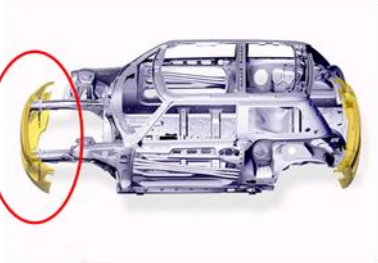
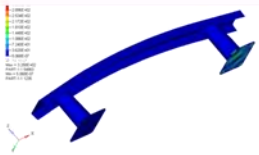
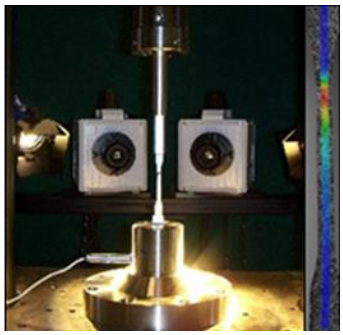
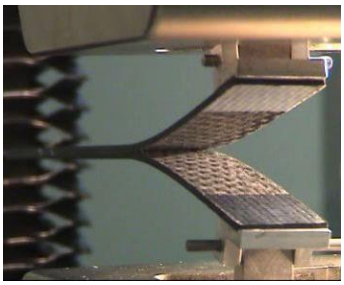
Co-funded by the European Union

METAL MORPHOSIS









## The Context

The stringent environmental regulations, the increasing safety demands and the sustainability of mobility are asking for lighter vehicles with enlarged functionalities. The solution applied in the last decades has been the introduction of lighter materials (Al, Mg, reinforced plastics) or materials with improved properties (HSS, AHSS, composites). The result has been, lighter and safer vehicles made with components of different materials mechanically assembled.

Nowadays this approach is not enough, and the integration of several functions in the same component or the hybridization of elements combining different materials are necessary in order to fulfil the weight requirements of the new generation of vehicles.

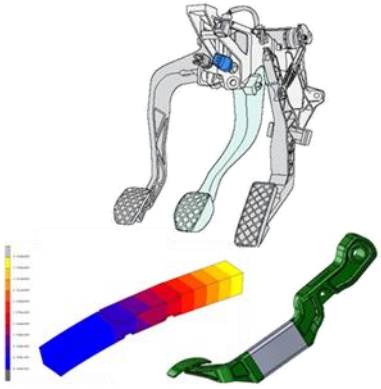
The MetalMorphosis consortium is totally aware of this need and it has developed an innovative process to join composite and metal parts through the application of electromagnetic forces. This innovative methodology overcomes most of the drawbacks of the joining processes used nowadays.

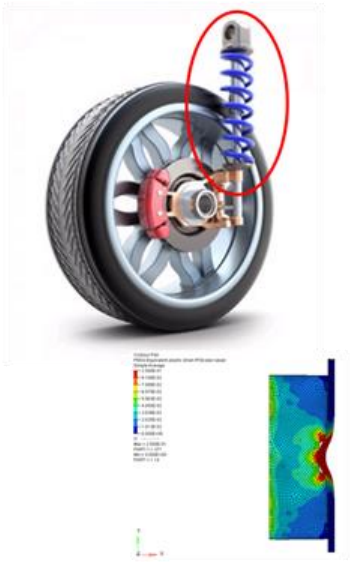
## Our Solution

Cidaut, as an expert in design and development of innovative solutions, is able to cover all the stages from the initial idea to the industrialization going through: design, specific material characterization, joint process simulation, in service behaviour calculation, prototype manufacturing, testing, validation and preindustrial prototypes manufacturing.

In the case of MetalMorphosis Project, Cidaut has focused its attention on the simulation of the composite-metal joints through electromagnetic forces, and the validation of the results achieved by experimental tests.

Other important achievement of the project has been the simulation of the behaviour of the components taking into account the effect of joining process, the anisotropy of the materials and the strain rate in order to evaluate the damage in the composite.



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