

TRANSPORT

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Riferimento: TRA7-IT-SMCP-6

Data Scadenza: **31/05/2007**

Programma: **Transport**

Titolo: Automotive electrical battery's life expectancy

Tipo Progetto: Collaborative small medium

Descrizione: As today's automobiles add more electronics ed elettrical systems to the vehicle, the need for reliable battery power is more imporant than ever. The need to determine battery's life expectancy giving a reliable "predictor of battery end of life" improves safety and vehicle reliability by protecting car owners from accident..

To improve the safety of the transport system, reducing fatalities due to battery failure, is now a must guarateeing in such a way elettrical functions to the vehicle.

The research intends to investigate the possibility to determine battery life expectancy, in real time, inteded as a failure event predictable with large advance.

The innovative concept is based on eletrical wavefom analysis which is present at the motor starting. A proper time -variant algorithm enables to determinate the battery transitory response just at start with decrease in electrical capacity, and far and away battery decay.

Tipo Ente: PMI

Partner richiesto: Battery characterization measuring electrical and alectrochemical variance range with different battery manufacturers and aging statuses and under variable operating temperatures.

Method selection to analyze electrical transient response resulting from motor starting system also determining the acquiring and data processing procedures. The transient analisys will correlate magnitude and time variability with real battery status and carried out on different battery manufacturers and models.

Research results will be adressed to design the life expectance device as prototype and then to perform field operational tests. In addition a visualization system will be designed to display the battery state of health to vehicle user.

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Riferimento: **TRA7-EU-SMCP-1**

Data Scadenza: **31/05/2007**

Programma: **Trasporti**

Titolo: Development of a new joining technology based on the combination of the processes resistance spot welding and brazing for its application to aluminium - steel modular body in white vehicles

Tipo Progetto: small medium collaborative

Descrizione: The project is aimed to develop a new hybrid joining technology based on the combination of resistance spot welding and brazing processes (RSB process). The RSB process will be designed to cope with dissimilar joints of aluminium to steel thin plates. These joints are identical to the ones used to produce advance body in white concepts, combining different materials to enhance crashworthiness, reduce weight and as a result fuel consumption and emissions.

Market requirements were the main driver for the evolution of advanced concepts of the kind, shifting from the traditional monocoque body concept to the modular concept. This implies the use of materials with specific properties depending on their function in the vehicle (energy absorption, lightness, aesthetic, etc.). It is a fact that nowadays, it exists a necessity of using front and rear modules made out of aluminium, to be later jointed to a steel safety cell. Conventional joining techniques (RSW, GMAW) are not useful for those applications as a number of metallurgical problems arise. Current joining solutions are based on hybrid joining techniques, e.g. rivet - bonding. Nevertheless, these solutions have significant disadvantages including their high cost, their increase in weight, limited flexibility, and others.

Resistance Spot Brazing will overcome these problems, allowing a broad implementation of aluminium - steel concepts. Hybrid resistance welding - brazing techniques to join aluminium components are to date barely investigated. Consequently, this represents a real opportunity to acquire a key knowledge for the European transport industry, increasing its competitiveness through this innovative process.

A multidisciplinary consortium will execute the project. The consortium will investigate the characteristics and the requirements of the RSB process, including the definition of appropriate filler materials, the state of application (paste or solid pre - forms) and the application method. A selected application will be defined and specific joint requirements will be established. Comprehensive laboratory tests and real pilot tests will be performed during the project. It is expected that the industrial viability of the process will be demonstrated and precise data of technological characteristics, productivity and economics will be obtained.

3. Objectives

The main objective is to develop a new hybrid joining technology based on the combination of processes including resistance spot welding and brazing (RSB process).

Other technical objectives for the successful development of this project include:

1. To develop an aluminium - steel joining process with good mechanical properties.
2. To develop a filler metal (composition and form) that adapts to resistance heating mode and metallurgical affinity both with aluminium and steel sheets.
3. To develop an automatic deposition method of filler metal to achieve typical automotive productivity rates.
4. To determine non-destructive testing methods to evaluate the quality of joints.
5. To develop new electrode tips (material and geometry) for this new process.
6. To elaborate a weldability and troubleshooting guide about this new process and this new type of joint.

Tipo Ente: Pubblica Amministrazione>

Partner richiesto: RTDs: Project Management. Process development.

Laboratory testing. Weld characterization.

OEM & TIER: Process and application definition. Pilot production testing.
Exploitation.

Brazing filler material supplier: Adapted filler material development.

System integrator: Adapted RSW equipment development.

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Riferimento: **TRA7-EU-SMCP-2**

Data Scadenza: **31/05/2007**

Programma: **Trasporti**

Titolo: Development of a new aerodynamic design for more safe and environmental friendly high speed vehicles

Tipo Progetto: small medium collaborative

Descrizione: An important way for greening the surface transport is developing technologies to reduce the aerodynamic drag of any vehicle that finally means lower emissions. This project proposal aims to develop a new aerodynamic design for surface (underground) vehicles according to a recent Romanian/European patent so that reduce the drag and external noise more and more while increasing the speed, also to reduce the vibrations. The new design will be applied to coach work only. In a previous Romanian short project were performed wind tunnel tests for an underground train model and the measured results encourage the research way to achieve the proposed objectives. The project implementation requires a multidisciplinary effort that mainly refers to the followings:
theoretical aerodynamic studies regarding the generating airfoils and the coach work geometrical shape, studies about noise and vibrations, structure, design and manufacture a coach work experimental model, tests in the wind tunnel simulating the body, respectively tunnel effects, synthesis studies regarding the new technology, design, manufacture and test a small high speed motorlorry as prototype, final reports, management, IPR protection, dissemination of the new technology.

Tipo Ente: Pubblica Amministrazione

Partner richiesto: to be requested