

Corrosion Potential Determination in Extruded Aluminium Profiles

Alumil SA

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ALUMIL is a global powerhouse in architectural aluminium systems.
With 32 subsidiaries and 12 cutting-edge factories across Europe,
ALUMIL's reach spans over 60 countries worldwide.

Vision

Our aim is to uphold our position as a leading force in designing, developing, and producing aluminium systems for architectural purposes, solidifying our presence across all the markets we serve.

Mission

Our mission is to improve the quality of people's lives by enhancing the performance of their buildings with products of the highest quality, technology, and aesthetics.



Πρόγραμμα
Κεντρική Μακεδονία
2021-2027



Open Innovation

- **Confluence Challenge** – We participated in this Open Innovation initiative that aimed to help startups make their first steps and propose collaborative innovation to the management and executives of industrial companies.
- **Architectural Aluminium Academy** – ALUMIL is one of the main shareholders of the Center for Innovation & Skills Development for the Aluminium Manufacturing Industry.
- **RecAL – Horizon Europe** - Our company participates in the groundbreaking RecAL (Recycling technologies for circular ALuminium) project – a Horizon Europe-funded initiative – that focuses on developing advanced recycling and digital technologies to foster a circular aluminium economy.

Technology & Sustainability

- **IoT platform** – It allows the interconnection of all our machines in the cloud for continuous monitoring and big data analysis.
- **Extrusion 4.0 system** – This system helps us identify surface defects created in the product during the production process in real-time.
- **Loop 60** – We launched the first certified recycled aluminium in Greece for architectural system profiles, composed of 60% recycled material.

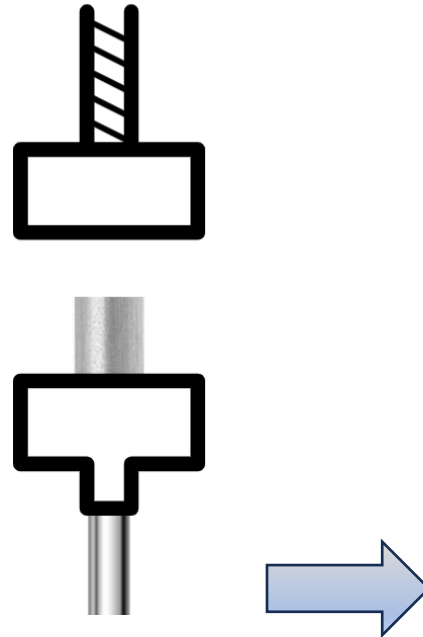


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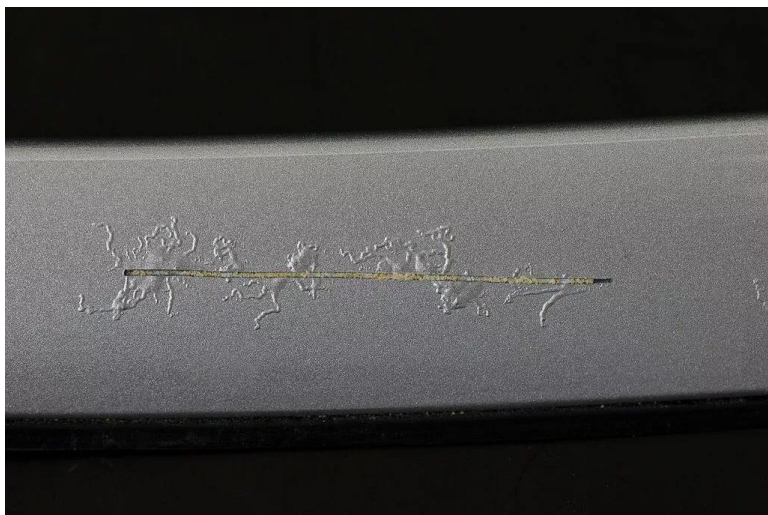
Extrusion

In the extrusion process, the aluminium ingot is heated and pressed through a shaped tool called a die.



General info's:

- After the extrusion process the profiles are powder coated or anodized for corrosion protection and aesthetic reasons. We are certified with the international quality assurance systems Qualicoat and Qualanod.
- Usually, the profiles have a great corrosion resistance with up to 25 years warranty.
- In some cases due to **alloy composition** in combination with **industrial** or **marine** atmospheres corrosion can occur.
- There are many corrosion types in aluminium: Pitting, Galvanic, Inter-granular, Crevice and **Filiform**.



Critical Questions:

- Why some aluminium profiles that are in the same environment doesn't develop corrosion and some do?
- Is a correlation between the possibility to corrode and the alloy & intermetallic composition of the profiles?
- Can we measure the tendency for a profile to corrode?

The Challenge:

To develop a testing methodology to measure the corrosion potential in extruded aluminium profiles using basic principles and techniques from electrochemistry and metallurgy.

Expected Results

Having this methodology, one could decide whether certain aluminum profiles should be used for buildings near zones that have a highly corrosive environment, such as coasts and highly polluted areas.

This will help to produce high end architectural systems with a longer lifespan which in turn leads to cost savings avoiding replacements, reduced environmental impact and more sustainable buildings.

Let's get started!