Si
silicon

Al
aluminium

SisAl Pilot

Innovative pilot for Silicon production with low environmental impact using secondary Aluminium and silicon raw materials

The timing of SisAl Pilot is impeccable with respect to key European challenges; the transformation to a circular economy, the strongly enhanced focus on climate and future expected EU-ETS CO_2 allowances with associated risk for carbon leakage from Europe, the rapidly increased difficulty of exporting aluminium scrap from Europe to China, and modern society's ever-increasing need for silicon metal. With SisAl, all these challenges are turned into new European opportunities.

The project

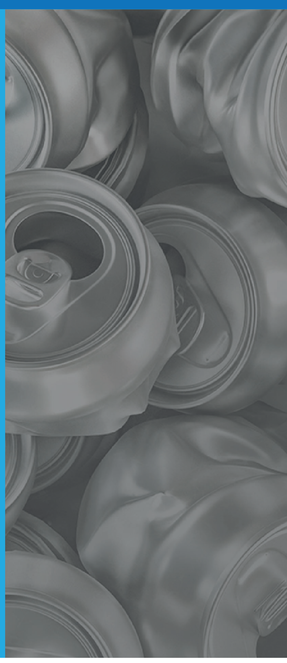
SisAl Pilot aims to demonstrate a patented novel industrial process to produce silicon (Si, a critical raw material), enabling a shift from today's carbothermic Submerged Arc Furnace (SAF) process to a far more environmentally and economically alternative: an aluminothermic reduction of quartz in slag that utilizes secondary raw materials such as aluminium (Al) scrap and dross, as replacements for carbon reductants used today.

Objectives

The overall objective of SisAl Pilot is to scale up and demonstrate a new European technology at TRL 6-7, using different raw material mixes to produce silicon and silicon alloys, along with MGA and HPA, validating product quality, environmental impact and economic parameters to lay the ground for commercialisation.

Specific objectives:

- Define suitable raw material characteristics, availability and mixes for the SisAl process to assure product quality;
- Pre-industrial scale production of commercial grade MG-Si, HP-Si/SoG-Si precursors, Al-Si alloys, MGA and HPA, in five different pilot locations® Assessment of processes and products;
- Develop at least five European business case scenarios for project partner clusters;
- Verify environmental performance and HSE compliance of the SisAl process;
- Dissemination and communication to create additional European societal value;



Partners

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FIRST YEAR PROJECT RESULTS

During this first year, the project successfully performed small-scale experiments in WP2 used as input in the upcoming pilot trials at Elkem. The separation of the different compounds through hydrometallurgical treatment has been optimized in WP3 and the modelling team in WP5 has created initial HSC and LCA models in which data from small-scale experiments have been used to verify the models. Data from the pilot experiments in WP2 and WP3 will be included when these will be available.

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