

Boundary heat flux estimation in continuous casting molds using data assimilation

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In continuous casting of steel, the most critical component is the mold. In the mold, the steel begins its solidification, and several complex physical phenomena happen. To ensure a proper control of the process, it is necessary to know how the steel is behaving inside the mold. However, it is not possible to make measurements inside the solidifying steel and the only available data are pointwise temperature measurements in the interior of the mold plates. To provide a tool for the proper control of the process, we developed a methodology for the real-time estimation of the heat flux at the steel-mold interface given the temperature measurements. With this tool, we allow the caster operator to quickly detect any malfunctioning in the casting increasing the safety and the productivity of continuous casters.

References

- [1] U.E. Morelli, P. Barral, P. Quintela, G. Rozza and G. Stabile: *A numerical approach for heat flux estimation in thin slabs continuous casting molds using data assimilation*. Int. J. Numer. Methods Eng., 1-34, 2021.