**Abstract**

**Presentation title:**

Optimization of the Steel Casting Process Parameters to Control the Longitudinal Facial Crack (LFC) Defect Appearance

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**Presentation type:** (Oral presentation/ **Poster presentation**)

**Abstract (250-300 words):**

The target of this research is to identify the occurrence of the longitudinal facial crack (LFC) defect during the casting of a low-carbon, low-manganese flat steel product. Despite the severity of this defect which may be minor, it turned out unacceptable in the final product due to the remarkable production losses associated with reproducing the product. Electrochemical testing was executed on samples of the LFC defect, which were compared to a control sample. Additionally, Selected LFC samples were also analyzed using scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDX) at various process parameters such as carbon equivalent, isostatic flow control, non-metallic inclusion, and mold flux to determine the root cause of the LFC defect. The findings of this investigation revealed that optimizing specific process parameters in both the thin slab caster and the melt shop effectively controlled the appearance of LFC defects. By manipulating these parameters, it was possible to mitigate the occurrence of LFC defects and prevent the associated economic losses, which result from having to reproduce the product. The likelihood of LFC defects can be drastically reduced by identifying and solving the underlying root causes of the defect, such as adjusting carbon equivalent, isostatic flow control material, managing non-metallic inclusions, and improving mold flux. These results underline how crucial it is to properly optimize the process variables in order to guarantee the manufacture of premium low-carbon, low-manganese flat steel products. As a result, efficiency and overall production are improved while the financial and environmental costs of making defective products are reduced.

**Biography (150-200 words):**

* Magdy Talaat is a metallurgical and Material Science Professional Engineer who graduated from Suez Canal University in 2009.
* He has accumulated approximately thirteen years of solid experience in thin slab casting operation in a Flat steel plant.
* From 2011 until 2018, Magdy served as a senior thin slab casting operation engineer at Al EZZ Dekhila Steel Co. (EZDK) in Alexandria, Egypt.
* At the end of 2018, Magdy was promoted to the position of steel making and thin slab casting process engineering manager.
* In 2017, Magdy played a key role in the CSP revamping project within EZDK premises. His contributions were instrumental in achieving outstanding performance since the project's start-up, including the tuning of process models.
* In 2020, Magdy embarked on a journey to pursue a master's degree in Material Science, and is currently preparing himself for the discussion of his master's thesis.
* Magdy has also made significant contributions to the field through his published works. He has authored three technical papers that were presented at steel casting conferences.