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Project information			
PPP ■ Factories of the Future ❒ Energy-efficient Buildings ■ Green Cars			
Topic/Title	**Partial Forging of Cast Components**		
Project idea, objectives	• New manufacturing technology for components with complex 3D-geometries and very large difference between billet shape and final shape • Casting of base geometry with subsequent forging of designated component sections with specific property requirements • Elimination of multiple forging operations and greatly increased material utilisation • Examples: knuckle, crank and lever shaped components • Integration of conventionally separated casting and forging industries and utilization of advantages of both technology branches • Application of innovations from casting, forging and materials sciences • Hybrid components with both cast and forged material structures • Considerably shortened processing chains with significantly lower resource and energy consumption at increased economic efficiency		
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**			
Partner 1	**Company / (SME) - end user of complex forged/cast products:** **automotive industry, aviation industry, medical engineering industry**		
Partner 2	**Company / (SME) - Manufacturer of complex forged/cast products:** **casting+forging companies, supply industries**		

EGCI-B02

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Project information	
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings ☑ Green Cars	
Topic/Title	Improvement the autonomy of the electric cars and integration of ecological charging points in private houses and urban areas
Project idea, objectives	OBJECTIVES - Extend the battery life of electric cars - Increase public awareness of the advantages and evolution of electric cars and involved them in the evolution of the electric cars - Achieve the strategic goal of 2030 - Integrate battery charging stations in urban areas and private houses - Generate green electricity for battery charging - Manage the distribution of energy load depending on the circumstances IDEAS - Study the influence of different driving parameters in the autonomy of the batteries of electric cars - Use of the results for longer battery life - Design and development of the necessary installation for charging electric vehicles in urban areas and private houses - Design and development of the necessary installation for the generation of energy for charging batteries of electric cars - Design of an automated distribution of energy depending on the needs
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**	
Partner 1	University or research center interested in the collaboration in one of the areas or ideas of the project
Partner 2	Car company interested in the development of the electric cars and their battery life

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Project information			
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings X Green Cars			
Topic/Title	**Next-generation EV batteries using nanotechnology**		
Project idea, objectives	LiOn battery technologies are subject of vast investments and are expected to dominate the next decade of EV battery R&D. However, beyond LiOn, technologies that show potential include solid□state, Li□S, lithium-air and zinc-air batteries, Most of these still have space for improvement, in terms of cyclelife for example. The proposed project would bring together highly innovative research lines on non-LiOn technologies and would connect these to some major large industry players that can act as future channels towards large scale lower cost production of the solutions that come out of the highly innovative research lines In addition an end user advisory board is foreseen in which several major OEMs will have a seat. It is the objective of the project to incorporate those technologies that can be a basis for European competitiveness in the battery market beyond the LiOn market which it has perhaps more or less lost to Asia and the US.		
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**			
Partner 1	University / research organisation working on Li-air, zinc-air or Li-S, or solid state battery technologies		
Partner 2	Start-up companies with highly innovative non LiOn battery technologies under development		

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Project information	
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings ☒ Green Cars	
Topic/Title	**GC.NMP.2012-2 Innovative advanced lightweight materials for the next generation of environmentally-friendly electric vehicles.** **MULTI-MATERIALS/MULTI-THICKNESS DESIGN CONCEPT (MM-MT-DC)**
Project idea, objectives	Preamble The current trend to use more advanced high strength steels (AHSS) in automotive applications is driven by a) the reduction of passenger car weight, b) the improvement of the passive safety of vehicles, and c) the strong competition from light-weight materials, in particular Al and Mg alloys and plastics. The increased use of AHSS steels is driven by regulatory pressures and customers' expectations. Both European NCAP (New Car Assessment Program) and the North American NHTSA (National Highway Traffic Safety Administration) regulations increasingly put a strong emphasis on passenger safety by means of frontal offset and side impact crash test. AHSS steels with superior dynamic behaviour are increasingly used to address these stringent passive safety requirements. However, Aluminum alloys may successfully take part in the future manufacturing of light-weight green cars provided that an **effective multi-material design-concept** is conceived. This new design-concept requires a flexible, reliable and clean welding technology to weld many bulk or sheet materials to each other. Aim: **selected structural components** have to assure passive safety of vehicles, crash-worthiness and lower weight; this can be achieved by increasing the component complexity in geometry and/or materials. ***Novel lighter high-performance components*** *will exhibit a* ***more efficient geometry*** *regardless* ***thicknesses*** *and* ***constituent materials.*** Novelty: *an ad-hoc combinations of AHSS sheet steels or AHSS steels and thin aluminum alloy structural castings will be combined to*

	simultaneously minimize weight and maximize formability, functions and mechanical resistance. Specifically **complex phase steels (CP 1200)**, **TWIP** (twinning-induced plasticity), **L-IP** (lightweight steels with induced plasticity) **steels** and **thin Aluminum alloy structural castings** (e.g. rheocasting or by any other microstructure-controlled casting technology). Thin Aluminum alloy castings are intended to be produced by **rheo-casting or similar technologies**, capable of promoting non-dendritic microstructure to cope with high resistance and design complexity requirements. Eventually, other AHSS steel sheet grades (e.g. DP, TRIP, CP, MS, stainless steels) may be involved in the MM-MT-DC. Inherent Problems to be solved: ***deep drawing formability*** of multi-materials parts has to be understood and optimized while ***spring-back effect*** of CP1200 steel has to be predicted and eventually complied with TWIP or L-IP steels; the ***mechanical characterization of*** CP 1200 and TWIP/L-IP steels ***has to be accomplished with both conventional and non conventional mechanical tests***; multi-materials constitutive law have to be extracted from measurements; a flexible, reliable and effective welding technology has to be searced to successfully ***join dissimilar materials together (AHSS steels and Aluminum castings) regardless materials and sheet thicknesses***. The high cost penalty makes the second-generation AHSS steels unattractive for all but the most challenging or critical body structure applications; therefore, they have to be optimized for each application (in amount and location). The ***rheocasting process*** is proposed as a key casting technology to tailor the maximum toughness and mechanical resistance of aluminum alloy castings as well as the thin aluminum castings provided that the most important process parameters are adequately controlled. (RG) Research Group's Skills and Expertise: - ***welding technology for dissimilar materials***: the RG owns a consolidated know-how on ***capacitor discharge solid-state welding*** (CDW), a non conventional welding technology suitable to weld various AHSS sheets or AHSS sheets with **thin** aluminum alloy castings; CDW is reliable, fast, clean, efficient and non-discoloring welding technology. The RG will contribute to welding process modeling for component properties optimization - ***Rheocasting technology(or the like) to produce thin aluminum castings***: the RG will contribute to the rheocasting process optimization in order to produce aluminum castings with the required thickness, microstructure and mechanical properties requiredf or the final application; process modeling may be also developed for component properties optimization - ***Stamping Process (experimental and modeling)***: the RG has long experience in developing integrated numerical/experimental methodologies suitable for rapid process setup, die design and component properties optimization; RG can provide support to computer modeling of deep drawing process with prediction of spring-back, derivation of new constitutive laws to be included in commercial finite

	element programs to discern the forming behaviour of new alloys; - ***Materials characterization (experimental and modeling)***: RG can perform mechanical properties characterization by tensile test, punch-test, shear test, instrumented micro- or nano-indentation test; formability tests may be performed on standard or small-size samples (10 mm size samples); specialized computer modeling will be developed to extract mechanical constitutive laws in combination with any mechanical test: the effect of materials properties on sheet thickness will be elucidate; prediction of FLD curves: the numerically generated FLD will be compared with the experimental data; identification of failure criteria of cold formed alloys: a theoretical necking model will be described for the prediction of the forming limit strains of sheet metals typically used in the automotive industry. - ***Component design***: the RG may support the overall design stage of the proposed MM-MT-DC methodology.
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**	
Partner	European Partnership: the RG may participate to any consortium by introducing selected industrial partners each with their individual expertise to support all or part of the proposed research activities, e.g. an ***European producers*** will develop the thin rheocasted or die-casted structural aluminum components and/or casting aluminum alloys; an ***European producer will*** supply the capacitor discharge welding machines together with the related tooling for the designed novel component; a ***European producer*** of CP1200 sheets steel (and other AHSS steel if required).
CONCLUDING REMARKS The RG may support all, a few or may adapt the proposed research activities to complement other research activities.	

EGCI-B05

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Project information			
PPP ☒ Factories of the Future ❒ Energy-efficient Buildings ☒ Green Cars			
Topic/Title	**Process monitoring and control for composites manufacturing**		
Project idea, objectives	Composites liquid moulding is a relatively new production method which attracts more and more interest having increasing applications in automotive, aerospace, wind energy, boat building, infrastructures, railways and many other manufacturing sectors. The use of durable sensors and advanced monitoring systems in composites manufacturing can provided at industrial production level valuable information for process and quality control for optimal production, energy and time reduction, scrap reduction and material savings. Their industrial application has demonstrated their potential but more research is necessary. The concept is to build intelligent control systems that would take advantage of this technology alongside with sensor networks and wireless sensors around the moulds that could accelerate the process by ensuring quality.		
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**			
Partner 1	Composites manufacturing companies in Aeronautics, Automotive, Wind Energy etc. interested to accelerate their production, to real-time monitor the product quality, gain process insight, apply optimal control in real-time. Production includes Resin Transfer Moulding, Resin Infusion, SMC and pultrusion.		
Partner 2	Research Organisations involved in the process development of liquid composite moulding and other composites manufacturing processes.		

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Project information	
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings ☑ Green Cars	
Topic/Title	**FOAMS FOR CARS**
Project idea, objectives	"Green cars" need for lighter parts (both structural and functional parts), aiming at reducing the energy consumption. At the same time these parts necessarily must keep their compliance in comparison with substituted parts. One precedent of this trend is the SuperLIGHT-CAR project co-funded by the European Commission under the 6th Framework Programme. It was demonstrated, by using cost-effective materials available on the market and suitable for mass production, that a considerable weight reduction on a standard automobile could be achieved [1]. New aluminium and magnesium alloys as well as reinforced plastics and composites were proposed as an alternative to steel and other heavier materials present in cars nowadays. The new generation of vehicles requires further development, not only on the raw materials, but also on their structures. Foams are bio-inspired structures with immense potential and extraordinary properties [2]. They are light-weight materials with a very high specific stiffness, very good vibration damping and energy absorption capability. Especially in case of electric powered vehicles, weight reduction and improved safety concepts are key factors for their success. Moreover the use of foams reduces the amount of materials involved in car production contributing to the bio-sustainability. **Under this perspective, the aim of this project is to propose innovative lightweight car parts, based on foam structures, and to develop cost-effective technologies for producing such materials. The project will show the advantages of solid foams compared to traditional light weight materials for similar processing costs.** The main technical objectives are: ○ The development of cost effective production routes to manufacture large parts. This will be based on free-foaming technologies. ○ Tough-stiff structural parts for automotive industry with low payload. (also important for fuel saving). ○ Development of production technologies for large parts. ○ Demonstrator prototypes. The project will focus on two type of materials: **a) Polymeric foams**. Although polymer foam structures are already established in the market, the processes have to be improved and adapted e.g. for large part production,

	recycling, etc The key objective of this part of the project are: - Development of a free foaming technology based on polymers of excellent mechanical properties (polypropylene, polyamide, filled materials, nano filled materials etc) already present in the car and conventionally difficult of being foamed. This technology should be able to produce large parts at low cost. - Optimization of the process parameters and formulations. - Use of additives and nanoadivites as stabilizing agents playing role in foam stabilization and physical properties - X-ray radioscopy tests under microgravity and hypergravity aiming to understand the stabilizing mechanisms during foaming. - Tests on recyclable foam parts (non crosslinked thermoplastic polymers) - Systematic testing of produced parts. - Production and testing of prototypes and demonstrator parts. **b) Metallic Foams:** Metallic foams are ready for mass production, and are superior materials as conventional steel or simple aluminium structures. One of the traditional handicaps of these materials has been the high processing cost and the properties uncertainty. These problems are intended to be solved in the current project proposal The key objectives are: - Development of a free-foaming technology with optimum structure-properties. - Development of new generation of aluminium foam sandwich for improved performance and handling. - Production of car parts with superior crash absorption behaviour. -X-ray radioscopy tests under microgravity and hypergravity aiming to understand the stabilizing mechanisms during foaming. - Foam parts based on recycled material (aluminium based alloys suitable for foaming) - Systematic testing of produced parts. - Production and testing of prototypes and demonstrator parts **The expected results of the project are:** i) Weight reduction with cost, energy efficiency and environmental benefits. (ii) Development of both economically viable and technologically feasible advanced lightweight materials and their respective processes. (iii) Options for the use of globally available, recyclable or recycled materials, as well as carbon neutral materials; (iv) Extended lifetime of durable components of a vehicle, and lower life cycle costs. **<u>Current Partners</u>** These partners have already confirmed its participation. European Spatial Agency (ESA), The Netherlands (project leader) Grupo ABN Pipe, Spain ALM International, Germany University of Valladolid, Spain Technical University of Berlin, Germany
Partner search description Type = Company/SME/Research organisation/university + desired skills/knowledge	
Partner 1	Company in the automotive industry interested in the development of light weight materials for structures in cars. The key role in the project would be to define the parts of interest, the requirements of these parts and to test the parts produced. It would be beneficial if the company has experience in electrical cars.
Partner 2	Company or Research organization with experience in modelling by finite element analysis. The key role would be the modification of the current designs of the parts into optimized designs when the part is foamed.

EGCI-B07

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Project information			
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings ☒ Green Cars			
Topic/Title	**GC.SST.2012.2-2. Complete vehicle energy management.** **GC.SST.2012.1-7. Demonstration of Urban freight Electric Vehicles for clean city logistics.**		
Project idea, objectives	Cetemet is a Non-profit Tech. Centre in the Metal-Mechanic and Transport Industry. The Tech. Centre is able to provide its expertise and research capabilities on these two topics: *a) Climatic and thermo-dynamical research line:* • Assessing technologies for efficient vehicle energy managem. in the **Climatic-Wind-Tunnel** operated by the Centre. • Testing capabilities: testing energy efficiency of diverse kind of vehicles (**Trains, trams, buses, trucks, cars**, etc.). • Optimizing power management and distribution including energy (cooling/heating performance). • Creating an energy efficient work environment for the driver including (insulation materials, reflective coatings for glass, new thermally reflective paint technologies and other intelligent materials, etc.). • Testing different elements (for example, batteries and electrical components) of vehicles (Green Car). • Climatic and thermo-dynamical tests. Air conditioning (HVAC), isolation and refrigeration systems. Reducing heat losses. *b) Research line: Urban sustainable mobility and fleet management* • Development, implementation and assessment of sustainable urban mobility plans for the assessment of the state-of-the-art of city freight movements and the delivery market. • Development of tools to support design and sustainability of container-chassis and bodies (trucks).		
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**			
Partners	Company/SME/Research organization/university to lead a project in the two topics above indicated.		

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Project information			
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings ☒ Green Cars			
Topic/Title	GC GC.NMP.2012-2/ GC.SST.2012.1-1/ GC.ENV.2012-6.6.-3: **Innovative advanced lightweight materials for next generation of environmentally-friendly electric vehicles**		
Project idea, objectives	**Advanced lightweight composites for EFVs/ electric cars** **Objectives:** - Reduction in material weight, fulfilling safety requirements of vehicles. - Increasing attractiveness of EFVs through: ✓ Reduction of production costs. ✓ Decreasing fuel consumption. **Expected results:** - 20% reduced vehicle weight. - Achieving high levels of energy efficiency by reducing fuel consumption. - Minimization of the environmental impact by using recyclable materials. Andaltec will carry out advanced composites developments and design and manufacturing at a pilot scale (including design, layout, prototyping, simulations, etc.)		
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**			
Partner 1	University/ Research organisation: Research of vehicle parts to reduce weight Research of composites and properties analysis		
Partner 2	Consulting Company: Economic and technological feasibility analysis and LCA		
Partner 3	Industrial Large Enterprise/ SME: Collaboration in the different WPs Development and optimization of production technologies		

EGCI-B09

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Project information

PPP ❒ Factories of the Future ❒ Energy-efficient Buildings X Green Cars

Topic/Title	**LIGHT WEIGHT MATERIALS**
Project idea, objectives	AITEX expertise in composites industry. Composite materials (or composites for short) are engineered materials made from two or more constituent materials with significantly different physical or chemical properties which remain separate and distinct on a macroscopic level within the finished structure. There are two categories of constituent materials: matrix and reinforcement. At least one portion of each type is required. The matrix material surrounds and supports the reinforcement materials by maintaining their relative positions. The reinforcements impart their special mechanical and physical properties to enhance the matrix properties. A synergism produces material properties unavailable from the individual constituent materials, while the wide variety of matrix and strengthening materials allows the designer of the product or structure to choose an optimum combination. Many diversification possibilities exist for Textile Sector in Composites Industry due to the wide variety of markets where these materials are employed. Furthermore, the diversity of production technologies and textile reinforcements able to be used in composites industry allow to be employed in industries needed to have light weight materials Nowadays, AITEX research activities in regard of composites materials is mainly related to eco-composites development, where a high percentage of these compounds is biodegradable. In order to achieve this objective natural fibers are being applied as substitutes for glass and carbon fibers. AITEX is able to develop a wide variety of textile reinforcements (knitted or woven fabrics, multilayers, spacers, non-wovens, etc.) just by using technical or conventional textile materials. Obviously, the structure of reinforcement will depend on the application and the technical requirements for the end product. AITEX would like to take part in a consortium developing composites for application in the automotive industry working in a biodegradable solution. AITEX will work in the textile reinforcement.

Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**	
Partner 1	

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Project information	
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings X Green Cars	
Topic/Title	**LNG Blue Corridors for medium and long distance transport**
Project idea, objectives	The proposal focuses on expanding LNG (Liquefied Natural Gas and liquefied biomethane) supply routes for using LNG/LBG in heavy goods vehicles on medium- and long-distance haulage. Since freight transport often starts and ends in cities, the LNG Blue Corridors proposal also aims at supplying NG/biomethane to urban areas and big European cities using the flexible L-CNG filling station concept, a filling station that is supplied with LNG and is able to deliver both LNG to heavy-duty trucks and CNG to light-duty passenger cars and commercial fleets (vans and lorries) for urban distribution. *Objective of the project* The main objective of the project is to initiate a European network for sustainable road transport by tackling non-technological barriers to the production of Liquefied BioMethane (LBM), expansion of supply routes for LNG and the use of LNG in heavy goods vehicles. This will be done through an analysis and development phase, followed by pilot projects and the initiation of a European network of production/refuelling facilities. The high autonomy (600 to 800 km) of the long distance LNG trucks will reduce the number of the minimal necessary filling stations to a relatively small number. Going to real numbers, our aim would be to install in Europe a minimum of 10 LNG/LBG new filling stations, strategically situated, able to give service in the different main routes to not less than 50 to 100 LNG heavy trucks. *Analysis & development* The analysis will be aimed at determining the member state and European market barriers. In addition, the differences in legislation, taxation and subsidy programmes will be investigated throughout Europe by the project partners. Moreover, recommendations will be formulated for European policy makers. Finally, an effort will be made to normalise and standardise the various technologies related to both, LMB production and application in Methane vehicles using LNG. Taking into account that today the Iberian Peninsula is the part of Europe with more LNG terminals, we have imagined three initial LNG

	Blue Corridors: 1. Portugal, Spain, France, Belgium, The Netherlands and UK 2. Portugal, Spain, France, Germany, Denmark and Sweden 3. Portugal, Spain, France, Italy, Slovenia, Croatia A fourth transversal corridor could link UK, The Netherlands, Germany, Austria, Russia; taking advantage of the filling points for the previous ones. An additional inland waters corridor going up the Danube river will link Romania up to Vienna. Pilot projects & dissemination Within the pilot projects, LBM production and identifying strategic supply routes of LNG for application in heavy goods vehicles will be demonstrated in partner countries and several regions being interested to apply the LNG concept in heavy goods transport, functioning as a connector to other regions and big European cities using the same principle, thus creating the LNG Blue Corridors. All pilot projects results will be monitored and disseminated to potential users. The deliverables of the project will be applied to accelerate the development of so-called Blue Corridors. And by testing various marketing strategies to solve the identified barriers, potential users will be inspired by early adopters and will in this way help to boost the market. Typical tools for this approach are workshops, business meetings, conferences and consultancy meetings. There are already some European small fleets running on NG, but their area of work is very reduced, local or regional (The Netherlands and some parts of Spain), because the lack of international infrastructure connexions. These pilot, positive experiences give us the basis for a much bigger project that is going to show the opportunity of the LNG/LBG to replace diesel oil as the fuel for long distance, heavy transport in Europe, and also to foster the development of new OEM products using this fuel. See annexed NGVA Europe presentation: "LNG Blue Corridor concept", dated July 2011.
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**	
Partner 1	NGVA Europe is the only association representing the interests of the European NGV (Natural Gas Vehicle) related industry with relation to the use of natural gas (both gaseous and liquid) and biomethane in transport. The project participants would be selected from among our members, now counting more than 130 companies from 35 different countries, meaning the key players of the European CNG, LNG and biogas vehicles related industry, incl. manufacturers of OEM vehicles and its components, filling station producers, natural gas and biogas companies, research and homologation institutes, etc. This approach of coordinating the proposal via the European Association for Natural & bio Gas Vehicles also implies the benefit that the Commission will not receive many different proposals by several industry players, but one well-structured and coordinated approach by NGV Europe, the sole European stakeholder for Methane in transport.

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Information	
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings ✠ Green Cars	
Title	**INTEGRATE NOVEL SOLUTION OF EXCHANGEABLE BATTERIES FOR MOTORBIKES AND LIGHT VEHICLES**
Idea & objective	◦ Public-Private Partnership Energy, Transport, Industry and ICT cooperation for enabling and boosting the use of multi-vehicle, standard and exchangeable batteries for electric motorbikes and light vehicles. ◦ Logistic solution and new business models for owners and managers of the interchangeable batteries, charge stations, vehicles manufacturers and individual and collective users
Impact	◦ Deployment and demonstration in three real-usage at regional/urban level in three regions of the market and mobility features and performances ◦ Validation of light vehicles and exchangeables batteries manufacturers. ◦ Evaluation of the satisfaction: • electric vehicle manufacturers. • batteries manufacturers, owners and managers. • electricity charge stations and battery suppliers. • electric vehicle users (owners P/P and drivers).

Partner search description	
Partner 1	◦ Three motorbike and light vehicle manufactures
Partner 2	◦ Three standard exchangable batteries manufactures
Partner 3	◦ Three exchangable stations network
Partner 4	◦ Three logistics “rent-batts” companies

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Project information			
PPP ☒ Factories of the Future ☐ Energy-efficient Buildings ☐ Green Cars			
Topic/Title	**GC.NMP.2012-2: Innovative advanced lightweight materials for the next generation of environmentally-friendly electric vehicles**		
Project idea, objectives	Teknia Manufacturing Group is a dynamic and multinational company founded in Spain. The group consists of three businesses: Automotive, Energy and Research & Development and its factories are located around the world such as Spain, Poland, Czech Republic, Morocco and Brazil. All our manufacturing plants are certified with ISO/TS 16949. Teknia Group specializes in product development, engineering and manufacturing technologies for the automotive and concentrated photovoltaic (CPV) sector by applying its basic principles of specialization, technological strength, proximity and close collaboration with its customers at an international level. Teknia R&D is the Technological Centre of the group. The main target is to give support to the customers, applying our know-how in plastic, metallic, machining and CPV technologies and offering comprehensive and innovative added values. The company relies on a highly experienced team working with injection carbon-fiber-reinforced polymer and structural optimization of advanced steel for body parts and chassis. Teknia Group would collaborate in the proposal through mechanical design, FEA/CAE simulation, prototyping and manufacturing of the different components in order to achieve lightweight materials for the next generation of environmentally-friendly electric vehicles. Moreover, it would be carry out a study of applicable materials for product and process, process design and automation for reducing manufacturing cost and tests for suitable forming and joining technologies in order to guarantee reliability, robustness and safety, reducing the cost of assembly.		
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**			
Partner 1	Teknia is looking for a multidisciplinary consortium in order to apply our know-how and manufacturing technologies.		

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Project information	
PPP ***X Factories of the Future*** ❒ **Energy-efficient Buildings** ***X Green Cars***	
Topics	**GC.SST.2012.1-4.** Modelling and testing for improved safety of alternatively-powered vehicles **FoF.NMP.2012-5**. High precision production technologies for high quality 3D micro-parts
Capacities offered	The **Aragón Technology Centre (ITA, Instituto Tecnológico de Aragón)** provides support services to the industry for the development of innovative products and processes. The scope of this area is to develop new tools and methodologies oriented to improving design processes and developing products by means of the convergence of different multidisciplinary technologies: numerical, experimental and hybrid. ITA has participated in a number of European projects both as a Coordinator and as a partner. Some examples are: **KRISTAL** (FP6); **CAFÉ** (FP5-CRAFT): **RICAT+**; and **Green Car Eco-design** (INTERREG). **POSSIBLE CONTRIBUTIONS:** - Design, modeling and analysis of mechatronic systems including mechanisms, electromagnetic, hydraulic, pneumatic and piezoelectric actuation, and control. Matlab/SIMULINK is the main tool used in this field. Application to automotive, fluid control and machinery industries. - Advanced (non-linear and adaptive) control design for mechatronic systems based on models. Application of Matlab/SIMULINK and Stateflow for controller implementation and verification via Software-in-the-loop. - Research on advanced control for active vibration control and micropositioning using smart actuators (piezoelectric). - Experience in the design, development and set-up of specific test rigs to evaluate functional and durability performance of final products, components and materials. - Hardware design and software implementation (embedded systems) for data acquisition, control and communications. Research on real-time capabilities, system integration and distributed control architectures. - Construction of real-time simulators based on system models for realistic emulation of signals for hardware verification and testing (hardware-in-the-loop HIL). - Code generation for rapid control prototyping. Application of Matlab/SIMULINK, dSPACE and National Instruments software and hardware tools for prototype testing and analysis. - Large laboratory facilities available for performance, durability and EMC product testing.

Partner search description	
Partner 1	ITA (Aragon Technology Centre)
Partner 2	Industrial partners may be brought in

Contact person			
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Project information	
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings	***x Green Cars***
Topic/Title	**GC.NMP.2012-2 Innovative advanced lightweight materials for the next generation of environmentally-friendly electric vehicles**
Capacities offered	The Aragón Technology Centre (ITA, Instituto Tecnológico de Aragón) provides applied **research services to the industry** for the development of innovative products and processes based on the appropriate selection of materials and a deep knowledge of their functional properties. We also provide industry with support when creating new advanced and multifunctional materials using numerical characterization and prediction of the behaviour of materials. ITA has participated in a number of European projects both as a Coordinator and as a partner. Some examples are: **KRISTAL** (FP6), which objective was to develop innovative coating & surfacing techniques and associated modelling and experimental tools (design of large range, high precision tribometer); **CAFÉ** (FP5-CRAFT): Development of a Semi-Automated Cost- Effective Facade Cleaning System; **RICAT+**, which objective was the development of design methodologies for mechatronic products, applied to the nonlinear control of smart actuators; **Green Car Eco-design** (INTERREG), which objective was optimization of components in electric vehicle for improvement of energy efficiency. **POSSIBLE CONTRIBUTIONS:** - Advanced material characterization and formulation of physical laws, focussing on cost-effective but accurate product simulation from an industrial point of view. - Development of macroscopic behaviour models (non-linear behaviour, visco-elasticity, failure criteria, fatigue life prediction). - Computational simulation: virtual prototyping of parts and systems through advanced using of FEA, CFD and Fluid-Solid-Interaction tools, modelling of material processes, dynamic phenomena, fluid-solid interaction. - Design, simulation and testing of composite parts and structures. Our capabilities include the production of prototypes in glass and carbon fibre reinforced materials as well as NDT inspection using active thermograpy. - Research on joining technologies, with special focus on characterisation and modelling of adhesives, and development of numerical models for mechanical fasteners (bolts, rivets, …). - Advanced tribological modelling and characterisation of friction and wear, with special attention to contacts including polymeric and elastomers materials on hard countersurfaces. Laboratory facilities includes unique tribotesting facilities for long stroke reciprocating contacts. - Failure analysis and material fatigue: identification of failure modes, identification of failure origin (design concept, manufacturing process, service life, maintenance, etc), determination of material fatigue limit, crack-growth monitoring and analysis. Accelerated fatigue characterisation of materials and

	structures. - Development of new materials with knowledge-based multifunctional performance: modelling, design and manufacture of polymer matrix nanoreinforced materials. Main fields of activity are oriented to properties in relation to magnetism, EMI shielding and electrical conductivity, always in combination with high mechanical properties, focusing on materials for the new generation of mechanical and electromechanical systems for transport and machinery sectors. - The scope of application includes the following target materials: metallic materials, reinforced thermoplastics, industrial elastomers, paper and corrugated paperboard, and advanced composites/ nanocomposites, being the main expertise the cross-sector application of material developments and material analysis techniques.
Partner search description	
Partner 1	ITA (Aragon Technology Centre)
Partner 2	Industrial partners may be brought in

EGCI-B15

Contact person			
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Project information			
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings X Green Cars			
Topic/Title	**Intelligent energy management and predictive control strategies for EVs (IMPCOS)**		
Project idea, objectives	**Objectives**: Development of intelligent energy management approaches covering different electric vehicle architectures/topologies and different energy storages. This comprises: - Intelligent control of auxiliaries and communication networks ("partial networks") - Investigation of multi-layer electrical systems to reduce energy consumption (e.g. 48V) - Adaptive and predictive energy management strategy taking into acount driver aspects and environmental information (digital maps, traffic news,...) - Optimal fusion of thermal/electrical management of highly electrified vehicles and vehicle dynamics control (drivability). - **Expected Impact:** Development of an advanced on-board energy management for highly electrified vehicles given driver and environmental / infrastructural data (V2I)		
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**			
Partner 1	OEMs, TIER1 &2,		
Partner 2			

EGCI-B16

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Project information			
PPP ❒ Factories of the Future ❒ Energy-efficient Buildings X Green Cars			
Topic/Title	**Innovative advanced lightweight magnesium alloys for the next generation of environmentally-friendly electric vehicles**		
Project idea, objectives	Regarding the call GC.SST.2012.1-1. Innovative advanced lightweight materials for the next generation of environmentally-friendly electric vehicles, **MAGNA STEYR Fahrzeugtechnik**, Austria, and **AIT Austrian Institute of Technology**, Austria, are coordinating a consortium which focuses the reduction of the structural weight of cars and light-duty commercial vehicles by innovative advanced magnesium alloys. New types of alloys with enhanced characteristics innovative structures in a multi-materials approach shall improve the structural efficiency, the energy efficiency and safety, respectively. In parallel the enhanced functional properties, the efforts of manufacturing such novel alloys along the process chain have to be optimized, in particular developing suitable forming and joining technologies. The assessment of the performance parameters as well as a life-cycle analysis of the advanced Magnesium alloys and the respective processes incl. dismantling and recycling will be performed and compared to state-of-the-art types. The global resources of magnesium primary material as well as alloys (e.g. rare earth) will be of major interest in the LCA and the alloy development.		
Partner search description **Type = Company/SME/Research organisation/university** **+ desired skills/knowledge**			
Partner 1	Automotive OEM will interests in using novel magnesium alloys in future car structures (esp. BIW)		
Partner 2	SME from countries other than Austria or Germany with expertise in manufacturing magnesium alloys in standard or novel mass production processes related to magnesium cast or wrought alloys		
Partner 3	SME/RTO from countries other than Austria or Germany with expertise in testing magnesium alloys as well as mixed material joints regarding all typical characteristics (corrosion, static, fatigue, dynamic mechanical properties)		
Partner 4	SME/RTO from countries other than Austria or Germany with expertise in joining magnesium alloys to itself as well as other light weight design materials		