The Consortium



Stay in touch

isteel-expert.eu

company/isteel-expert

iSteel-Expert

Remote expert virtual system enhancing human management capabilities and favors preservation, transfer and continuous evolution of knowledge for steelmaking operations



www. isteel-expert.eu

company/isteel-expert

Project co-funded by the Research Fund for Coal and Steel - (RFCS) G.A. 101112102

Objectives

iSteel-Expert implements and demonstrates in an industrial environment a remote expert virtual system that:

- **Monitors 24/7 the EAF process**
- **Exploits AI to timely detect relevant events**
- **Effectively supports operators in decision-making and maintenance**
- **Integrates an interactive immersive training tool which helps preserve and continuously evolve the company's know-how.**

AI-powered EAF monitoring to support situation awareness and decision-making

Deep learning technologies applied to process video streams for:

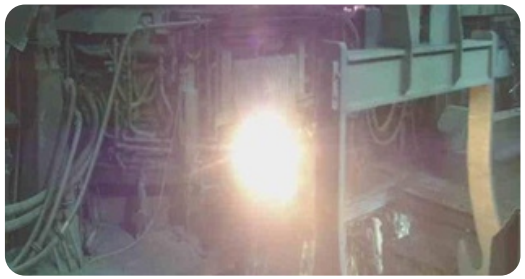
- Detection of personnel presence in high-risk zones around the furnace



- Detection of smoke and flames around the electrodes



- Detection of slag door status



- Electrode clamp speed estimation



- Assessment of electrode tip status





Machine Learning tools applied to merge heterogeneous data sources recorded throughout each heat (e.g. chemical composition measurements, process operational parameters, and electrical signals) for timely identification of anomalous events in EAF operations:



- High-carbon melt
- Roof closing trouble
- Strong furnace reaction
- Electrode breakage
- Furnace explosion
- Oxidized/liquid slag
- Slag reaction



80–90% balanced accuracy achieved in detecting anomalies.

A proof-of-concept Decision Support System to provide actionable corrective recommendations when an anomaly is predicted

