

PROJECT

## WIBOND

### WING BOX BONDING

**Funding:** European (Horizon 2020)

**Duration:** Mar 2019 - Dec 2020

**Status:** Complete

**Total project cost:** €1,284,925

**EU contribution:** €899,445



**Call for proposal:** H2020-CS2-CFP08-2018-01

[CORDIS RCN : 221316](#)

#### Objectives:

An innovative flexible jig will be designed and fabricated to allow the structural bonding of a SAT composite wing box. TM will use the jig to join internal ribs and lower panel to the upper panel where 3 spar are already co-cured. The bonding process will be performed using a paste adhesive that requires the application of a calibrated pressure on the bond line. To allow the control of effective bonding an SHM system based on fiber optic sensors will be embedded in the bonding line. Therefore the jig must allow the bonding operation like paste adhesive application and squeezing while holding the required part position during the process.

The Consortium propose a jig with a part that sliding on a lower base give all the necessary accessibility for rib bonding and position of SHM sensors. It will be necessary to develop suitable guidelines for the bonding jig. Different methods to hold the part positioning and give bonding pressure application will be evaluated including mechanical and inflatable devices. As experimental verification is considered necessary to fulfil the requirements, before full scale jig design and fabrication, subscale trial will be performed by WIBOND consortium.

Guidelines on the process delivered by TM integrated with know-how of WIBOND on assembly and bonding jig will be tested on a subscale, representative bonding jig. Detailed Jig design will be performed. It includes 3D models, 2D tables, stress, thermal & tolerance analysis. Partially in parallel with design, to meet the tight schedule, Jig components will be fabricated and assembled using state of art control equipment like Laser tracker and galvanometric Harm.

Jig will be delivered and installed at TM Premises were also try out and training of operators will be performed. Lightweight recyclable materials will be used for main structure and components. Jig will have provision for self-heating but the heating system isn't included in the baseline proposal.

#### Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

**Institute type:** Public institution

**Institute name:** European Commission

**Funding type:** Public (EU)

**Other programmes:** JTI-CS2-2018-CfP08-AIR-02-61 Development and Optimization of Bonding Assembly Technology for a Composite Material Wingbox

#### Lead Organisation:

**Metitalia S.r.l.**

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**EU Contribution:** €223,045

## Partner Organisations:

### Marotta Srl

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Via G.marconi 18/a  
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**EU Contribution:** €109,375

### O.m.p.m. - Officina Meridionale Di Precisione Meccanica Srl

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**EU Contribution:** €228,375

### Protom Group Spa

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**EU Contribution:** €179,768

### Laer Spa

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**EU Contribution:** €158,882

## Technologies:

Computer-aided design and engineering  
Simulation of wingbox manufacture and assembly using Lean production principles

**Development phase:** Research/Invention

**STRIA Roadmaps:** Vehicle design and manufacturing

**Transport mode:** Air transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Other specified

**Geo-spatial type:** Other