

Recycling of minerals from secondary metallurgy residues (REM)

Presenter and Project leader
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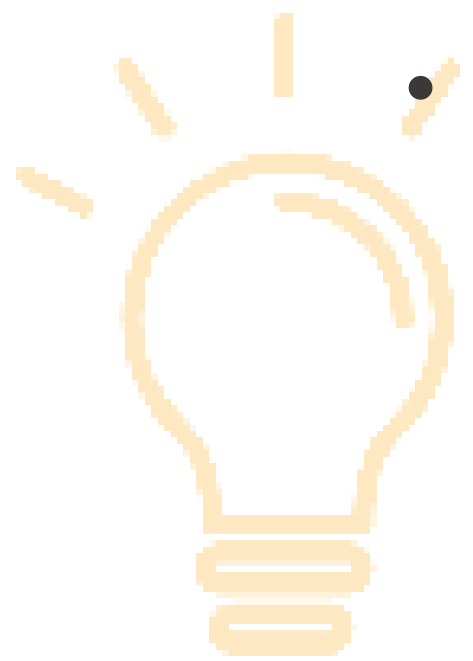
Partners
Swerim AB, Celsa Armeringsstål AS,
Höganäs Sweden AB, Carbomax AB



Program Day 2023

Goals of the project

- The goal of the pre-study has been to find a way to use the companies ladle slag in their own electric arc furnaces (EAF).
- The aim is to increase the use of ladle slag and minimize the amount of virgin lime (CaO) and dolomite (CaO·MgO) used in the EAF process.
- Focus has been on adding the material as briquettes but also injection and addition using big-bags have been considered.
- The project proposes a way to substitute raw material that have a carbon footprint and instead utilize residual material that otherwise would have been sent to landfill.
- The result could be of interest for all steel plants with production processes based on EAF and ladle furnaces.



Project Plan

Mapping of material
(All)

Thermodynamic
calculations
(Swerim)

Lab scale trials
(Swerim, Höganäs, Celsa)

Verification of roller press
(Swerim and Carbomax)

Study of implementation
(Höganäs and Celsa, respectively, Carbomax)



Project results so far

About 30 % of the Ladle slag can be used.
→ about 7-11 % decrease in lime or lime+dolomite,
also possible with reduced input of sand.

S and P content could be a challenge.

Calculation and first trials show positive results, but
more tests are needed.



Dissemination

- Jernkontoret's technical area TO 55, "Steel production residues"

Coming dissemination

- Will participate in workshop arranged by TO 55
- Presentation at TO-seminar organized by Jernkontoret



Next Steps

Höganäs & Celsas implementation studies will continue.

- Höganäs will discuss LF-slag briquettes with Carbomax and test to add briquettes in EAF. Also, injection trials will be performed.
- Celsa will perform injection trials with their existing injection system. In addition, a feasibility study on the separation of steel from newly produced powder ladle slag is planned, as well as a review of the cost of both briquetting and injection alternatives.

Follow up meeting with project group will be organized to disseminate the findings and discuss possible joint continuation.



Mining innovation for a sustainable future