

Project name: Advanced Low Observable Materials (ALOA)

End date: 2013

Participating countries: France, Germany, Netherlands and Sweden

Who was there: The ALOA project was carried out by a consortium of leading European entities from Cassidian EADS Deutschland GmbH, Centre d'Expertise Parisien, DCNS, EADS France, Wehrwissenschaftliches Institut für Werk- und Betriebsstoffe (WIWeB), Wehrtechnische Dienststelle für Schutz- und Sondertechnik (WTD 52), National Aerospace Laboratory (NLR), Thales Nederland BV, SAAB AB, Swedish Defence Research Agency (FOI).

Summary

The ALOA project aimed to improve the materials and development tools.

The objectives of the project were: (i) development of technologies for stealth materials that help to improve future military platforms to survive in the hostile battlefields of the 21st century; (ii) improvement of European materials and technologies to secure the competitiveness of European military platforms not only due to their technical advantages, but because of their availability and cost efficiency as well; (iii) development of simulation tools for the material properties.



Example of honeycomb (left) and fiber reinforced laminate (right) impregnated with radar absorbing material.

In detail

PROJECT RESULTS

For the design of a complete low observable platform, whether it is air or sea based, a couple of different reflection and scattering mechanisms on the structure have to be treated. Therefore, different kinds of materials and absorbers are needed on the same platform.

Basic materials have been designed, manufactured and tested. With further development necessary to increase the TRL level, these materials will lead to a new generation of stealth structures that are capable to achieve a much broader performance spectrum.

The work has been focused on a list of core material technologies:

- Magnetic radar-absorbent material / structures
- Iron oxide-based paints, tiles and structural materials (composites, foams and honeycombs)
- Steel Fibre castings and structural materials
- Multispectral materials

- Infrared low emissive paints
- Combinations of infrared low emissive paints with radar absorbers
- Magnetic, dielectric and combined multilayer materials

In parallel and supporting the material investigations, the development of simulation tools for the material properties has been an important issue as well.

CONCLUSIONS

Under the ALOA programme requirements for LO materials have been established and necessary material candidates have been identified. These material candidates have been developed and tested on sample level with very promising results.

The main emphasis of the follow-up programme “Advanced Low Observable Materials And Structures” - ALOMAS is the improvement of LO materials and development tools and the increase of the Technology Readiness Level (TRL) of LO materials.