

## **A model for prediction of precipitate formation during steel making**

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Steel cleanliness strongly affects the properties of the products. There is an ever increasing requirement of strict control of inclusion composition and amount during ladle treatment. A comprehensive model for inclusion development in gas stirred ladles developed by the authors is validated in the industrial ladle treatment processes. It can be used for process simulation and optimization. The most important factors, such as stirring intensity, reaction between steel and slag as well as refractory material, and the conditions needed for separation and floatation of non-metallic inclusions are taken into account in a SimuSage-based simulation program. The evolution of steel and slag composition along with the amount and composition of inclusions during the ladle treatment are calculated and compared with results from the industrial process. The comparison between model predictions and actual plant data shows good agreement for 210 t heats as well as for 30 t heats and different steel grades. The present model is a useful tool for simulation and optimization of ladle metallurgical treatments in the industry.