

PROJECT: PATCHBOND II

•**RESEARCH BACKGROUND:** Repairing composite structures is more challenging than the traditional metal's structures. The NH90 helicopter is realised with a large use of composites, increasing also the complexity of maintenance and repair operations.

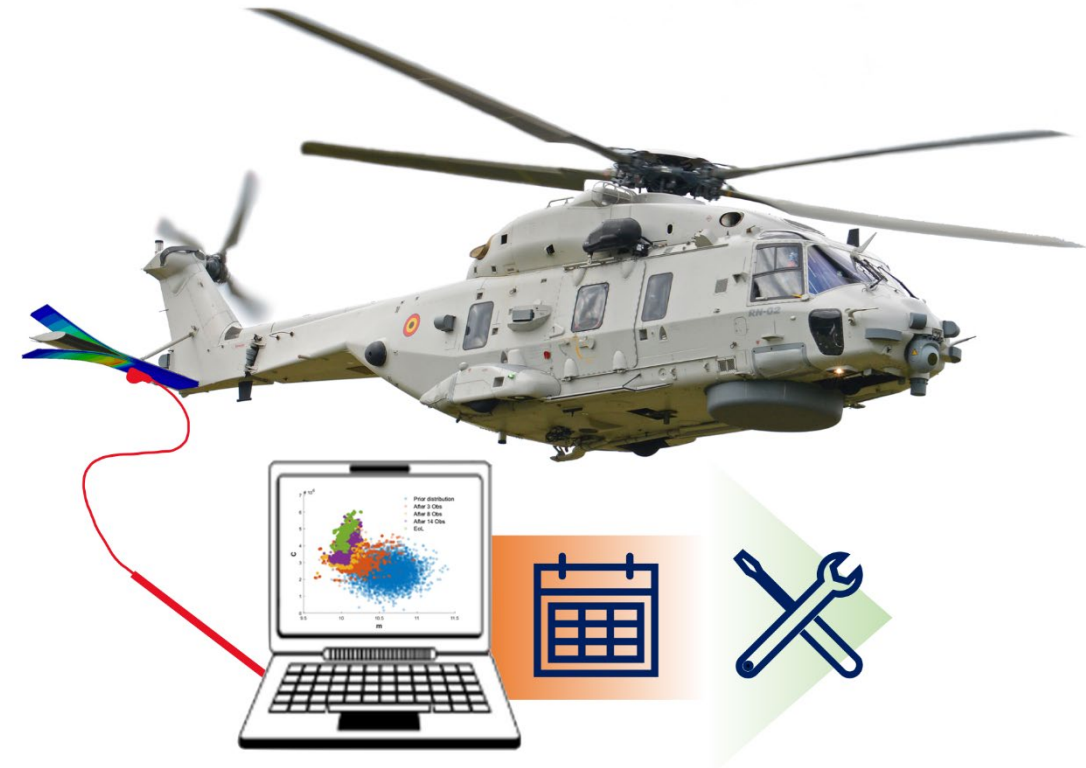
•**PROJECT OVERVIEW:** this project is focused on the realization of a Structural Health Monitoring (SHM) system of a bond repair patch of the NH90 fuselage. Bonded patches are potentially affected by debonding, thus a proper monitoring system can increase the safety of the structure early detecting anomalies.

•**TESTS:** the SHM methodology is designed on a coupon scale level and then verified with a flight test (incoming tests, 2022-2023)

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Composite material specimen representative of the NH90 fuselage with strain sensors



TITLE: Design and implementation of an SHM system for an operating helicopter

RESEARCH BACKGROUND: Repairing composite structures is more challenging than the traditional metal's structures. The NH90 helicopter is realised with a large use of composites, increasing also the complexity of maintenance and repair operations. This leads to the development of a dedicated SHM system to early detect the presence of damages.

RESEARCH ACTIVITIES:

1. In-flight experimental test (2023-2024)
2. Data analysis
3. Application of SHM algorithms (iFEM, Monte-Carlo, Bayesian inference, surrogate modelling, etc.)
4. Assessment of performance in a noised environment

METHODOLOGY: experimental, numerical, programming

DURATION: 9 months

POSSIBLE COLLABORATIONS: PATCHBOND II partners (Europe)

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