

REGISTRO

WEDNESDAY 25/10/2023

08:15 - 18:00 Accreditation desk opening hours

Remember that you have the option of registering online and/or at the accreditation desk during the days of the event.

Until then, get your accreditation in advance by clicking on the following [link](#)

THURSDAY 26/10/2023

08:30 - 17:30 Accreditation desk opening hours

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APERTURA

WEDNESDAY 25/10/2023

09:15 - 09:40 Welcome speech and opening

Participants:

- Xabier Basañez (BEC)
- Santiago Oliver (UNESID)
- Carlos Alvarez (SIDEREX)
- Mikel Amundarain (GV)


BEC

Santiago Oliver

**Carlos
Álvarez**

Mikel Amundarain Leibar

THURSDAY 26/10/2023

09:15 - 09:20 First day review and contextualisation

SIDERURGIA 5.0

WEDNESDAY 25/10/2023

STEEL INDUSTRY 5.0

SIDERURGIA 5.0

09:45 - 10:15 KEYNOTE - Sustainability / Steel sector ahead of the next industrial revolution

Jean Théo Ghenda - Director Technologies - EUROFER

Steel is essential for a climate-neutral economy. From renewables to electric vehicles, the clean-tech value chains are dependent on steel. The European steel industry can be the EU's industrial front-runner in deep CO₂ emission reduction cuts already in the next few years, with numerous industrial-scale projects ready to be implemented before 2030. However, these clean technologies require significant capital investment for which decisions have to be taken now, and access to abundant, affordable low-carbon energy. Total operational expenditure will also be high. To become viable, low-CO₂ steel needs a level-playing field with global competitors and demand-side measures to boost its uptake in the market.


Jean Théo Ghenda

Sesión 1 - SOSTENIBILIDAD

WEDNESDAY 25/10/2023

SESSION 1 - SUSTAINABILITY

10:20 - 10:40 KEYNOTE - A journey of 10.000 steps

Ana Fernández-Iglesias - Global Director Sustainable Mining - ARCELORMITTAL GLOBAL R&D

Steel is not only a material which is critical to building the infrastructure of our world but it is also one with leading circularity credentials. Therefore, as meeting the objectives of the 2015 Paris agreement requires a permanent, fundamental shift in the way we consume and produce goods, the drive to decarbonise aligns with the drive to transition to a truly circular economy – one that seeks to eliminate waste through the continual re-use of resources.

Therefore, steel has the credentials to be a material which sits at the heart of a sustainable, circular economy.



Ana Fernández-Iglesias

GREEN STEEL - THE STEEL OF THE FUTURE

10:45 - 11:05 SSAB's transformation to Fossil Free Steel with the HYBRIT technology

Martin Pei - Executive Vice President & CTO - SSAB

"Steel is the most important material for modern society, indispensable for production of food, drinking water, electricity, housing and infrastructure like railway, bridges, tunnels, airports etc. Steel is also the most recycled material. However, growth in world steel demand can't be satisfied only by recycling. Virgin iron ore based steel is needed for the foreseeable future. Current production technologies of steel from iron ore relies heavily on fossil energy sources like coal and natural gas, and the steel industry accounts for approximately 7% of global CO₂-emissions.

SSAB initiated together with mining company LKAB and energy company Vattenfall in 2016 the HYBRIT initiative, aiming at developing a fossil free value chain from mine to steel, thus solving the root cause of CO₂-emission. Extensive R&D efforts have been spend and in beginning of 2022 SSAB decided to accelerate and complete the transformation to fossil free steelmaking around 2030, 15 years ahead of the earlier target of 2045."



Martin Pei

11:10 - 11:30 Decarbonization of hard to Abate industries Starting with Steel

Denis Hennessy - VP of Steel - H2 GREEN STEEL



Denis Hennessy

DECARBONISATION - CO₂ CAPTURE TECHNOLOGIES, TRANSPORT, STORAGE AND USE OF H₂ AND OTHER ALTERNATIVES

12:05 - 12:25 Ferroalloy sustainability in steels for the Green Deal

Hardy Mohrbacher - Managing Director - NIOBELCON BV

Ferroalloys such as molybdenum, nickel, niobium and several others play important roles in steels used for renewable energy generation. The expected strong demand for these metals is indicated for various technologies and is put into perspective to supply scenarios by global mining companies. The production of ferroalloys goes along with a carbon footprint. The relevance of that effect within the total context is discussed and perspectives of reducing ferroalloy carbon footprint are demonstrated. A new molybdenum mining project in Greenland will demonstrate the possibilities but also the complexity of such a development.



Hardy Mohrbacher

12:30 - 12:50 Development of high-temperature gas generator for blast furnace shaft preheating

Yoshiyuki Hagiwara - Senior General Manager - TAIYO NIPPON SANSO CORPORATION

Oxygen blast furnaces are being researched by steel manufacturers for the purpose of improving productivity and reducing CO₂ emissions. Oxygen blast furnaces are operated by blowing pure oxygen through the tuyeres. Compared to conventional blast furnaces that blow in hot air, the combustion efficiency at the tuyeres is higher, and CO₂ can be reduced. In addition, since pure oxygen is used, nitrogen is not included in the blown gas, so the CO₂ concentration in the flue gas is high, making it easy to separate and recover CO₂.

On the other hand, the amount of gas flowing through the furnace decreases, resulting in a shortage of heat in the shaft of the blast furnace. We have developed a high-temperature gas generator that preheats blast furnace gas using oxygen combustion technology to compensate for the lack of heat in the shaft.



Yoshiyuki Hagiwara

12:55 - 13:15 Steel Key Challenges in CO₂ Transport and Injection for Carbon Capture and Storage

Pilar Esteban - R&D Researcher - TUBACEX I+D

A substantial amount of the world's rising energy demand is forecast to still be met by fossil fuels over the next decade. Carbon Capture and Storage (CCS) is a key available technology to mitigate emissions from large-scale fossil fuel use. Therefore, developing and commercializing this technology is essential to help reduce the impact on climate change. CCS primarily involves capturing the CO₂ arising from energy-related and industrial sources, treating it to remove impurities, and compressing, transporting and injecting it in a storage site to ensure long-term isolation from the atmosphere. The specific difference in relation to experience with relatively pure CO₂ injection is caused by the impurity of the CCS CO₂ which will be dictated by its source and the capture technology employed.

One of the most important challenges in CCS technology is to provide guidance in material selection and corrosion control for engineers to design and identify operating limits for projects that involve CO₂ transport and injection. In this sense, the international standardization committees are currently deeply working in addressing guidelines to develop new specific corrosion testing for material screening. Stainless steel products as corrosion resistant alloys are considered key materials in this new field of study.



Pilar Esteban

13:20 - 13:40 Carbon Dioxide Shipping

Colin Trundley - Operations Director CO₂ - NIPPON GASES

Carbon Capture and Storage CCS is widely accepted as a key element in the strategy for decarbonisation of Industry. Captured CO₂ will be delivered to sequestration sites in different conditions and by different modes of transport. Large scale marine shipping of CO₂ would enable transportation of captured CO₂ from remote sites or local hubs to more distant sequestration sites.

Nippon Gases own and operate 75% of the existing global CO₂ marine shipping capacity and undertook the feasibility studies that paved the way for the most developed of the current CCS Shipping projects.

The ships and cargoes of a future CCS shipping industry will be on a far greater scale than the business operated by Nippon Gases. However the fundamental principles and constraints of carbon dioxide operations remain the same, with the need to “scale-up” providing further challenges.

Nippon Gases’ core business is not in the large scale transportation of captured CO₂, rather it is to support customers with expertise and assets that can assist their transition to de-carbonisation.

The talk will outline the basic operational principles of CO₂ shipping and describe the options that are being considered for the future. Some examples of recent and live projects will illustrate the current state of the industry and expectation of developments.



Colin Trundley

CIRCULAR ECONOMY / SMART WASTE MANAGEMENT

15:00 - 15:20 The latest technologies and developments of the "digital" scrap yard management for steel plants.

Bastian König - Head of Technical Sales - SMS

Over the past few years, there has been significant progress in digital scrap yard management systems, thanks to technological advancements like the Internet of Things (IoT), artificial intelligence (AI), and cloud computing. The latest tools and techniques for managing digital scrap yards incorporate RFID tags, drones, and sensors, which monitor the movement and

processing of scrap metal. Additionally, AI-powered algorithms are being used to optimize sorting and processing, while cloud-based software solutions manage inventory, track shipments, and automate billing and invoicing processes. These cutting-edge technologies result in improved efficiency, accuracy, and transparency in scrap yard management, ultimately reducing costs and enhancing customer satisfaction. SMS Group is a full-service partner for the metals industry looking to digitize their scrap yard management processes, leveraging their expertise as a leading provider of equipment.



Bastian König

15:25 - 15:45 Circular economy / Smart waste management: Challenges and opportunities for slags in a decarbonized steel industry

David Algermissen - Head of Department - FEHS

The decarbonization of the steel industry that has begun will inevitably lead to changes in by-products. These can differ significantly from today's materials in some cases, so there are many challenges to serving today's application markets and maintaining the high utilization rate. Furthermore, there are also opportunities to use the new slags in higher-value applications than today.



David Algermissen

NEW ENERGY SOURCES

16:15 - 16:35 Green H2 in the steel sector

Beatriz Nieto - Head of Engineering Unit - SPANISH NATIONAL HYDROGEN CENTRE

Hydrogen is the most abundant element in the universe and is key to fossil fuel refinery processes and to the production of ammonia for the fertiliser industry.

One of the sectors in which hydrogen shows the greatest potential is steel production, which accounts for 7% of all greenhouse gas emissions and therefore has quite a significant impact on the environment.

Green hydrogen to decarbonise steel production through different processes promises to be, in the long term, a financially profitable route according to various studies.



Beatriz Nieto

16:40 - 17:20 Hydrogen as a key element in the industry decarbonization

Carlos Fúnez - Green Hydrogen Developer manager - IBERDROLA

The economy needs to be decarbonized in the year 2050. In order to reach the decarbonization the combination between electrification and green hydrogen will be the solution. Green hydrogen will be used in hard-to-abate sector when the electricity is not possible to be use. Steel industry is maybe the biggest hard-to-abate sector and the green hydrogen use will be mandatory in order to comply with the industry decarbonization



Carlos Fúnez

17:25 - 17:45 KEYNOTE - 21st century management

Xavier Marcet - Chairman - INNOVATION MANAGEMENT

21st century management goes well beyond the paradigm of strategic planning: as well as planning what we offer today in our portfolios, we must be capable of exploring what we will offer tomorrow and doing so such that our people learn and unlearn to be able to present the best professional version of themselves, all their talent. In 21st century management, we are committed to ambidextrous companies, to the innovation to which we are invited by sensitivity to risk and to leaderships that express the fact that to lead is to serve and not to serve oneself. 21st management is humanist management in a context defined by technology.



Xavier Marcet

THURSDAY 26/10/2023

LOGISTICS SOLUTIONS

Sesión 2 - PLATAFORMAS COLABORATIVAS

THURSDAY 26/10/2023
SESSION 2 - COLLABORATIVE PLATFORMS
09:20 - 09:40 KEYNOTE - Bind 4.0, the largest industry Open Innovation Platform

Leyre Madariaga - Director of Digital Transformation and Entrepreneurship - BASQUE GOVERNMENT

The BIND 4.0 Open Innovation and Acceleration Program connects dynamic startup teams with well-established companies, to provide external solutions for their internal digital transformation challenges while promoting the development of commercial skills and encouraging the immersion of startups in the local ecosystem, catalyzing new business opportunities.



Leyre Madariaga

LOGISTICS SOLUTIONS
09:45 - 10:05 Autonomous logistics inside a stainless steel factory

Juan Almagro - Laboratory & Research Sec. Manager - ACERINOX

Jesús Murgoitio Larrauri - Project Director - TECNALIA

Juan Almagro - Laboratory & Research Sec. Manager - ACERINOX

At a steel mill, thousands of tonnes of steel are moved daily from one place to another. This material comes in various shapes, depending on the products or semi-products being handled, and unit weights are measured in tonnes. Traditionally, heavy machinery is required for these movements and the physical properties of the product, as well as the working environment, are usually considered hostile to new technologies. In this project, navigation technologies adapted to the industrial environment have been developed to use on fully autonomous vehicles for the automatic, unattended movement of stainless-steel coils weighing up to 30 tonnes, sharing streets and roads with conventional traffic.



Jesús Murgoitio Larrauri



Juan Almagro

COLLABORATIVE SERVICES, TEAMS AND SMART PROJECT MANAGEMENT
10:10 - 10:30 Effects of tundish wear lining concepts on hydrogen pick-up
Stefan Eder - Research Associate - RHIM

Due to the direct steel contact of the tundish wear lining in combination with significant residence times and the large open surface, the potential of picking up hydrogen from the wear lining is certainly high. In the general mind-set the wear lining seems to be one of the major sources of hydrogen pickup in the tundish. In Hydropick project the attention has been paid to slurry gunning mixes as they are the most distributed mixes worldwide. Water in the slurry gunning mixes should be completely removed during the drying and preheating process, but it is likely that some residual water remains in the system. The focus was the modification of the actual water demand by using different raw materials, individual binder systems, the addition of an foaming (air entraining) agent and/or the variation of the fibre content. Mixes design and preliminary tests have been conducted at laboratory/pilot facilities at RHIM, for further testing at industrial level at SIDENOR.



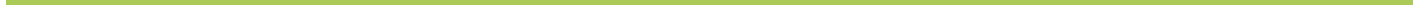
Stefan Eder

10:35 - 10:55 The role of IoT in re-imagining new user experiences and value propositions
Asier Galdos - CEO - MAGNET

How the IoT technology is acting as a game changer in many industries. IoT's capabilities help build new solutions that enable the emergence of new products and services; not only increasing efficiency and efficacy, but also reimagining new user experiences and business models.



Asier Galdos



11:00 - 11:40 **ROUND TABLE - Collaborative Platforms**

Collaborative Platforms will explore the challenges and opportunities of implementing such tools in the steel industry, fostering cooperation between companies, suppliers and other stakeholders.

Speakers:

- Anna Casals -Head of Innovation Spain and France - Celsa Group
- Javier Herrera - ICT Market Manager for Industry - TECNALIA
- Leyre Madariaga - Head of Innovation Spain and France - EUSKO JAURLARITZA
- Mireia Mir - CEO - INDPULS

Moderator:

- José Luis Alonso - Teacher and researcher - Mondragon Unibertsitatea



Leyre Madariaga



José Luis Alonso Andreano



Javier
Herrera



Mireia Mir



Anna Casals

Sesión 3 - RESILIENCIA

THURSDAY 26/10/2023

SESSION 3 - RESILIENCE

12:15 - 12:35 **KEYNOTE - The contribution of Smart Maintenance to more sustainability and resilience in your company**

Thomas Heller - Managing Director - FRAUNHOFER SMART MAINTENANCE COMMUNITY

Resilience and sustainability are not just supply chain issues. The presentation will show how the degree of resilience and sustainability in manufacturing companies can be determined and improved.



Thomas Heller

HYPER-AUTOMATION: COST SAVINGS (COMBINATION OF AUTOMATION, MACHINE LEARNING AND AI)
12:40 - 13:00 Integration Architecture for Industry 4.0

Marco Busatto - Director Industry 4.0 - IDOM INC USA

An IIoT Integration Framework will be presented to integrate all plant applications using the MQTT SparkplugB communication protocol, which allows the integration of all real-time information services of the plant equipment, so that this information is modelled, concentrated and accessible from a single point (central broker). This project is the cornerstone of the integrations between plant IT/OT systems while enabling bidirectional projection of asset status information and production operations to the cloud.



Marco Busatto

13:05 - 13:25 From operator to supervisor: a safer and human-centric steel industry

Ion Rusu - R&D Manager - POLYTEC SPA

As the steel industry is already in full transition towards digitalization and Industry 4.0, the criteria of the 5.0 generation leap are already being set, with sustainability and the human element playing a fundamental role. The safety of the worker holds immense value in the Industry 5.0 transition, as it plays a key role in ensuring worker's well-being, which can be achieved by removing human activities from the dangerous processes that characterize this industry. This paper shows how the integration of the latest robotics technologies along the whole production line, from the melt shop to the downstream, greatly increases workers quality of life, while at the same time granting all the benefits that robotic technologies can give.



Ion Rusu

13:30 - 13:50 Will Digital Transformation make experts obsolete?

Günter Spreitzhofer - Application & Consulting - IBA AG

Digital transformation in the steel industry is an ongoing process. Today, artificial intelligence (AI) and machine learning (ML) are playing an increasingly important role in this transformation. One of the main obstacles is the lack of high-quality data, which is essential for accurately training these models. To overcome these challenges and fully leverage the power

of AI and ML, it is necessary to establish a single data-source basis to retrieve and derive accurate information. This can be achieved through the implementation of measurement systems that adhere to certain architecture and design principles. But digital transformation is not just a technical matter, it needs a paradigm shift toward a digital mindset. Digitalization begins first and foremost in the minds of the people who have to drive and live the transformation. So it needs the right people and, that's for sure, excellent domain experts will be needed more than ever.



Günter Spreitzhofer

13:55 - 14:15 The role of artificial intelligence (AI) in the digital transformation of the steel industry

Rafael Margarit - Digital Business Line Manager - ABB

ABB is leading the industrial transformation and actively supports the steel industry through constant innovation and advanced technological solutions.

At this event, we will discuss various applied cases in this sector, where the application of new technologies helps to improve quality, costs and energy efficiency.



Rafael Margarit

MULTI-CLOUD ENVIROMENTS: GREATER FLEXIBILITY AND AGILITY

15:15 - 15:35 Industry 5.0: Human-centricity as a Trigger for Combining Technological and Social Innovation

Antonius Schröder - Member of Management Board Social Research Centre (SFS) - UNIVERSITY OF DORTMUND

The new concept of Industry 5.0 fostered by the European Commission is focusing on developing the technology dominated Industry 4.0 to a human-centric, resilient, and sustainable industry. Human centricity is key for a value-oriented, people-centered and, in particular, employee-centered paradigm based largely on current Industry 4.0 technology. Criteria for human-centered system design, human-centered approaches to competence development, qualification and organizational design are central to ground and complete the digital and green transition with social innovations. It underlines the powerful role the steel industry can play in achieving societal goals through green and sustainable production by shifting the technology-driven to a human- and society-centric approach. This shift will be explained by first project results combining technological and social innovation and putting

recent and future skills of the workforce in focus.



Antonius Schröder

**MONOLITH-BREAKING: PREDICTIVE ANALYTICS, ENERGY MANAGEMENT -
MICROSERVICES ARCHITECTURE.**

Irakasle Elkartua / Prozesuen Unitateko burua - KTH - Stockholmeko Teknologiaren Errege Institutua

**15:40 - 16:00 Self-adaptive data-driven system for process monitoring
during ladle refining and continuous casting (H2020 INEVITABLE)**

*Björn Glaser - Associate Professor/ Head of Unit of Processes - KTH - The Royal Institute
of Technology*

Real-time process monitoring in relation to steelmaking is challenging due to various physical and chemical interactions of process parameters and stochastic events. The complexity of understanding these events limits the use of conventional monitoring tools. In recent times, increasing global demand for clean steel created a need for discovering novel methods for predictive process monitoring and control. Using applied artificial intelligence, dynamic and data-driven models can be developed to help achieve robust processing by reducing production errors. Considering the advantage of rapid anomaly detection in steelmaking, the use of data-driven models is demanding. One of the applications to use data-driven process models is in the early prediction of the clogging phenomenon associated with the continuous casting of steels. Clogging of the submerged entry nozzle (SEN) during the continuous casting of steel is a major stochastic event that needs to be carefully monitored from castability perspective.

Another important application is the online optimization of material additions during ladle refining. As every steelgrade is unique, developing the distinctly trained machine learning (ML) model seems challenging for deployment in existing production servers. Industrial data were collected from steel plants to design and validate the model's set rules. The collected data were examined to optimize the model parameters by continuously monitoring the evaluation of non-metallic inclusions at various steelmaking stages. The differences between predicted and actual castability were analyzed to validate and verify the newly developed models. Special efforts were taken to make the models self-adaptive in case of data drift to avoid degradation in model performance. Such model predictive results coupled with effective thermodynamic calculations can be used as a decision support system for effective process monitoring.



Björn Glaser

16:05 - 16:45 **ROUND TABLE - Resilience**

Resilience will address the challenges and strategies for developing digital transformation in the steel industry, considering factors such as sustainability, risk management and adaptability in the face of economic and technological change.

Speakers:

- Antonius Schröder - Member of Management Board Social Research Centre (SFS) - UNIVERSITY OF DORTMUND
- Felix Bayon - Steering product Manager - Sidenor Aceros Especiales SLU- ESSA STEEL HUB
- Marian Tejedo - Quality Manager - OLARRA

Moderator:

- Irantzu Calvo Santamaría - Teacher and researcher - Mondragon Unibertsitatea



Antonius Schröder



Irantzu Calvo Santamaría



Felix
Bayon



Marian Tejedo

NETWORKING

WEDNESDAY 25/10/2023

11:30 - 12:00 Coffee Break - Networking exhibition area

13:40 - 15:00 Lunch Break - Networking exhibition area

17:45 - 19:00 Afterwork Drink - Networking exhibition area

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STEEL TECH

PROGRAMA

11:40 - 12:10 Coffee Break - Networking exhibition area

14:15 - 15:15 Lunch Break - Networking exhibition area

CLAUSURA

THURSDAY 26/10/2023

16:50 - 17:10 Congress summary and Closing

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