

Continuous Aluminothermic Reduction of MgO with Molten Aluminium Recycled from Post-Consumed Scrap

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The continuous aluminothermic reduction of MgO that we have developed uses a suspension of MgO particles in an Al melt as a reaction mixture. The experimental results we collected confirm that the aluminium melt reduces the MgO as effectively as Al powder. The reaction mixture was prepared by applying a dosing wire, with the core made of MgO powder and the cladding made of aluminium. The proposed solution was tested at the pilot level in a melting with an atmosphere of flowing argon, equipped with an electromagnetic pump (EMP). The wire was continuously introduced to the melt through the vortex created in the charge-well of the EMP.

This enables the aluminothermic reduction to take place continuously, at a speed regulated by changing the feed rate of the dosing wire, and opens up the possibility of planning a future production line with a capacity of 10.000 t/year of primary magnesium.