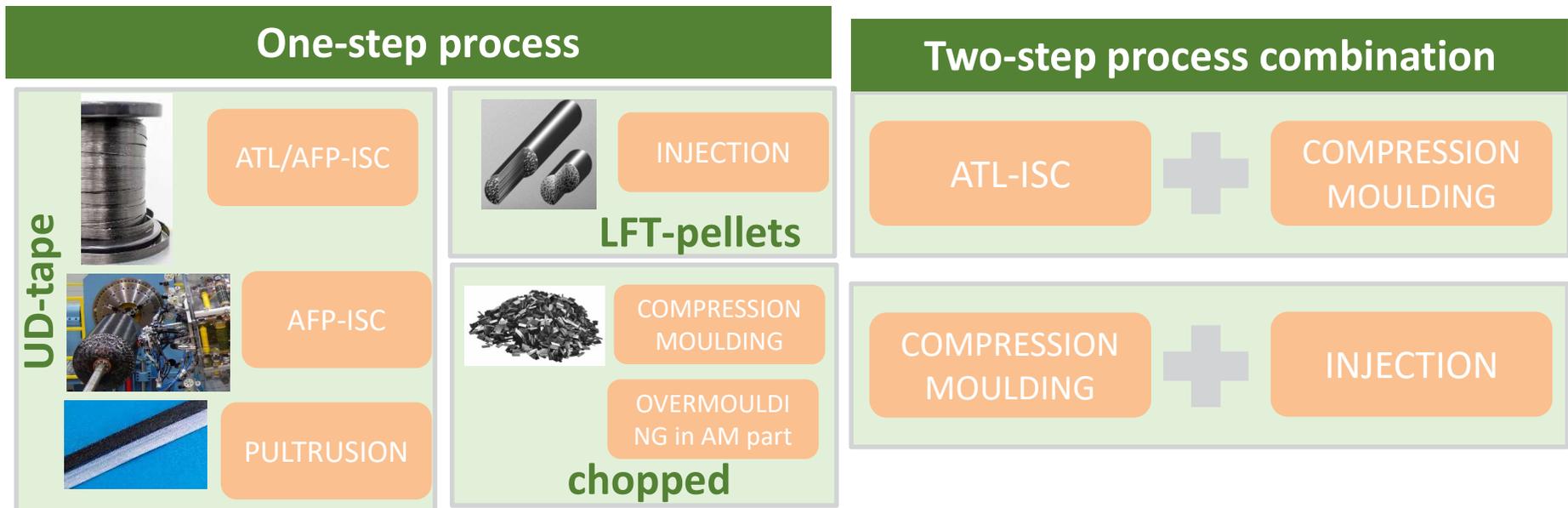


Optimise out of autoclave processes:

- ATL/AFP-ISC
- Injection
- Compression moulding
- Overmoulding
- Pultrusion



STUDY CASES



Project Idea

HORIZON-CL4-2022-RESILIENCE-01-11: Advanced lightweight materials for energy efficient structures (RIA)

PROCESS MANUFACTURING to reduce energy consumption:

- Available pilot plant for OoA manufacturing processes: long fiber thermoplastic tapes, pultrusion, injection, extrusion, oven RTM, microwave curing.

SENSING

- Advanced monitoring techniques for SHM and process monitoring to avoid defects.
- Development of novel sensorized long fibre thermoplastic unidirectional tapes suitable for AFP in-situ consolidation in order to obtain a high quality product and eliminating finish operations such as non-destructive inspection and reducing non-recurrent costs.

SUSTAINABILITY

- Recycling strategies for recovering and reprocessing of thermoset and thermoplastic composites and ancillary materials.
- Recovery of secondary raw materials (recycled fibres) for new composites manufacturing. Surface treatments/coatings.
- Combination with recycled plastic and foams for thermal management

Project Idea



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Mechanical recycling

- Separation and shredding for compounding processing or direct reuse (pre-treatment and particle size adaptation)
- Material cleaning (including CO₂ & water in supercritical conditions)
- Separation based on electrostatic and triboelectric properties
- Air separation (elutriation) and density separation.
- Optical (NIR) plastic material identifier and separator

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Chemical recycling

- Pyrolysis and solvolysis methods for fiber and resin separation and oil Recovery
- Biological degradation to degrade polymers to monomers or oligomer.

Some AIMPLAS' equipment:

