Universidad de Navarra

Speaker 8

Effect of Ti microalloying and residual S content on the hot ductility of a boron steel

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ABSTRACT:
The hot ductility of a boron steel with different Ti addition is evaluated by hot tensile testing. Hot tensile tests were carried out at different temperatures in the range 800-1100ºC at a constant strain rate of 0.001 s-1, in order to simulate the conditions at which bending/unbending is conducted during continuous casting. The addition of Ti improves the hot ductility by reducing the width and depth of the ductility trough, yet mixed results are obtained depending on the TI/N ratio. An optimal Ti addition corresponds to a proportion close to the stoichiometric with respect to the nominal N.

The FEG-SEM analyses performed on samples quenched at different temperatures in the range of interest show that the improved hot ductility for the stoichiometric Ti/N relation is due to the confluence of the inhibition of BN formation at austenite grain boundaries and the reduced size of TiN particles.