Next Generation Combat Aircraft Technologies - NGCAT

ACRONYM: BestCMR

Title: Belgium Strategic Composite Manufacturing Resource

Duration of the project: 1/05/2025 – 1/02/2028

Key words: Net-shape Composite Manufacturing, Fibre Placement Automation, Digital Twin Simulation, Process Optimization, Quality Monitoring, Energy-Efficient Production

Budget: 4.950.000 €

of which RHID contribution: 4.938.000 €

PROJECT DESCRIPTION

To support Belgium's strategic positioning within the European "Future Combat Air System" (FCAS) program, the BEST-CMR (Belgium Strategic Composite Manufacturing Resource) project aims to advance scientific and technological capabilities in next-generation combat aircraft manufacturing. Belgium is home to several high-tech SMEs that are global leaders in their respective domains and already serve major international aerospace and defence (ASD) groups. These companies have joined forces under BEST-CMR to demonstrate their collective expertise in *net-shape* composite aerostructures and aeroengine parts manufacturing. This initiative represents a unique opportunity to strengthen Belgium's industrial base and seize new business opportunities in the defence sector.

Led by Coexpair, a strategic supplier to Airbus, BEST-CMR brings together a network of partners with complementary skills in moulding, automation, fibre placement, inspection, simulation and training. The project is aligned with "Theme 4 – Transversal Disruptive Enabling Technologies" within the Next Generation Combat Air Technologies (NGCAT) framework. It builds on recent achievements, such as Coexpair's successful repatriation of A320 spoiler manufacturing from Asia to Europe, which resulted in a 30% cost reduction and the creation of 170 new jobs.

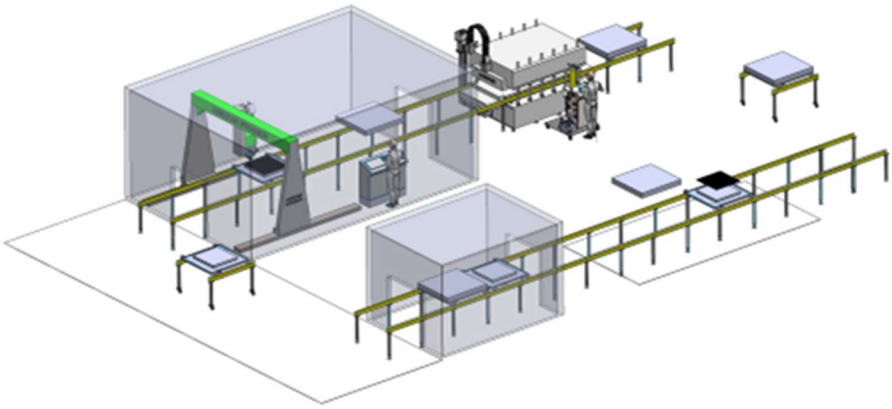
A320 RTM Spoilers – Process, Mould and Equipment provided by Coexpair to integrate semi-automated production line built by Thyssen Krupp for Spirit AeroSystems

The general objective of BEST-CMR is to develop a fully automated, high-efficiency composite manufacturing line for aerostructures and aeroengine parts. The project has a dual ambition: first, to deliver the FCAS program with the most competitive composite structures manufacturing capabilities; and second, to establish Belgian industrial leadership in high-performance composite manufacturing, thereby contributing to European technological autonomy.

The methodology of BEST-CMR is based on the integration of state-of-the-art equipment and advanced digital technologies. Equipment from Coexpair, Coexpair Dynamics and Airbus will be made available to support the development of the project's scope. Digital twin models will be created for equipment and moulds to simulate manufacturing processes, enabling real-time monitoring and predictive control. AI-driven production data management will support adaptive process control, resulting in significant cost savings (up to 30%) and energy efficiency improvements (reductions of 80% to 90%).

The project will incorporate Balliu's unique handling automation, Coexpair Dynamics' fibre placement systems, Pégard Productis's ultra-precise machining and advanced inspection technologies from Argon and Optrion. Simulation and modelling will be supported by GDTech and Cenaero, with intended integration into Airbus-CTC's simulation ecosystem. This comprehensive approach will enable the development of a fully integrated and automated composite manufacturing shop, from material arrival to final part inspection.

The expected final research results of BEST-CMR include a validated model of an automated composite manufacturing line, digital twin simulations for process optimization, demonstration scenarios showcasing integrated workflows, technical reports, workshops for stakeholder engagement and peer-reviewed publications. These outcomes will serve as a foundation for future industrial deployment and continued innovation.



3D Sketch of an automated composite part production line (conceptual)

The impact of BEST-CMR on defence is substantial. By enhancing the competitiveness and autonomy of European composite manufacturing, the project supports the strategic objectives of the FCAS program. It strengthens the Belgian industrial base, creates high-value jobs, and establishes a scalable model for future defence and aerospace manufacturing initiatives.

In terms of valorisation, the short-term perspective includes access to new business opportunities for Belgian SMEs within the FCAS supply chain. In the medium term, the technologies developed through BEST-CMR can be deployed across defence and civil aerospace applications, as well as other high-performance sectors such as space and automotive. Continued collaboration with Airbus and other European partners will enable the scaling and refinement of these technologies, positioning Belgium as a centre of excellence in composite manufacturing innovation.

CONTACT INFORMATION

Coordinator
Emmanuel Detaille
Coexpair
emmanuel.detaille@coexpair.com

Partners
Cedric De Roover
Coexpair Dynamics
cedric.deroover@coexdyn.com

Geert Creemers
Argon
gcreemers@argon-ms.com

Nicolas Schifflers
Pegard
n.schifflers@pegard.com

Lieven Vervaeke
Balliu
LV@balliu.be

Sébastien Hoffait
Optrion
s.hoffait@v2i.be

Michael Bruyneel
GDTech (Global Design Technology)
michael.bruyneel@gdtech.eu

David Dumas
Cenaero
david.dumas@cenaero.be

LINK(S)

To be done shortly.