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ALURECO

Smart Circular Recoating System for Aluminium Profiles

ORGANISATION PROFILE

Yeşilova Holding is a leading industrial group in Türkiye, specialising in aluminium-based solutions for the automotive, rail, energy, and construction sectors. With more than 1,500 employees and a production campus of 125,000 m² in Bursa, the company integrates high-pressure die casting (HPDC), aluminium extrusion, CNC machining, and advanced surface treatment technologies (anodizing & powder coating) under one roof.

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ORGANISATION PROFILE

What We Do?

Extrusions Dies

- Die Design and Analysis
- In House Die Production 1500 Dies Per/Year
- Over 14.000 Dies in Portfolio

Aluminium HPDC

- 13 HPDC Presses, 1320 Ton Press Force
- 12kg/shot Weight
- Yearly 12.000 Tons Melting Capacity
- Alloys According to EN AC; 46.000, 44.300, 46.100, 47.100 UNIFONT 94

Aluminium Extrusions

- 6 Extrusion Lines 5 Hard, 1 Soft Alloy 40MN Press Force
- Up to 5,7,6,9,10" Press Diameter
- Up to 12m Profile Lenght
- 21kg/m Profile Weight
- Yearly 50.000 Tons Capacity

Extrusions Presses

- 10" 40 MN
- 9" 35 MN
- 8" 28 MN
- 7" 18 MN
- 5" 10 MN
- 5" 9 MN

Alloy: 6060, 6063, 6005, 6082, 7020

Surface Treatment

- **Anodizing x 2**
  Up to 7 Meter Lenght
  Yearly 10.000 Tons Capacity
  Up to 25 µ
- **Powder Coating x 3**
  Up to 7 Meter Lenght
  Yearly 3.000 Tons Capacity
  Sprey / Electrostatic Coating
- **Wet Painting**
  Yearly 100.000m² Capacity
  Conveyor System
- **Shot Blasting**
  Continues Type
  Hanging Type

ORGANISATION PROFILE

Mechanical Processes

- > 100 CNC Machining Centers
- Up to 12m Profile Lenght
- Yearly 8.000 Tons Capacity
- Stretch Bending
- Drilling / Cutting
- Marking (Laser / Mechanic)

Joining Technologies

- Robotic CMT
- Robotic FSW
- MIG Welding
- TIG Welding
- Oxygen Welding
- Riveting
- Bonding

Test Capabilities

Dimensional & Mechanical
Romidot
CMM
Tensile & Compression Test
Surface Hardness Test
3P Bending

Material
Spectrometer
Microstructure Analysis
Radiographic Inspection
CT X-RAY
Density Measurement Device
Metallurgical Welding Measurement

Paint & Surface
XENON Test
Humidity Control Chamber Test
Corrosion Test

PROPOSAL INTRODUCTION

Vision: The project aims to develop an intelligent, sustainable, and cost-effective paint stripping and recoating system for 6xxx series aluminum profiles used in extrusion-based production. The system will allow defective powder-coated profiles to be recovered and reused, reducing scrap rates and minimizing environmental impact in the aluminum finishing industry.

Motivation: Currently, a significant portion of powder-coated aluminum profiles are discarded due to surface or coating process defects. These rejects cause high material loss, energy waste, and environmental burden. Developing a process that can safely and efficiently remove defective coatings without damaging the aluminum substrate will contribute to both economic efficiency and circular production practices, aligning with EU Green Deal and sustainability goals.

Content: The project will focus on the following developments:

- Design of an automated paint stripping systems (chemical, mechanical, plasma-based methods etc.)
- Development of eco-friendly stripping agents with low environmental footprint,
- Implementation of AI-based surface inspection and process optimization,
- Validation of the process through pilot-scale trials on real industrial profiles,
- Life Cycle Assessment (LCA) to quantify environmental benefits.

PROPOSAL INTRODUCTION

Expected outcome:

- A smart and reusable stripping–recoating prototype system for aluminum profiles,
- Reduction of coating scrap rates by at least 50%,
- Validated eco-friendly chemical formulations for paint removal,
- Demonstrated improvement in the CO_2 footprint and overall process sustainability.

Impacts: The project will enable the aluminum extrusion and coating industries to recover previously scrapped materials, reducing both production costs and environmental impact. The developed system will provide a competitive advantage for European manufacturers by introducing a circular and smart surface treatment technology. It will open new markets for green coating solutions in the aluminum finishing sector.

Schedule:
Planned start date: Q4 2026
Project duration: 18 months

PARTNERS

Partner search:

- **Chemical Formulation Company** for developing low impact chemical solutions for coating removal
- **Equipment / Machinery Manufacturer** for the smart stripping, recoating system
- **AI / Machine Vision Technology Provider** for surface inspection, defect detection, quality monitoring
- **Sustainability & Circular Economy / LCA Expert**

CONTACT INFO

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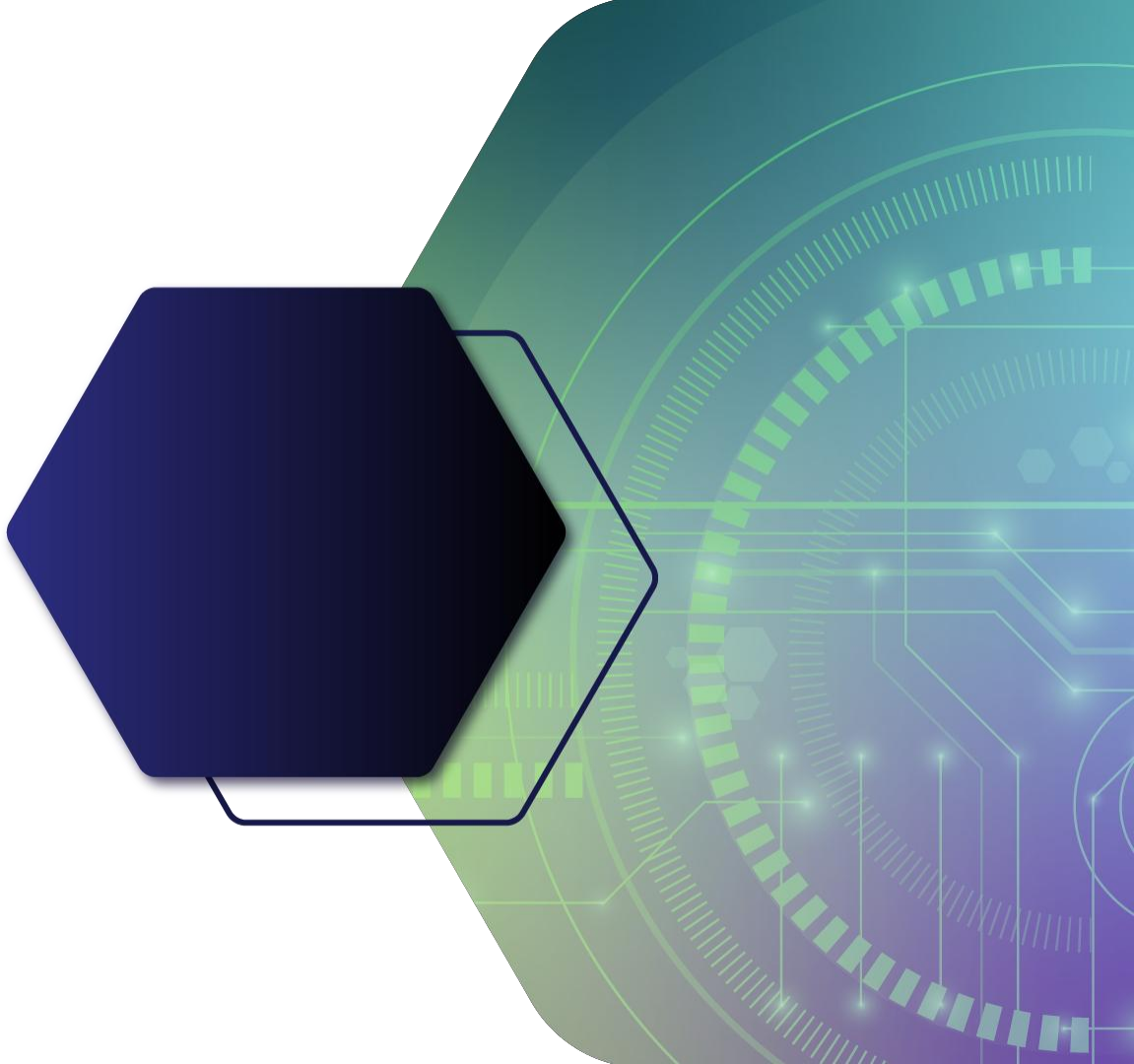

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