# PRESS RELEASE

## AT THE END OF SEPTEMBER 2020, THE INVEITABLE PROJECT REACHED ITS ONE-YEAR MILESTONE

The consortium of INEVITABLE is proud to announce that the project has reached a one-year milestone. This is also the time to look back and overview our path and achieved results.

### OVERVIEW OF GENERAL PROJECT OBJECTIVES

The general objective of the INEVITABLE project is to improve the performance indicators in the steel and nonferrous metals sectors by retrofitting existing production sites by digitalization and innovative control technologies. The main ambition is to exceed the level and functionality of traditional process automation and control systems by applying the functionalities of Digital Factories and Industry 4.0 concepts. The developed technologies will be demonstrated and validated on the three selected use cases that cover several metallurgical processes (Use Case 1: SIJ Acroni, Use Case 2: Sidenor and Voestalpine, and Use Case 3: Eibar Precision Casting).

### PROGRESS OVERVIEW

**Use Case 1** aims to digitally transform the two technological processes at SIJ Acroni of the SIJ Group, i.e. Electric Arc Furnace and Cold Rolling Mill. In the first year of the project, the prerequisite upgrade of the ZRM automation and control equipment and associated control software was successfully completed. Moreover, SIJ Acroni, together with SIEMENS, defined the concept of digital infrastructure that combines Industrial Internet of Things (IIoT) and cloud. To monitor the impact of the project, SIJ Acroni also established a system to collect some representative KPIs. The modelling activities of UL-FE successfully adapted the models to the SIJ Acroni use case where they will help improve the melting profile for EAF and to evaluate non-measurable process parameters. In addition, JSI and Compureg were focused on two main areas: (i) analysis of historical production data (to optimize production recipes) and (ii) development of first principle models of the process (to enhance equipment monitoring).

# OVERVIEW OF THE FIRST YEAR

**Use Case 2** aims to develop and demonstrate at Sidenor and voestalpine complex models to predict the castability and the cleanliness level in the final product based on secondary metallurgy process parameters. Standard tests were conducted at Sidenor and voestalpine steel plants in the first year, to identify the appropriate process parameters. The results of the study are used to guide and validate the sub-models that are being developed within the project. The results show that at Sidenor developed fatigue tests detect meso-inclusions. In addition, non-metallic inclusions (NMI) within the steel grade of interest were investigated at voestalpine. These results showed no correlation between NMIs and clogging or the stopper rod position at early stages of the metallurgical process. However, the steel samples taken during casting indicated a higher content of Mg-containing inclusions when the stopper rod position change is larger.

**Use Case 3** at EIBAR Precision Casting aims to integrate different ICT technologies to build a digital cognitive architecture for the investment casting process that can improve production scheduling and monitor product quality. The initial requirement is to obtain a complete traceability of the production path for each batch of moulds. Consequently, during the first year of the project, the digital upgrade activities were carried out on several process stages, where additional sensors had to be installed and integrated with the existing databases. In addition, various data sources were reorganized to centralize and organize process and product variables and link them to final KPIs of aluminium component quality and mechanical properties. To predict the performance of KPIs and to anticipate process adjustment before failure modes or deviations occur, process models are being developed that will be used in model predictive control (MPC) algorithms. The current offline validation of the developed MPC for specific components shows promising results.

## WORKSHOP

Project partner Siemens organized a two-day workshop (9.-10. September 2020) for the INEVITABLE project partners. The aim of the workshop was joint overview and evaluation of the suggested digital platform. At the workshop the best practices related to the principles of communication and data infrastructure design were presented. Moreover, the hands-on workshop was provided focusing on an overview, evaluation and testing of the MindSphere cloud platform and the Edge Streaming Analytics solution, which would be needed to build an end-to-end data platform, providing data acquisition, processing, data analysis and visualization capabilities. As travelling and gathering in groups is still restricted due to COVID-19, this workshop was organized only for the Slovenian project partners. Workshops for other partners will be organized in 2021 using virtual form.

## ABOUT INEVITABLE

The INEVITABLE is H2020 project that is targeting at resource and energy intensive sectors of the process industry, with focus on the **steel and nonferrous metals sector**.

The project approach is based on three **enabling technological areas** (i) data collection & sensor technologies, (ii) tools for data analysis, control and optimization, (iii) digitalization infrastructure. The application of these enabling technologies will be an important step towards **digital transformation and optimization** of selected production processes.

**Full title: Optimization and Performance Improving in Metal Industry by Digital Technologies**

**H2020 Call**: DT-SPIRE-06-2019
**Start date**: 2019-01-10
**Duration**: 36 Months
**Type**: Innovative Action
**Budget**: 6,1 M€
**Coordinator**: Jožef Stefan Institute
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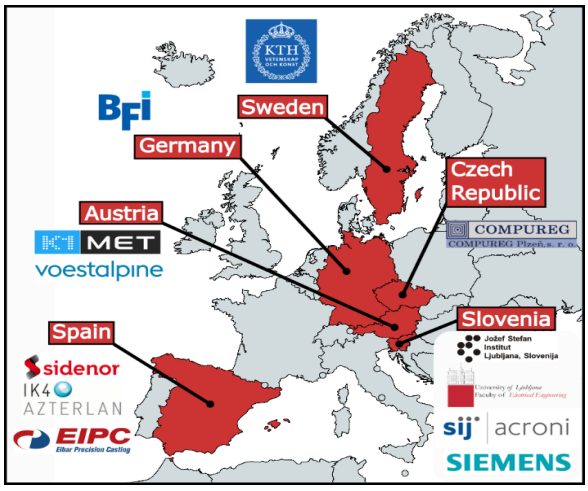
## THE CONSORTIUM

- *Industrial end users* (steel/metal producers SIJ Acroni, voestalpine Stahl, Sidenor Aceros Especiales and Eibar Precision Casting),
- *Institutions specialized in metallurgy and related control technologies* (BFI, KTH, K1-MET, Fundación Azterlan),
- *Process control and automation providers and research institutions (SIEMENS, COMPUREG, University of Ljubljana - Faculty of Electrical Engineering, Jožef Stefan Institute – Department of Systems & Control).*

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 869815.