Logistics, work environment, and information management in chemical analysis work in the steel industry (LIKA)

Logistik, arbetsmiljö och informationshantering vid kemiskt analysarbete i stålindustrin (LIKA)

21 May 2026 Lena Abrahamsson
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The project is a collaboration between Human Work Science at LTU, SSAB Oxelösund, SSAB Borlänge, Outokumpu Avesta, Sandberg Analytical and Jernkontoret. It is carried out during 2025–2028 with financial support from the Impact Innovation programme Swedish Metals & Minerals – an initiative by the Swedish Energy Agency, Formas and Vinnova.

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A sociotechnical study of the laboratory analysis work in the steel industry.

The aim: to investigate how the interaction between humans, technology and organisation can be improved for the laboratory work and contribute to a sustainable and more automated industry.

Based on case studies in the steel industry´s laboratories, we explore how to create attractive and safe working environment for laboratory staff and at the same time a well-functioning sociotechnical system.

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Work environment and technology in laboratories is an often overlooked (but critical) part of the steel production chain.

The steel industry's analysis laboratories are the heart of quality assurance, environmental control and production control.

The laboratories are well-working internal sociotechnical systems. The staff solves everything, they are knowledgeable, committed and thrives, both at the workplaces and in the profession.

But the labs' organisation and work environment have sometimes been neglected – and isolated?

Bottlenecks, stress, risks and lack of overview and system perspective (from the labs' perspectives). Human errors (outside the labs?), manual work is required when the technology does not work.

The labs have often been seen as supporting functions rather than strategic nodes in the steel flow – which has affected investments, organization and technological development.

But also: new technology is being implemented with the hope of improving both efficiency and the work environment.

Laboratories deeply integrated into a changing industrial context – requirements for traceability, climate neutrality and digitalisation are increasing.

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How can laboratory work be developed in parallel with increased automation and digitalisation?

What factors promote (and hinder) an efficient and sustainable interaction between humans, technology and organisation in the laboratories?

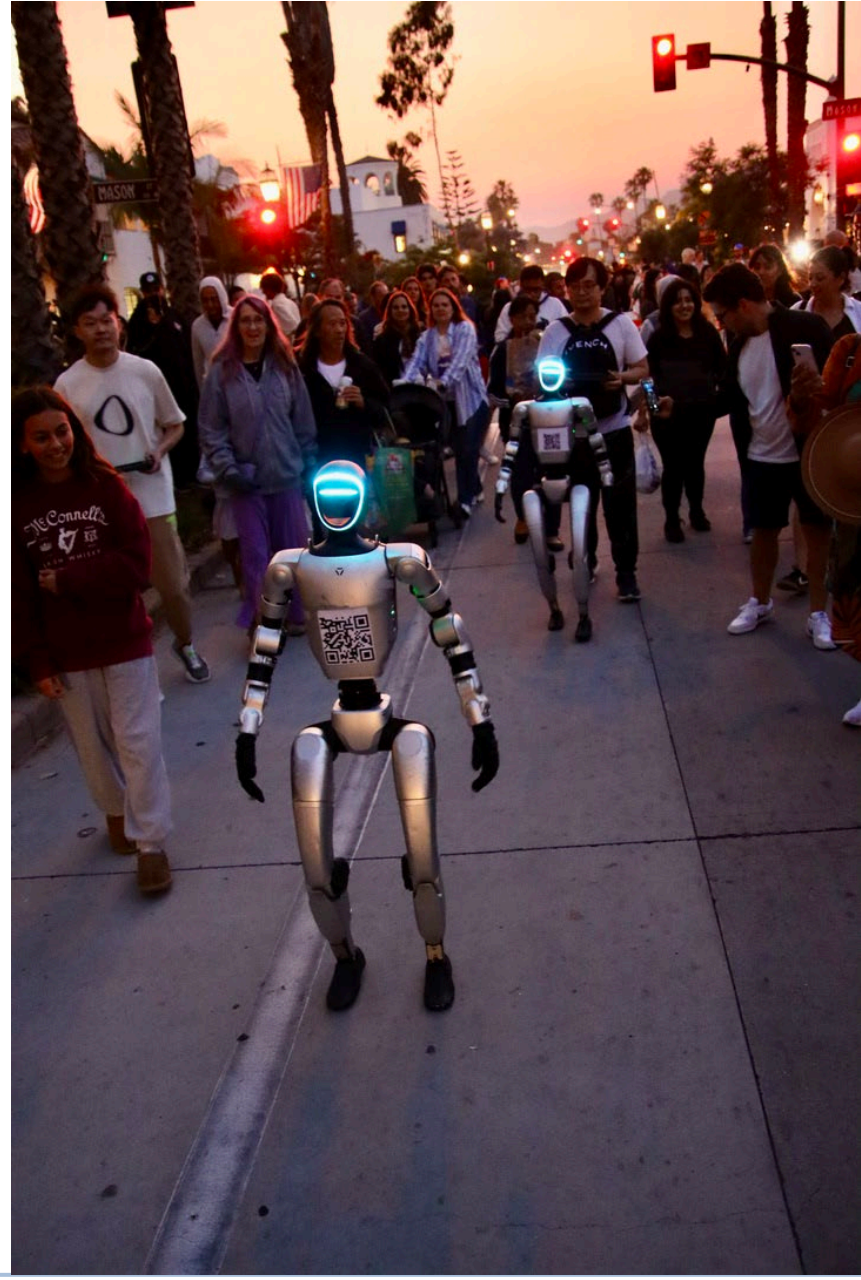
The test chain as a sociotechnical system: variation, disturbances and quality.
The invisible work: maintenance, coordination and problem solving.
Risk culture and safety practices in highly automated laboratories. Work organisation, work roles and gender in the technical laboratory environments.

How are the laboratories' work environment, sample logistics and information management affected (and affect) new technology and organizational changes?

The "ironies" of automation and digitalisation: changing professional roles.
New problems and risks are created: Boring jobs, skills disappear?

Social systems are needed to manage the whole life cycles of technical systems.

How can technical and organisational solutions be developed (together) and implemented in an inclusive and sustainable way?



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