

MACADI

Development of models and calculation methods for the analysis of polymer materials and composite structures under dynamic loads and impact

IMAST members involved:

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- **CETENA**
- **CIRA S.c.p.A.** – Italian Aerospace Research Center
- **CRF S.c.p.A.** - FIAT Research Center
- **Università degli studi di Napoli “Federico II”** – Department of Aerospace Engineering (DIAS)
- **Politecnico di Torino** - Department of Mechanical and Aerospace Engineering (DIMEAS)

Objective

The objective of the MACADI project is to develop a numerical approach to **improve the reliability in the prediction of the structural response of composite or polymeric components under dynamic loads ranging from low speed impact until ballistic impact.**

To support numerical methodologies a series of tests to study the dynamic behavior of used materials will be performed, in order to improve the potential design, to reduce the number of experimental qualification tests, with a consequent reduction of time and cost of development and improved vehicle performance.

The developed methodology will improve and drive design of component in order to reduce the experimental tests that are necessary for the design, with a consequent reduction of times and costs design. During the project, numerical simulation methodologies of impact test on polymeric and composite structures will be studied for low (1-10m/s), medium (10-20m/s) and very high speed (500-1000m/s), in order to improve the technical design of components for applications in different impact scenarios.

