



Project webpage

Deliverable D5.2

Delphine Snaet (ESTEP)

Valentina Colla (SSSA)

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1. Scope

For the purposes of disseminating information about the project and its results, as well as for ensuring a communication channel for key stakeholders, a website has been set up in accordance of the project branding toolkit (deliverable D5.1).

The GreenHeatEAF website is accessible at the following URL link: <https://www.estep.eu/clean-steel-partnership/list-of-csp-projects/greenheateaf>

The project website is hosted on the ESTEP website and can be found under the list of projects of the Clean Steel Partnership (CSP). By being on the ESTEP website, the project GreenHeatEAF will benefit from the already existing visibility of the ESTEP website within the steel community and beyond. Nevertheless, it has to be noted that since ESTEP is updating its own website and it aims to be finalized by the end of the summer 2023. Therefore, the GreenHeatEAF website will subsequently also be updated with its new design. The above-mentioned project URL link will then also be slightly adapted and will merge to www.estep.eu/projects/clean-steel-partnership/greenheateaf

The GreenHeatEAF website is the principal source of information regarding the project, including its scope and framework, consortium, and activities, for the target audiences of the GreenHeatEAF project. It will function as a central point for distribution and interactivity, both with its own content and through links to other websites or platforms, and will also act as a central repository for GreenHeatEAF deliverables, documents and other material. As the project's major communication tool, the website address will be prominently displayed on all project-related communication materials. The website will, therefore, also be used for networking purposes.

2. Target audience

The GreenHeatEAF website is designed to engage both the project' stakeholders (see also deliverable D5.1) and members of the general public affected by and/or interested in the decarbonisation technology for integrated steelworks; more specifically in scrap-based steelmaking (a circular economy process) and the new DRI-EAF route, that is expected to replace the BF-BOF route steelmaking.

Therefore, the whole steel community and its value chain, academic and professional audiences (such as scientific communities, research centres, and public organisations) will be able to profit from the published content, as well as other European projects, in an effort to discover synergies and potential collaboration avenues. Journalists will discover recent information such as news, upcoming events, and press releases.

In order to increase the awareness of the project, ESTEP will share the project logo and the link to the dedicated project website to be added on the partner's websites. The partners will be invited to translate key information about the project in their respective national languages. This will also increase the reach of the target audience.

3. Website structure

The public area of the website presents all relevant information on the project. This includes the project overview, project objectives, partners, news and events, outcomes and contact.

Certain intermediate deliverables may be made available in the public area under the publication section, depending on the information contained. The public area will also be used for stakeholder engagement activities, for instance, the publication of links to the public consultation when this is launched.

There is also a private area generated by SSSA, a shared folder, which serves as a repository for working documents and intermediate deliverables as well as facilitating exchanges between partners and other selected stakeholders.

The website will be constantly updated to ensure the timely dissemination of information about the project.

The website is structured as following:

- **Home page** (Fig. 1) is divided with 4 subpages: project overview, news & events, outcomes and contact
- **Project overview** (Fig.2) contains the project summary, overall project concept and further links to other pages. It also includes 3 subpages: **objectives** of the project (Fig.3), **partners** (Fig.4) and **structure** (Fig.5). The structure page is an overview of the 6 work packages of the project.
- **News & events** (Fig.6): This page corresponds to all information that will be displayed in the media, press releases, social media, etc. as well as the past and futures events related to the project. It will also contain the project announcements made through the newsletters.
- **Outcomes** (Fig. 7): This page describes the outcomes of the project through the publications and deliverables. The **publication** section is related to the future publication of scientific articles, project flyer, etc. The **deliverables** section will contain any intermediate deliverables and documents that can be made available for the public area. Both sections will be regularly updated according to the progress of the results of the project.
- **Contact** (Fig.8): Contact details from the project Coordinator (SSSA) can be found on this page

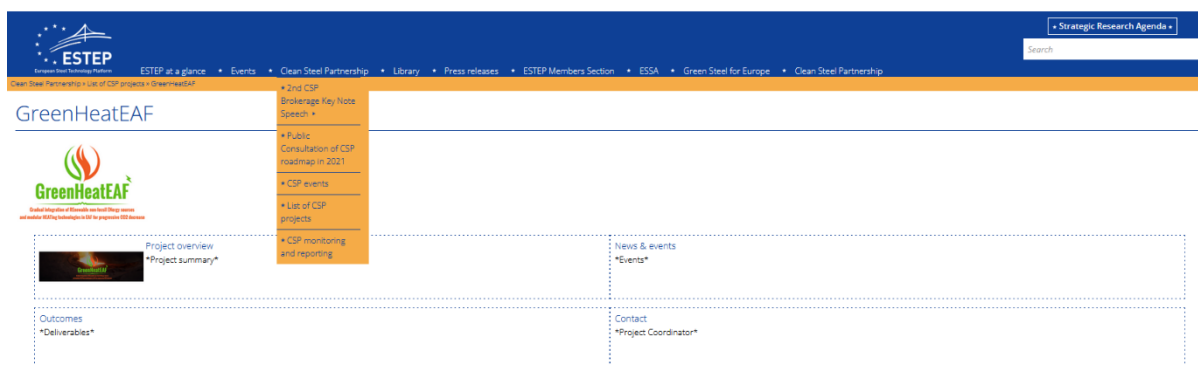


Figure 1 : GreenHeatEAF website home page

Project overview



Project summary

Electric arc furnaces to reduce steelmaking emissions

The indispensability of steel in society and the need to protect the environment are at the base of the steelmaking industry's decarbonisation. Clean steelmaking transition finds in electric arc furnaces (EAF) a key technology: it is at the base of scrap-based steelmaking (a circular economy process) and of the new DR-EAF route that is expected to replace the BF-BOF route. In this context, the EU-funded GreenHeatEAF project aims at further increasing the importance of EAF. The replacement of natural gas and other fossil energy sources with hydrogen or renewable carbon sources (e.g. biochar) is investigated. In addition, technologies to re-optimize the heating management with maximum heat recovery from off-gas and slag are explored. Coupling pilot tests with digital applications constitutes the strength of GreenHeatEAF.

Overall project concept

GreenHeatEAF will adapt, develop and demonstrate technologies for integrating non-C gases and renewable C materials and for obtaining a wide control range of the whole heat capacities in EAF processes considering EAF role in both scrap- and iron-based route.

It will consider 3 use cases:

- Integration of non-C gases flows;
- Fossil C sources replacement with biomass/biochar;
- Modular and alternative heat recovery.

It will include parallel and complementary application of demonstration and pilot tests, digital simulation and monitoring and control strategies.



Detailed information about the GreenHeatEAF project is available on the following links:

- [Objectives](#)
- [Partners](#)
- [Structure](#)
- [News & events](#)
- [Subsidies](#)
- [Contact](#)
- [Further links](#)
- [EU Fosters Heat GreenHeatEAF project PDF: click here](#)
- [Green Steel Partnership: 10th](#)



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 <p>Objectives *Objectives*</p>	<p>Partners The GreenHeatEAF consortium includes 13 specialized partners (4 steel producers and their affiliate companies, 3 research institutes, 1 gas supplier, 1 cement producer, 1 manufacturer and 1 technology platform from 6 different European countries. The GreenHeatEAF project is coordinated by SSRA ***</p>
 <p>Structure *Workplan*</p>	

Figure 2 : Project overview

Objectives

Objectives

Background

The EAF-based steelmaking plays a fundamental role in the decarbonization of steel production, being at the core of the 'circularity of steel' as well as strategic for the application of CDA and SCU technologies. The average potential CO₂ savings in EAF-based steelmaking is related to the integration of non-fossil and renewable energy sources, modular heating technologies and alternative heat recovery.

Demands and overall project objectives

The EAF steelmaking process needs to adapt to new challenges:

- change from fossil C and energy sources to bio-based C and green H₂;
- use of different iron carriers from first grade scrap to more DR/HBI with various C-content and low-grade scrap;
- decrease of heat/energy losses with advanced/modular recovery technologies and advanced control systems;
- material valorization considering by-products changes.

Therefore, the main project objective is to demonstrate the integration of non-fossil fuels and renewable C-sources in EAF processes to decrease CO₂ emissions and dependence from fossil energy and C-sources markets by also focusing on improvement of heat recovery solutions.

Technical objectives

Transferability of the GreenHeatEAF solutions are ensured by different business cases belonging to the several industrial partners. The technical objectives of the project aims to:

- Integration of non-fossil gases flows in EAF processes with different charge materials and configurations towards GHG reduction and green transition of steelmaking;
- Development of modular regenerative and alternative heating technologies for increasing in-process heat recovery from off-gases and maximizing slag latent heat exploitation for their valorization;
- Demonstration of the technical feasibility of biomass/biochar exploitation for non-fossil energy intake in EAF process;
- Coupling of novel measurement techniques and optimized control strategies to manage exploitation and facilitate integration of novel non-fossil heat/energy sources and streams.

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Figure 3 : Project objectives



Partners

The GreenHeatEAF consortium includes 13 specialised partners (4 steel producers and their affiliate companies, 3 research institutes, 1 gas supplier, 1 cement producer, 1 manufacturer and 1 technology platform) from 6 different European countries. The GreenHeatEAF project is coordinated by SSSA.



The Consortium consists of:

- 3 leading EU research institutes (SSSA, BR and SWERIM)
- 4 major multinational steel producers (Sidenor, SSAB, CELSA & Deutsche Edelstahlwerke, who is an associated partner). Sidenor and SSAB are also participating with their affiliate companies: Sidenor Investigación y Desarrollo (Si+D) and SSAB EMEA.
- Höganas, which is the world-class manufacturer of metal powders for powder metallurgy
- 2 further companies, which are partner and providers of steel sector. These are namely the cement producer Cementsa, using slag for cement production, and LINDE, one of Europe's largest gas suppliers, with already installed electrolyzers, which provides of the Cojet burners.
- ESTEP is also involved in the innovation process to accelerate, extend and multiply the project outcomes as well as to support wide dissemination and communication within the EU steel sector.

Figure 4 : Project partners

Structure

Workplan

GreenHeatEAF has a duration of 42 months and is organised in 5 work packages (WPs). The WP works combine pilot/demo trials, process modelling & simulation, monitoring and control strategies. WP1 and WP2 constitutes the core of project. The technical WPs 1-3 are complemented by WPs for dissemination, exploitation, communication and management.

WP1 : Integration of non-fossil gases and improved heat recovery in existing steelworks

WP1 deals with investigations related to the usage of H₂ and NG-H₂ blends in EAF process. standard and cutting-edge EAF burners are tested in pilot and on field trials, simulations support the trials. The effect of H₂ on the process are evaluated and different charge materials and modes are explored. WP1 activities are completed by tests of heat recovery solutions from off-gases and slags generated during trials, by taking advantages from innovative sensors and heat recovery technologies and processes.

Key objectives:

- Demonstration of hydrogen enhanced combustion (HEC) for EAF heating by using standard EAF burners.
- Demonstration of hydrogen use in EAF using Cojet-technology in TRL7 for different use cases.
- New overall gas phase conditions using HEC (Simulation)
- Off-gas temperature and heat recovery monitoring system
- Demonstration of regenerative/recuperative heating of gases using EAF off-gas
- Evaluation of hot treatment of new EAF slag

WP2: Integration of renewable C-sources exploitation in EAF operation

WP2 is related to the study of the effects of biomass/biochar use in EAF pilot, demo and simulation investigations are provided after a study of available biomass on the market and selection of most suitable ones.

Key objectives:

- Determination of the most suitable biomass/biochar to be used in the EAF considering their performance and effect on the process and facility.
- Simulation of the metallurgical process when using different types of biomass/biochar to study its effect during the melting of steel and to optimise its usage.
- Demonstration of the technical feasibility of using biomass/biochar instead of fossil fuels in the EAF operation.

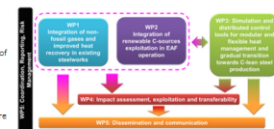


Figure 5 : Project structure

News & events

Events

January 2023

The GreenHeatEAF project started in January 2023. The Consortium partner had a pre-kick-off meeting online on 20 January 2023.

March 2023

The Kick-off meeting took place on 2 & 3 March 2023 in Brussels.

The GreenHeatEAF project was presented at the **ESTEP Spring Dissemination Event 2023**, which took place in-person on 29 & 30 March 2023 at the Aula Magna of Scuola Superiore Sant'Anna (SSSA) in Pisa, Italy.

Siderim informed about the project on the **15th TMS 2023** annual meeting & exhibition in San Diego (USA).

June 2023

The Consortium had its second General Assembly meeting online on 22 June 2023.

News

The webpage will be regularly updated throughout the whole project.

Follow the GreenHeatEAF project on LinkedIn.

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Figure 6 : Project news & events

Outcomes

Deliverables

Deliverables made throughout the whole project will be uploaded on this webpage.

Publications

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Figure 7 : Project outcomes

Contact

Project Coordinator

Dr. Valentina Colla
Scuola Superiore Sant'Anna - TeCIP Institute
Via Moruzzi 1,
56124 Pisa
Italy
Email: valentina.colla@santannapisa.it
Phone: +39 050 883228

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Figure 8 : Project coordinator contact

As already mentioned previously, the ESTEP website is in the process of being updated and redesigned. ESTEP aims to finalize the redesign of its website by the end of the summer 2023. The GreenHeatEAF project website will keep the same structure as presented in this document but will accordingly have a design on its own (as shown in Fig. 9). The project logo will be present in the website banner and footer (Fig.10). This is a first glance of the new redesigned website.



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It will consider 3 use cases:

- Integration of non-C gases flows;

Figure 9 : First glance of new redesigned website



Figure 10 : First glance of new redesigned website - Project overview page

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