Abatement of deposit formation in aqueous systems using various projectiles

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\textbf{ABSTRACT}

The utilization of brackish or seawater is widespread in cooling systems or in desalination plants. This would, nonetheless, lead to severe and chronic deposit formation which is extremely difficult to combat. One promising technique to mitigate fouling in tubular passages is to propel projectiles at specified injection intervals. In this study, a comparative experimental investigation of mitigating fouling is performed using seven different types of projectiles. The results showed that the flexible sponge balls were more efficient than the rigid rubber balls. Larger and harder sponge balls were more effective than smaller and softer ones as long as they can be propelled into tubes. Hard balls with exact diameter as inner diameter of the tube even worsened fouling as they may have compacted precursors on the inner wall causing even a harder and more tenacious deposit. Finally, the experimental results showed injection decreased the induction time of fouling.

\textit{Keywords:} Fouling; Cleaning; Desalination; Heat exchanger; Projectile

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