Effects of Magnetic Field on Corrosion Behaviour of X100 Pipeline Steel in Simulated Soil Solution Containing Sulphate-Reducing Bacteria

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The magnetic field (MF) is often utilized in engineering as a means of removing microbial bacteria. The effects of an MF on the electrochemical corrosion behaviour of X100 pipeline steel caused by sulphate-reducing bacteria (SRB) were investigated by electrochemical tests and scanning electron microscopy (SEM). The results showed that the MF inhibited the growth and activity of SRB, and the corrosion rate of X100 steel initially decreased and then increased with increasing MF strength. The lowest corrosion rate of X100 steel was observed under a 5-mT MF. These results are also attributed to the effect of the MF on the mass transfer of the corrosive medium..

Keywords: Magnetic field; Sulphate-reducing bacteria; X100 steel; Electrochemical corrosion; Mass transfer

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