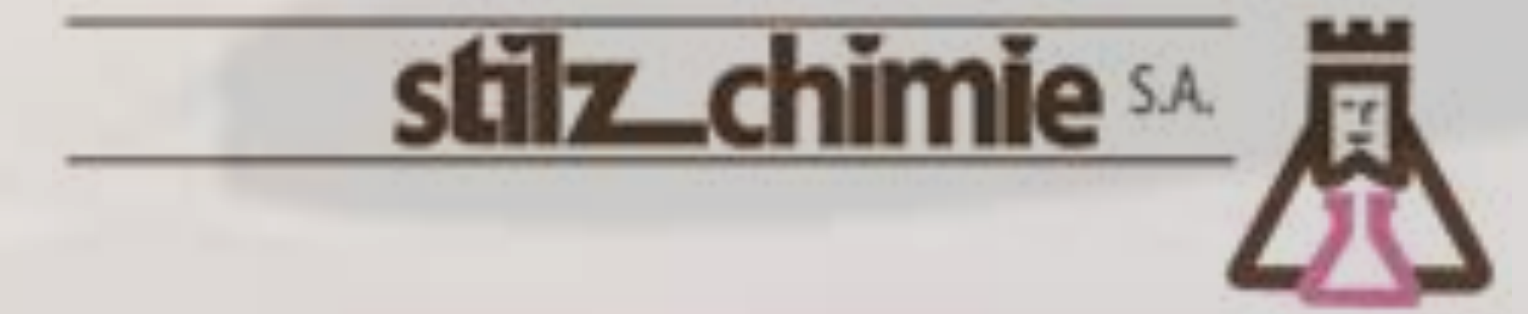


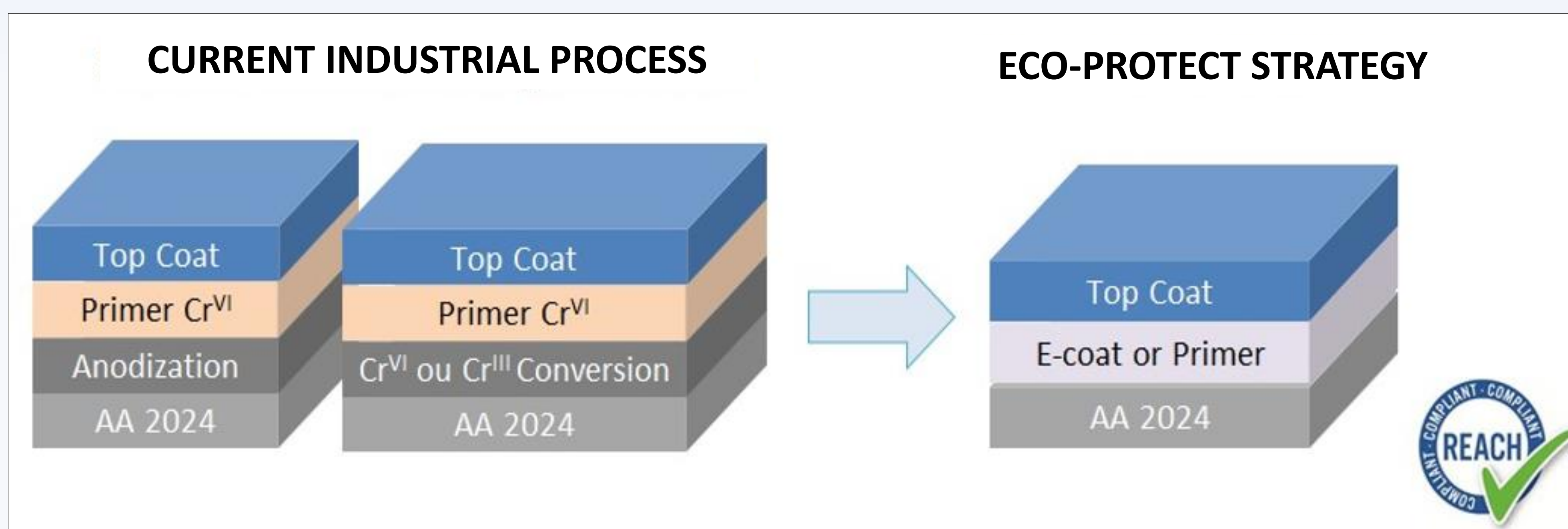
Development of an ECO-friendly PROTECTioN for aerospace aluminium parts (ECO-PROTECT)

PROJECT PARTNERS:



OBJECTIVE

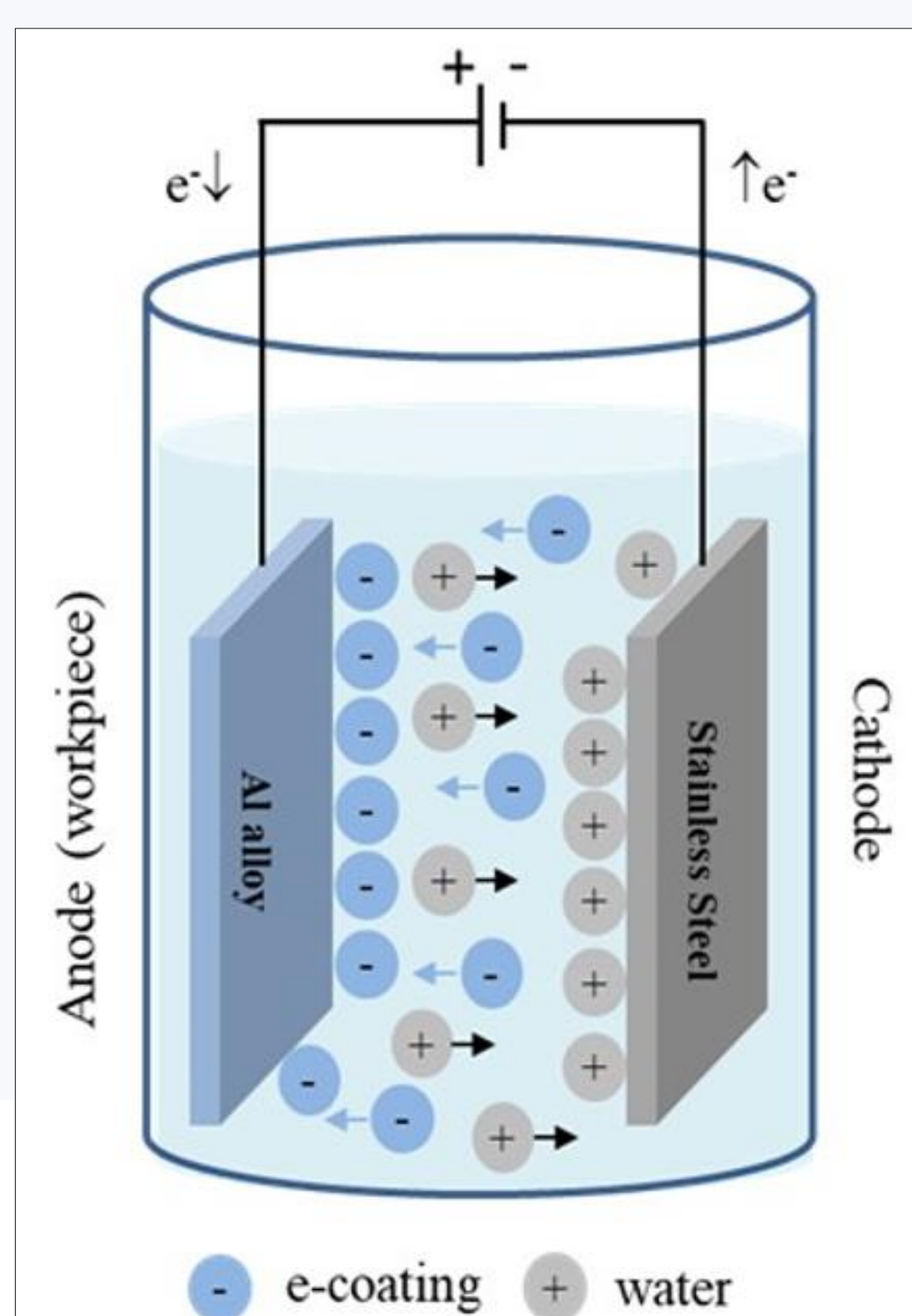
The objective of the project is focused on the development of an **eco-friendly chemical and electrochemical coating process** of aluminium building parts for the aerospace industry. The goal of ECO-PROTECT, approved in the EUROSTARS competitive industrial funding call, is to develop and characterize **Cr(VI)-free surface treatments to protect aluminium alloys used in the aerospace industry.**



Technical objectives	Improvement
Increase of the resistance to the corrosion	25 %
Improve of the coating power	10 %
Reduction of the VOC emissions	50 %
Cost reduction	30 %
Decrease of the treatment time	55 %
Reduction of energy consumption	45 %

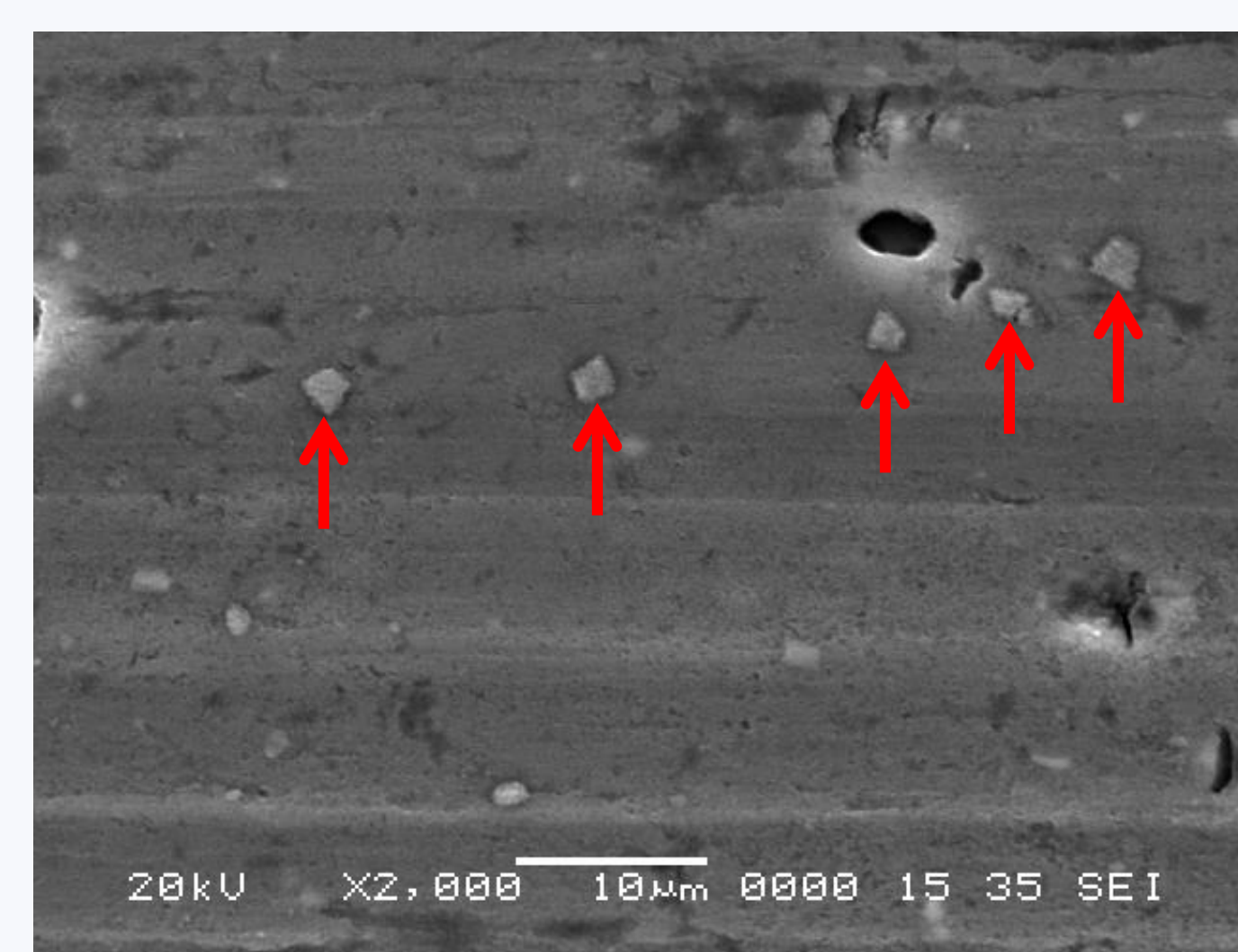
Material characterization

The characterization of material reference panels is taken place by use of **surface engineering** analytical techniques to obtain microscopic information, such as surface rugosity, liquid contact angle, electron microscopy (SEM-EDX), among others. Alternatively, we also perform Neutral Salt Spray tests to validate the corrosion resistance for the validation of the final **coated material** properties within the industrial regulation schemes (REACH) for direct application in aircrafts (for example, AIRBUS models).



We use anaphoresis to coat the material (*e-coating*) or spray-based approaches (*sol-gel primer*), as single protecting steps.

ELECTRONIC MICROSCOPY IMAGES



Metal-oxide nanoparticles identification on surface



Controlled-removing surface treatments

Applications in aerospace industry

The project aims to replace the very toxic Cr(VI)-based surface treatments for protection of aerospace Al alloys (Al7075, Al2024, etc.). As a unique solution does not exist to cover different geometries and uses, considering the two following **ecological approaches**: anaphoretic process for complex geometry parts and spray-based method for big parts.