esteco.com
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ESTECO is an independent technology provider delivering first-class software solutions aimed at perfecting the simulation-driven design process. ESTECO's smart engineering suite brings enterprise-wide solutions for design optimization, simulation data management and process integration and automation. With more than 15 years' experience, the company supports over 300 leading organizations in designing the products of the future, today.

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ergolines.it

Ergolines, from electromagnetic stirrers to process control instrumentation, strives to guarantee perfection in continuous casting. An ambitious objective that is achieved through research, innovation, and the capacity to develop specific products for the requirements of every customer.

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iCAST project is funded by Regione Friuli Venezia Giulia under the POR FESR 2014-2020 call. The project is part of the "S3 – Smart Specialization Strategy" area (metalworking sector), in the framework of the development trajectory dedicated to Numerical modeling technologies of processes and products.

POR FESR 2014 2020 Friuli Venezia Giulia
OPPORTUNITÀ PER UNA CRESCITA SOSTENIBILE

funded project

iCAST

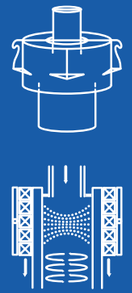
INNOVATIVE COMPUTER AIDED SOLIDIFICATION TECHNOLOGY

duration
21 MONTHS

supported with
153.264,99€

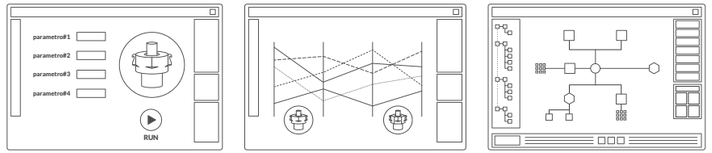
INTRODUCTION

The use of electromagnetic stirrers for semi-continuous casting introduces a revolutionary technology in preventing dendrite formation. Previously limited to continuous casting technique, the electromagnetic properties and geometrical shape of the stirrers can now combine the high quality of ingot casting and the productivity rate of continuous casting.



THE PROJECT

ERGOLINES and ESTECO teamed up to elaborate this new technology for 'assisted solidification' of steel to improve further the quality of the final product. The goal is to optimize the stirrer parameters and reduce internal and surface defects, increase product homogeneity and minimize energy consumption. At the same time an innovative methodology for collaborative design in this field includes experts and non experts in the engineering process. ERGOLINES provides a numerical model of the stirrer which includes electromagnetic analysis with Comsol Multiphysics and fluid dynamic analysis with OpenFOAM software. ***modeFRONTIER***, ESTECO multiobjective optimization platform, is used to automate the simulation process by integrating numerical solvers and models. VOLTA, ESTECO web-based collaboration platform, distributes computational load on the network resources and allow access to the optimization process to different users.



BENEFITS

The project outcome is creating a computational platform for the innovative design of electromagnetic stirrers, with the following benefits:

- Optimize the assisted solidification technology in semi-continuous steel casting
- Grant non experts the ability to set parameters, run optimization projects, visualize different configurations and choose the optimum stirrer for any kind of steel plant.