FP7 INFORMATION DAYs for Research PPPs on 11+12 July 2011

Template project ideas

Contact person			
Name	**Pablo M. Romero**		
Organisation	**AIMEN Technology Centre, Laser Applications Centre**		
Address	**Relva 27A, Torneiros, 36410 Porriño, SPAIN**		
Telephone	**(+34) 986 344 000**	**e-mail**	**promero@aimen.es**
Project information			
PPP ☑ **Factories of the Future** ❒ Energy-efficient Buildings ❒ Green Cars			
Topic / Title	**Sheet Forming of Aeronautic Parts with Laser Assisted Tecnhonogy (SALAT)**		
Project idea, objectives	Laser Assisted progressive forming techniques will be developed and DEMONSTRATED during this project, to allow the efficient production of shaped parts from plates of titanium, magnesium, and aluminium alloys with important strain hardening, cracking sensibility and cost. The project is based in well known facts, developed in previous projects, but not well implemented in the industry, due to the lack of demonstration activities or proof-of-concept machine tools. The mechanisms to be exploited are smart distribution of high gradient thermal fields simultaneous to forming, and highly localized yielding with dynamic recovery. This will allow: - Forming with minimal or no strain hardening effects - Reduction of the allowable bending radius - Reduction in the post-processing - Improving the chance of sheet forming to gain presence in aerostructures, with the derived advantages in raw material optimization (lower buy-to-fly ratio), cost reduction, flexible design. The construction of specific machines and processes is sought, which exploit the mechanisms detected in previous theoretical and experimental studies of Laser Assisted Mechanical Forming (LAMF). The main objectives of the project include: - Identify, quantify and demonstrate the benefits of laser assisted forming in aerospace applications, from material, process and product quality point of view. - Build demonstrator manufacturing system for process evaluation. - Identify main market applications and quantify the real advantages. Typical parts include internal & external engine parts, ozone converter housing components, dry seal metal flanges, reducers, stringers,		

	channels, beams, gas managing components, functional or structural profiles. - Technology and engineering development for expanding the technique to a wider range of high added value products. The main impact of the project is enabling permeation of laser assisted forming in aeronautic sector, thus exploiting its benefits in terms of cost, quality and manufacturing speed. Aditional benefits include rational utilization of raw materials; reduce the dependency on cast or extruded parts; laser as a highly controllable, dependable and traceable power source; provide the SMEs aerospace subcontractors with a tool for easily produce high quality parts in light alloys. Activities to be developed include the process planning and development (research and engineering activities), development of in-line process monitoring, process modeling, building of ad-hoc diode laser sources, building of optimized forming machine-tools for implementing the process, and demonstration activities for precise evaluation of the process benefits.
Partner search description **Type = Company / SME / Research organisation / university** **+ desired skills / knowledge**	
Partner 1 Company	End User with capability for part design and testing. Role in the project: functional and quality specifications, benchmarking, DEMO activities.
Partner 2 SME/Company	Machine tool manufacturer, for building of prototype system for laser assisted forming of a range of geometries.
Partner 3 SME	Measuring systems for integration in the designed and built Laser Assisted Forming machine.
Partner 4 SME/Company	Diode Laser manufacturer, for high power/low cost/custom diode bar heaters suitable for operation in harsh environments.