

# Ybridio

## Novel technologies for dissimilar materials joining

The second year of the Ybridio project is well underway, with the main focus of this project to develop innovative and reliable thermal joining methods to join dissimilar materials, such as metal-plastic hybrid components.

Ybridio is focused on thermal joining methods, specifically laser transmission joining (LTJ) and induction joining (IJ), which have demonstrated excellent potential to be implanted in a variety of industry. In the projects second year, remarkable progress has been achieved and the principal ideas are as follows:

- The metallic materials selected for joining are stainless steel, aluminium or titanium while the selected thermoplastic materials are PP, PA6 or PEEK with or without glass/carbon fibre. A variety of surface texturing methods are also being investigated to increase the adhesion properties of these materials.
- It was found that it was possible to weld materials which are not transparent to the laser beam. This was achieved by directly heating the metallic part.



- Induction part. Similar to laser joining, a better temperature control ( $\pm 5^{\circ}\text{C}$ ) was achieved by directly heating the metallic component. The flexibility of induction joining allows large structures to be joined under high speed conditions. A variety of different clamping devices also allows for spot welded or continuously welded joint making induction joining desirable to all industries.



- The maximum strength obtained from basic tensile tests revealed bond strengths in the order of 25MPa. This was achieved by both the laser joining and induction joining.

The Ybridio team continues to work towards optimising the complex laser and induction processes and equipment as well as many more aspects in order to improve and achieve the best possible results.

[www.ybridio.eu](http://www.ybridio.eu)

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