



STUDIES ON LIME FOR THE IRON AND STEEL INDUSTRY

**Fassa Bortolo Sistema Calce
EEC & EMECR 2026**



**FASSA
BORTOLO**

**Two research
projects developed
together with
Politecnico di Milano
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Sistema Calce.**

**PRESENTED DURING EEC &
EMEER 2026 IN MILAN.**

RESEARCH TOPIC #1 - PURPOSE

Assessment of dephosphoration and desulphurizing capacity of the slag as a function of the lime reactivity.

FOCUS:

This study evaluates how the firing conditions of lime —a primary slag-forming agent—directly influence the dephosphorization and desulphurization capacity of metallurgical slags.

RESEARCH TOPIC #1 - EXPERIMENTS

- A series of controlled laboratory-scale equilibrium experiments were performed to determine the partition ratios of sulphur between hot metal and slag, and of phosphorus between steel and slag.
- The experimental design used slags with identical target chemical composition while varying the lime component according to its calcination history.
- Limes produced under different firing temperatures and residence times were characterized in terms of reactivity, specific surface area and crystalline structure.



RESEARCH TOPIC #1 - RESULTS

THE RESULTS DEMONSTRATE A CLEAR AND QUANTIFIABLE DEPENDENCY BETWEEN SLAG REFINING PERFORMANCE AND LIME CHARACTERISTICS.

This investigation provides actionable insights for steel producers, emphasizing that precise control over lime manufacturing parameters is not merely a quality concern for the refractory industry, but a powerful lever for metallurgical control, contributing to both economic and environmental sustainability in steelmaking operations.

RESEARCH TOPIC #2 - PURPOSE

Assessment of the natural absorption of CO₂ performed by electric steelmaking slag.

FOCUS:

This study aims to evaluate the natural CO₂ absorption potential of steelmaking slag, focusing on both black (EAF) and white (LF) slag generated during steel production.

RESEARCH TOPIC #2 - EXPERIMENTS

- Representative samples of black and white slag were monitored to evaluate physicochemical properties, mineral composition and carbonation behaviour under natural environmental conditions over time.
- Preliminary findings contribute to understanding the role of steel slag as potential carbon sink within the steel industry.
- The study also investigates factors influencing carbonation - including particle size, exposure time and ambient conditions - providing insights into optimized slag management for enhanced CO₂ sequestration.



RESEARCH TOPIC #2 - RESULTS

THIS RESEARCH REPRESENTS A STEP FORWARD IN INCORPORATING NATURAL CARBONATION PROCESSES OF STEELMAKING BY-PRODUCTS INTO CARBON ACCOUNTING FRAMEWORKS AND PROMOTING THEIR BENEFICIAL REUSE IN CLIMATE CHANGE MITIGATION STRATEGIES.



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