PROCTWIN

April 2026

Newsletter #1

Integrated modelling for sustainable and optimized steel manufacturing processes

The project falls under the funding programme of Horizon Europe – Clean Steel Partnership.

The call topic is linked to digital transformation and ensuring a better use of industrial data, which can optimise steel supply chains

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This project has received funding from the European Union under Grant Agreement n° 101178721

ProcTwin in brief

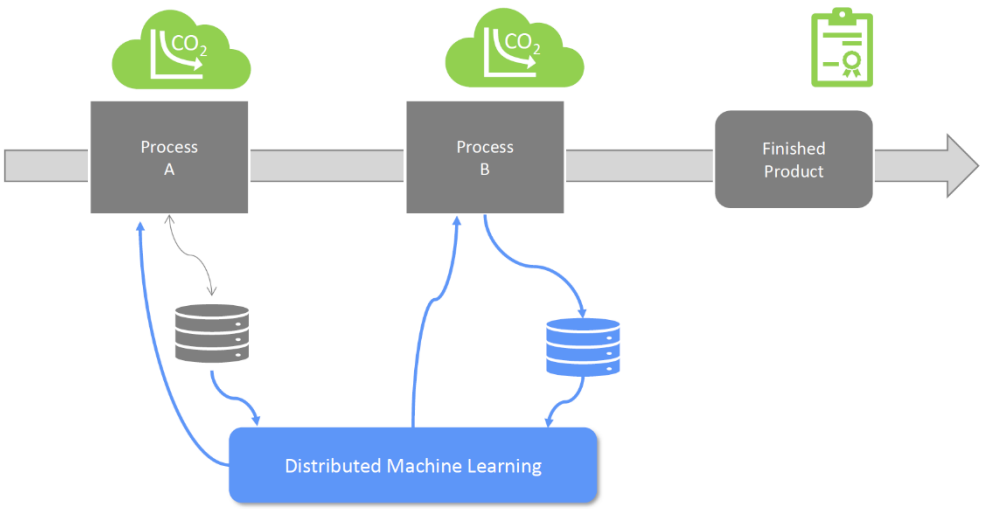
ProcTwin is a Horizon Europe Innovation Action focused on accelerating the green and digital transformation of the European steel industry. The project develops an advanced digital twin platform that integrates physics-based modelling, industrial data, soft sensors, and distributed artificial intelligence to optimize steel manufacturing processes.

Steel production involves multiple interconnected stages, including continuous casting, reheating, hot rolling, quenching, and levelling, which are typically controlled independently. ProcTwin addresses this challenge by creating a holistic, data-driven framework that enables real-time prediction, visualization, and optimization across the full production chain.

By combining advanced modelling and AI, ProcTwin supports more efficient, flexible, and sustainable steel production.

"ProcTwin's optimization tools target energy-intensive steps like reheating furnaces, aiming for a challenging 5% reduction in energy consumption"

Concept of PROCTWIN



ProcTwin is carried out over 48 months from January 2025 to December 2028. With a consortium of 11 partners, the project combines advanced process modelling, soft sensors, industrial data integration, and distributed artificial intelligence with validation in real industrial environments at Celsa (Spain) and SSAB (Sweden).

In this way, ProcTwin fully addresses the objectives of the Horizon Europe Twin Transition by linking digital innovation with industrial sustainability. Its integrated approach supports the optimization and visualization of steel manufacturing process chains, helping accelerate the transition of the European steel industry towards more energy-efficient, resource-efficient, and low-emission production.

Consortium

The ProcTwin consortium brings together 11 leading partners across research, technology, and industry, creating a unique ecosystem of knowledge and implementation capacity.

The ProcTwin project is coordinated by SWERIM.

ProcTwin objectives

ProcTwin aims to improve performance, sustainability, and digitalization in steel manufacturing through five main objectives:

- Integrated Process Modelling: Connect numerical models across key production stages to capture process interactions and dependencies.
- Advanced Data Integration: Enable secure industrial data integration and develop soft sensors for real-time estimation of critical variables.
- Distributed Artificial Intelligence: Apply machine learning to large-scale industrial datasets to predict outcomes and optimize performance.
- Industrial Demonstration: Validate the ProcTwin platform in real production environments at Celsa (Spain) and SSAB (Sweden).
- Operational Support: Provide decision-support and visualization tools to help operators improve process control and product quality.

Strategic Impact for European Steel

ProcTwin supports the competitiveness and sustainability of the European steel sector in line with EU industrial and climate goals.

By targeting energy-intensive steps such as reheating furnaces, the project aims to achieve up to 5% reduction in energy consumption in selected processes, contributing to lower greenhouse gas emissions and the objectives of the European Green Deal.

ProcTwin also improves product quality and process reliability through better prediction and control across interconnected manufacturing stages, helping reduce defects, waste, and resource use. At the same time, the project demonstrates the value of digital twins and distributed AI in complex industrial environments, while supporting operators and engineers with intuitive digital tools and new skills for data-driven manufacturing.

Events & meetings

Since its launch, ProcTwin has successfully initiated its technical activities and collaboration framework among the various partners. In order to raise awareness of the project and to engage relevant stakeholders, also beyond the steel industry, the ProcTwin project took already part to various events.

The project was presented at:

- ESTEP Spring Dissemination Event, June 2025, Krakow (Poland)
- ESTEP Annual Event 2025: How decarbonisation, digitisation, and circular solutions forge the sustainable European steel future, October 2025, Udine (Italy), at the digital poster session

The events provided an important platform to exchange knowledge with key stakeholders from the European steel research and innovation community.

Next to a pre-kick-off meeting in January, the project consortium had already two General Assembly meetings in 2025: one in Sweden at Swerim, and one in Spain at Celsa. The third General Assembly meeting will take place in Leoben (Austria) in May 2026.

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