

## InSGeP

### INVESTIGATIONS OF SLAGS FROM NEXT GENERATION STEEL MAKING PROCESSES

#### SNEAKPEEK

##### Unlocking opportunities

Promising potential | Achieving green steel and slag industry with circular economy

##### Team spotlight

Leading the way | Introducing the consortium

##### Updates & Events

Breaking news | Latest findings and project activities

#### EUROPEAN STEEL PRODUCERS PREPARE FOR THE SHIFT TO CO<sub>2</sub>-NEUTRAL PRODUCTION

European steel manufacturers recognize the need to transition to CO<sub>2</sub>-neutral steel production and are planning to phase out traditional blast furnaces (BFs) with more sustainable technologies like direct reduction (DR) and electric arc furnaces (EAF), which are proven on an industrial scale and seen as a realistic option.

However, not all steel grades can be produced with 100% scrap input in an EAF, and global scrap supply is insufficient to meet demand. As a result, some hot briquetted iron (HBI) or hot metal will still be needed to meet volume and quality standards.

The limited availability of high-grade iron ore also means greater reliance on low/medium-grade ores for DR and hot metal production. This has led to research into hydrogen-based DR processes and smelter technologies for melting lower-grade HBI, ensuring production meets environmental and industrial needs.

For more information about future steel production please refer to Deliverable 2.1.



# SLAG SAMPLES COLLECTION AND CHARACTERIZATION

## FROM CANADA TO MIDDLE EAST

As current production of steel based on DRI or HBI is limited in Europe, it was necessary to collect slag samples from around the world as well as create samples for the InSGeP project to understand the effects on slag. Within the project, slag samples from Germany, Middle East, Canada, and Mexico were collected to gain deeper understanding of scientific characteristics and their potential impact on their final application. The chemical composition, mineral composition and leaching behavior were determined. Also, basic physical analyses of the slag samples were conducted to understand how these slags will differ from the currently produced slags and what modification might be needed to reuse them in various sectors. For the results, please refer to Deliverable 3.1.

In addition, the InSGeP partners are working on creating laboratory-, pilot- and industrial-scale slag samples from DRI, HBI or hydrogen plasma smelting reduction (HPSR) as well as modeling their behavior. The collected data will not only provide a solid foundation for the valorization of the slag from next-generation steelmaking processes but can also set a precedent for the integration of sustainable practices in the industry.

## TEAM SPOTLIGHT

### MEET OUR CONSORTIUM

InSGeP project's consortium is comprised of 13 partners to cover a wide area of expertise dealing with slag, to better understand the transformation that is taking place with respect to next generation steelmaking. The number of partners shows the importance of this topic facing the European steel industry and necessity for the research. The partners have extensive knowledge of the current steel production in Europe and around the world and the upcoming changes to prepare for decarbonization of the steel industry. The project brings together five steelworks (ORI MARTIN, VOESTALPINE, SAARSTAHL, ArcelorMittal and SIDENOR), six RTOs (FEhS, RINA, K1-MET, SSSA, CRM and BFI) and 2 technology suppliers (TENOVA and PRIMETALS) who represent a large part of the European slag knowledge from different parts of Europe (Austria, Belgium, France, Germany, Italy and Spain) as well as international presence. This allows the project to cover different steel routs which will be part of the steel transformation with different input material to have a clear guideline of what can be expected from future slag production in Europe. This permits not only for the steel industry to be prepared and understand the challenges that it will face with respect to the slag, but also for other industries to understand what raw materials they can expect.



# CONTINUING THE CONVERSATION

## 3<sup>rd</sup> IN-PERSON PROJECT MEETING IN CASTELLANZA

The 3<sup>rd</sup> in-person project meeting took place on June 3<sup>rd</sup> and 4<sup>th</sup>, 2024, at the state-of-the-art facilities of Tenova in Castellanza, Italy. This highly productive and engaging event brought together key project partners for in-depth discussions and collaborative efforts, fostering a collaborative environment that strengthened team dynamics and reinforced project objectives. The two days of updates and discussions concluded with a comprehensive review of the progress across the project, ensuring that all partners were aligned on the next steps!



## LATEST DEVELOPMENTS

### MILESTONE MOMENTS

#### Dissemination activities



LinkedIn page is active with 1-2 post(s) each month  
2<sup>nd</sup> Newsletter was sent out in May 2024  
Presentations at six conferences

#### Target values



8 deliverables have been submitted and 4 milestones have been completed

#### Regulatory situation



Slag analysis is done with compliance to different regulations in each country of the partners

#### Slag samples



Collection of relevant data on slag type and amount to ensure sufficient samples to complete the planned tests

**InSGeP** Investigations of Slags from Next Generation Steel Making Processes

**START DATE** | 01-07-2023

**PROJECT DURATION** | 48 months

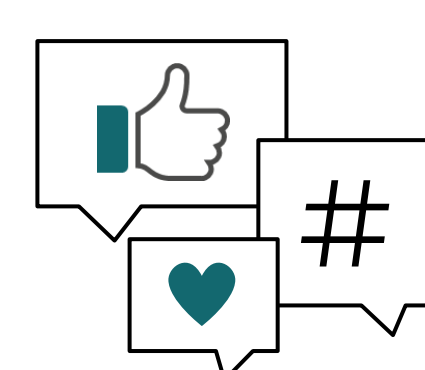
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