

Anti-Scale Magnetic Method as a Prevention Method for Calcium Carbonate Scaling

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Abstract : The effect of anti-scale magnetic method (AMM) in retarding scaling deposition is confirmed by many researchers, to result in new crystal morphology, the crystal which has the tendency to remain suspended more than precipitated. AMM is considered as an economic method when compared to other common methods used for scale prevention in desalination plant as acid treatment and addition of antiscalant. The current project was initiated to evaluate the effectiveness of AMM in preventing calcium carbonate scaling. The AMM was tested at different flow velocities (1.0, 0.5, 0.3, 0.1, and 0.003 m/s), different operating temperatures (50, 70, and 90°C), different feed pH and different magnetic field strength. The results showed that AMM was effective in retarding calcium carbonate scaling deposition, and the performance of AMM depends strongly on the flow velocity. The scaling retention time was found to be affected by the operating temperatures, flow velocity, and magnetic strength (MS), and in general, it was found that as the operating temperatures increased the effectiveness of the AMM in retarding calcium carbonate (CaCO₃) scaling increased.

Keywords : magnetic treatment, field strength, flow velocity, magnetic scale retention time

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