

Materials Processing Institute adopts machine learning tool to accelerate steelmaking innovation

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The Materials Processing Institute (MPI) has announced a long-term collaboration with machine learning specialist Intellegens to reduce carbon emissions from the next generation of Electric Arc Furnaces (EAFs).

Leveraging machine learning, MPI will focus on optimising the design of EAFs, enhancing scrap steel recycling, as well as advancing the development of essential materials produced by the foundation industries, including concrete and plastic.



Ben Pellegrini, CEO of Intellegens, and Nick Parry, MPI's Group Manager – Industrial Digitalisation

It will enable MPI, which operates an EAF plant in its Green Steel Centre on Teesside, to utilise Intellegens' advanced Alchemite™ machine learning suite, a tool that supports the design and development of processes, materials, chemicals, and formulations.

This enables R&D teams to reduce repetitive, costly, and time-consuming experiments and process developments, typically by 50-80%. It has already been successfully applied across multiple industries, from alloy development in the car industry to additive manufacturing methods and drug pharmacokinetics.

The UK's steel industry has already made a pivotal turn towards lower carbon production methods – with British Steel having been granted permission to build two EAFs, which use electric currents to melt scrap steel, at its Teesside and Scunthorpe plants and Tata Steel announcing plans to build an Electric Arc Furnace at its Port Talbot plant in South Wales.

The project is part of the UK Research and Innovation-funded EconoMISER programme, the first initiative of the Foundation Industry Sustainability Consortium (FISC) – allowing MPI to significantly expand its research capabilities and enhance the support it offers to industry and other stakeholders in order to accelerate the foundation industries' progress toward sustainability and net-zero targets.

Dr Gareth Conduit, CSO at Cambridge-headquartered Intellegens, said: "The programme with MPI offers a great opportunity at a time of transition for the UK steelmaking industry to Electric Arc Furnaces. We are excited to see how Alchemite™ machine learning can drive steelmaking to a green future."

Terry Walsh, CEO of MPI, said: "Our collaboration with Intellegens is a crucial step in supporting the UK's steel industry to transition to a more sustainable future. Applying machine learning to EAF technology will allow us to create new efficiencies and it accelerates our ability to innovate."

Nick Parry, MPI's Group Leader for Industrial Digitalisation, added: "We have accumulated decades of process knowledge and data, but to meet necessary innovation timelines, achieve cost savings and reducing carbon emissions, research must be conducted at a significantly faster pace to maximise the benefits to society. Such innovations are crucial as the steel industry shifts towards using more scrap feedstocks as demand increases for new, high-performance steel products."

About MPI

MPI is a research and innovation centre serving global steel and materials organisations that work in advanced materials, industrial decarbonisation, the circular economy, and digital technologies.

Through collaboration with its customers, MPI provides a range of technology and R&D based services and consultancy. It also has pilot and demonstration facilities and an SME Technology Centre to support supply chain businesses with the development of new technologies and products.

Works with: steel, metals and alloys, chemical processes, aerospace and defence, energy, mining and quarrying, construction, rail, transport, and infrastructure, offshore, subsea, and nuclear.

<https://www.mpiuk.com/>



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