Tenova's Role

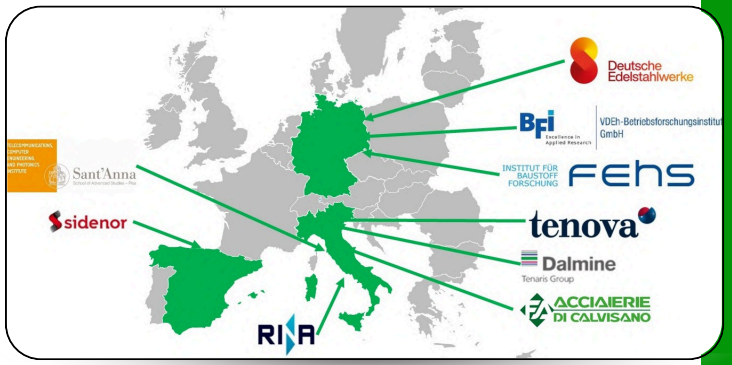
As a key industrial partner, Tenova played a crucial role in the success of the iSlag project. Our primary objectives included:

- Development of On-Line Characterization Devices: We created advanced systems capable of real-time, accurate analysis of slag in industrial settings.
- Modeling and Simulation Tools: We developed comprehensive models to predict slag composition, helping optimize metallurgical processes.

Decrease the time and costs for slag analysis and optimize the process control

The iSlag Project

The project aimed at developing novel digital solutions to improve valorization of the slag coming from the electric steelmaking process route, support good practices in the steelmaking process and explore new recycling paths by facilitating the implementation of a real "industrial symbiosis".



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iSlag

Optimising slag reuse and recycling in electric steelmaking at optimum metallurgical performance through on-line characterization devices and intelligent decision support system

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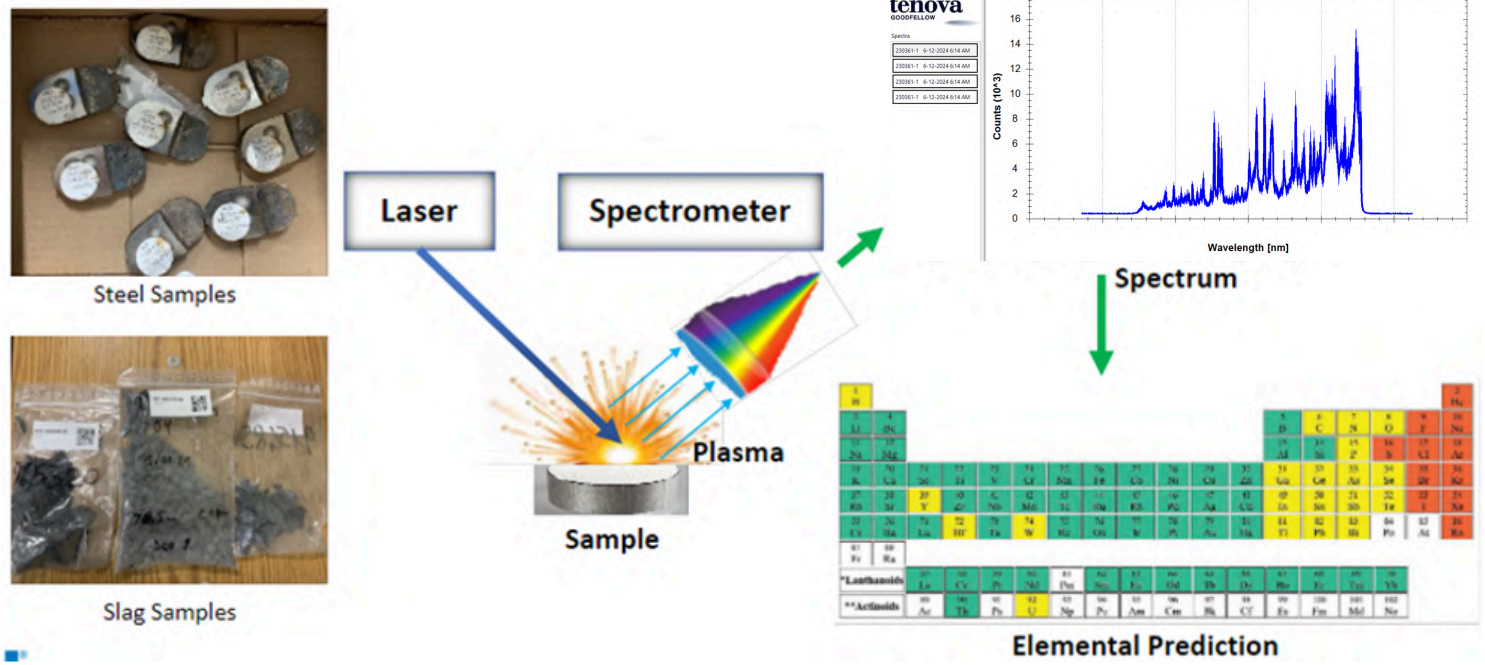
Innovative Technology: LIBS

At the heart of our contributions was the development of the Laser Induced Breakdown Spectroscopy (LIBS) system. This cutting-edge technology allows for rapid, real-time analysis of slag composition by using a high-energy laser to create plasma from the slag. The emitted light is analyzed to determine the concentration of elements, providing immediate insights that are critical for optimizing recycling processes.

Advanced Data Analysis

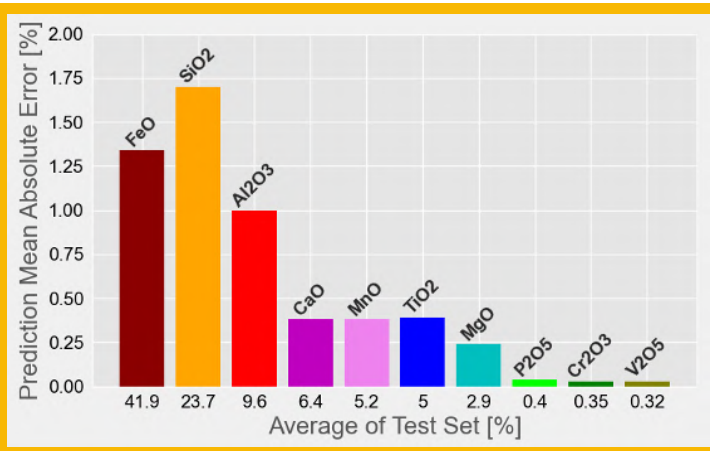
To enhance the accuracy of the LIBS system, Tenova developed Machine Learning (ML) workflows. These workflows process the data collected by LIBS and use ML modeling to deliver precise and reliable predictions, even in challenging industrial environments.



Field Success

The LIBS system was successfully tested at steel plants such as Sidenor Aceros Especiales Basauri and Tenaris Dalmine. The system demonstrated exceptional precision, consistently delivering accurate analysis of key elements in slag, which is essential for efficient and sustainable steel production.

Results



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