

Modeling of temperature field at outlet of continuous casting mold

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Abstract : Continuous casting of steel is a complex industrial process, involving many factors and mechanisms. For steel makers it is very difficult to control the process parameters optimally to obtain a product free defect i.e. a quality with the best possible return. Numerical simulation is a tool that can be used to optimise the process parameters. This work has for objective to model the temperature field at the level of solidified skin at the outlet of the mold "Ts". There are , three important key parameters affecting the cooling process in the mold: The "immersion distance of the nozzle Di", the "casting temperature Tc" and the "casting speed Vc". These parameters are used as input parameters during a parametric study by the experiments: "box behenken" Plans. The "outlet temperature Ts" is measured on the consolidated layer of steel on leaving the mold. The simulation of continuous casting phenomenon is carried out by the Fluent code 6.0. A relation between the above cited key parameters and the "outlet temperature Ts," was established by using the required algorithm. Thus, the optimal parameters were obtained by predicting a minimum threshold temperature (TSmin) at the outlet of the mold.

Keywords : continuous casting, output temperature, casting temperature, casting speed, distance immersion, model "box behenken."