Control of inclusion, slag foaming and temperature in vacuum degassing

Funded under: ECSC-STEEL C

Abstract
Vacuum treatment is the most utilized process for the production of quality steel with strict demands on cleanliness and low contents of hydrogen, nitrogen and sulphur. To improve the process performance and to develop new process-control functions, collaborative research between MEFOS, BFI, Sidenor, ABS and Ovako has been carried out. In the work, the steel grades 10Cr6 and C70, common to the three steel plants in the group, were selected for the investigations.

The project has focused on inclusion refining, temperature control and methods to suppress disturbances from slag foaming. The outcome of the project is now available in a real-time software package where the new control modules are integrated as extended functionality of a previously developed process-control system.

The work was based on extensive assessments of the vacuum units at ABS, Sidenor and Ovako. In the work, established as well as new methods for supervision, measurement and analysis were used and evaluated. The analysis of information and process data obtained was predominantly made with the help of extended process-control models and newly developed CFD models for inclusion refining and slag foaming.

Additional information

Authors: 8NGSTROM S, MEFOS, Luleå (SE); KOHLE S, BFI, Düsseldorf (DE); ÅNGSTRÖM S, MEFOS, Luleå (SE); SHENG D Y, MEFOS, Luleå (SE); KLEIMT B, BFI, Düsseldorf (DE); KÖHLE S, BFI, Düsseldorf (DE); GONZALEZ E, Sidenor, Basauri (ES); RICCI S, Acciaierie Bertoli Safau (ABS), Pozzuolo Del Friuli (IT); HALLBERG M, Ovako, Hofors (SE)


Last updated on 2003-03-03
Retrieved on 2019-12-16

© European Union, 2019