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COCET - Behaviour of composite materials under extreme conditions: high temperature

Soci IMAST coinvolti:

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- CRF S.c.p.A – FIAT Research Center
- Adler Plastics S.p.A.
- CYTEC Italy s.r.l.
- CNR - Institute for Composite and Biomedical Materials (IMCB)
- CETENA S.p.A.
- University of Naples Federico II – Department of Chemical Engineering (DIC)

This research project aims to investigate flame resistance and/or fumes toxicity properties of lightened components and/or structures in which weight reduction has been obtained through the replacement of traditional materials with advanced composite materials.

To this purpose, new polymeric materials/composites and new thermo-mechanical and chemical models will be developed to predict the behaviour of these materials under significant fire conditions. In order to validate the results obtained within this project, a number of demonstrators will be designed, realized and tested. Moreover, new rules will be proposed aimed to overcoming the limitations of standard experimental tests for non-conventional materials.

In this project, five demonstrators will be realized in the automotive, aeronautical, aerospace and naval sectors.

In the **automotive** sector, a **lightened fuel filler neck** will be realized with improved combustion speed and electrical conductivity. Moreover, a fuel line will be produced with increased flame resistance and electrical conductivity.

In the **naval** sector, a **bulkhead** made up of composite and non-conventional materials will be realized to comply maritime fire rules.

In the **aerospace** sector, an **ablative tile** made up of composite materials for ballistic atmospheric re-entry will be produced with improved ablative features.

In the **aeronautical** frame, a **lining subsystem** representative of the interiors of a regional aircraft made up of composite materials will be realized with reduced weight and also compliant with aeronautical fire rules.

