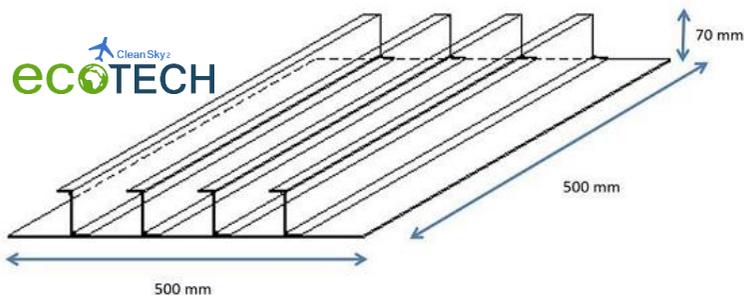


EXPECTED RESULTS

- ▶ Scrapping (cutting-decoating) methodologies for several references of innovative ecoTECH panels.
- ▶ Remelting set-up for recycling mixed Al-Li alloys scrap back into aeronautical grades, minimising downcycling (<10%): keeping contents of Li, Ag, Zr within specified levels for Al-Li alloys and coping with undesired elements sourced from welding joints and coatings.
- ▶ Proposal and validation of EoL route(s) to produce high quality recycled Al-Li alloys, at multi-stringer panel level.
- ▶ Detailed EoL guidelines of integral welded fuselage panels
- ▶ Software tool to predict recyclability and compatibility of aluminium scrap streams (open access).
- ▶ Collect LCI data of the scrapping and remelting technologies developed, for the aeronautics LCA database in Clean Sky.
- ▶ Feedback to ecoTECH to help ecodesign new welded panels (DfEOL tips).



Demonstrator to be recycled:
Multistringer welded panel

BENEFICIARIES



INDUSTRIAL ADVISORS



TOPIC MANAGERS (ecoTECH partners)



Re INTEGRA

Innovative End of Life procedures for recycling integral welded Al-Li Aerostructures



Project reference:
GA No. 886609.
H2020-CS2-CFP10-2019-01



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349 862.50 €



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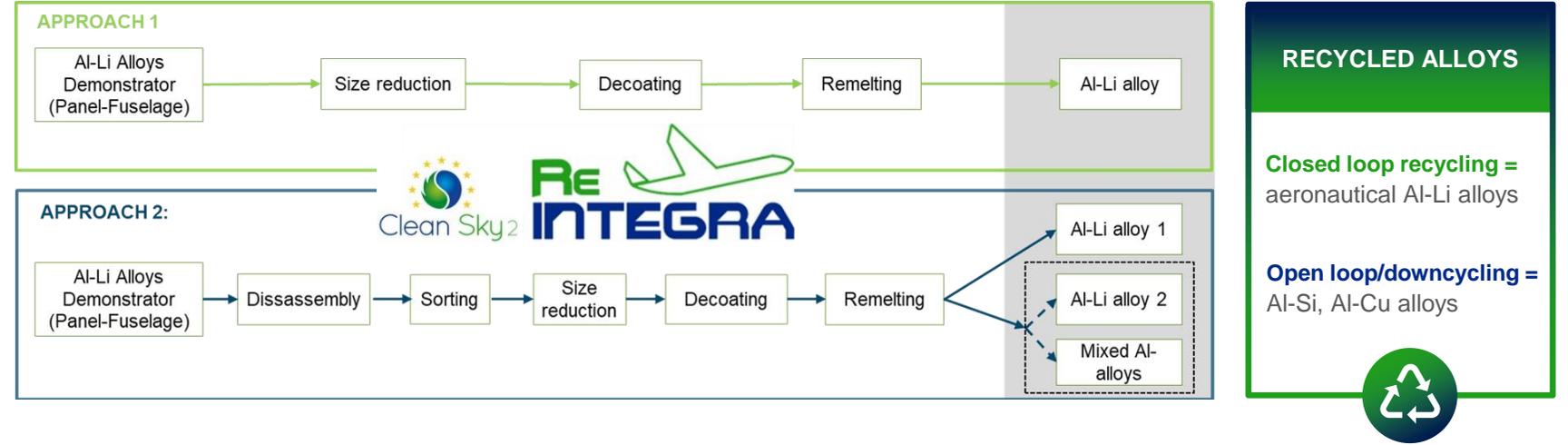
www.reintegra.eu

INTRODUCTION

The 3rd generation of **Al-Li alloys**, in combination with advanced design concepts, including assembly by Friction Stir Welding (**FSW**) and Laser Beam Welding (**LBW**), offer high opportunities for improving structural performance of the **next generation of commercial aircraft fuselage**, compared to conventional riveted counterparts. Those design solutions are being investigated by Clean Sky 2 Core Partners project ecoTECH. Moreover, **novel Cr-free coating systems** are also being developed.

Currently, percentage of admissible “new scrap” in manufacturing the costly aeronautical Al-Li alloys is ca. 80%, while “old scrap” is about zero. Recycling Al-Li parts still presents a challenge due to the loss of light elements during scrap remelting.

APPROACH

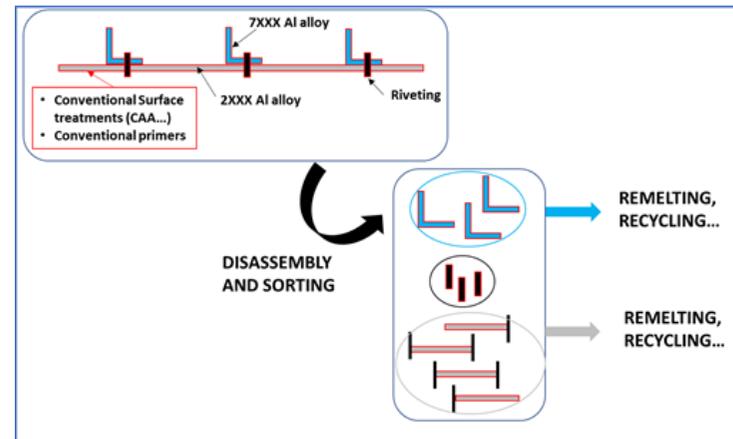


OBJECTIVES

Define and demonstrate End of Life (EoL) procedures for recycling innovative reinforced fuselage panels manufactured using different Al-Li alloys, advanced welding technologies and new Cr-free surface treatments and primers; by

- ▶ making progress in the metallurgical understanding of recycling process;
- ▶ suggesting procedures to scrap the panels, evaluating the need to separate components or to prepare the scrap prior to the recycling operation;
- ▶ validating experimentally the recycling potential of the alloys/coupons/panels, while advancing in the comprehension of the environmental impact of their EoL.

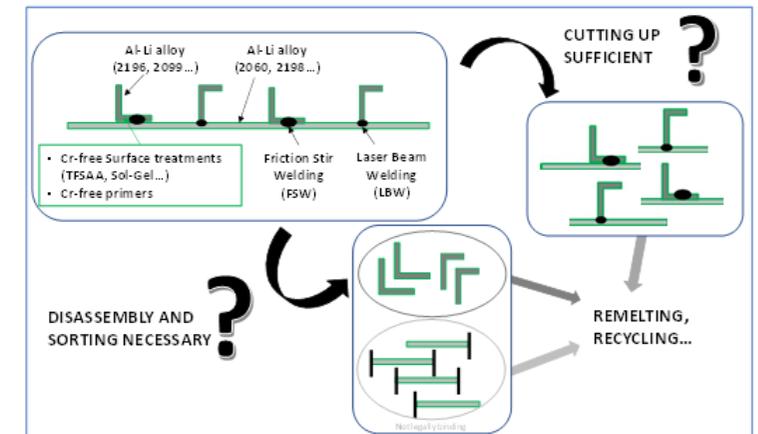
Reference Technology



SoA Recycling – Riveted panels (CS1-SENTRY):

- Dismantling
- Sorting
- Size reduction
- Decoating
- Remelting separated alloy families

ecoTECH Technology Innovation



New EoL – Welded panels (CS2-ReINTEGRA):

- Dissassembly – needed?
- Sorting – needed?
- Size reduction
- Decoating
- Remelting separated/welded Al-Li alloys of 2XXX series