Experimental evaluation of the new lance for powder injection

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The paper presents the results of the evaluation experiments of the new lance for powder injection process. The pneumatic powder injection process itself has been well known since many years and it can be operated both with submerged and non-submerged lance. The new invented by authors injection lance is dedicated for processes without its submersion especially when the powders are injected into liquid metal bath inside the ladles or induction crucible furnaces. In these cases it is important to not introduce the carrier gas into metal volume to make the temperature decrease as low as possible. However, when the lance is not submerged the problem with particles jet introduction into liquid metal with proper distribution appears. The new lance of special design with slots and flange at the outlet was checked both in model water experiments and real conditions for ferroalloys injection into liquid cast grey iron. The results proved the efficiency of the powder introduction and low liquid alloy temperature decrease, too.

Keywords: powder injection, injection lance, cast iron production, alloying, induction furnace

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