Experiments and Simulations of Alternative Lance Tips for Pulverised Coal Injection (PCI)

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Pulverised coal is used as a fuel substitute to reduce the amount of coke necessary in iron making. The pulverised coal is injected through lances in the tuyere sections. A proper dispersion of these highly laden particle jets is crucial for efficient combustion. This study investigates particle dispersion for various lance tips. In a first step they were tested in cold lab-scale pneumatic test facility and numerical simulations using Lattice-Boltzmann based large eddy simulations. In a second step an alternative lance design was tested on a real blast furnace and observed via a high-speed camera.
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