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## Continuous Casting Mold Flow with Original and Used Nozzle Geometries: Numerical Flow Simulations and Water Model Measurements

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In continuous steel casting, the turbulent liquid steel flow in the mold has a significant influence on the produced steel quality. The varying process parameters casting speed and inert gas injection at the stopper rod tip influence the mold flow pattern. Most investigations consider the original geometry of the submerged entry nozzle. During the casting process, material deposition and erosion change the nozzle surface geometry continuously. The geometries of two used nozzles are determined by a 3D scan at voestalpine. Numerical multiphase flow simulations and 1:1 scaled water model experiments are performed for the used and unused nozzle geometries and compared. The used nozzle geometries show significantly different flow patterns in comparison to the original unused nozzle geometry.

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