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Abstract
Since 1980, pulverized coal injection（PCI） using ground powders of coal injected from the lances and mixed with hot air in the blow pipe is the key technology in the steel making industry. The Digital Particle Image Velocimetry（DPIV） method is employed to measure the mixing behavior of pulverized coal injection in the blowpipe for three kinds of single lances. In the visualization experiment, both water and air are used as working fluid and performed each case under three different velocity ratios. The result shows that the design of the lance and the number of the insertion in blowpipe is the main factor for the mixing behavior of pulverized coal injection in the blowpipe. It is disclosed that due to the jet with more momentum at high velocity ratio, the jet could be easy to intrude to main flow for any test section. The jet is more intrusive to main flow for the single lance with an oblique angle at lance exit. The reason is that the jet is co-flow with main flow. And in double single lance, the jet exit appeared vortex for any velocity ratio. In addition, it could be concluded that the mixing effect is more notable because the jet is more intrusive to main flow.
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