

Continuous health monitoring and non-destructive assessment of composites and composite repairs on surface transport applications.

A project funded by the European Commission in order to improve European transport and strengthening its competitiveness
FP7-SSTY-2007

Project aims:

- To develop quantitative non-invasive NDT approaches for prompt assessment of composites during the **manufacturing and assembly stages** of the composite materials and structures.
- To develop a **health monitoring** approach for the composite components on full scale structures.
- To develop a **robotic scanner** that will accommodate the NDT approach for the in-situ testing of the structures during inspection and maintenance.



Product applications:

- High and low speed trains
- Buses
- Trucks
- Trams

The results of this project could also be used for other industry sections such as aerospace, automotive and marine.

This project will also contribute to wider use of composite material in different transport applications, therefore reducing CO₂ emissions and promoting an eco-friendly environment.

Project co-ordinator: TWI Ltd

Project partners:

ATOUTVEILLE www.atoutveille.com (FR)

CERETETH www.cereteth.gr (GR)

ENEA www.enea.it (IT)

ENVIROCOUSTICS www.envirocoustics.gr (GR)

G-Tronix www.gtronix.co.uk (UK)

HEXCEL COMPOSITES www.hexcel.com (UK)

KTU www.ultrasonics.ktu.lt (LT)

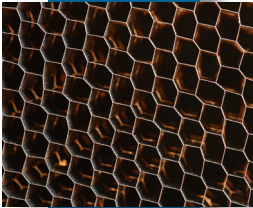
KCC www.kccltd.com (UK)

NTUA www.ntua.gr (GR)

TWI www.twi.co.uk (UK)

VTT www.vtt.fi (FI)

Background



The ComPair project is partly funded by the European Seventh Framework Program (FP7) over three years and will develop new techniques to non destructive assessment and monitoring of composite and composite repair on surface transport (buses, trucks, trams and high and low speed trains).

Composites are used in a wide range of applications in surface transport and its use has increased steadily in both low and high technology engineering applications over recent years.

There are many drivers behind this increased use of high performance composites within such industries; weight reduction being the primary one. Although currently other materials (ie steel, aluminium, etc) are the main materials used in surface transport applications and vehicles, advanced composite materials are providing an increasingly attractive and economically viable alternative.

However, a high proportion of defects that can occur within composites are very difficult to detect with the current non destructive techniques (NDT). Many of these defects are internal to the composite or may occur in locations within structures that have limited or no access. Due to the fact that such defects can affect the performance of the material there is a real need for the development of reliable, accurate and sensitive NDT techniques capable of detecting damage and defects in complex composite materials.

The aim of ComPair is to build a new and original way for continuous health monitoring and non-destructive assessment of composites and composite repairs on surface transport applications. The project will also establish a certificated procedure and guidelines on these applications, in order to generate a cost effective manufacturing and maintenance procedure.

Included in the project is a major dissemination programme to present the findings to industry via a network of events and seminars.



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