

Preforming of composite parts by placing dry fiber

DFP Project



The DFP project is a robotic solution for placing the dry fibers used in the aviation industry to create a preform (composite part before injection from the matrix). This technique should be optimized by considering speed and quality of deposit fiber which will be useful in the complex parts.

To promote these improvements, processes will be the subject of a numerical simulation.

Technical and economic impacts

- ▶ 20% gain of robotization operation of composite manufacturing
- ▶ 50% gain of productivity
- ▶ 15% gain in quality of preforming

Keywords

Placement of Dry fiber
Robotization
Preform



INDUSTRIAL CONTEXT

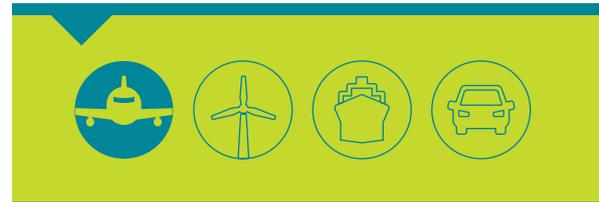
Die/infusion injection for the manufacture of aeronautical composite parts extends the application of composites in complex geometry parts ensuring the geometric quality and integration of functions. Preforming solutions available today are: manual lay-up and preforming tablecloths/dry fabrics and weaving technologies which will have solution for certain applications of technical and/or economic limits.

INNOVATIVE FEATURES

- ▶ Better understanding of Thermo-mechanical phenomena and interaction of laser/fiber.
- ▶ Innovative tooling solution for hanging 1 ply (1st layer of fiber).
- ▶ Adapt a trajectory multi-camera Retiming solution technology fibre placement and development of a concept of matching innovative micro-mechanism Mechatronics.
- ▶ Demonstrate the maturity and the potential of the DFP on part type structure advanced before aircraft.

APPLICATIONS INDUSTRIELLES

The goal is the expansion of the range of structural complex composite parts for injection/infusion industry by deploying a solution of automated manufacturing of preforms complex textiles offering a gain of quality and productivity.



Partners

- ▶ IRT JULES VERNE
- ▶ AEROLIA
- ▶ AIRBUS
- ▶ AIRBUS GROUP INNOVATIONS
- ▶ COMPOSE TOOLS
- ▶ CNRS (IRCCyN)
- ▶ ECOLE CENTRALE NANTES (GEM)
- ▶ ICAM

Equipments

- ▶ DFP DAFné cell
- ▶ Multi-camera system
- ▶ Micro-mechanism correction Mechatronics

Budget

- ▶ 1 915 k€

Sales contact

Simon Ordonneau

simon.ordonneau@irt-jules-verne.fr

Press contact

Sophie Péan

communication@irt-jules-verne.fr

www.irt-jules-verne.fr

