

Automotive industry is looking for reducing energy consumption by using lightweight structures instead of some metal parts. This fact is causing the introduction of plastic sections. But, as metals cannot be excluded as fundamental material in many applications; many products are made of multi-components where several types of materials are introduced. Up to date, the stable joining of plastics and metals is not easy and takes place by methods as adhesive bonding or mechanical joining, that involve a large number of production steps.

The present project aims to overcome their disadvantages trough the development of a new innovative joining concept for Plastic and Metal materials using a direct non-contact laser joining process without extra filler, adhesive bonds or mechanical union but that offers a robust physical and mechanical bonding and ensures the integrity of the structure. The PM laser joint herein presented is led to offer higher process flexibility compared to mechanical joints especially through the use of flexible beam guiding systems. Compared to adhesive bonding solutions it can be much faster with high joint resistance and same flexibility but without contaminant risks. In addition, the shortening of the process chain will lead to a more economical and faster production.

Another important aim of this project fits with a general requirement for technical components which is to achieve flexible automatic joining prototypes for dissimilar plastic-metal materials with short cycle times and a broad field of applications.

The consortium counts with three large companies like FAURECIA, PSA and VALEO as end

users mainly dedicated to automotive sector, LASEA as SME laser source integrator and ANDALTEC as high-tech SME supporting innovation in the plastic field. The consortium is complemented with ILT, IK4-TEKNIKER and ARMINES, research Centers of excellence in laser, manufacturing and material characterization topics.



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