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The optimization of the processing of low carbon reinforcing steel bars

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ABSTRACT

Reinforcing bars produced at ArcelorMittal via the Electric Arc Furnace (EAF) process route and the Rod Mill are breaking during application. This is due to the high residual content of the material, which produces an excessively high tensile strength and reduces its ductility. This work aims to develop a cooling program at Rod Mill to process the high residual material and to optimize the chemistry at the EAF to compensate for the high residuals in order to achieve a maximum tensile strength of 600MPa, which has sufficient ductility for downstream processing.

Less severe cooling conditions were imposed at the Rod Mill on the high residual material and lower tensile strength and higher ductility were achieved. The C and Mn contents of the material were decreased at the EAF and lower tensile strength and increased ductility were achieved.