



# COMPOSITE STRUCTURES & MANUFACTURING PROCESSES

We search for **innovative, fast, efficient, automated, robust and competitive manufacturing and assembly processes** facing the component whole life cycle: design, simulation, manufacturing (including semi industrial upscale), optimization, characterization, and recycling.

## STRATEGIC RESEARCH LINES

### Composite solutions for weight reduction:

- Design of structures and components made of composite materials.
- Structural, Thermal and Dynamic analysis and Topologic Optimisation.
- Adhesive and Hybrid Joints design and analysis.

### Fast Manufacturing Processes:

- Automated Cutting, 2D stacks preparation, 3D preforming & forming
- Fast heating.
- Textile technology and advanced preforming.
- Thermoset composites:
  - RTM.
  - Fast Curing prepregs.
  - SMC.
- Thermoplastic composites:
  - RTM (In situ polymerisation).
  - Automated tape laying.
  - Forming of tailored organosheets.

### Composites 4.0/ Monitoring and simulation:

- Process modeling and monitoring: curing, injection, forming.
- Process simulation and materials characterization for simulation inputs.
- RTM digital twin.



### Functions integration and joining technologies:

- Hybrid processing (compression + injection).
- Laser transmission, resistive and US welding.
- Mechanical & Adhesive joining.

### Composite Materials Additive Manufacturing.

- Continuous long fibre.
- Integration of electrical function.

### Waste Materials Recycling and Valorisation.

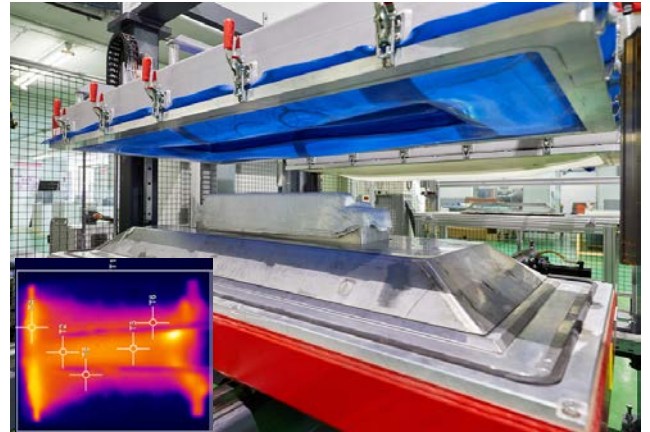
## OUR CONTRIBUTION

- Composite based components design and analysis
- Composite manufacturing process simulation (PAM-FORM, PAM-RTM) (and characterization)
- Composite manufacturing processes automation.
- Resistive heating processes.
- Fast curing materials adoption
- Thermoplastic composite manufacturing processes development.
- Prototypes manufacturing (preforms and components).
- Tooling design and development
- Continuous fibre additive deposition process development
- Manufacturing processes critical variables monitoring and analysis

# COMPOSITE STRUCTURES & MANUFACTURING PROCESSES



Pick & place automated cell.



Hot forming equipment with fast heating solutions.



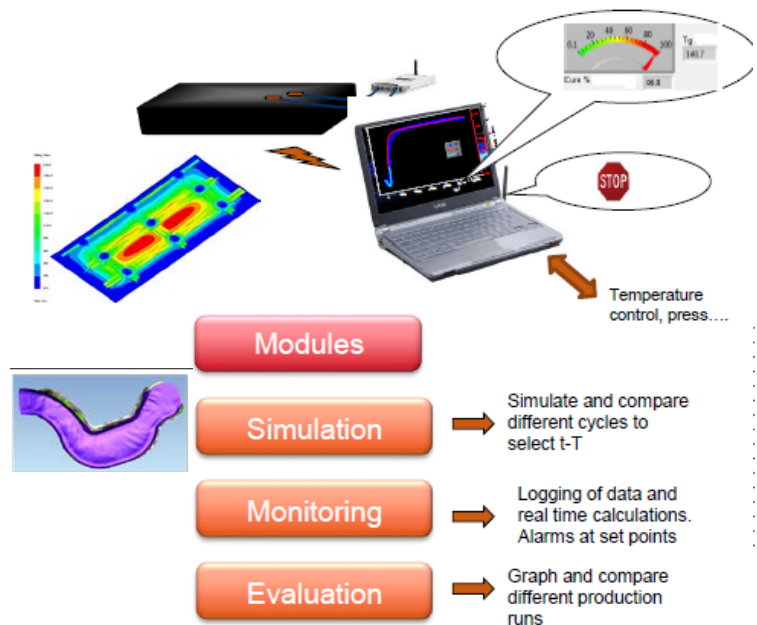
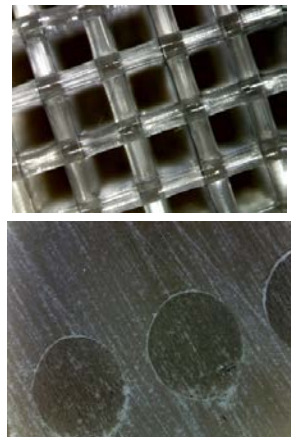
High speed tape laying cell.



Automotive application developed with T-RTM technology.



Composite Materials Additive Manufacturing.



Process monitoring and simulation - Sw developed by Tecnia.

## CONTACT:

Begoña Canflanca  
[Begoña.canflanca@tecnalia.com](mailto:Begoña.canflanca@tecnalia.com)  
 Ricardo Mezzacasa  
[Ricardo.mezzacasa@tecnalia.com](mailto:Ricardo.mezzacasa@tecnalia.com)

## WE CAN DO SO MUCH TOGETHER

Our work is not understood without yours; we want to work together so your company can compete better. Because together, we can develop technologies that transform the present.

The future is technological, let's share it!

## TECNALIA

T 902 760 000\*  
 T +34 946 430 850 (International calls)  
[www.tecnalia.com](http://www.tecnalia.com)