Contribution ID: **11** Type: **Oral Presentation**

Influence of Mold Level Control Dynamics on Billet Surface Quality: A Quantitative Analysis

Friday 13 March 2026 08:55 (25 minutes)

In the continuous casting of steel billets, the initial solidification at the meniscus is the critical determinant of surface quality. The shell characteristics and geometry are intrinsic features of the process, resulting from the interaction between mold process parameters and the solidifying meniscus. However, defects and irregularities significantly alter the local heat transfer coefficient in the mold and act as stress raisers, increasing the susceptibility to transverse cracking. This study investigates the direct correlation between the performance of different Mold Level control systems and the morphological characteristics of billet surface.
A comprehensive experimental campaign was conducted on a multi-strand billet caster. The trials involved the application of distinct mold level control strategies, characterized by varying response times and damping factors, to induce controlled variations in meniscus stability. The resulting oscillation profiles were analyzed to quantify their impact on the overall quality. To ensure robust data validation, the surface quality assessment employed a multi-technique approach. This involved the utilization of both conventional methodologies, such as direct visual observation and manual profilometry, and advanced techniques, including digital image recognition.
This study provides valuable insights for optimizing the casting process, identifying the most effective control strategies and measurement techniques to ensure consistent billet surface quality.
Keywords: Continuous Casting, Mold Level Control, Surface Quality, Digital Image Recognition.

Author: DI CECCA, Cosmo (Feralpi Siderurgica S.p.A.)

Co-authors: MILAN, Allessandro (Feralpi Siderurgica S.p.A.); LANDINI, Andrea (Feralpi Siderurgica S.p.A.); DI GIOVANNI, Federica (Feralpi Siderurgica S.p.A.); FREDI, Francesco (Feralpi Siderurgica S.p.A.); FOGLIO, Gianpaolo (Feralpi Siderurgica S.p.A.); BURATTI, Giulia (Feralpi Siderurgica S.p.A.); ANGELINI, Lorenzo (Feralpi Siderurgica S.p.A.); TELLAROLI, Mattia (Feralpi Siderurgica S.p.A.); FRITTELLA, Piero (Feralpi Siderurgica S.p.A.)

Presenter: DI CECCA, Cosmo (Feralpi Siderurgica S.p.A.)

Session Classification: SURFACE QUALITY OF LONG AND FLAT SEMIS: PLANT RESULTS AND LAB EXPERIMENTS

Track Classification: Surface quality of long and flat semis: Plant results and lab experiments