



## Use of vibration for residual stress relaxation in dual-purpose metal manufacturing

**The main technological challenge** of the project is to develop and apply vibration procedures that are able to homogenise and mitigate the residual stresses inherent in aluminium rolling and WAAM parts. This technology is nothing more than a layered superposition of arc welding beads and is currently considered to be the metal additive manufacturing process with the lowest cost, energy consumption and environmental impact per kg of deposited material, that is to say, the most sustainable.

### Specific objectives:

Enable efficient and scalable hybrid manufacturing processes, additive manufacturing plus machining, for large aluminium parts (above 1 m), reducing the required starting thicknesses and minimising the drawbacks of these technologies and manufacturing methodologies.

Improve the fine-tuning of machining processes, dimensional tolerances and quality of highly integrated large components common in military aviation, minimising the need to eliminate deformations and including correction machining and relaxation times based on trial and error processes.

To advance the state of the art vibration application technique currently used in large tooling welding to new applications by evaluating multiple methodologies.

Aerotecnic will lead the development of this project and will have the collaboration of the Lortek technology centre. Its relationship with the project is based on its participation in the MULTIFUN project, where the appearance of residual stresses was identified as a problem to be solved within the WAAM manufacturing process.

