



SAFEJOINT PROJECT BEGINS

THE SAFEJOINT project began on 01 January 2013 and is a jointly funded project by the European Commission. The focus of the project is to enhance structural efficiency through novel dissimilar material joining techniques. The SAFEJOINT consortium will focus on joining metal to metal and metal to composite joints.



The project has nine European partners and also has an Industry Advisory Group to provide practical industrial expertise and facilities.

The project will run for 36

months and results from the project will be disseminated through an industrial workshop at the eighteen month stage of the project and a final conference in the final year.

The project has launched a website at www.safejoint.net which currently has an outline of the project and the facility to register on the database for regular newsletters.

The site will continue to be developed as the project progresses and results are made public.

SAFEJOINT KICK-OFF MEETING

The SAFEJOINT project held its Kick-off meeting on 14th February 2013 at Newcastle University, UK. The project began on 01 January 2013, will run for 3 years and is jointly funded by the European Commission. The topic of the project concerns the joining of dissimilar materials particularly focusing on enhancing structural efficiency through novel dissimilar material joining techniques.



Members of the SAFEJOINT Consortium and Industry Advisory group at the KickOff meeting in Newcastle, UK

April 2013

Highlights of Edition 1:

- **How the project begins**
- **Who are the partners**
- **Support from Industry**
- **The work structure**

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Partner Profiles

Newcastle University (UNEW)



The Coordinators of the SAFEJOINT project are NewRail (UNEW), based at Newcastle University, UK. UNEW have a successful track record in EC project management, and also has a wide experience in the transfer of knowledge and international collaborative research particularly in transport applications.

As well as the coordination and project management of SAFEJOINT, UNEW will be focusing on the optimization of matrix/nanoparticle interaction; metal/composite manufacturing and NDE procedures.

The dissemination activities include organizing an industrial workshop in the second year and a final conference at the end of the project, which will have both industrial and academic participants.

National Technical University of Athens (NTUA)

(NTUA) is the oldest and most prestigious educational institution of Greece in the field of technology. NTUA's involvement in the SAFEJOINT project will be: synthesis of carbon nanotubes and nano-containers, nano-mechanical characterisation, deformation evaluation (recoverability), theoretical and computational modelling of joint structures through FE models, corrosion investigation. Life cycle -risk assessment in terms of economic,



environmental and industrial assessment of the innovation will be accomplished throughout the project.

Anthony, Patrick and Murta Exportação (AP&M)



Anthony, Patrick and Murta Exportação (AP&M) is a small industrial fabricator of composite parts and structures based in south-west Portugal. AP&M will bring their practical manufacturing

expertise to SAFEJOINT. They will support the metal/ composite joint development activities of WPs 2 and 4 through the production of appropriate joints for evaluation. They will also provide information on the feasibility of the joint designs developed in this project in terms of suitability for full scale industrial production.



To register for regular newsletters go to: www.safejoint.net

SWEREA SICOMP (SICOMP)

swerea | SICOMP

Swerea SICOMP is a Swedish non-profit research institute which was formed in 1989. There are a large range of clients and partners from small European composite processors to very large multi-national industry corporations.

Research, education, consultancy services and technology transfer to industry are their main activities. Process technology, structural analysis, process simulation and

material science are the Swerea SICOMP core competences.

SICOMP will undertake the development work of the metal/composite CNT interfaces; carry out the initial EPD tests to deposit CNTs on steel, aluminum and titanium substrates; with partner IVF on the development of CNT veils; undertake modeling work the manufacture of joints and mechanical property testing.

Swerea IVF AB (IVF)

swerea | IVF

Swerea IVF, member of the Swerea Group, is a non-profit research and technology organization (research institute) covering the fields of fibers, textiles, plastics and rubbers. Melt spinning of Nano-composites fibers is a core competence of IVF as well as polymer physics, chemistry and melt rheology. IVF has

extensive laboratory facilities for melt spinning and evaluation of fibers as well as for melt compounding and rheological characterization. IVF will have involvement only in Task 1.5 "Application of thin veils of CNTs for metal composite joints" due to their expertise in this field of CNT processing.

Kaunas University of Technology (KTU)



The Ultrasound Institute has experience in different areas of various applications of ultrasonic techniques for the aerospace industry, monitoring of various manufacturing processes and development of non-destructive testing techniques for composite materials. Research activities include ultrasonic NDE, ultrasonic industrial measurements,

and investigation of material properties by ultrasonic techniques. Application of the exceptional competence in numerical simulations of ultrasonic bulk and guided waves propagation in complicated composite structures, signal processing, development of the novel techniques for ultrasonic non-destructive testing and quality control, highly experienced evaluation of results.



Keep up with the latest news about **SAFEJOINT** at: www.safejoint.net/news



Partner Profiles

Construcciones y Auxiliar de Ferrocarriles (CAF)



(CAF) is an international market leader in the design, manufacture, maintenance and supply of equipment and components for railway systems.

In SAFEJOINT, CAF will be involved in the definitions of joint designs for rail applications and will design the demonstrator structure to be tested in

WP7. CAF have begun work analyzing possible applications of interest for the "functionally graded adhesive joints", one of the technologies that will be analyzed within SAFEJOINT.

Between the alternatives considered, there is a joint of a composite roof concept that seems to be a perfect case of study. CAF feel that this will also constitute an ideal demonstrator.

Fraunhofer Institute (IFAM)

IFAM is working in the areas of the research and development of powder technology, casting technology, micro production technology, functional printing, rapid prototyping and nano powder technology. Also, adhesive bonding technology is a major topic including all kinds of surface technology.

Particular fields of research relating to SAFEJOINT are adhesive bonding and surface analytics with the goal of developing application-orientated bonding system solutions for industry.

IFAM will work in SAFEJOINT on the



mechanics of adhesive joints. Their main focus in the project will be the investigation of the effect of ageing and degradation mechanisms in nano-filled adhesives, resins and composites to fatigue properties and crash-worthiness of the joints.

Their work will include the mechanical characterisation as well as numerical methods for joints.

Instituto Tecnológico de Aragon – (ITA)



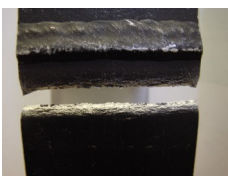
The Aragon Institute of Technology (ITA) is a public non-profit research centre that was established in 1984 by the Regional Government of Aragon. ITA expertise in the field of material modelling cover from the full characterisation of the material to the

development of constitutive models including complex phenomena as damage or fatigue crack growth, with activities involving also frequently the development of specific test rigs or fixtures.

Their role in the SAFEJOINT project is to undertake modelling and experimental work on functionally graded adhesive joints.



SAFEJOINT addresses this challenge by developing novel techniques for metal to metal and metal to composite joining



Industry Advisory Group (IAG)

The SAFEJOINT project is complemented by an Industry Advisory Group (IAG), comprised of Alstom, Bombardier Transportation, WTR and ARCAM, which covers all major industries where output from the work is applicable. Although not full partners of the consortium, the IAG will be providing guidance on the technical issues of the project.

Members of the IAG attended the Kick-off meeting in February 2013 and provided valuable input into the direction for the first six months of the project.

The Industry Advisory Group (IAG) will cooperate with the Technical Committee and will assist with the review of technical results and appraisal of their potential for exploitation and the development of strategies for the dissemination and exploitation of the project's results, and the management of arising intellectual property.

Work Packages

The SAFEJOINT work will follow nine Work Packages (WP) to work through the stages of development of the theoretical and practical aspects of the project. The 9 WPs are detailed below:

WP 1	Development of CNT interfaces for dissimilar material joining
WP2	Design and Optimisation
WP3	Manufacture of dissimilar metal joints
WP4	Manufacture of metal/composite joints
WP5	Joint integrity assessment
WP6	Manufacturing procedures
WP7	Demonstration
WP8	Dissemination
WP9	Project Management

The results from the WP research will be produced in the form of reports and available for download when these have been approved by the European Commission.

www.safejoint.net



Multi-material highly efficient structures are essential in the transportation sector where designers are constantly examining techniques to reduce weight without compromising structural safety.

