

AI for Steel ESTEP Workshop

Overview, recent developments
and future trends

Conference venue

Live Congress
Hauptplatz 1
8700 Leoben (Austria)

DAY 1
15th April 2026

8:25 – Registration

9:00 – Welcome and Opening

Klaus Peters & Valentina Colla – ESTEP

9:15 – Introduction to AI in the Steel Industry

Alexander Thekale – Primetals

9:35 – 11:00 SESSION 1: Strategy, Policy & Enablers

Chair – Valentina Colla

9:35 – KEYNOTE: Materials Commons: Driving Digital Innovation in Materials Science within Europe – Spotlight on the Steel Use Case

Lukas Morand – Fraunhofer Institute for Mechanics of Materials IWM

10:00 – RIVER: A Human-Centred Agile Framework for Industrial AI and Digital Twin Deployment in Steel Production

Alan Menk – Capitole Consulting

10:20 – ALPmat: A Platform for Collaborative AI-driven Steel Research

Natalia Bedoya – Materials Center Leoben

10:40 – Building Trust, Transparency, and Technology Ownership for AI Deployment in Safety- and Asset-Critical Industries

Yale Zhang – Hatch

11:00 – 11:25 COFFEE BREAK

11:25 – 12:25 SESSION 2: Industrial AI Applications & Case Studies *Chair – Akhilesh Swarnakar*

11:25 – Data-Driven Framework for Industrial Noise Monitoring and Mitigation

Valentina Colla – Scuola Superiore Sant'Anna

11:45 – From Predictive Monitoring to Prescriptive AI: Driving Reliability, Efficiency and Throughput in Steel Manufacturing

Sean Maley – Infinite Uptime

12:05 – Forecasting Green Hydrogen Price and Solar Energy Production with Deep Reservoir Computing

Ismael Matino – Scuola Superiore Sant'Anna

12:25 – 13:45 LUNCH

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13:45 – 16:10 SESSION 3: Digital Twins & Process Modelling

Chair – Christine Gruber

13:45 – KEYNOTE: Modern machine learning for industrial processes

Tobias Kronlachner – Emmi AI

14:10 – Digital Twins for a Greener Steel Value Chain: Preliminary Results from the DiGreeS Project

Thomas Sobottka – Fraunhofer

14:30 – Bridging the gap between lab and plant in case of an HVOF coating process using interpretable Machine Learning

Maria Thumfart – K1-MET

14:50 – A Hybrid Machine Learning Approach for Supervisory Optimization of Temperature Setpoints and Heating Zone Flow Rates in Continuous Annealing Furnaces

Vikas Goel – Tvarit

15:10 – AI enhanced Predictive Model for reheating furnaces

Giovanni Bavestrelli – Tenova

15:30 – AI-Enabled Hybrid Digital Twins for Integrated Cost and Carbon Optimization Across the Steel Value Chain

Yale Zhang – Hatch

15:50 – Integrating Process Data and Real-Time Modeling for Digital Twin Development of an RH Degasser

Xiaomeng Zhang – K1-MET

16:10 – 16:30 COFFEE BREAK

16:30 – 17:50 SESSION 4: AI for Quality Control

Chair – Alexander Thekale

16:30 – Surface quality control for steel long products via digital twins, new sensors and AI

Christoph Nölle – BFI

16:50 – How to control steel surface quality by means of applied AI

Jens Brandenburger – BFI

17:10 – An Open Dataset for Surface Defect Detection on Steel Coils: Advancing AI Research in Industrial Quality Inspection

Valentina Colla – Scuola Superiore Sant'Anna

17:30 – Intelligent Control Algorithm for Enhanced Product Quality and Process Efficiency in Heat Treatment of Metal Products

Stephan Strommer – Austrian Institute of Technology

17:50 – Closure of Day 1

Klaus Peters – ESTEP

19:15 – Event Dinner at LCS, Dominikanerhof

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DAY 2
16th April 2026

8:15 – Registration

8:45 – Welcome Day 2

Peter Raninger – Materials Center Leoben

8:50 – 9:50 SESSION 5: Human Centered, Safe & Skilled Workplaces *Chair – Colin Goffin*

8:50 – Trusted AI for Workforce Training: A Curated Tutor Framework for the Steel Sector

Jorge Muract – Worldsteel

9:10 – Quo Vadis, Steelmaking and Metallurgy University Courses and LLMs?

Fabio Miani – Udine University

9:30 – AI-Driven Digital Assistants as Key Enablers of Autonomous Plant Operation in the Steel Industry

Henrik Erb – Primetals

09:50 – 10:15 COFFEE BREAK

10:15 – 12:00 SESSION 6: Process Optimization

Chair – Peter Raninger

10:15 – Hybrid AI Models for Predicting Electric Arc Furnace Slag Chemistry and Optimizing Slag Conditioning

Bernd Kleimt – BFI

10:35 – Investigating Feature Importance in the Prediction of Tensile Strength via Explainable AI

Manfred Mücke – Materials Center Leoben

10:55 – Generative AI plus Discrete Event Simulation in the Steel Sector: First Steps Towards a Hybrid Modelling Approach

Valentina Colla – Scuola Superiore Sant'Anna

11:15 – Domain-Knowledge-Informed Bayesian Optimization for Designing Steels and Manufacturing Processes

Bernd Schuscha – Materials Center Leoben

11:35 – Monocular Depth Estimation for Industrial Insight: Depth Estimation of Hot Heel in Electric Arc Furnaces

Amit Sharma – RWTH Aachen University

11:55 – Concluding Remarks & End of Conference

Peter Raninger – Materials Center Leoben

12:00 – 13:15 LUNCH

13:15 – 17:00 Optional plant tour: voestalpine Donawitz

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POSTERS

Exploitation of Hot Rolling Data Using Machine Learning

Hugo Uijtdebroeks – CRM Group

Machine learning expert system for microstructure-based remaining-life assessment of power-generation steels

Jaroslav Opara – GIT - Łukasiewicz

Model-Based Control and Integrated Data Management for Hydrogen Plasma Smelting Reduction (HPSR)

Erwin Reichel – K1-MET

Optimising the Sequencing in Steel Treatment Plants with a DDO Optimiser

Nikolaos Matskanis – CETIC

A Hybrid Machine Learning Approach for Supervisory Optimization of Temperature Setpoints and Heating Zone Flow Rates in Continuous Annealing Furnaces

Vikas Goel – Tvarit

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