The effect of argon stirring on separation of oxidic inclusions in the ladle furnace at Sandvik Materials Technology AB

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Abstract

The effect of gas stirring in the ladle furnace on inclusion content in austenitic and duplex stainless steel has been investigated at Sandvik Materials Technology AB. The effect was mainly investigated by varying duration of stirring time and intensity of stirring. Any effect on inclusion content was determined by examining total oxygen content before and after the ladle treatment, along with mapping the chemical composition, size and size distribution of the inclusions. Any effect on slag composition was also determined.

The effect of gas stirring was measured on a number of heats with continuous sampling during normal production. Data regarding oxygen content during the ladle refining process and the duration of the processes was used to determine a quantifiable relationship between stirring time, stirring intensity and resulting change in oxygen content.

The result of the investigation was recommendations regarding the use of varied stirring intensities and duration of gas stirring for achieving negative net loss in oxygen content before and after ladle treatment.

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