

ASAP

Composite structural adhesives for applications in the transportation field

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- University of Naples “Federico II” Department of Engineering of Materials and Production (DIMP)

Partners:

- CRF S.c.p.A - FIAT Research Center
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In this project, new adhesive systems have been developed to **improve the bonding processes and product performances.**

In the **Aeronautical** sector an **innovative thermosetting adhesive and an out of autoclave bonding process have been developed** in order to join stringers to the skin. Numerical rebuilding of adhesion tests has been studied to improve the capabilities to simulate **repaired aerospace components and bonding process.**

In the **Automotive** sector an assembling process has been developed to **join the structure and the skin of a hood.** The hood was assembled by using traditional mono-component epoxy adhesive and the new adhesive modified by nanoparticles. The prototypes was tested by torsional stiffness analysis according to the automotive standard. **The bonded hood exhibits a 30% improvement of torsional stiffness and a 20% weight reduction with respect to welded hood.**

In the **Naval** sector a **swimming pool and a fire door** were bonded to the structural parts of the ship by new structural and fire resistant adhesives.

The developed **fire door** exhibits a reduction of **75% of the process time, 20% of the costs and 40% of the stress in the component with respect to mechanical joints. Moreover, developed door meets fire resistant regulation.**

The swimming pool, exhibits a **70% process time and 14% costs reduction.**

In the **Railway** sector a **structural bonded joint between floor and lateral panels** of a train was realized by using a methacrylic adhesive in order to substitute a mechanical joints. The structural bonded joint exhibits a reduction of **38% of the process time and 12% of costs.**

