



**PROJECT:**

**ΣIDERWIN**

**Deliverable:**

**D8.2.3**

**Title:**

# Master Dissemination and Communication Plan and Updates

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## Status

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| ☐Final | |
| ☒In Progress. Please explain: | ☒ Iterative Process – This year's results have been 100% achieved.<br>☐ Delay – This year's results were not fully achieved. |

## Tracking Changes

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|---|---|---|
| First Draft | 0.1 | First Draft (M54) by Tecnalia |
| Second Draft | 0.2 | Integration of partner´s feedback |
| Initial Version | 1.0 | Issue to EC (M54) |

## Level of Dissemination

☐ Confidential
☒ Public

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## Executive summary

This document is a deliverable of WP8 of the European Commission funded project ΣIDERWIN (Grant Agreement no. 768788, under the H2020 framework and the SPIRE initiative) and presents the fourth release of deliverable D8.2 "Master Dissemination and Communication Plan and Updates".

The deliverable D.8.2.3 includes an overview of the dissemination activities carried out during the last 18 months of the project life and the action plan for the next reporting period. It is associated with Task 8.1 Communication and dissemination actions, and it is under the responsibility of TECNALIA.

The deliverable aims at describing the update of the Dissemination and Communication Plan of ΣIDERWIN project. The plan will serve to disseminate and outreach the project results. The dissemination activities are mostly focused on the description of the project's goals, the explanation of how it is planned to attain them, the forecast results and expected benefits.

The proper dissemination and communication are keys in order to ensure the maximum impact of the ΣIDERWIN project. The main goal of the planned dissemination activities is to increase the visibility of ΣIDERWIN on selected communities and target groups, at both European and International level, to promote the implementation and use of the project results (exploitation), always considering confidentiality and IPR protection aspects. All partners of the consortium will contribute to the ΣIDERWIN dissemination, according to their foreseen role and effort, and using all available tools and channels.

This deliverable outlines the ΣIDERWIN dissemination strategy in terms of identification and description of the dissemination key elements:

- the objectives of the dissemination (why, mission & vision).
- the subjects of the dissemination (what will be disseminated).
- the target audience (to whom it will be disseminated).
- the timing (when the dissemination will take place).
- the dissemination tools and channels (how to reach the target audience).
- the responsible for the dissemination (who will perform the dissemination).
- the rules for performing the dissemination activities.
- the way to evaluate and assess the impact of the dissemination activities.

It must be underlined that, this deliverable is based on the previous release D8.2.2 (M36), that has been updated to cover the activities carried out during the last 18 months of the project. This deliverable will also be updated at the end of the project in M66, according to the 6 months extension approved. Therefore, the action framed in this plan is a dynamic one, which requires a continuous supervision carried out by the Dissemination and Exploitation Work package leader.

# 1 Introduction

European Union countries have agreed on a 2030 Framework for climate and energy, including EU-wide targets and policy objectives for the period between 2020 and 2030. These targets aim to help the EU achieve a more competitive, secure, and sustainable energy system and to meet its long-term 2050 greenhouse gas (GHG) reductions target [1].

The targets established for 2030 are:

- a 40% cut in GHG emissions compared to 1990 levels.
- at least a 27% share of renewable energy consumption.
- at least 27% energy savings compared with the business-as-usual scenario.

Nowadays, there are no economically feasible steelmaking technologies available having the potential to meet the EU's climate and energy targets for 2030. At best, a 15% decrease in the overall $CO_2$ intensity of the sector could be achieved throughout the widespread dissemination of technologies that could reasonably become cost-effective in the future. Therefore, breakthrough technologies are urgent and indispensable.

With this in mind, ΣIDERWIN project proposes to develop a breakthrough innovation compared to the actual steel production process bringing together steel making with electrochemical process. The electrolysis process using renewable energies will transform any iron oxide, including those inside the by-products from other metallurgies, into steel plates with a significant reduction of energy use. This process decomposes under mild conditions but at intense reaction rate naturally occurring iron oxides, such as hematite, into iron metal and oxygen gas. By offering a low $CO_2$ emissions steel production process, the project will contribute to the reduction of the total greenhouse gas (GHG) emissions.

The technology developed within the framework of ΣIDERWIN project can provide *environmental benefits* to reach the targets established by the EU, compared to traditional steelmaking plants, such as:

- a reduction by 87% of the direct $CO_2$ emissions.
- a reduction by 31% of the direct energy use.
- the ability to produce steel from by-products rich in iron oxides from non-ferrous metallurgy residues.
- an increased integration with renewable energies with a more flexible process.
- oxygen as by-product.

ΣIDERWIN project is focused on:

- the development of an electrochemical processing route for primary steel production.
- an industrially feasible new processing route.
- an iron metal production from renewable energy.
- raw material efficiency during steel production.
- close to market research.

Dissemination and communication of project results (both within and beyond the project's own community) are key activities in order to ensure the maximum impact of the ΣIDERWIN project and facilitate the exploitation activities.

This document is organised in the following sections:

- Section 1: introduces the main goals and features of the project.
- Section 2: contains the information about the scope and objectives of this deliverable.
- Section 3: presents the Dissemination and Communication Plan, illustrating the objectives of the dissemination and the main elements of the dissemination strategy (subject, timing, target audience, tools and channels and the dissemination management policy).
- Section 4: presents the activities carried out during the last 18 months of the project (M37 – M54).
- Section 5: presents the activities planned for next reporting period (M55 – M66).
- Section 6: presents the conclusions of the document.
- Annex I: presents the Technological Platforms and Associations with involvement of ΣIDERWIN partners. It has been updated with the information provided by RECOY.
- Annex II: presents some screenshots of ΣIDERWIN videos.
- Annex III: includes the 7 issues of the Newsletter.

# 2 Scope and objectives of this deliverable

This document is the deliverable D8.2.3 of WP8 of the ΣIDERWIN project and it is associated to Task 8.1. Communication and Dissemination actions. The scope of this document is to present the fourth release of the dissemination and communication plan for the ΣIDERWIN project, including the activities carried out during the last 18 months of the project, the formulation of the ΣIDERWIN dissemination strategy and the action plan focused on the next 12 months of the project (M55 – M66).

A new release of the deliverable (D8.2.4) shall be elaborated at the end of the project (M66), including a detailed report of the dissemination and communication activities performed during preceding 12 months. If needed, it will also be included an update of the dissemination strategy in accordance with the findings gained during the preceding months of the project.

Finally, at the end of the project (M66), a survey of the dissemination and communication activities carried out along the whole project lifetime will be elaborated and published (deliverable D8.6 “Dissemination and communication actions survey”).

This plan represents the strategic vision of the Consortium in terms of the dissemination of the ΣIDERWIN project itself and of its achievements and outputs as well. The main objective of the planned dissemination activities is to increase the visibility of ΣIDERWIN on selected communities and target groups, at both European and International level, in order to ensure the maximum impact of the project and to promote the exploitation of the project results.

This deliverable outlines the ΣIDERWIN dissemination strategy in terms of identification and description of the dissemination key elements:

- the objectives of the dissemination (mission, vision).
- the subjects of the dissemination (what will be disseminated).
- the timing of the dissemination (when dissemination will take place).
- the target audience (to whom it will be disseminated).
- the dissemination tools and channels (how it will be disseminated).
- the responsible for the dissemination (who will perform the dissemination).
- the rules for performing the dissemination activities.
- the way to evaluate and assess the impact of the dissemination activities.

It also includes a description of the actions carried out during the last 18 months of the project (M37 – M54) and the activities planned for the next 12 months.

# 3 Dissemination and Communication Plan

## 3.1 Dissemination goal and strategy

The final goal of the dissemination and communication activities is to promote the ΣIDERWIN project and spread the ΣIDERWIN's results to the largest possible concerned audience (at the national, European, and international level) in order to encourage the implementation and use of the project results (exploitation), always taking into account the confidentiality and IPR protection aspects.

In more detail, the objectives of the dissemination are:

- to raise public awareness about the project, its expected results and progress within defined target groups,
- to disseminate the fundamental knowledge, the methodologies and technologies developed during the project,
- to exchange experience with projects and groups working in the field, in order to join efforts, minimize duplication and maximize potential,
- to pave the way for a successful (commercial and non-commercial) exploitation of the project outcomes.

The objective of the dissemination strategy is to identify and organize properly the activities needed to achieve these objectives. The following sections describe the main pillars of the dissemination strategy: (i) subjects (what will be disseminated), (ii) target audience (who will most benefit from the project results and who would be interested in learning about the project findings), (iii) the timing (when dissemination will take place); (iv) tools and channels (how to reach the target audience) and (v) dissemination management and policy.

## 3.2 Subject of Dissemination

The following general subjects of dissemination have been identified up to now:

- ΣIDERWIN project itself: goals, approach, pilot plant and expected benefits.
- The techniques and methodologies used for the technical development of the project in all the involved areas (simulation, modelling, monitoring, control, automation, optimization...).
- The sustainability indicators and Key Performance Indicators in the process industry.

## 3.3 Timing of Dissemination

Dissemination activities are planned in accordance with the stage of development in the project. Although several dissemination actions took place during the last 18 months of the project and they will continue during the next months, where the most significant dissemination activities will take place as final research results were available. It is also important to consider that plant owners' investment decision might require extensive time, so timely communication on the project results will ease the successful commercialisation of the results.

The dissemination follows the **AIDA** principle: **A**wareness to attract the attention of the target audience, **I**nterest of the target audience, **D**esire of the target audience to know more about the

project and **A**ction to lead the target audience towards get involved in the project and to promote its results to facilitate their exploitation. According to this principle, three phases are considered:

- Initial phase (**A**wareness) (month 1 – month 12): focused on increasing the visibility of the project and mobilizing stakeholders and multipliers. At this phase, the main activities were related to the implementation of the dissemination tools (website, social networks, visual identity), preparation of dissemination material, general presentations of the ΣIDERWIN project and launching of the ΣIDERWIN Special Interest Group.
- Intermediate phase (**I**nterest/**D**esire) (month 13 – month 36): focused on informing and engaging to the target stakeholders when preliminary results become available. At this phase, the project results and their future applications will be presented in journals and conferences to specialized audience with the objective of stimulating the interaction with the concerned scientific and industrial community and determining the stakeholders' expectations.
- Final phase (**A**ction) (month 37 – month 66): focused on encouraging further exploitation of the ΣIDERWIN outcomes (transfer to other industries, replicability...). At this phase, the results of the validation of the ΣIDERWIN approach at the pilot plant and the transferability analysis will be presented in journals, conferences, and industrial events. One of the main dissemination actions at this phase will be the organization of the ΣIDERWIN workshop at the end of the project, as it is explained later.

## 3.4 Target audience

Considering the goal of the ΣIDERWIN project, the target audience for the dissemination activities has been divided in the following groups:

1. *Industrial Community*: raise awareness of and interest in the project results to promote the exploitation and co-operation opportunities.

   ΣIDERWIN project addresses specifically the steel sector and the aluminium sector as providers of raw material within the circular economy approach, but other industrial sectors could also use the new technologies developed in the project to reduce the carbon emissions and residues and increase their competitiveness.

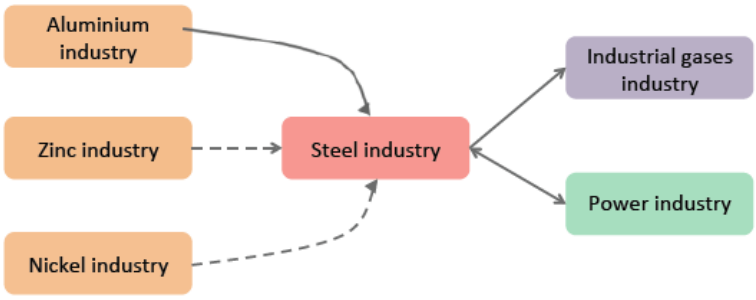



Figure 1. Synergies between the steel industry and other European industries thanks to ΣIDERWIN technology

The project will disseminate the results to business stakeholders to make them aware of the expected impact of the project and promote the exploitation of its results. So, from the exploitation side, the target audiences from the industrial community will be:

a. Steel industry: European Union is the second largest producer of steel in the world after China. Its output is over 177 million tonnes of steel a year, accounting for a 11% of global output [ 3 ].
b. Aluminium industry: The aluminium industry's presence spans across Europe, with a total of more than 600 plants in all 27 EU Member States, including alumina, metal supply (primary and recycling) and semis production (i.e. extrusion presses, rolling mills) [ 4 ].
c. Other metallurgies where iron oxides are produced as by-products of their processes
d. Mining industry and particularly iron ore industry.
e. Electricity producers from renewable energy sources.
f. Oxygen gas producers.

The message for this audience would be:

| |
|---|
| "Increased economic competitiveness and reduced environmental impact due to a breakthrough production process by applying electrochemical method to steelmaking, reducing $CO_2$ emissions and direct use of energy. This will allow producing steel from by-products rich in iron oxides from non-ferrous metallurgy residues such as the aluminium industry allowing further processing of these by-products and increase the integration with renewable energies by flexible and interruptible operation." |

2. *Scientific Community* (universities and research centres): enlarge the knowledge and facilitate the communication among European researchers in the research field of the ΣIDERWIN project (industrial process modelling, control and optimization, alternative raw material, techno-economic and environmental assessment).
3. *Financial Community:* financial instruments are a key point for investments in low carbon technologies. The project will disseminate the results to existing Public-Private Financial and Insurance schemes available for Energy Intensive Industries (i.e., Public funds, Private Equity Funds, Mezzanine) with the aim to promote the direct investments by innovative financial-insurance schemes.
4. *Policy makers*: raise awareness of the relevance and economic impact of exploited research results obtained by EU-funding (the European Commission's DG develops policies and actions for the re-industrialization of Europe and an innovative, modern, and sustainable economy). Dissemination among national and European decision-makers is to encourage them to develop/support policies that promote the development and implantation of low carbon technologies as the technologies developed in ΣIDERWIN.
5. *"Internal" Community* (*ΣIDERWIN partners*): Ensuring effective internal communication and dissemination among the consortium partners is a key element for the development of the project and also because some of the partners represent "influencers" due to their great position on the associated industrial sectors. Particularly, ΣIDERWIN consortium partners comprise important market players in various segments and this constitutes a natural channel for the dissemination of the project and its results to other potential users. Therefore, it is important to communicate information about the project and its results to partners' managers, consultants, and people responsible for their marketing and sales and to encourage them to share this information further to their customers and business partners.

6. *General public*: the goal is that the audience can be aware of the general impacts of the project for the society in general (i.e., sustainability, environmental impact) and let them aware of the positive impacts generated and the relevance of the EU funded research industry.

Dissemination activities must be tailored in such a way to reach the audiences most efficiently through appropriately selected dissemination tools and channels.

## 3.5 Dissemination tools and channels

This section describes the main tools and channels that are being implemented/used by the ΣIDERWIN partners for the dissemination of the project and its results. Some of the tools are of general purpose, while other ones are oriented to specific target groups.

### 3.5.1 ΣIDERWIN Website

The ΣIDERWIN website (https://www.ΣIDERWIN-spire.eu) is the main interface for communication to the public. It contains information on the ΣIDERWIN objectives, the consortium, the proposed activities, and the foreseen/achieved results. It also allows having access to the dissemination material and to facilitate the interaction between partners and interested parties by means of the contact formulary. In order to maximize its visibility, free or affordable methods to increase page ranking on search engines are being used. When possible, links from the homepages of all the partners will also be established to the ΣIDERWIN site.

### 3.5.2 Social networks

In order to reach a broad target audience while establishing two-ways communication channels, the presence of the ΣIDERWIN project in social media will be encouraged. A Twitter account (https://twitter.com/ΣIDERWIN_spire) is being used as an instant dissemination instrument for reaching the general public. To reflect the relation of the project with the SPIRE community, references to @Spire2030 in the ΣIDERWIN tweets is being included whenever possible. On the other hand, a LinkedIn (https://www.linkedin.com/in/ΣIDERWIN-spire-15b185154/) page is being used for reaching stakeholders and industry professionals. Official LinkedIn groups will be joined to raise awareness among Process Industry professionals.

The website has direct access to these social networks by clicking over the icons situated on a visible part of the website. In this way, it is easy for every user to participate in these social networks when the website is visited.

Finally, YouTube is being used for the publication of videos produced within the course of the project, if this does not imply any property right conflict.

### 3.5.3 Visual Identity and dissemination material

The visual identity (logo and style) of the project helps external audience to easily identify ΣIDERWIN and contribute to the project visibility by providing a clear identity from the very beginning of the project. Communication and dissemination tools (such as project website, Twitter, LinkedIn page...), dissemination material (such as flyers, presentations, posters...) and deliverables apply the visual identity defined for the project.

Different dissemination material is being produced along the project lifetime, such as:

- Project flyers (hardcopy and electronic version) to provide our audiences with an attractive and written project overview and summary of the main project objectives and results. Two flyers were scheduled in the project: one at the beginning of the project focused on the project's objectives and vision (https://www.ΣIDERWIN-spire.eu/content/others) and another one a few months before the end of the project highlighting the key results of the pilot plant. The flyers will be able to be distributed in printed form (handed out at conferences or other events) or in electronic version (PDF file). The flyers will also be available for download through the project website.
- Short Project presentations (electronic version) describing the objectives and the main achieved results for presenting the project in different forums, such as internal presentations inside of the partners, presentations at schools/universities, visits with clients, etc. These presentations will be available for download through the website (https://www.ΣIDERWIN-spire.eu/content/others) and could be uploaded in SlideShare.
- Videos to communicate the project's vision, objectives, and results. Two videos are scheduled: one animation at start of the project (https://youtu.be/0SG421hiKXA) and one video focusing on the results at the pilot plant. These videos will be accessible through the website and could be uploaded in YouTube.

Finally, the deliverables will also offer a good mean for disseminating the performed activities and achieved results. Public deliverables will be accessible through the website, meanwhile confidential deliverables will be used to spread the knowledge within the partners´ organizations.

### 3.5.4 Special Interest Group (SIG)

The "ΣIDERWIN Special Interest Group" was created at the beginning of the project to engage stakeholders with the ΣIDERWIN consortium. The SIG is an informal group of external stakeholders interested in the project (i.e., possible beneficiaries, end users...). Participation in this group is under accepted subscription and it is managed through the website to ease the contact of the interest people/entities.

For this purpose, a specific section is available through the website vertical navigation bar where a form to be completed by people/entities interested in being part of the SIG is available. They will receive periodically via email a newsletter starting from May2019 with information about relevant news, events, and results of the project. At this moment 7 editions have been launched (May 2019, November 2019, April 2020, October 2020, March 2021, October 2021, and March 2022). They will also be informed of relevant events of the project, such as webinars.

### 3.5.5 Channels offered by the European Commission and SPIRE

The ΣIDERWIN consortium will make use of the tools offered by the European Commission and SPIRE to maximize the diffusion of the project.

*European Commission*

The EC offers different tools such as:

- The "projects and results" service from CORDIS that provides: (i) "project information" based on the project's grant agreement, (ii) "report summaries" that come from the publishable summaries of periodic and final reports submitted by the project participants and approved by the project officer and (iii) "Results in Brief" written by CORDIS science editors based on each report summary.
- CORDIS Wire to publish articles on the CORDIS News and Events service.
- research*eu Results Magazine that features highlights from the most exciting EU-funded research and development projects.

*A.SPIRE*

A.SPIRE is the European Association which is committed to manage and implement the SPIRE Public-Private Partnership. It represents innovative process industries, 20% of the total European manufacturing sector, and more than 130 industrial and research process stakeholders from over a dozen countries spread throughout Europe. A.SPIRE's offers different communication tools/channels for dissemination of project outputs such as:

- A dedicated page on the SPIRE website where information about all SPIRE projects and links to project-dedicated websites are published (https://www.spire2030.eu/printpdf/projects/our-spire-project/2218).
- A section of the SPIRE website, SPIRE Newsletter and Twitter account where project related announcements can be published
- Annual projects brochure
- SPIRE event (such as Impact workshop, SPIRE projects' conference, etc.)

### 3.5.6 National and European technology platforms and associations

The link of the ΣIDERWIN partners with several relevant national/European platforms and associations, closely related with the ΣIDERWIN objectives, provide a great chance for disseminating the project activities and increasing the number of reached stakeholders. The Annex I gathers information of some of these platforms and associations together with the type of involvement of the partners. An updated list of the platforms and associations where the partners are involved would be available in the ΣIDERWIN SharePoint.

### 3.5.7 Scientific and trade journals

Scientific publications are an effective way to disseminate high-level project information and to attract the interest of representatives of the various target groups. Similarly, publications in trade journals can attract the attention of potential beneficiaries of the ΣIDERWIN results. The industrial and academic partners will individually and in collaboration publish and present scientific advances in scientific journals (peer reviewed or not) and trade magazines, considering confidentiality and IPR protection aspects.

Table 1 provides some examples of scientific and trade journals where the ΣIDERWIN partners could submit papers along the project.

### 3.5.8 National and international conferences

National and international conferences are a good opportunity to share the results with experts in the field and, therefore, to achieve an effective dissemination of the project.

Table 2 provides some examples of national and international conferences where the project and its results could be presented.

### 3.5.9 Workshops and trade fairs

Finally, workshops and large events such as trade fairs will be attended by the partners to disseminate both the techniques developed during the project and the achieved results to the targeted beneficiaries of the ΣIDERWIN project.

Table 3 provides some examples of potential events.

### 3.5.10 Media and social media coverage

ΣIDERWIN news in the media (newspapers, magazines, radio...) are expected to inform to general public about the project and reflect the impact of EU research and innovation funding on European industry and environment.

### 3.5.11 ΣIDERWIN workshop

At the end of the project, the final ΣIDERWIN workshop will be organized to show the achieved results and to give the opportunity to meet potential interested clients (either on public or private field), investors and researchers. Target audience could include different players in the scientific, industrial, financial, and social fields, as well as journalists. Announcement of the ΣIDERWIN workshop will be done through all the available channels (web, Twitter, LinkedIn, EU/SPIRE tools, related Platforms and Associations, etc.) to reach the maximum audience as possible.

### 3.5.12 Other activities

Presentations of the project at the universities will be carried out, mainly by the academic partners, in order to promote the research fields of the ΣIDERWIN project.

Direct proactive communication with stakeholders during visits/meetings and internal meetings inside of the partners organizations will help raising awareness of the goal/benefits of the project.

Table 1. Scientific and trade journals

| Journal/Magazine Name | Type | Journal/Magazine topics | Indexed (Yes/No) | Other relevant information |
|---|---|---|---|---|
| Computers & Chemical Engineering | Scientific | Modelling, numerical analysis and simulation; Mathematical programming (optimization); Process dynamics, control and monitoring; Plant operations, integration, planning/scheduling and supply chain; Enterprise-wide management and technology-driven policy making | Yes | Q1 Chemical Engineering (Miscellaneous) - SJR 2020 1.02 |
| DYNA Journal (Spain) | Scientific | Journal of general engineering; Industrial innovation, engineering and management. | Yes | Q3 Engineering (Miscellaneous) – SJR 2020 0.18 |
| Electrochimica Acta | Scientific | Analytical Electrochemistry; Bioelectrochemistry; Electrochemical Energy Conversion and Storage; Electrochemical Materials Science; Electrochemical Process Engineering and Technology; Molecular Electrochemistry Physical Electrochemistry | Yes | Q1 Chemical Engineering (Miscellaneous) - SJR 2020 1.53 |
| International Journal of Life Cycle Assessment | Scientific | Journal devoted entirely to Life Cycle Assessment (LCA) and closely related methods. It is a forum for scientists developing LCA and LCM (Life Cycle Management); LCA and LCM practitioners; managers concerned with environmental aspects of products; governmental environmental agencies responsible for product quality; scientific and industrial societies involved in LCA development, and ecological institutions and bodies. | Yes | Q1 Environmental Science (Miscellaneous) - SJR 2020 1.09 |
| Journal of Applied Electrochemistry | Scientific | Technologically orientated aspects of electrochemistry | Yes | Q2 Chemical Engineering (Miscellaneous) - SJR 2020 0.6 |

| Journal/Magazine Name | Type | Journal/Magazine topics | Indexed (Yes/No) | Other relevant information |
|---|---|---|---|---|
| Journal of Cleaner Production | Scientific | Cleaner production and technical processes; Sustainable Development and Sustainability; Sustainable Consumption, Environmental and sustainability assessment | Yes | Q1 Environmental Science (Miscellaneous) - SJR 2020 1.94 |
| Journal of Electroanalytical Chemistry | Scientific | Electrochemical science in all its aspects | Yes | Q1 Chemical Engineering (Miscellaneous) - SJR 2020 0.85 |
| Journal of Sustainable Metallurgy | Scientific | Metallurgical processes and related research aimed at improving the sustainability of metal-producing industries, with a particular emphasis on materials recovery, reuse, and recycling | Yes | Q2 Environmental Science (Miscellaneous) - SJR 2020 0.55 |
| Journal of the Electrochemical Society | Scientific | Energy storage and conversion; Corrosion; Electrodeposition; Electrocatalysis; Double layer phenomena; Sensors; Bioelectrochemistry; Electrochemical engineering; Electroanalytical chemistry | Yes | Q1 Condensed Matter Physics – SJR 2020 1.26 |
| SIDENEWS | Trade | Steelmaking | No | Managed by SIDEREX (the Spanish Association of Steelworks Exporters) whose main goals are to promote Spanish steel exports. |
| Simulation Modelling Practice and Theory | Scientific | Theoretical aspects of modelling and simulation; methodology and application of modelling and simulation in any area; distributed and real-time simulation; tools for high performance computing simulation, including dedicated architectures | Yes | Q2 Hardware and Architecture – SJR 2020 0.55 |

Table 2. National and international conferences

| Conference Name | Scope | Conference topics | Type of audience | Organiser |
|---|---|---|---|---|
| COM – Conference of Metallurgists | International | Environment; Hydrometallurgy; Light Metals; Management in Metallurgy; Materials; Minerals Science and Engineering; Pyrometallurgy | Researchers and practitioners | MetSoc |
| ESTAD – European Steel Technology and Application Days | International | Steelmaking, Rolling, Environmental and energy | Researchers and practitioners from equipment suppliers, plant manufacturers & steelmakers | ASMET, AIM, A3M, Steel Institute VDEh and Jernkontoret |
| ECCC – European Continuous Casting Conference | International | Steelmaking (Continuous Casting) | Steelmakers, Researchers | ASMET |
| EUROSIM Congress | International | Simulation and modelling | Researchers and practitioners | Federation of European Simulation Societies |
| ICSTI – International Congress on Science and Technology of Ironmaking | International | Cokemaking; Iron ore production and handling; Sintering; Pelletising; Blast furnace ironmaking; Direct reduction; Smelting reduction; Environmental control in coke and ironmaking; $CO_2$ reduction and energy saving; Recycling of in-plant residues; Automation and digitalization in coke and ironmaking; Modelling and simulation in coke and ironmaking | Researchers and practitioners | ASMET |
| IFAC-MMM – Symposium on Automation in Mining, Mineral and Metal Processing | International | Process modelling; Control and optimization; Advanced process control; Data mining and statistical analyses; Artificial intelligence, machine learning systems | Professionals, researchers and experts | IFAC MMM |

| Conference Name | Scope | Conference topics | Type of audience | Organiser |
|---|---|---|---|---|
| Life Cycle Management (LCM) conference | International | Life cycle sustainability and circular economy | Researchers and practitioners | Changes with each conference |
| Materials Science and Technology | International | Materials Science | Material researchers and industries | AIST, ASM, TMS |
| Society of Environmental Toxicology and Chemistry (SETAC) | International | Dedicated to the use of multidisciplinary approaches to examine the impacts of stressors, chemicals, and technology on the environment. Sessions related to developments in LCA | Researchers and practitioners | SETAC |

**Table 3. Events (Workshops and Fairs)**

| Fair/workshop Name | Scope | Event topics | Audience profile | Web | Organiser |
|---|---|---|---|---|---|
| Electrochemical Society Meetings | International | Solid-state and Electrochemical Science and Technology | Professionals, researchers, experts and students | https://www.electrochem.org/meetings/ | The Electrochemical Society |
| METEC – International metallurgical trade fair | International | Metallurgy; Steelmaking | Researchers and practitioners | http://www.metec-tradefair.com/ | GIFA, METEC, THERMPROCESS and NEWCAST |
| STAHL - International annual meeting of steel makers and suppliers | International | Steelmaking | Professionals, researchers and experts | http://www.stahl-online.de/ | Steel Institute VDEh |

## 3.6 Dissemination management

A special section in the ΣIDERWIN SharePoint was created for the management of the dissemination activities (planning, monitoring, storing dissemination material…).

### 3.6.1 Distribution of responsibilities

According to the Article 29.1 of the Grant Agreement "*each beneficiary must — as soon as possible — 'disseminate' its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the results), including in scientific publications (in any medium)*". Therefore, every possible opportunity will be embraced, by individual partners or on collective basis through joint appearance by more than one partner, to make ΣIDERWIN project known among technicians and general public as well.

TECNALIA will act as Dissemination and Communication Manager of the project coordinating and supervising all the dissemination activities. On the other hand, all partners of the consortium will contribute to the ΣIDERWIN dissemination according to their foreseen role and effort and using all available tools and channels (thus for instance by participating and giving presentations at conferences and workshops, publishing papers, networking, attending to fairs and showcases where technical achievements and prototypes can be shown to stakeholders, etc.) for the purpose of the project results adoption and successful future commercialization of ΣIDERWIN outputs.

### 3.6.2 Dissemination policy and rules

Dissemination activities in the ΣIDERWIN project are deeply joined with the intellectual property rights protection and confidentiality aspects that are clearly stated in the articles 23a and 36 of the Grant Agreement, respectively, and adjusted in the Consortium Agreement. It is important to find out a good equilibrium among the interests of academia and industry partners. Usually, the academia partners tend to publish all information they have at disposal, which is caused by academia common motivation systems, while the industrial partners' decision whether, when and where to publish can depend on commercial considerations.

The basic regulation of the dissemination activities in the Consortium Agreement states that:

> *During the Project and for a period of 3 year after the end of the Project, the dissemination of own Results by one or several parties including but not restricted to publications and presentations, shall be governed by the procedure of Article 29.1 of the Grant Agreement subject to the following provisions:*
>
> - *Prior notice of any planned publication shall be given to the other Parties at least 45 calendar days before the publication.*
> - *Any objection to the planned publication shall be made in accordance with the Grant Agreement in writing to the Coordinator and to the Party or Parties proposing the dissemination within 30 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.*
>
> *An objection is justified if:*
>
> *(a) the protection of the objecting Party's Results or Background would be adversely affected*
>
> *(b) the objecting Party's legitimate academic or commercial interests in relation to the Results or Background would be significantly harmed.*

*(c) The proposed publication contains Confidential Information of the objecting Party.*

*The objection has to include a precise request for necessary modifications.*

*If an objection has been raised the involved Parties shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned publication and/or by protecting information before publication) and the objecting Party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion.*

*The objecting Party can request a publication delay of not more than 90 calendar days from the time it raises such an objection. After 90 calendar days the publication is permitted, provided that appropriate measures are taken that remove the justification of the objection.*

***A Party shall not include in any dissemination activity another Party's Results or Background without obtaining the owning Party's prior written approval unless they are already published.***

The project partners will follow the open access principle, according to the article 29.2 of the Grant Agreement. They will publish their results based on the green model (http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hioa -pilot-guide_en.pdf) and use their organisation's existing institutional repositories to offer free online access to scientific journal articles and reports to increase the visibility and availability of ΣIDERWIN output. The Dissemination manager (TECNALIA) has its own repository following the 'green' open access model. According to the Grant Agreement:

*The bibliographic metadata must be in a standard format and must include all of the following:*

- *the terms "European Union (EU)" and "Horizon 2020";*
- *the name of the action, acronym and grant number;*
- *the publication date, and length of embargo period if applicable, and*
- *a persistent identifier.*

According to the article 29.4 of the Grant Agreement, unless the Commission requests or agrees otherwise or unless it is impossible, it is necessary to include the European emblem and the following statement of financial support in all the dissemination documents and applications for protection of results:

*"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 768788".*

When displayed together with another logo, the EU emblem must have appropriate prominence.

According to the article 29.5, any dissemination of results must include the following Disclaimer excluding Commission responsibility:

"This [insert type of activity] reflects only the author's views and the Commission is not responsible for any use that may be made of the information contained therein."

Finally, in addition to the acknowledgement to the EU, all the dissemination material will include:

- the acronym of the project: ΣIDERWIN.
- the logo of the project, if feasible.
- the project's website URL (https://www.ΣIDERWIN-spire.eu/).

### 3.6.3 Dissemination activities planning and follow-up

As described in the previous sections, a key element for the dissemination of the project results is their presentation in scientific and technical publications, trade journals and magazines, national and international relevant scientific conferences, workshops, exhibitions, fairs, and the media (Press releases, radio, TV...).

For the planning and follow-up of these activities, a section in the ΣIDERWIN SharePoint has been designed to create and store the "Dissemination reports" of each activity. The goal of these reports is to collect the most relevant information of each activity and to allow its monitoring from the moment of its planning until its execution. In this way, the partners will start filling the report as soon as they decide to perform an activity and then, when the activity is finished, they will finish the report.

Five different types of reports have been defined depending on the type of activity: (i) paper on a journal/magazine, (ii) presentation in a conference, (iii) participation in an event (fair, workshop...), (iv) presence in the media (press, TV...) and (v) any other type of activity. The templates for each one of the reports are included in the Annex II, but mainly they include:

- general information about the event (name, type, scope, audience…).
- information about the action (title, topic, authors...).
- feedback gathered by the respective partners from the target audience (if applicable) and eventually gained contacts for further dissemination purposes.

### 3.6.4 Evaluation and assessment

The evaluation of the ΣIDERWIN dissemination activities and the assessment of their impact will be carried out through different means. On the one hand, the partners have set up several Key Performance Indicators (KPI), together with their main metrics and a numerical target. The target has been estimated taking into account the individual partner´s input and considering a minimum threshold to have proper dissemination. It is foreseen that the number of disseminations actions (papers, conferences, workshops, fairs,…) will increase as the project progresses and results are achieved. If needed, new KPIs/metrics could be defined along the project.

During the WP8 meetings and/or the Project progress meetings organised every 6 months, the real and planned values of the KPIs will be analysed, and, if needed, contingency plans could be defined in case the threshold is not reached. This update of the deliverable 8.2 Master Dissemination and Communication plan and Updates at month 54 will also analyse the real performance of the KPIs up to this moment and it will include new target values for the final stage of the project. Finally, at the end of the project, the deliverable "D8.6. *Dissemination and communication actions survey"* will analyse all the activities performed and collect the final performance of the KPIs.

On the other hand, for the updates of the Dissemination and Communication plan, the partners will carry out an internal evaluation of the project dissemination effectiveness in order to detect the potential weaknesses and propose further actions to improve the dissemination plan. This internal evaluation will be performed through a specific questionnaire implemented in the ΣIDERWIN Sharepoint and based on questions like:

1. What do you think of the current information of the website? (Home, Objectives, Workpackages, Consortium, Documents, News, Events, Special Interest Group)
2. Can you contribute to include additional information in any of the website sections? (Home, Objectives, Workpackages, Consortium, Documents, News, Events, Special Interest Group)
3. Any other comments or suggestions about the website?
4. What do you think of the dissemination actions done until the date? (Flyer, Video, Newsletter, Twitter, LinkedIn, Conferences papers/presentations, Scientific magazines paper, Contacts with industrial associations, contacts with industries, communication to general public)
5. Can you contribute to any dissemination action? (Flyer, Video, Newsletter, Twitter, LinkedIn, Conferences papers/presentations, Scientific magazines paper, Contacts with industrial associations, contacts with industries, communication to general public)
6. Any other comments or suggestions about the dissemination actions?

In addition, all events organized by the consortium will be evaluated afterwards by questionnaires to participants. These evaluations will be used as input to improve later such events.

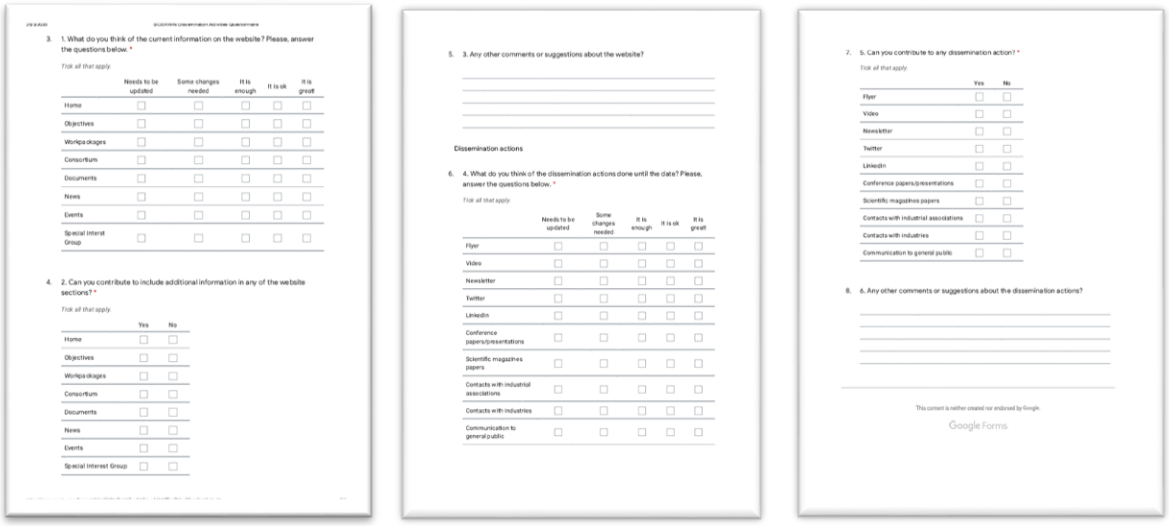


Figure 2. D&C internal evaluation questionnaire

# 4 Activities done during M37-M54

This section describes the main dissemination and communication activities carried out during the last 18 months of the project (M37 to M54).

The main activities done during this period were:

- 9 papers on International Conferences were presented and published.
- 7 papers on Scientific Journals were published.
- 1 PhD Thesis Defence
- 4 videos were published on the YouTube channel: HydroMeTEC Learning Course by NTUA, ΣIDERWIN building erection at Maizières site, recording of the ΣIDERWIN webinar and ΣIDERWIN full-size pilot installation time-lapse video.
- 4 Newsletters were produced and sent to the SIG members and are available on the website.
- The web page was regularly updated. There were 5,250 visits to the ΣIDERWIN web in this period (average: 319 visits per month).

## 4.1 Update of the ΣIDERWIN Web page

The ΣIDERWIN website https://www.ΣIDERWIN-spire.eu/ is available since month 3 of the project and it was described in the deliverable D8.1. Project website. Oriented to the dissemination, the website provides essential information related to the project and the partners through different sections (see Figure 3):

- *Home*: provides an overview of the project. Apart from a direct access to the ΣIDERWIN video, a carrousel of photos and direct access to the ΣIDERWIN webinar video have been included in this section.
- *Objectives:* provides a description of project objectives and the background.
- *Workpages:* describes the eight WP and the relation between them.
- *Consortium:* present the involved partners and a link to their websites. The consortium has been updated with the link and description of Recoy, as new partner of the project.
- *Documents:* provides access to public documents of the project (public deliverables, open access papers, etc.) and dissemination material (flyers, presentations, videos,…). In this section are also uploaded the newsletters sended to people registered to the SIG and shared through social networks.
- *Cocreation area*: provides a link to the Collaborative platform.
- *News:* provides general information (both internal and external) related to the project.
- *Events:* provides information about events organised/attended by the consortium (meetings and dissemination events).
- *Special Interest Group:* manages the subscription of the interested people/entities on being part of the SIG.
- *Contact us:* provides the public audience the contact points where asking for more information about the project.

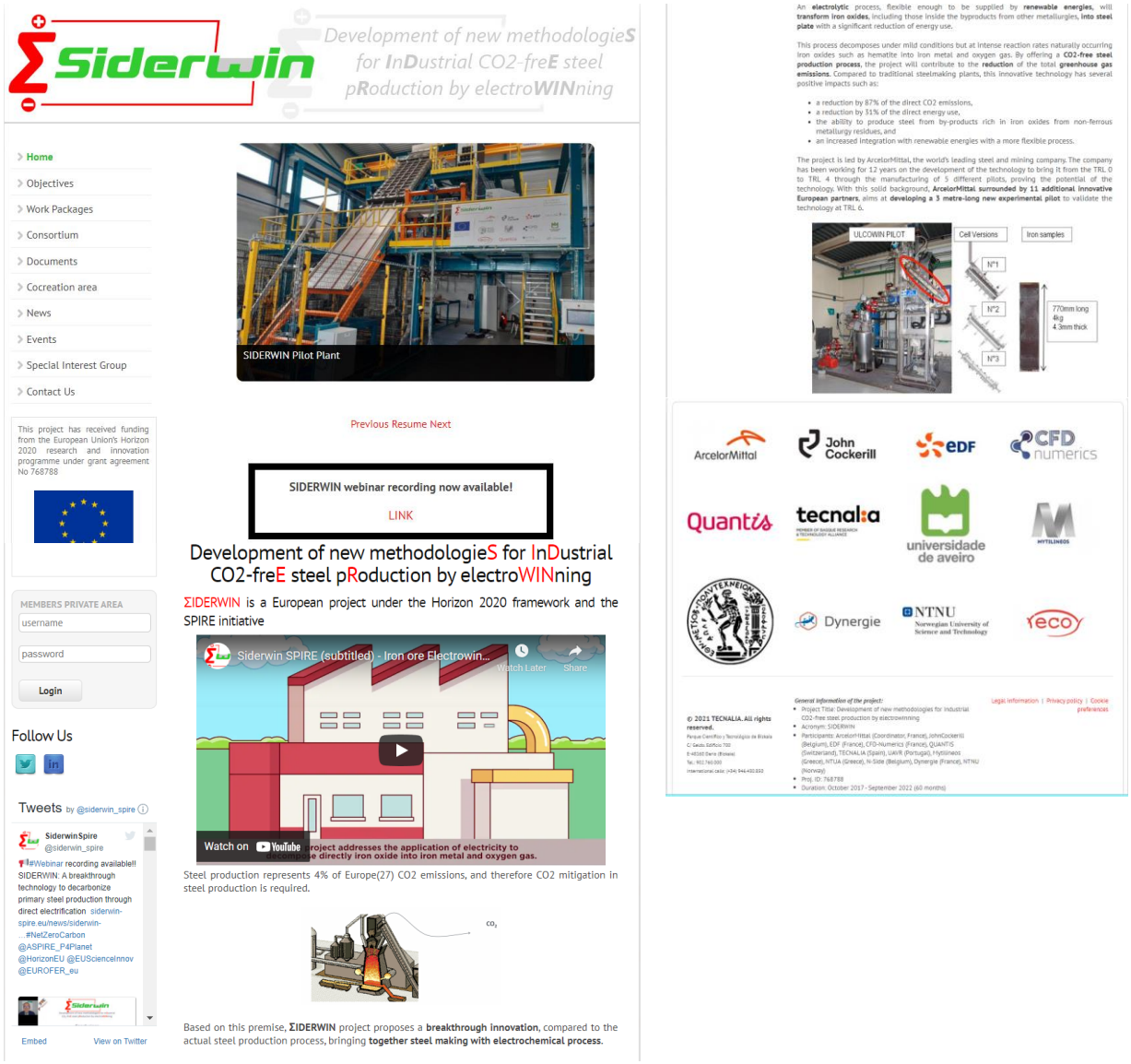



Figure 3. Screenshot of ΣIDERWIN updated homepage and footer

The ΣIDERWIN website provides links to H2020 and SPIRE websites, and to the ΣIDERWIN Twitter account and LinkedIn page. It also allows using the Google Analytics utilities to monitor the website access: number of visitors, duration of the visits, geographical area, pages of the website more visited…

The website is being updated regularly by the website-manager upon with inputs of partners.

*Analysis of the ΣIDERWIN website visits (until 31st March 2022)*

ΣIDERWIN uses Google Analytics to monitor the behaviour of the website. This allows the project to steer the strategy with the main aim of reaching the right audience. From the analytics collected over a period of 18 months (October 2020 to 31st March 2022) the total number of users of the ΣIDERWIN website is 5,250 of which 5,236 are new users. In total 7,486 sessions have been opened with an average of 1.43 sessions per user and an average duration of 00:02:07. Figure 4 shows the evolution of the number of users and sessions along this period and Figure 5

the channels used for the access to the website and the evolution of the number of users per month. Now about 50.2% of the visitors to the ΣIDERWIN website come through organic searches, 40.5% through a direct access, 7% through referral and 2.3% from the social networks.

Figure 6 shows the most visited pages of the website. After the homepage with the 40.81% of visitors, the second position corresponds to the page with the objectives of the project (9.89%) followed by the deliverables (8.36%) and news (7.20%) sections.

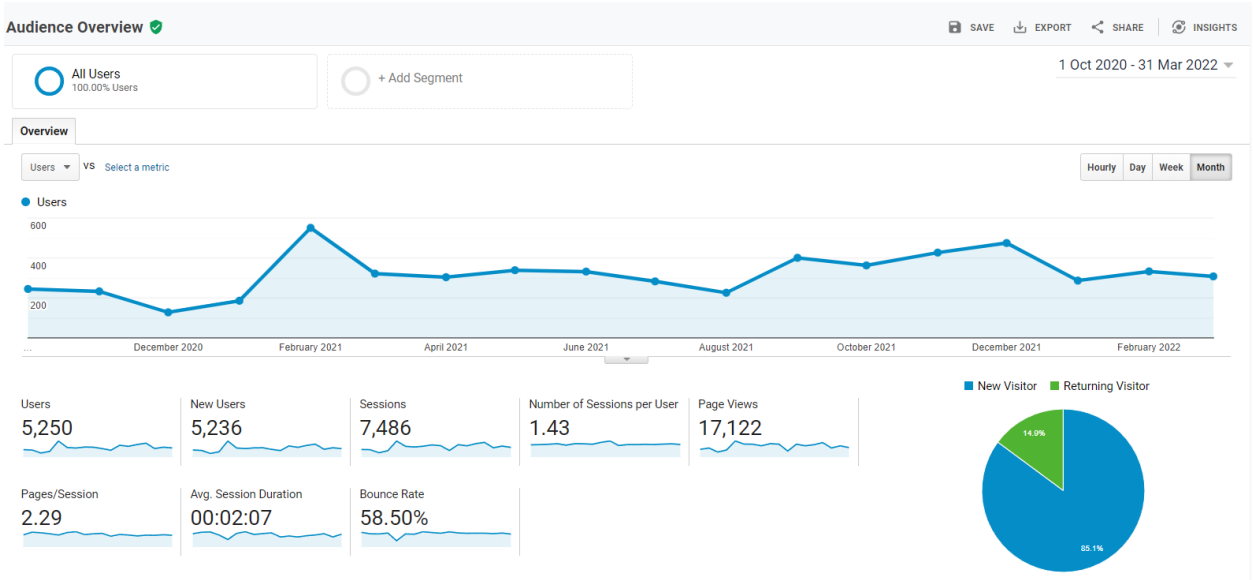



Figure 4. Users' evolution to ΣIDERWIN website (1st October 2020- 31st March 2022)

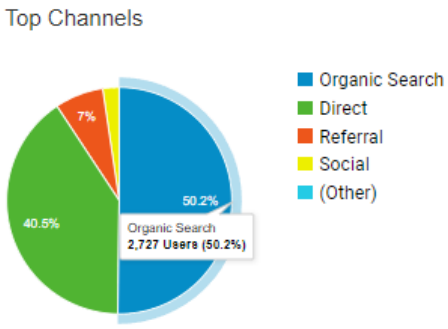



Figure 5. Traffic in ΣIDERWIN website

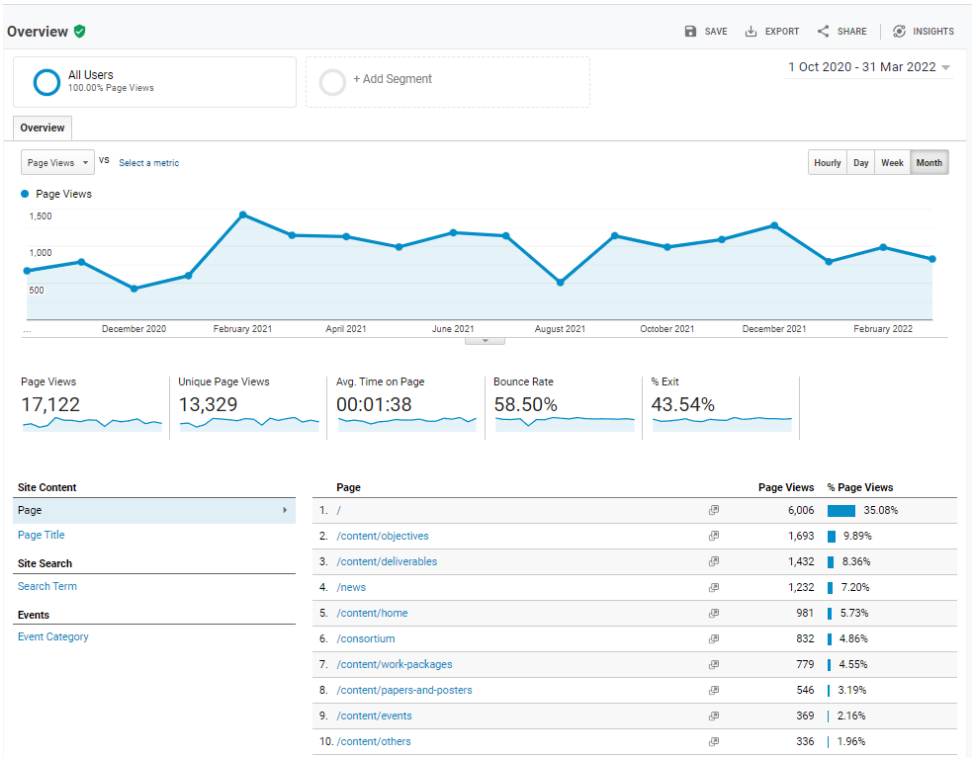
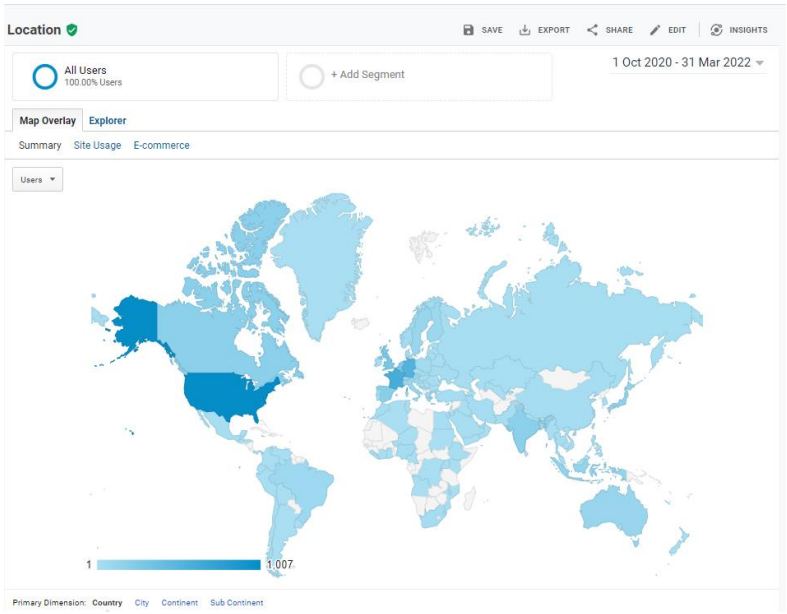



**Figure 6. Most visited pages of ΣIDERWIN website**

Figure 7 shows the percentage of visits per country. It is remarkable that the first position is occupied by USA (19.07%). The second, third and fourth positions are occupied by: France (11.32%), Germany (10.17%) and United Kingdom (5.28%), respectively. Looking at the world map, it could be said that the visibility of the project website is spread to worldwide.



| Country | Acquisition | | | Behaviour | | |
|---|---|---|---|---|---|---|
| | Users | New Users | Sessions | Bounce Rate | Pages/Session | Avg. Session Duration |
| | 5,250 % of Total: 100.00% (5,250) | 5,239 % of Total: 100.06% (5,236) | 7,486 % of Total: 100.00% (7,486) | 58.50% Avg for View: 58.50% (0.00%) | 2.29 Avg for View: 2.29 (0.00%) | 00:02:07 Avg for View: 00:02:07 (0.00%) |
| 1. United States | 1,007 (19.07%) | 1,004 (19.16%) | 1,175 (15.70%) | 79.49% | 1.68 | 00:00:52 |
| 2. France | 598 (11.32%) | 591 (11.28%) | 1,013 (13.53%) | 53.41% | 2.49 | 00:02:22 |
| 3. Germany | 537 (10.17%) | 534 (10.19%) | 714 (9.54%) | 58.96% | 2.19 | 00:02:10 |
| 4. United Kingdom | 279 (5.28%) | 276 (5.27%) | 363 (4.85%) | 60.33% | 1.90 | 00:01:37 |
| 5. Belgium | 256 (4.85%) | 251 (4.79%) | 365 (4.88%) | 56.44% | 2.52 | 00:02:30 |
| 6. Netherlands | 216 (4.09%) | 212 (4.05%) | 305 (4.07%) | 61.97% | 1.90 | 00:01:17 |
| 7. Spain | 197 (3.73%) | 198 (3.78%) | 488 (6.52%) | 35.66% | 4.65 | 00:06:08 |
| 8. Canada | 186 (3.52%) | 185 (3.53%) | 308 (4.11%) | 60.71% | 2.18 | 00:01:57 |
| 9. India | 184 (3.48%) | 184 (3.51%) | 204 (2.73%) | 56.86% | 1.81 | 00:01:51 |
| 10. Japan | 150 (2.84%) | 149 (2.84%) | 234 (3.13%) | 53.42% | 2.65 | 00:02:34 |

Figure 7. ΣIDERWIN website users by country

## 4.2 ΣIDERWIN at social networks

The Twitter account for the project @ΣIDERWIN_Spire and the LinkedIn profile are already available (see Figure 8) and they are used to publish announcement and relevant information about the project.

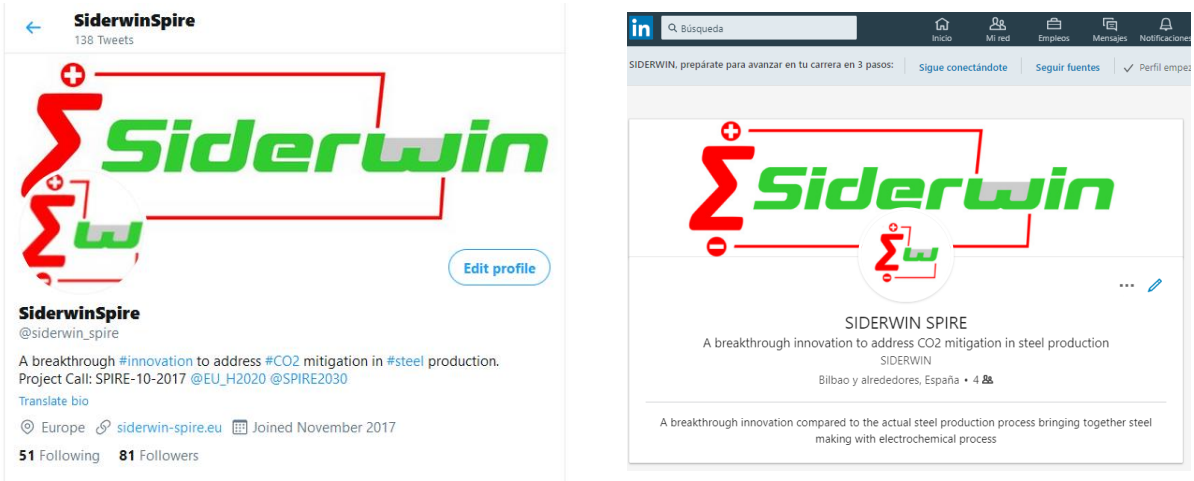
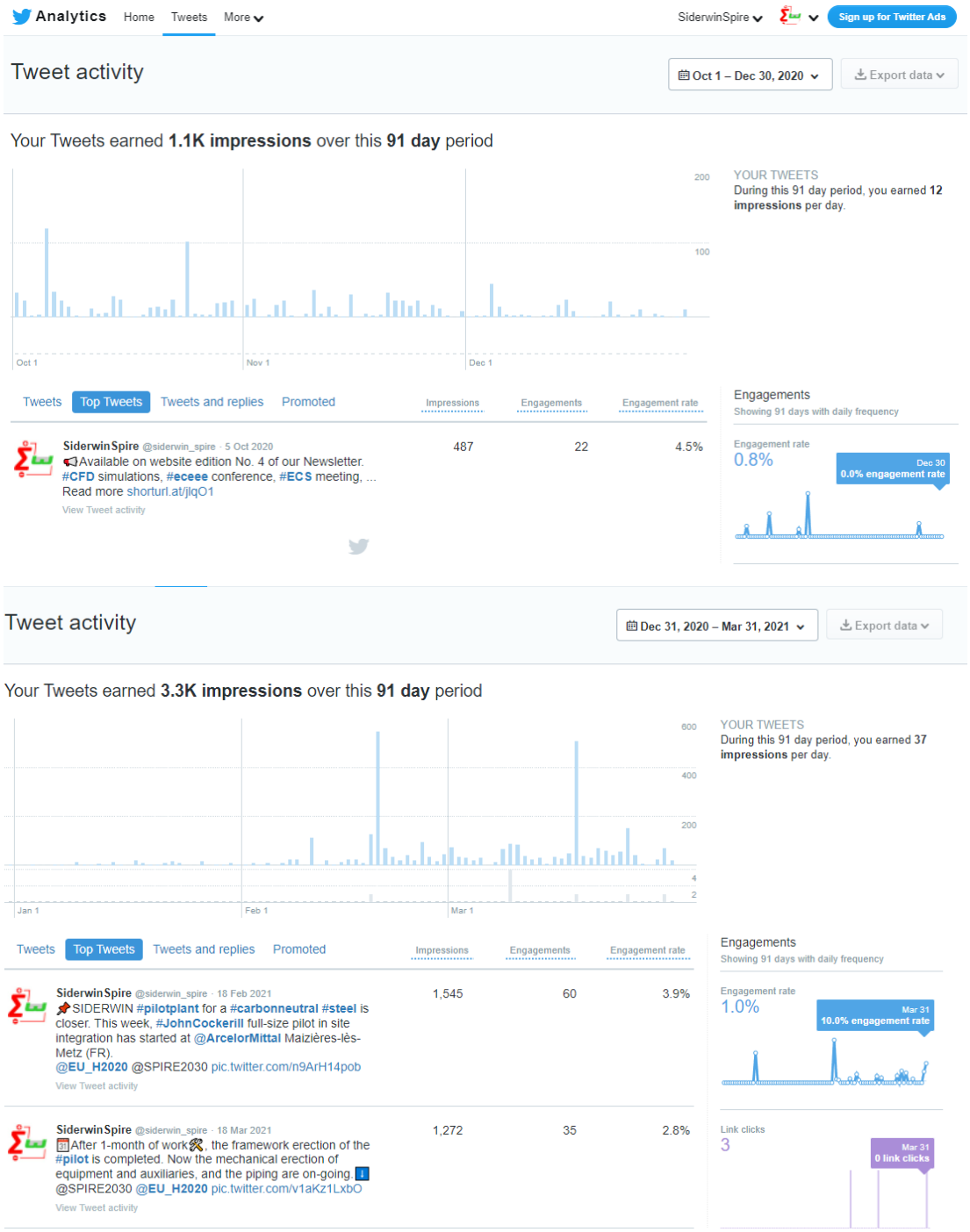
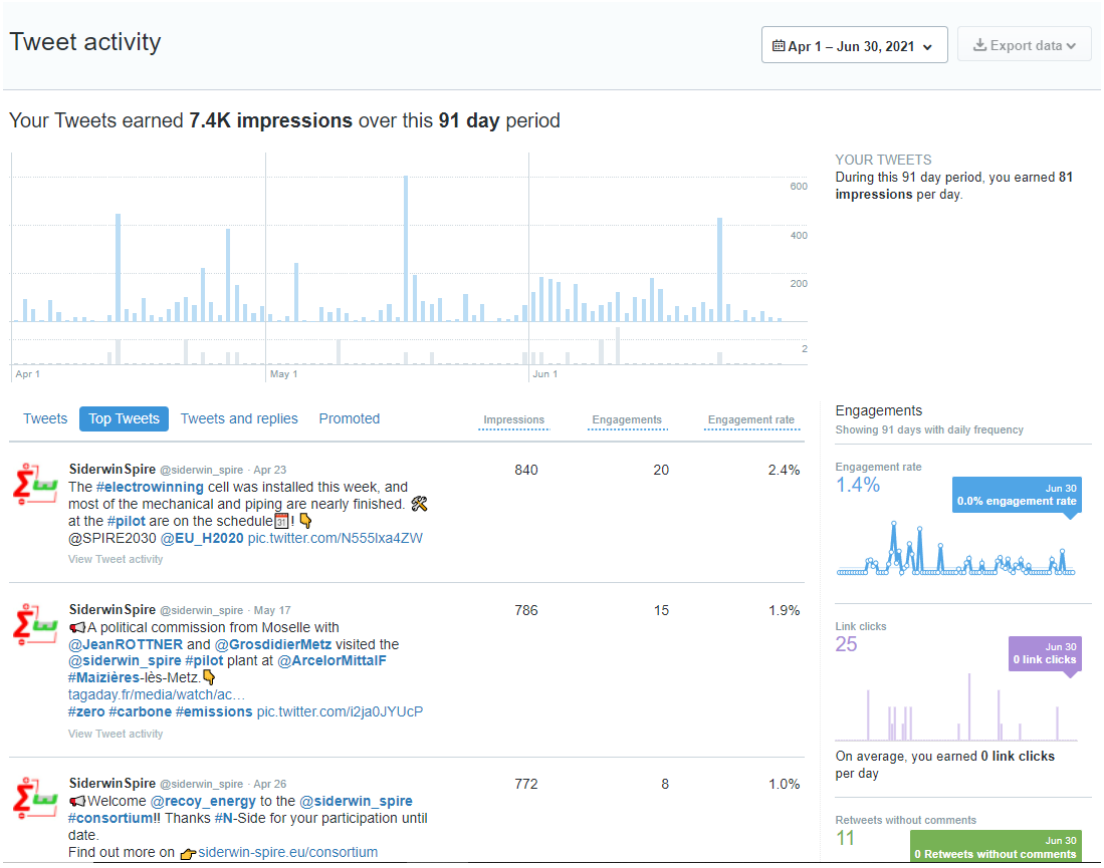


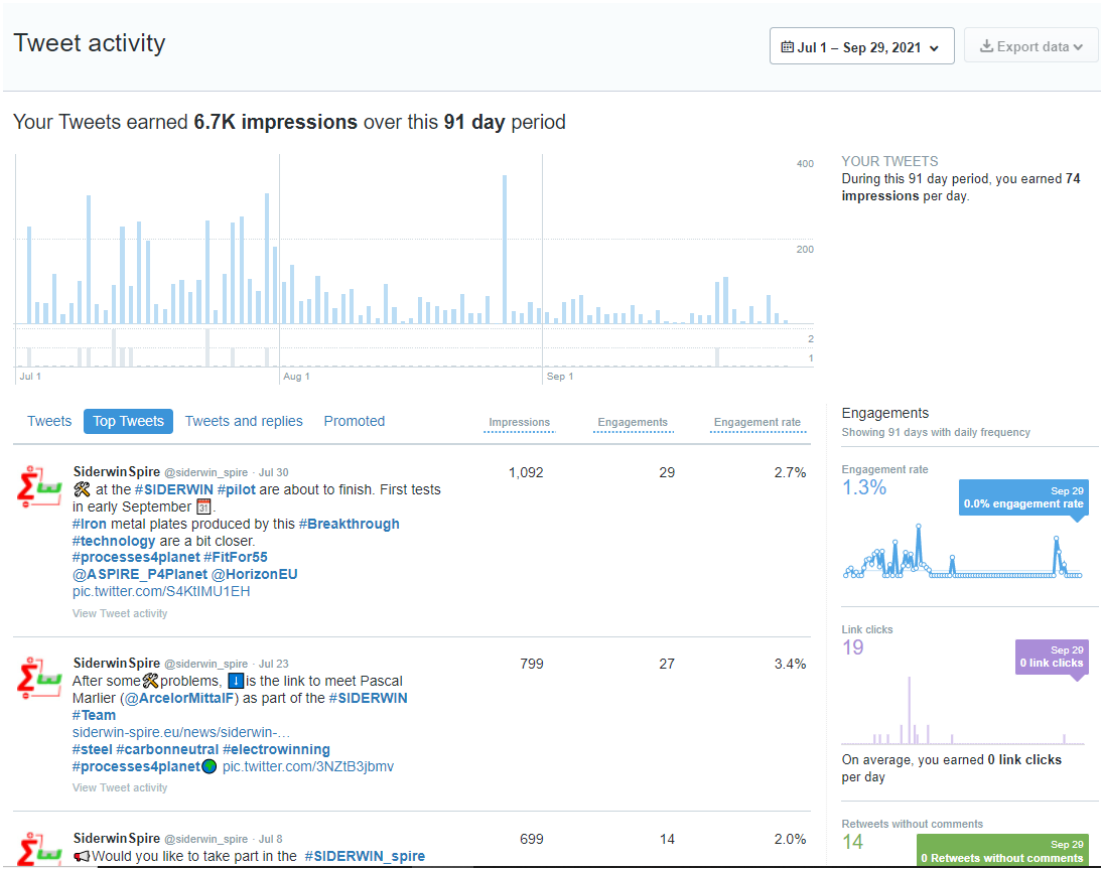

Figure 8. ΣIDERWIN Twitter account and LinkedIn profile

*Analysis of the ΣIDERWIN Twitter activity (October 2020 till March 2022)*

Figure 9 depicts the activity of the project's Twitter account since October 2020 until the end of March 2022, and the list of top tweets with the largest number of impressions. There were between 360-2400 impressions per month, with an average of 1240 impressions per month during this period. The first position is occupied by the tweet about the full-size pilot site (1545 impressions), followed by several tweets about the progress of the works at the pilot (1272, 1092 and 840 impressions), the visit of a French political commission to the facilities (786 impressions) and the video showing the building erection of the ΣIDERWIN site (686 impressions) are the most outstanding.


Analytics
Home
Tweets
More
SiderwinSpire
Sign up for Twitter Ads
Tweet activity
Oct 1 – Dec 30, 2020
Export data
Your Tweets earned 1.1K impressions over this 91 day period
200
100
Oct 1
Nov 1
Dec 1
YOUR TWEETS
During this 91 day period, you earned 12 impressions per day.
Tweets
Top Tweets
Tweets and replies
Promoted
Impressions
Engagements
Engagement rate
SiderwinSpire @siderwin_spire · 5 Oct 2020
Available on website edition No. 4 of our Newsletter. #CFD simulations, #eceee conference, #ECS meeting, ... Read more shorturl.at/jlqO1
View Tweet activity
487
22
4.5%
Engagements
Showing 91 days with daily frequency
Engagement rate
0.8%
Dec 30
0.0% engagement rate
Tweet activity
Dec 31, 2020 – Mar 31, 2021
Export data
Your Tweets earned 3.3K impressions over this 91 day period
600
400
200
4
2
Jan 1
Feb 1
Mar 1
YOUR TWEETS
During this 91 day period, you earned 37 impressions per day.
Tweets
Top Tweets
Tweets and replies
Promoted
Impressions
Engagements
Engagement rate
SiderwinSpire @siderwin_spire · 18 Feb 2021
SIDERWIN #pilotplant for a #carbonneutral #steel is closer. This week, #JohnCockerill full-size pilot in site integration has started at @ArcelorMittal Maizières-lès-Metz (FR).
@EU_H2020 @SPIRE2030 pic.twitter.com/n9ArH14pob
View Tweet activity
1,545
60
3.9%
Engagements
Showing 91 days with daily frequency
Engagement rate
1.0%
Mar 31
10.0% engagement rate
SiderwinSpire @siderwin_spire · 18 Mar 2021
After 1-month of work, the framework erection of the #pilot is completed. Now the mechanical erection of equipment and auxiliaries, and the piping are on-going.
@SPIRE2030 @EU_H2020 pic.twitter.com/v1aKz1LxbO
View Tweet activity
1,272
35
2.8%
Link clicks
3
Mar 31
0 link clicks


Tweet activity
Apr 1 – Jun 30, 2021
Export data
Your Tweets earned 7.4K impressions over this 91 day period
600
400
200
2
Apr 1
May 1
Jun 1
YOUR TWEETS
During this 91 day period, you earned 81 impressions per day.
Tweets
Top Tweets
Tweets and replies
Promoted
Impressions
Engagements
Engagement rate
SiderwinSpire @siderwin_spire · Apr 23
The #electrowinning cell was installed this week, and most of the mechanical and piping are nearly finished. at the #pilot are on the schedule!
@SPIRE2030 @EU_H2020 pic.twitter.com/N555lxa4ZW
View Tweet activity
840
20
2.4%
SiderwinSpire @siderwin_spire · May 17
A political commission from Moselle with @JeanROTTNER and @GrosdidierMetz visited the @siderwin_spire #pilot plant at @ArcelorMittalF #Maizières-lès-Metz.
tagaday.fr/media/watch/ac…
#zero #carbone #emissions pic.twitter.com/i2ja0JYUcP
View Tweet activity
786
15
1.9%
SiderwinSpire @siderwin_spire · Apr 26
Welcome @recoy_energy to the @siderwin_spire #consortium!! Thanks #N-Side for your participation until date.
Find out more on siderwin-spire.eu/consortium
772
8
1.0%
Engagements
Showing 91 days with daily frequency
Engagement rate
1.4%
Jun 30
0.0% engagement rate
Link clicks
25
Jun 30
0 link clicks
On average, you earned 0 link clicks per day
Retweets without comments
11
Jun 30
0 Retweets without comments


Tweet activity
Jul 1 – Sep 29, 2021
Export data
Your Tweets earned 6.7K impressions over this 91 day period
400
200
2
1
Jul 1
Aug 1
Sep 1
YOUR TWEETS
During this 91 day period, you earned 74 impressions per day.
Tweets
Top Tweets
Tweets and replies
Promoted
Impressions
Engagements
Engagement rate
SiderwinSpire @siderwin_spire · Jul 30
at the #SIDERWIN #pilot are about to finish. First tests in early September .
#Iron metal plates produced by this #Breakthrough #technology are a bit closer.
#processes4planet #FitFor55
@ASPIRE_P4Planet @HorizonEU
pic.twitter.com/S4KtIMU1EH
View Tweet activity
1,092
29
2.7%
SiderwinSpire @siderwin_spire · Jul 23
After some problems, is the link to meet Pascal Marlier (@ArcelorMittalF) as part of the #SIDERWIN #Team
siderwin-spire.eu/news/siderwin-…
#steel #carbonneutral #electrowinning
#processes4planet pic.twitter.com/3NZtB3jbmv
View Tweet activity
799
27
3.4%
SiderwinSpire @siderwin_spire · Jul 8
Would you like to take part in the #SIDERWIN_spire
699
14
2.0%
Engagements
Showing 91 days with daily frequency
Engagement rate
1.3%
Sep 29
0.0% engagement rate
Link clicks
19
Sep 29
0 link clicks
On average, you earned 0 link clicks per day
Retweets without comments
14
Sep 29
0 Retweets without comments

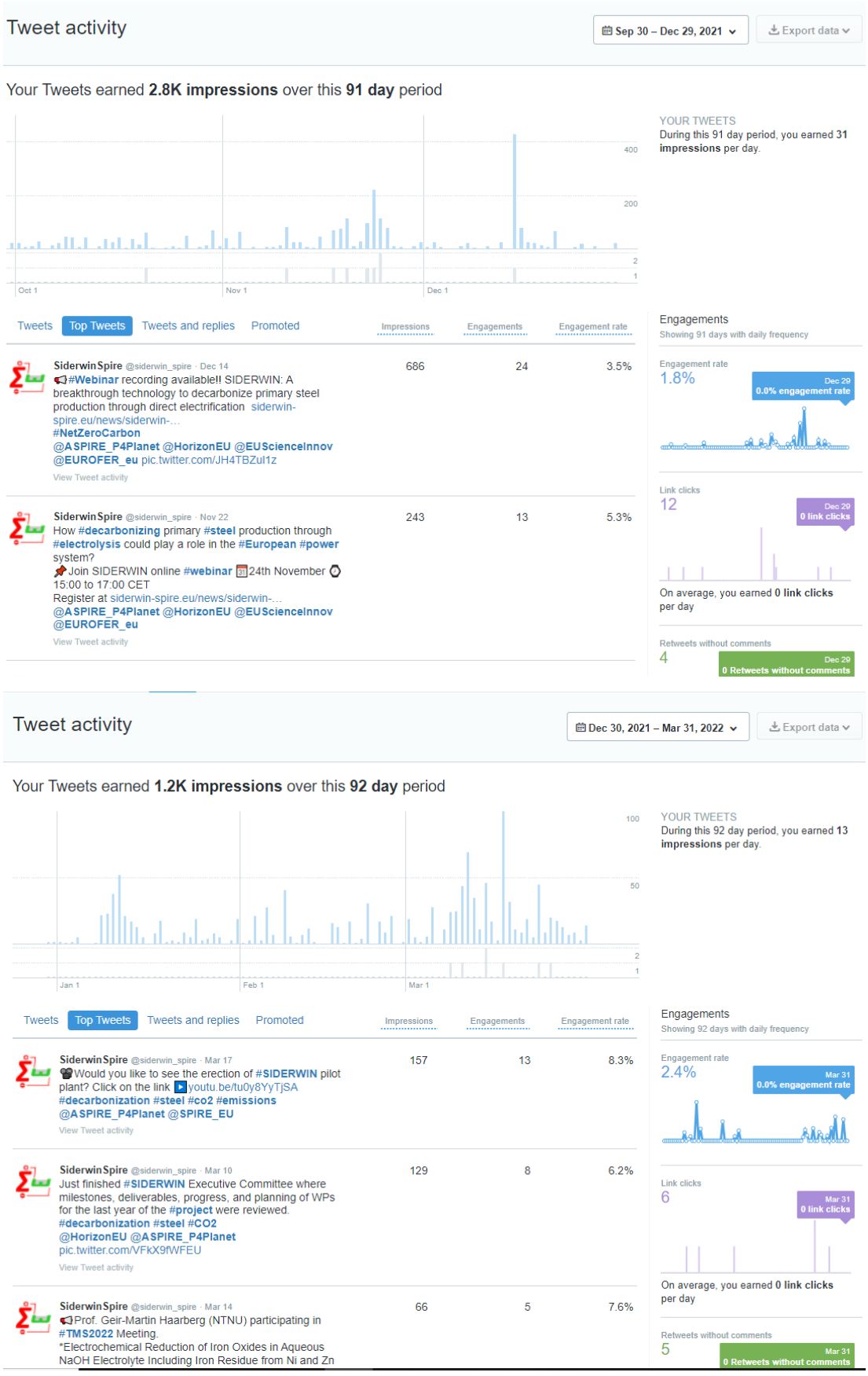



**Figure 9. ΣIDERWIN Twitter activity register and Top Tweets**

## 4.3 Preparation of dissemination material

During the last 18 months 1 public deliverable (see Table 4) was prepared and released for download through the website.

Table 4. List of public deliverables produced by the ΣIDERWIN consortium during last 18 months

| Deliverable Title | Deliverable description |
|---|---|
| D7.4 Environmental life cycle assessment final report (Public) | This deliverable includes the assessment of the environmental performance of the investigated novel process by means of environmental Life Cycle Assessment (LCA) |

One video was produced by NTUA for the HydroMeTEC learning course. This video is upload in the YouTube channel. The video is available through the website, YouTube, Twitter, and LinkedIn. Some screenshots are presented in Annex II: ΣIDERWIN videos of this deliverable.

The ΣIDERWIN webinar, held on the 24th of November 2021, was recorded and upload to the YouTube channel of the project.

ArcelorMittal produced a video to show the erection of the pilot plant that it was uploaded in the YouTube channel.

ArcelorMittal also produced a time-lapse video showing the site integration of the full-size pilot plant, and it was available through the YouTube channel.

## 4.4 Creation and management of the Special Interest Group (SIG)

The rules for the management of the SIG have been agreed between the partners and the mechanism for the subscription of the members is available through the website, where a special section was created for this purpose in the vertical navigation bar (https://www.ΣIDERWIN-spire.eu/content/special-interest-group). The SIG was launched by the 7th month and 41 people have registered at the time this report was written (M54).

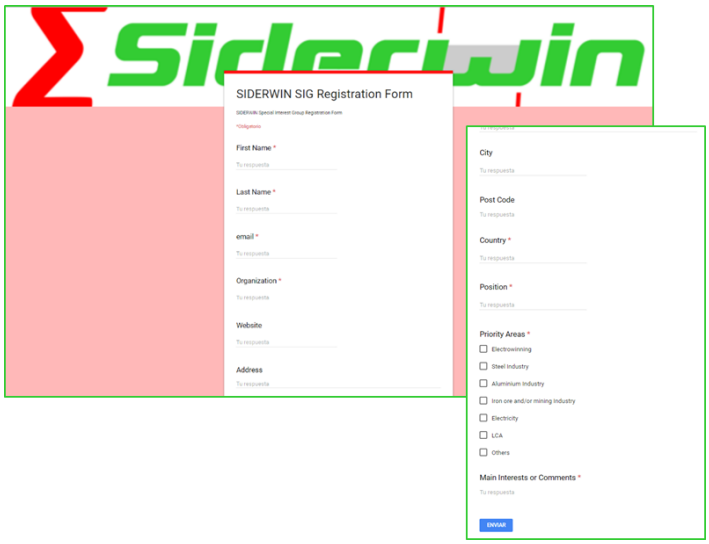



Figure 10. ΣIDERWIN SIG registration form

Currently, the SIG is composed of forty-one members from which EU (59%), USA (7%), UK (2%) and other countries (32%). They have been classified depending on their position: members related with universities (29%), companies' management (29%), experts and researchers (15%) and the rest of members (27%) includes engineers (10%), business developers (7%), and consultants (5%).

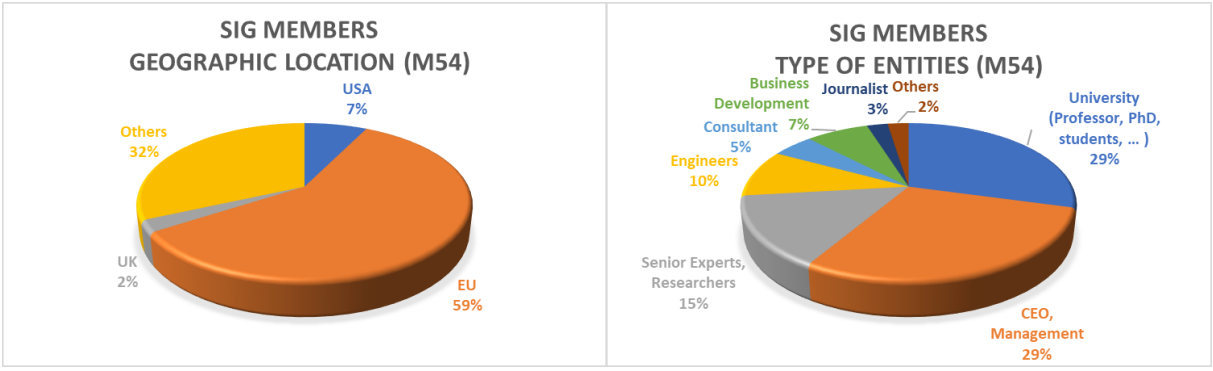


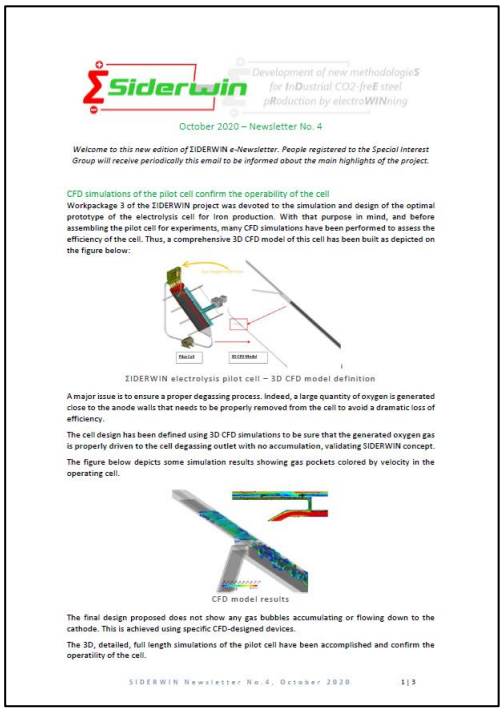

Figure 11. ΣIDERWIN SIG distribution M54 (41 members)

## 4.5 Newsletters

New issues of the Newsletter were launched in October 2020, March2020, October 2021 and March 2022. Each issue has 3 - 4 pages with a summary of the most relevant activities of the project from the technical and dissemination point of view.

The Newsletters are available at the project webpage and have also been distributed by email to the SIG members and interested contacts of each partner.

The Figure 12 shows the first page of each Newsletter.


Siderwin
Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

October 2020 – Newsletter No. 4

*Welcome to this new edition of ΣIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be informed about the main highlights of the project.*

CFD simulations of the pilot cell confirm the operability of the cell

Workpackage 3 of the ΣIDERWIN project was devoted to the simulation and design of the optimal prototype of the electrolysis cell for iron production. With that purpose in mind, and before assembling the pilot cell for experiments, many CFD simulations have been performed to assess the efficiency of the cell. Thus, a comprehensive 3D CFD model of this cell has been built as depicted on the figure below:

ΣIDERWIN electrolysis pilot cell – 3D CFD model definition

A major issue is to ensure a proper degassing process. Indeed, a large quantity of oxygen is generated close to the anode walls that needs to be properly removed from the cell to avoid a dramatic loss of efficiency.

The cell design has been defined using 3D CFD simulations to be sure that the generated oxygen gas is properly driven to the cell degassing outlet with no accumulation, validating SIDERWIN concept.

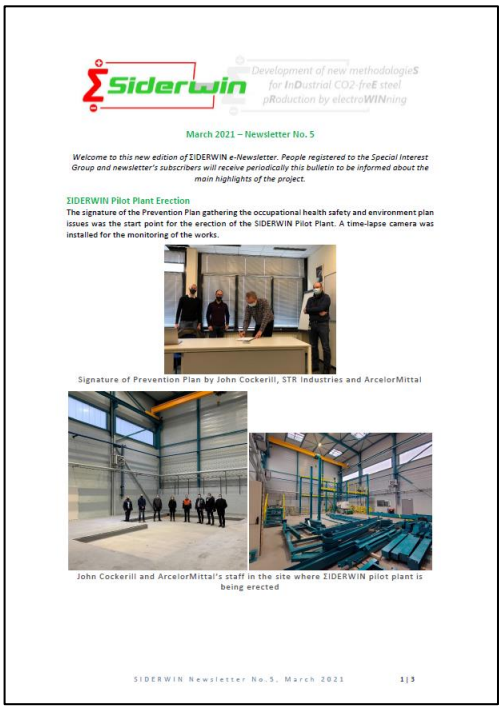
The figure below depicts some simulation results showing gas pockets colored by velocity in the operating cell.

CFD model results

The final design proposed does not show any gas bubbles accumulating or flowing down to the cathode. This is achieved using specific CFD-designed devices.

The 3D, detailed, full length simulations of the pilot cell have been accomplished and confirm the operability of the cell.

SIDERWIN Newsletter No.4, October 2020 1|3


Siderwin
Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

March 2021 – Newsletter No. 5

*Welcome to this new edition of ΣIDERWIN e-Newsletter. People registered to the Special Interest Group and newsletter's subscribers will receive periodically this bulletin to be informed about the main highlights of the project.*

ΣIDERWIN Pilot Plant Erection

The signature of the Prevention Plan gathering the occupational health safety and environment plan issues was the start point for the erection of the SIDERWIN Pilot Plant. A time-lapse camera was installed for the monitoring of the works.

Signature of Prevention Plan by John Cockerill, STR Industries and ArcelorMittal

John Cockerill and ArcelorMittal's staff in the site where ΣIDERWIN pilot plant is being erected

SIDERWIN Newsletter No.5, March 2021 1|3

October 2021 – Newsletter No. 6

*Welcome to this new edition of ΣIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be informed about the main highlights of the project.*

**ΣIDERWIN Pilot Plant Erection**

The commissioning of the Siderwin pilot is still on-going. The team on site has met some manufacturing issues on the equipment (leakage, ...) as well as late delivery of components due to the global market situation. The automation of such equipment is also a challenge considering the amount of instruments, valves and motors necessary for research purpose.

Moreover during the commissioning areas of improvement were identified, leading to direct implementation of actions in order to guarantee a maximum of chance of success for the first production.

The pilot should be ready for a first production around half-October.

Pilot plant

**ΣIDERWIN TEAM**

New content is available in website and social networks. Periodically, you can meet the ΣIDERWIN TEAM by means of interviews, videos, .... where they explain their involvement in the project. Until date, you can know a little bit about Dr. Daniela V. Lopes (Aveiro University), Cédric Flandre and Andrea Baldini (John Cockerill), Sevasti Koutsoupa and Stavroula Koutalidi (NTUA), Pascal Marlier (ArcelorMittal) and Efthymios Balomenos (Mytilineos). You can find more information on the website and social networks.

SIDERWIN Newsletter No.6, October 2021 1 | 3

March 2022 – Newsletter No. 7

*Welcome to this new edition of ΣIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be informed about the main highlights of the project.*

**ΣIDERWIN Pilot Plant**

During last months, the activities on the site were focused on the commissioning of the pilot, where every equipment of the machine has been tested. Two attempts for the iron plate production had to be stopped after few hours. This activity is still ongoing due to different factors:

- This is a completely new machine, one of a kind for this application.
- Some minor mechanical/automation modifications, identified in Hazard and Operability Analysis (HAZOP) during the first part of the commissioning, have been implemented in order to improve the safety of the pilot.
- Long delivery time for some equipment due to covid-19 crisis.

First trials are expected for middle of April 2022.

Pilot plant

**ΣIDERWIN Webinar**

The webinar ΣIDERWIN: *A breakthrough technology to decarbonize primary steel production through direct electrification* was held virtually on the 24th of November 2021. There were 124 registrations and finally there were 74 attendees from 44 companies.

The webinar generated a lot of interest due to the large number of questions submitted. Only a few of them could be answered during the event. Afterwards a document was produced to provide answers to all the questions arisen.

The video recording, slides and Q&A document are available through the website.

Webinar

SIDERWIN Newsletter No.7, March 2022 1 | 3

**Figure 12. New issues of ΣIDERWIN Newsletter**

## 4.6 Publications in scientific and trade journals

The partners publish the project activities and results in different scientific and trade journals. Table 5 shows the publications that have already been published during this period and also the ones planned for coming months.

**Table 5. List of publications done and planned since month 37**

| Name | Date | Partner coordinating action | Status | Title | Planned Date |
|---|---|---|---|---|---|
| Ceramics International | M40 | UA | Done | Microstructural design of cellular 3 YTZ-Al2O3 ceramic membranes | M35 |
| International Journal of Hydrogen Energy | M41 | UA | Done | MXene-containing composite electrodes for hydrogen evolution: Material design aspects and approaches for electrode fabric | M41 |
| Symmetry | M44 | UA | Done | Exploring the High-Temperature Electrical Performance of Ca3−xLaxCo4O9 Thermoelectric Ceramics for Moderate and Low Sut | M44 |
| Journal of Electrochemical Society | M46 | UA | Done | Alkaline electrochemical reduction of a magnesium ferrospinel into metallic iron for the valorisation of magnetite-based met | M46 |
| Materials | M53 | UA | Done | Prospects of Using Pseudobrookite as an Iron-Bearing Mineral for the Alkaline Electrolytic Production of Iron | M53 |
| Hydrometallurgy | | AMMR | Planned | Measurement of the electrochemical reactivity iron oxides from residues | M55 |
| TBD | | Tecnalia | Planned | Simulation tool of an iron ore electrowinning cell | M55 |
| Fuel | M56 | UA | Done | Catalytic O2-steam gasification of biomass over Fe2-xMnxO3 oxides supported on ceramic foam filters | M56 |
| Journal of The Electrochemical Society | M58 | NTNU | Done | | M58 |
| Journal of Industrial and Engineering Chemistry | | AMMR | Planned | Electrification of primary Steel production | M60 |
| Chemical Engineering Research and Design | | AMMR | Planned | Thermodynamical design of primary steel production | M60 |
| Journal of the Electrochemical Society | | UA | Planned | Iron electroreduction from mixed hematite/magnetite suspensions | M63 |
| Frontiers in Energy Research (or Frontiers in Mate | | UA | Planned | Prospects and challenges of the electrochemical reduction of iron oxides in alkaline media for steel production: a review | M63 |
| Journal of Sustainable Metallurgy | | NTUA | Planned | Reduction of current efficiency during time in the electrolysis of Bauxite Residue | M66 |
| Electrochimica Acta | N/A | NTUA | Cancelled | | N/A |
| Journal of Sustainable Metallurgy | N/A | NTUA | Cancelled but Replaced | | N/A |
| Ceramics International | N/A | UA | Cancelled | Red mud based cellular ceramics for catalytic and electrocatalytic applications | N/A |
| Electrochimica Acta | N/A | UA | Cancelled | Prospects for Fe-electrowinning from red mud suspensions | N/A |
| Electrochimica Acta | | NTNU | Planned | | TBD |
| Electrochimica Acta | | NTNU | Planned | | TBD |
| Electrochimica Acta, J. Electrochem. Soc, .. | | UA | Planned | Assessment of Fe-electrowinning from alkaline suspensions under simulated conditions of intermittent power supply | TBD |
| TBD | | UA | Planned | Valorisation of an industrial iron-rich residue by iron electrowinning in alkaline media | TBD |

## 4.7 Presentations at national and international scientific conferences

The partners present the project activities and results at national and international conferences. Table 6 gathers the main information of the presentations planned by the partners up to now and their current status for different national and international conferences. A total number of 14 conferences were identified, 4 of each were not attended in the end, and 9 of each were held until the writing of this deliverable.

**Table 6. List of national and international conferences identified for coming months**

| Conference Information | | | | | Presentation information | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Name of event* | *When* | *Where* | *Scope* | *Audience Profile* | *Presentation title* | *Presentation topics* | *Presentation type* | *Partner coordinating the activity* | *Other partners involved* | *Status* |
| 17th Electroceramics Conference | 2020 | Germany --> ONLINE conference | International | scientific community | Electrowinning of Fe0 from Fe2-xAlxO3 ceramics suspensions as a preliminary study for red mud waste valorisation | SIDERWIN results focused on WP6 | Oral communication | AU | | Done |
| Industrial Efficiency 2020 Conference | 2020 | Gotenburg (Sweeden) -> ONLINE | European | Governments, industrialists, companies, research institutes | Electrification of primary steel production based on SIDERWIN process: simulation on the European power system in 2050 | SIDERWIN results focused on Task 7.2 | Paper and presentation | EDF | | Done |
| BR2020 - Bauxite Residue Valorisation | 2020 | Constanta,Romania | International | Researchers and practitioners | Production of metallic iron with alkaline electrolysis under low temperatures | SIDERWIN results focused on WP6 | Paper | NTUA | | Done |
| International Mineral Processing Congress (IMPC 2020) | 2020 | South Africa | International | industrialists, companies, research institutes, researchers and practitioners | | SIDERWIN results focused on WP6 | Paper | NTUA | | Planned but finally Not Attended |
| International Mineral Processing Congress (IMPC 2020) | 2020 | South Africa | International | industrialists, companies, research institutes, researchers and practitioners | | SIDERWIN PROJECT | Paper | NTUA | AMMR | Planned but finally Not Attended |
| 14th Meeting of Physical Chemistry | 2021 | Portugal | National | scientific community | Simulation of the electrowinning process with green renewable energy sources for industrial iron production | SIDERWIN results focused on WP3 and WP6 | Oral communication | AU | | Done |
| 29th Topical Meeting of the International Society of Electrochemistry | 2021 | Czech Republic | International | scientific community | Electrodeposition of iron under intermittent current conditions | SIDERWIN results focused on WP3 and WP6 | Oral communication | AU | | Done |
| European Metallurgical Conference 2020 | 2020 | Virtually | European | | | | | NTUA | | Planned but finally Not Attended (Postponed for 2021) |
| 4th International Conference on Nanomaterials Science and Mechanical Engineering | 2021 | Portugal | International | scientific community | Iron electrowinning under alkaline conditions: effects of the current interruptions | SIDERWIN results focused on WP3 and WP6 | Oral communication | AU | | Done |
| 4th International Conference on Nanomaterials Science and Mechanical Engineering | 2021 | Portugal | International | scientific community | Prospects of metallurgical waste valorisation by the electroreduction of Fe2.3Mg0.704 ceramics to Fe | SIDERWIN results focused on WP3 and WP6 | Oral communication | AU | | Done |
| 5th ESTAD 2021 (European Steel Technology and Application Days) | 2021 | Sweden | European | | | | | AMMR | | Planned but finally Not Attended |
| 39th International Conference and Exhibition ICSOBA 2021 | 2021 | online | International | industrialists, companies, research institutes, researchers and practitioners | Bauxite Residue Reuse Through Combined Operations: Industrial Pilot Modules | SIDERWIN results focused on WP6 | Paper/Oral communication | Mytilineos | NTNU | Done |
| 2022 TMS Annual Meeting & Exhibition | 2022 | California | International | industrialists, companies, research institutes, researchers and practitioners | Electrochemical Reduction of Iron Oxides in Aqueous NaOH Electrolyte Including Iron Residue from Nickel and Zinc Electrowinning Processes | SIDERWIN results focused on WP6 | Paper/Oral communication | NTNU | | Done |
| BR 2022 | 2022 | | International | | | | | NTUA | | Planned |

## 4.8 Events

The main events that occurred in this period are listed in HydroMeTEC and Steel Tech Congress&Expo are described in Section 4.10.

Table 7. Some events that were not reported in the last update of this deliverable (M36) have also been included.

One of the highlights was the Defense of the Doctoral Thesis of Daniela V. Lopes from the University of Aveiro: “Electrochemical reduction of iron oxides into zero-valent iron for red mud valorisation”.

Dr. Daniela Lopes is a research fellow at CICECO – University of Aveiro Institute of Materials, Portugal, seeking steel production by electrochemical reduction within the scope of the SIDERWIN project.

Daniela completed the Doctoral Program in Advanced Materials and Processing in July 2020, involving the University of Coimbra (host university) and the University of Aveiro (CICECO). The PhD studies focused on designing porous ceramics materials mimicking iron-rich wastes for the electrochemical reduction of the iron oxides to iron in alkaline media. The attempt of red mud waste valorisation by electroreduction was one of the main targets, meeting the objectives of the SIDERWIN project. Since then, she has been investigating the effect of the presence of low

conductive components (Al, Mg) on the electrochemical reduction of iron oxides to iron. Daniela aims to find an efficient strategy for recovering valuable metals during steel and alloys production, contributing to the development and industrialisation of the electrochemical reduction technology as a CO2-lean alternative to the conventional steel production approach.

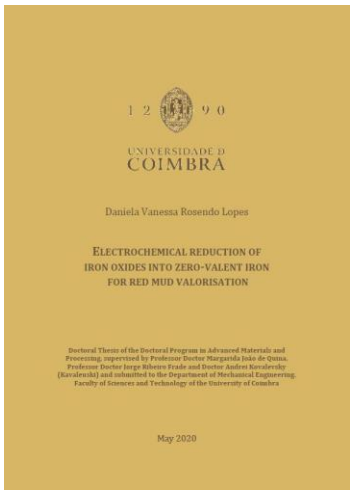



Figure 13. Cover page of Doctoral Thesis of Daniela V. Lopes

It is worth mentioning that in March 2020 (M30) the representatives of the European Investment Bank: Maria Lundqvist, Marc Tonteling and Hervé Lescoeur visited the ΣIDERWIN building at ArcelorMittal facilities. The Project Coordinator, Hervé Lavelaine, explained them the main developments behind the SIDERWIN project.

Figure 14. Visit of the European Investment Bank to the SIDERWIN building

Also noteworthy was the visit in May 2021 of Jean Rottner, head of “Grand Est” region in France, together with a local politician’s commission from Moselle to the ΣIDERWIN pilot. Hervé Lavelaine, as Project Coordinator, explained them the fundamentals of the operation.


Figure 15. Visit of a political commission from Moselle (FR) to the SIDERWIN building

HydroMeTEC and Steel Tech Congress&Expo are described in Section 4.10.

Table 7. List of events

| No | Name | Date | Partner coordinating action | Status |
|---|---|---|---|---|
| 10 | Visit of European Investment Bank | M30 | AMMR | Done |
| 6 | Daniela Lopes PhD. Thesis Defence | M34 | UAV | Done |
| 7 | Hydrometec | M43 | NTUA | Done |
| 11 | Visit of Mosselle (FR) Political Commission | M44 | AMMR | Done |
| 8 | Steel Tech Congress&Expo | M49 | TECNALIA | Done |
| 9 | Technical Day | M57 | EDF | Planned |

## 4.9 Webinar

The first ΣIDERWIN webinar was held on the 24th of November 2021 from 15:00 to 17:00 CET. Afternoon timetable was selected to facilitate the participation of people from other time regions.

The date was announced on website and social media some months before the event, and the registration form was available on the website. In addition, an email was sent to the SIG members and to other 47 people identified as possible attendees, to encourage them to register.

The participation in the event was free but registration was required. The platform used was GoToWebinar.

The final agenda of the event was:

*ΣIDERWIN: A breakthrough technology to decarbonize primary steel production through direct electrification*

- Welcome and introduction to ΣIDERWIN project
- The Greening of Steel? Net-Zero Steelmaking for the EU Green Deal: ΣIDERWIN
- Is electrodecomposition of iron oxide a feasible reaction?
- Is the electrolysis of primary steel production scalable and industrialisable?
- How decarbonizing primary steel production through electrolysis could play a role in the European power system?
- Does ΣIDERWIN contribute genuinely to deep decarbonization?
- Final conclusions
- Questions&Answers (Final Round)

The master of ceremony of the webinar was Jose Ignacio Barbero from TECNALIA. The introductory session *"The Greening of Steel? Net-Zero Steelmaking for the EU Green Deal: ΣIDERWIN"* was made by Jean-Pierre Birat. He is a consultant, owner and manager of IF Steelman, who works on environmental issues, energy and materials.

Then, Sevasti Koutsoupa from NTUA was in charge of presenting the first section of the webinar "*Is electrodecomposition of iron oxide a feasible reaction?*". Next, Thierry Conte from CFD-Numerics presented "*Is the electrolysis of primary production scalable and industrialisable?*".

Matthildi Apostolou and Caroline Bono from EDF focused on "*How decarbonizing primary steel production through electrolysis could play a role in the European power system?*". Finally, Anna

Kounina from Quantis disserted about "*Does ΣIDERWIN contribute genuinely to deep decarbonization?*".

To conclude, the project coordinator, Hervé Lavelaine from ArcelorMittal, wrapped up the final conclusions.

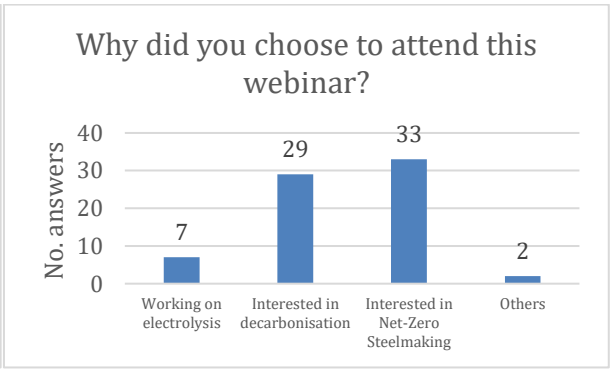
During the webinar, attendees could submit their questions by typing in the GoToWebinar chat. Some of them were answered after each main section, and there was also a dedicated time slot at the end of the webinar. However, due to the large number of questions received that could not be replied during the event, it was decided to gather all of them in a document with their corresponding answers. This document was provided to the attendees some weeks after the event, and it is also upload in the webpage.

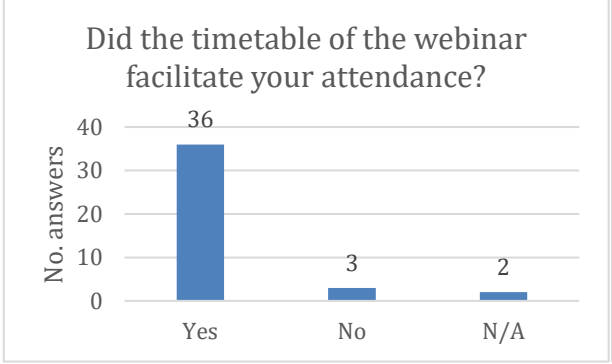
The webinar was recorded and made it available in the YouTube channel of the project where it has more than 263 views at the moment of the writing of this report. The link to the video is available at the website and social media.

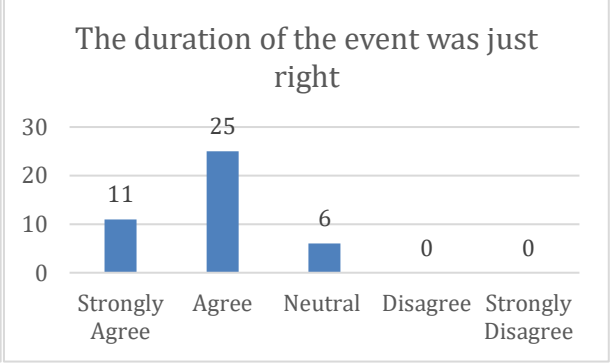
The slides of the presentation were also made available at the website in the section Documents>Others>Presentations and Others.

The webinar allows to achieve and spread the ΣIDERWIN project to the largest possible concerned audience. A total of 124 people from 64 companies registered.

The day of the event there was a great participation (63% of the people registered), with a total of 78 attendees from 44 companies. At the end of the webinar, a questionnaire was sent to the attendees, and 42 (54%) of them provided their feedback. In general, the webinar had a great acceptance and 90% will join the next event. The following graphs show the answers to the questions. There were also open questions where the participants described the most interesting topics for them (32 answers) and made comments or suggestions for improving future events (16 answers).

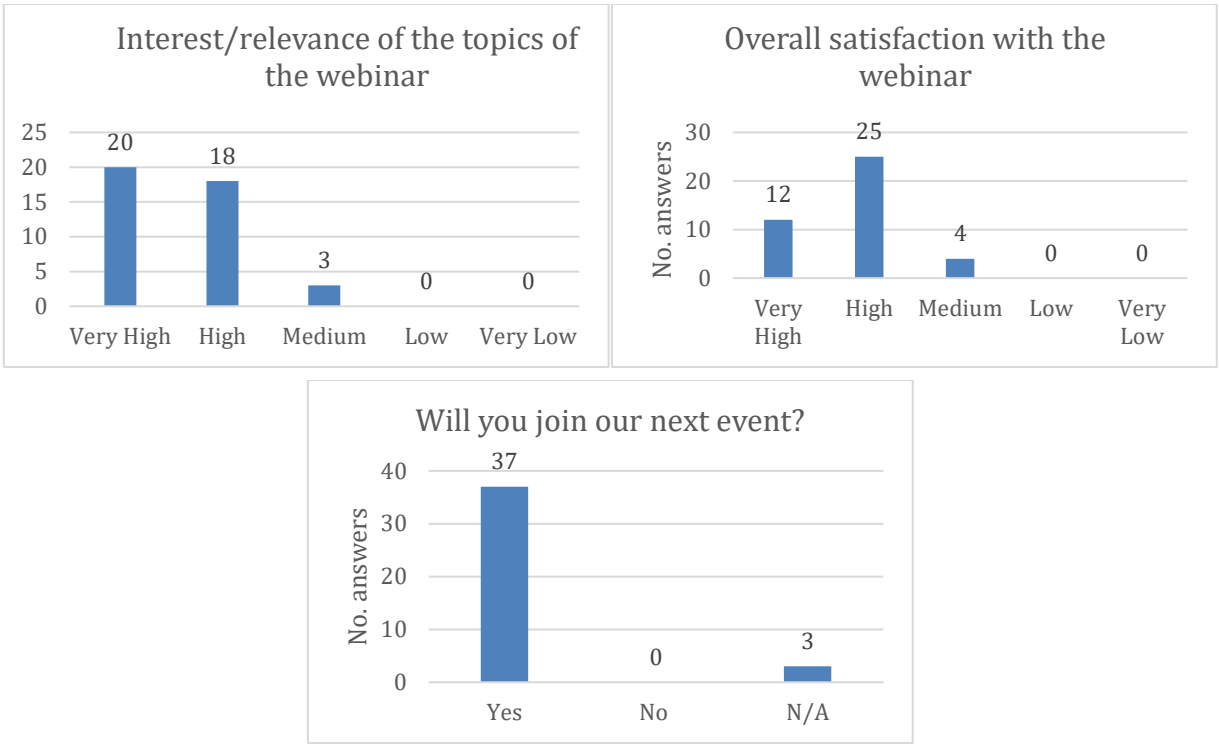



Figure 16. Answers to webinar's questionnaire

## 4.10 Participation at exhibitions, fairs, and workshops

HydroMetEC is a lifelong learning program organized within EIT Raw Materials academy and coordinated by NTNU. It is an educational and communication programme to educate professional metallurgists, engineers and students in primary and secondary raw materials and their treatments through hydrometallurgical processes to extract valuable metals and to promote circular economy in raw materials sectors.

The HydroMeTEC 2021 edition was hold online and NTUA participated with a video showing a laboratory demonstration of the electrochemical recovery of metallic iron from bauxite residue in aqueous alkaline solutions.


Figure 17. Cover slide of NTUA video for HydroMeTEC 2021

In November 2021 Bilbao Exhibition Center hold the 1st edition of the International Congress and Expo *Steel Tech 2021*. At the TECNALIA's stand was located the ΣIDERWIN roll up, and a QR code provided access to the website and the video. Flyers were also available at the stand.


Figure 18. International Congress and Expo Steel Tech 2021

## 4.11 Other activities

Finally, the partners conducted internal presentations/communications at their organisations to show the goals/progress of the project and contributed to the project dissemination with communications in the media and in their day-to-day during visits with clients or meetings with other parties.

## 4.12 KPIs performance and evaluation

Some quantitative indicators have been defined for the purposes of evaluating the ΣIDERWIN dissemination activities. Table 8 shows the real values for each metric of the KPIs in the M1-M18, M19-M36 and M37-M54 periods, as well as the target values for M66. The KPI4 and KPI5 indicates the expected attendees to the ΣIDERWIN final workshop.

There are slight deviations in the specified KPIs during last period (M37-M54), although it is expected that the number of publications increases considerably once the pilot starts to produce the first iron plates (April 2022), and results have been achieved.

**Table 8. Key Performance Indicators and metrics for the evaluation of the dissemination activities, real values for M18, M36 and M54 and planned values for final stage (M55-M66)**

| ID | Indicator | Metrics | Real Value (M1-M18) | Real value (M19-36) | Real Value (M37-M54) | Target Value (M37-M54) | Target Value (M55-M66) |
|---|---|---|---|---|---|---|---|
| KPI1 | General public awareness through the website and social media | Number of visits on the project website | 108 visits per month | 181 visits per month | 319 visits per month | 350 visits per month | 400 visits per month |
| | | Number of presentations upload to the Website/SlideShare | 2 | 2 | 1 | 3 | 3 |
| | | Number of videos upload to Website/Youtube | 1 | 2 | 4 | 2 | 4 |
| KPI2 | Awareness of the Scientific Community interest | Number of papers in scientific journals | 0 | 2 | 7 | 8 | 10 |
| | | Number of presentations in scientific conferences/workshops | 2 | 7 | 9 | 10 | 10 |
| KPI3 | Awareness of the industrial Community interest | Number of papers in trade journals | 3 | 2 | 1 | 6 | 6 |
| | | Number of participations at events with industry (fairs, exhibitions, workshops…) | 3 | 2 | 5 | 4 | 4 |
| | | Number of Interest expressions from industry to receive more information + industrial members of the Special Interest Group (SIG) | 16 | 16 | 9 | 15 | 15 |
| KPI4[1] | ΣIDERWIN final workshop | Number of people attending the final ΣIDERWIN workshop | N/A | N/A | N/A | N/A | 100 |
| KPI5 | ΣIDERWIN first webinar | Number of people attending the first ΣIDERWIN webinar (2021) | N/A | N/A | 78 | 30 | N/A |

[1] This indicator is included to have an overview of all the KPIs defined for the project and it does not apply for the first months of the project.

# 5 Activities planned for M55 to M66

The activities planned for the final stage of the project (M55 – M66) are summarised below.

## 5.1 Maintenance of the ΣIDERWIN website, social media, and SIG

The ΣIDERWIN website will be updated periodically with new content such as summaries of the new released deliverables, information about project meetings and dissemination events participated by the partners, new dissemination material, etc. In addition, the carrousel of photos included in the home page will also be updated with new photos of the pilot plant.

During the last period, the activity in Twitter and LinkedIn is expected to be increased as soon as the pilot plant was ready and the production starts, and more results were available. The project will increase its effort in these social networks as it is an excellent tool to show the project's achievements.

Finally, the maintenance of the SIG will include the management of the new members and the communication with all the members to provide them information about relevant news, events, and results of the project. The mechanism to achieve this purpose will be a newsletter that will be sent to SIG members every 6 months or when relevant news were produced.

## 5.2 Preparation of dissemination material

During the next reporting period, different dissemination material will be produced along the following 12 months of the project, such as short project presentations (electronic version) showing the main achieved results.

In addition, the partners will prepare material to be disseminated through the channels offered by the EC, SPIRE, and other entities, such as: newsletters, bulletins, news, reports, etc.

## 5.3 Publications in scientific and trade journals

The partners will publish the project activities and results in different scientific and trade journals. Table 5 shows the publications that have been planned up to now. The target of publications for this period (M55 to M66) is indicated in Table 8.

## 5.4 Presentations at national and international scientific conferences

The partners will present the project activities and results at national and international conferences. Table 6 shows the presentations that have been planned up to now. The target of presentations at conferences for the next period (month 55 to 66) is indicated in Table 8.

## 5.5 Participation at exhibitions, fairs, and workshops

Finally, partners will attend different events such as workshops, exhibitions, and fairs. The target of participations at events for the next period (month 55 to 66) is indicated in Table 8.

## 5.6 Events organised by ΣIDERWIN partners

The main interest behind the SIG is to get feedback from experts outside the consortium about usability of ΣIDERWIN developments, market potential and additional technologies that may improve or complement ΣIDERWIN. With this in mind, an online meeting will be organized with the SIG members before December 2022 to show the current status of the ΣIDERWIN developments (taking into account IPR issues), and to get their feedback on the above-mentioned topics.

At the end of the project (probably March 2023) ΣIDERWIN will organise a final dissemination Workshop to show the achieved results and to give the opportunity to meet potential interested clients (either on public or private field), investors, and researchers. Therefore, target audience could include different players in the scientific, industrial, financial, and social fields, as well as journalists.

Announcement of the ΣIDERWIN workshop will be done through all the available channels (web, Twitter, LinkedIn, EU/SPIRE tools, SIG, related Platforms and Associations, etc.) to reach the maximum audience as possible.

If Covid's situation allows, it will be a face-to-face event or even with a hybrid format. If not, it will be online, like the Webinar organized in November 2021. Apart from the ΣIDERWIN topics, the consortium will also try to involve some SIG members to present their views on the technology and the market.

To increase the impact of the workshop, if feasible, it could be organized jointly with the workshops of other SPIRE projects or in connection with any other relevant event (for example a well-known conference or exhibition).

# 6 Conclusions

This report corresponds to the fourth release of the "Master Dissemination and Communication plan and updates" for the ΣIDERWIN project, and describes the key elements of the strategy that have been defined by the consortium for achieving proper project dissemination:

1. **The objectives** (*why*, mission & vision) → to spread the ΣIDERWIN's results to the largest possible concerned audience (at the national, European and international level) in order to promote the implementation and use of the project results (exploitation).
2. **The subjects** (*what* will be disseminated) → the ΣIDERWIN project itself and its results together with the all the techniques/methodologies used for the project technical development.
3. **The timing** (*when* dissemination will take place) → three main phases are considered: 1) initial phase (*Awareness*) focused on increasing the project visibility and mobilising stakeholders and multipliers; 2) intermediate phase (*Interest/Desire*) focused on informing and engaging to the target stakeholders when preliminary results become available; 3) final phase (*Action)* focused on encouraging further exploitation of the ΣIDERWIN outcomes (transfer to other industries, replicability...).
4. **The target audience** (to *whom* it will be disseminated) → Industrial Community, Scientific Community, Financial Community, Policy makers, "Internal" Community (ΣIDERWIN partners) and General public.
5. **The tools and channels** (*how* to reach the target audience) → website, social networks, channels offered by the EC and SPIRE, dissemination material distribution, ΣIDERWIN Special Interest Group creation and mainly the presentation of the ΣIDERWIN results at scientific & trade journals, conferences, workshops and trade fairs. The report provides a list of potential journals, conferences, and fairs where the ΣIDERWIN results could be presented.
6. **The responsible** (*who* will perform the dissemination) → all partners of the consortium will contribute to the ΣIDERWIN dissemination during the whole project lifetime.
7. **The rules** for performing the dissemination activities.
8. **The way to evaluate and assess the impact** of the dissemination activities, defining and monitoring KPIs for the different period of the project.

The report also includes a description of the actions carried out during the previous 18 months of the project and the actions foreseen for the final stage of the project (M55-M66). The main results of the activities performed until the writing of this report are:

- 9 papers on International Conferences have been presented and published
- 7 papers on Scientific Journals have been published
- 1 PhD Thesis Defense
- 4 videos have been published on the web: HydroMeTEC Learning Course by NTUA, ΣIDERWIN building erection at Maizières site, ΣIDERWIN webinar recorded video, and ΣIDERWIN full-size pilot plant time-lapse video.

- 4 Newsletters have been produced and sent to the SIG members and available on the web
- The web page has been regularly updated. There have been 5,743 visits to the ΣIDERWIN web in this period (average: 319 visits per month)

## References

[ 1 ] https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2030-energy-strategy

[ 2 ] http://www.spire2030.eu/spire-vision/spire-roadmap

[ 3 ] https://ec.europa.eu/growth/sectors/raw-materials/industries/metals/steel_en

[ 4 ] https://www.european-aluminium.eu/

# Annex I: Technological platforms and Associations with involvement of ΣIDERWIN partners

| | | |
|---|---|---|
| **Acronym** | Axelera | |
| **Name** | AXELERA | |
| **Web** | https://www.axelera.org/ | |
| **Profile** | Cluster | |
| **Domain** | Chemical and environmental sectors | |
| **Scope** | French | |
| **Partners involved & Type of involvement** | CFD – Numerics | Member |

| | | |
|---|---|---|
| **Acronym** | ESNL | |
| **Name** | Energy Storage NL | |
| **Web** | https://www.fme.nl/brancheverenigingen/energy-storage-nl | |
| **Profile** | Interest Group | |
| **Domain** | Energy Storage | |
| **Scope** | Netherlands | |
| **Partners involved & Type of involvement** | RECOY | Member |

| | | |
|---|---|---|
| **Acronym** | ESTEP | |
| **Name** | European Steel Technological Platform | |
| **Web** | https://www.estep.eu | |
| **Profile** | Technological Platform | |
| **Domain** | Steel | |
| **Scope** | European | |
| **Partners involved & Type of involvement** | AM | Member |
| | TECNALIA | Working groups (Automotive, Environment) |

| | | |
|---|---|---|
| **Acronym** | EURELECTRIC | |
| **Name** | The Union of the Electricity Industry | |
| **Web** | http://www.eurelectric.org | |
| **Profile** | European electricity association | |
| **Domain** | Electricity industry | |
| **Scope** | Europe | |
| **Partners involved & Type of involvement** | EDF | Member |

| | | |
|---|---|---|
| **Acronym** | EUROFER | |
| **Name** | The European Steel Association | |
| **Web** | http://www.eurofer.org/ | |
| **Profile** | Technological Platform | |
| **Domain** | Steel | |
| **Scope** | European | |
| **Partners involved & Type of involvement** | AM | Member |

| | | |
|---|---|---|
| **Acronym** | European Aluminium | |
| **Name** | European Aluminium Association | |
| **Web** | https://www.european-aluminium.eu/ | |
| **Profile** | Association representing the Aluminium industry in Europe | |
| **Domain** | Aluminium | |
| **Scope** | European | |
| **Partners involved & Type of involvement** | Mytilineos | Member of the Alumina and Primary Aluminium Producers |

| | | |
|---|---|---|
| **Acronym** | FAN | |
| **Name** | Flexible power Alliance Network | |
| **Web** | https://flexible-energy.eu | |
| **Profile** | Technological Platform | |
| **Domain** | Power Industry | |
| **Scope** | European | |
| **Partners involved & Type of involvement** | RECOY | Member |

| | | |
|---|---|---|
| **Acronym** | FME | |
| **Name** | Federatie Metaal - en Elektrotechnische Industrie | |
| **Web** | https://www.fme.nl | |
| **Profile** | Interest Group | |
| **Domain** | Industry wide | |
| **Scope** | Netherlands | |
| **Partners involved & Type of involvement** | RECOY | Member |

| | | |
|---|---|---|
| **Acronym** | FoF / EFFRA | |
| **Name** | FoF - Factories of the Future<br><br>EFFRA - European Factories of the Future Research Association | |
| **Web** | https://ec.europa.eu/research/industrial_technologies/factories-of-the-future_en.html<br><br>www.effra.eu | |
| **Profile** | FoF – PPP of H2020<br><br>EFFRA - Association representing the FoF PPP Private Side | |
| **Domain** | Advanced manufacturing | |
| **Scope** | European | |
| **Partners involved & Type of involvement** | TECNALIA | Member of the Advisory Group |

| | | |
|---|---|---|
| **Acronym** | H2 Platform | |
| **Name** | H2 Platform | |
| **Web** | https://opwegmetwaterstof.nl | |
| **Profile** | Interest Group | |
| **Domain** | Hydrogen | |
| **Scope** | Netherlands | |
| **Partners involved & Type of involvement** | RECOY | Member |

| | | |
|---|---|---|
| **Acronym** | MANUFUTURE | |
| **Name** | Future Manufacturing Technologies | |
| **Web** | http://www.manufuture.org/ | |
| **Profile** | European Technological platform | |
| **Domain** | Process Industry, advanced manufacturing | |
| **Scope** | European | |
| **Partners involved & Type of involvement** | TECNALIA | Member of the Steering Committee |

| | | |
|---|---|---|
| **Acronym** | SPIRE | |
| **Name** | **S**ustainable **P**rocess **I**ndustry through **R**esource and Energy **E**fficiency | |
| **Web** | https://www.spire2030.eu/ | |
| **Profile** | PPP of HORIZON 2020 | |
| **Domain** | Process Industry | |
| **Scope** | European | |
| **Partners involved & Type of involvement** | AM | Member |
| | NTNU | Member |
| | TECNALIA | Participant of the Steering Committee and all the working Groups (Feed, Process, Application, Waste) |

| | | |
|---|---|---|
| **Acronym** | UFE | |
| **Name** | Union Française de l'Electricité | |
| **Web** | http://www.ufe-electricite.fr | |
| **Profile** | French electricity association | |
| **Domain** | Electricity industry | |
| **Scope** | France | |
| **Partners involved & Type of involvement** | EDF | Chairmans of the following Commissions: Marchés et Systéme Electrique; Electricité Renouvelable et Territorie; Prospective et Innovation |

## Annex II: ΣIDERWIN videos

This annex depicts some screenshots of the ΣIDERWIN videos.


Figure 19. Some screenshots of first ΣIDERWIN video with subtitles


Figure 20. John Cockerill Awards 2020 to ΣIDERWIN

Figure 21. ΣIDERWIN Pilot Plant Building erection

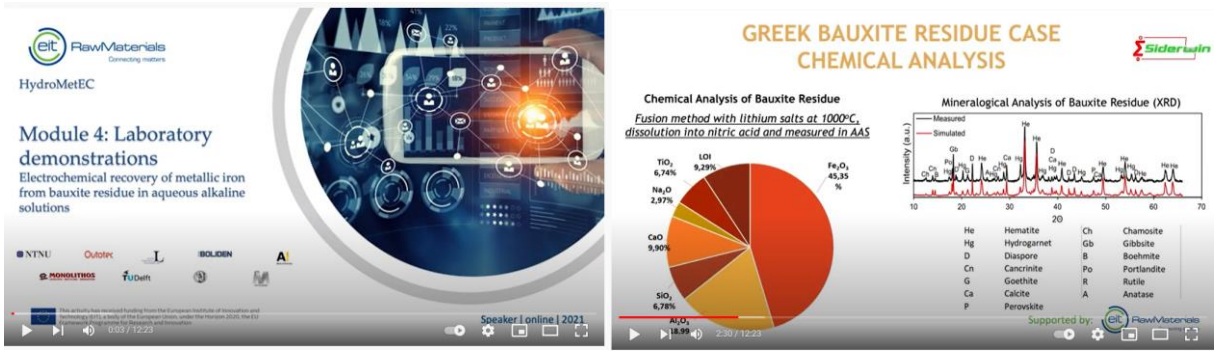



Figure 22. Some screenshots of NTUA video for HydroMetEC Learning Course

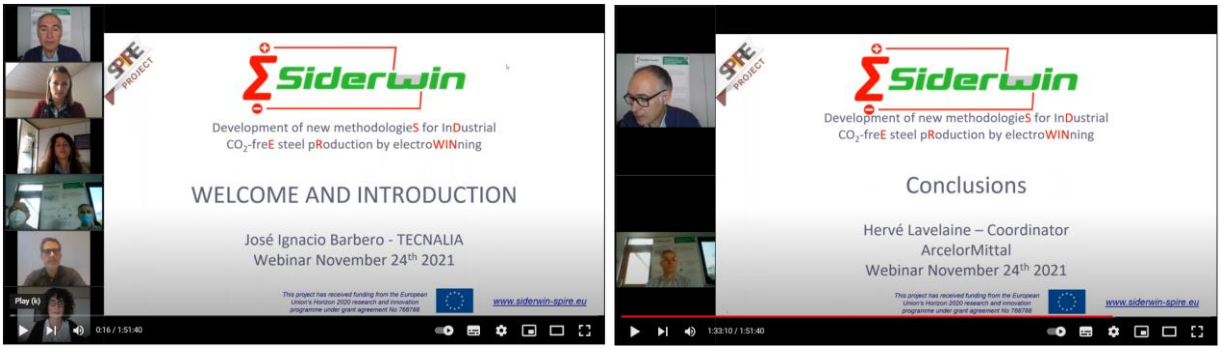



Figure 23. ΣIDERWIN webinar 2021/11/24


Figure 24. ΣIDERWIN full-size pilot installation time-lapse video

# Annex III: ΣIDERWIN Newsletter

This annex depicts the seven issues of the ΣIDERWING Newsletters.


NEWSLETTER

Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

May 2019 – No. 1

*Welcome to the first edition of SIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be inform about the main challenges of the project.*

SIDERWIN video

The first video of SIDERWIN project was launched in March. This short animation video offers a general overview of the project.

M18 Steering Committee and Review Meeting

The 28th of March SIDERWIN partners attended to the M18 Steering Committee in Brussels where the main achievements of the different work packages during the last 6-month period were discussed. The next day the Project Officer, Cristina Fernández-Ramos, and the Technical Expert, Margeride Pinto, joined the partners.

Several topics were addressed during the Steering Committee especially regarding the planning and possible deviations of the project. The goal was to emphasize the fact the delay that impacted the early stages of the project would not impact the upcoming tasks and workpackages. The huge developments undertaken during the first 18 months of the project allowed the consortium to actually dig deeper and to secure furthermore the choices to be made regarding the development of the cell.

At the end of the 2 days, the Project Officer and Technical Expert were relieved to see the project going forward in a sound state. A few recommandations were issued regarding the periodic report as well as the ongoing amendment. All of the recommendations have been heard and are already implemented.




NEWSLETTER

Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

November 2019 – No. 2

*Welcome to the second edition of SIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be informed about the main challenges of the project.*

Pilot Plant Building Construction

Works for the new building that locates the SIDERWIN pilot at ArcelorMittal facilities in Maizières-lès-Metz (France) have been progressing during these months. Our partners ArcelorMittal and John Cockerill met there at the end of August to validate the design. Detailed drawings and purchase order start being issued.








Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

April 2020 – Newsletter No. 3

*Welcome to the third edition of SIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be informed about the main challenges of the project.*

SIDERWIN building up of the pilot plant

The building is ready for commissioning of the SIDERWIN pilot at ArcelorMittal facilities in Maizières-lès-Metz (France). We are working on a video showing the building up of the pilot. As soon as it was ready, it will be share on our website and social networks. In the hope that the exceptional situation caused by #Covid19 will not delay the work too much.





SIDERWIN pilot plant building

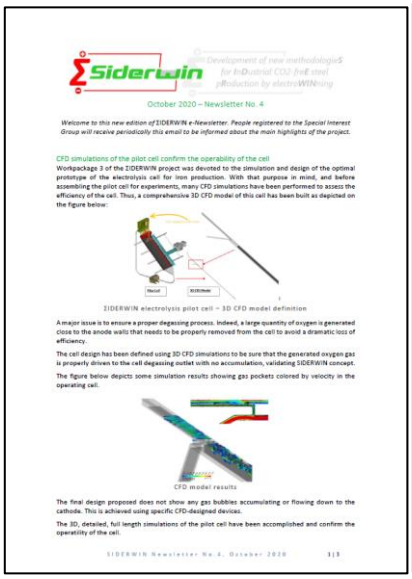
M30 General Assembly

The 26-27th of March SIDERWIN partners were intended to attend to the M30 General Assembly in Lausanne (Switzerland) where the main achievements of the different work packages during the last 6-month period were going to be discussed and planned the activities for the next months. Finally, due to the health decisions related to the evolution of the Covid-19 virus force us to reduce travel, and the physical meeting in Lausanne was cancelled. Instead, a teleconference Steering Committee took place on the 26th of March, while the Executive Committee for reviewing in detail the WP developments will be postponed until a safely face to face meeting could take place. We hope it would be as soon as possible.

SIDERWIN webinar (2020/09/22)

The SIDERWIN webinar is announced for Tuesday 22nd of September 2020. Soon it will be available in the web and social media the link to register for this interesting event, where the different partners will explain the developments made until date. Stay alert and save the date in your calendar




Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

October 2020 – Newsletter No. 4

*Welcome to this new edition of ΣIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be informed about the main highlights of the project.*

CFD simulations of the pilot cell confirm the operability of the cell

Workpackage 3 of the SIDERWIN project was devoted to the simulation and design of the optimal prototype of the electrolysis cell for iron production. With that purpose in mind, and before assembling the pilot cell for experiments, many CFD simulations have been performed to assess the efficiency of the cell. Thus, a comprehensive 3D CFD model of this cell has been built as depicted on the figure below:



ΣIDERWIN electrolysis pilot cell – 3D CFD model definition

A major issue is to ensure a proper degassing process. Indeed, a large quantity of oxygen is generated close to the anode walls that needs to be properly removed from the cell to avoid a dramatic loss of efficiency.

The cell design has been defined using 3D CFD simulations to be sure that the generated oxygen gas is properly driven to the cell degassing outlet with no accumulation, validating SIDERWIN concept.

The figure below depicts some simulation results showing gas pockets colored by velocity in the operating cell.

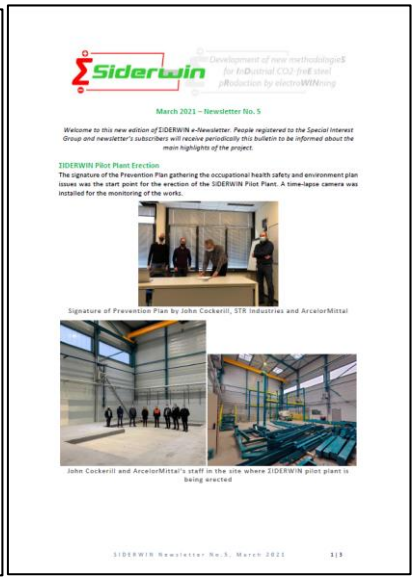


CFD model results

The final design proposed does not show any gas bubbles accumulating or flowing down to the cathode. This is achieved using specific CFD-designed devices.

The 3D, detailed, full length simulations of the pilot cell have been accomplished and confirm the operatility of the cell.




Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

March 2021 – Newsletter No. 5

*Welcome to this new edition of ΣIDERWIN e-Newsletter. People registered to the Special Interest Group and newsletter's subscribers will receive periodically this bulletin to be informed about the main highlights of the project.*

ΣIDERWIN Pilot Plant Erection

The signature of the Prevention Plan gathering the occupational health safety and environment plan issues was the start point for the erection of the SIDERWIN Pilot Plant. A time-lapse camera was installed for the monitoring of the works.



Signature of Prevention Plan by John Cockerill, STR Industries and ArcelorMittal





John Cockerill and ArcelorMittal's staff in the site where ΣIDERWIN pilot plant is being erected




Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

October 2021 – Newsletter No. 6

*Welcome to this new edition of SIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be informed about the main highlights of the project.*

ΣIDERWIN Pilot Plant Erection

The commissioning of the Siderwin pilot is still on-going. The team on site has met some manufacturing issues on the equipment (leakage, ...) as well as late delivery of components due to the global market situation. The automation of such equipment is also a challenge considering the amount of instruments, valves and motors necessary for research purpose.

Moreover during the commissioning areas of improvement were identified, leading to direct implementation of actions in order to guarantee a maximum of chance of success for the first production.

The pilot should be ready for a first production around half-October.



Pilot plant

ΣIDERWIN TEAM

New content is available in website and social networks. Periodically, you can meet the ΣIDERWIN TEAM by means of interviews, videos, ... where they explain their involvement in the project. Until date, you can know a little bit about Dr. Daniela V. Lopes (Aveiro University), Cédric Flandre and Andrea Baldini (John Cockerill), Sevasti Koutsoupa and Stavroula Koutalidi (NTUA), Pascal Marlier (ArcelorMittal) and Efthymios Balomenos (Mytilineos). You can find more information on the website and social networks.




Development of new methodologieS for InDustrial CO2-freE steel pRoduction by electroWINning

March 2022 – Newsletter No. 7

*Welcome to this new edition of ΣIDERWIN e-Newsletter. People registered to the Special Interest Group will receive periodically this email to be informed about the main highlights of the project.*

ΣIDERWIN Pilot Plant

During last months, the activities on the site were focused on the commissioning of the pilot, where every equipment of the machine has been tested. Two attempts for the iron plate production had to be stopped after few hours. This activity is still ongoing due to different factors:

- This is a completely new machine, one of a kind for this application.
- Some minor mechanical/automation modifications, identified in Hazard and Operability Analysis (HAZOP) during the first part of the commissioning, have been implemented in order to improve the safety of the pilot.
- Long delivery time for some equipment due to covid-19 crisis.

First trials are expected for middle of April 2022.



Pilot plant

ΣIDERWIN Webinar

The webinar ΣIDERWIN: *A breakthrough technology to decarbonize primary steel production through direct electrification* was held virtually on the 24th of November 2021. There were 124 registrations and finally there were 74 attendees from 44 companies.

The webinar generated a lot of interest due to the large number of questions submitted. Only a few of them could be answered during the event. Afterwards a document was produced to provide answers to all the questions arisen.

The video recording, slides and Q&A document are available through the website.



Webinar