

Magnetisasi Air Sadah untuk pencegahan Pembentukan Kerak

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Abstrak

Anti scale magnetic treatment is a hard water treatment method using magnetic field to prevent (CaCO₃) scale formation. This method has along and controversial history due to its unclear result of its mechanism and effectiveness. The results of researches, hypothesis, or explanations given by researchers were still partial and didn't satisfy yet in answering the magnetic phenomenon. There were three mechanisms which were suggested: ion mechanism, particle mechanism and Lorentz force effect. Hard water contain Ca²⁺ cations, CO₃ anions, and CaCO₃ particles. Magnetic field effect on CO₃ (ion mechanism) modified hydration of ions which suppressed CaCO₃ precipitation, whereas magnetization CaCO₃ particle (particle mechanism) supported particles to attract to each other and increased nucleation rate. Both ion and particle mechanism are clearly showed by using static magnetization system, system where water were static to magnetic field Lorentz force caused ion shift in solution and known as by the magnetohydrodynamic phenomenon that forced nucleation of CaCO₃. Lorentz force acts on every ions in hard water when it's moving through applied magnetic field therefore dynamic magnetization system was needed to investigate this phenomenon. Particle mechanism and Lorentz force effect could increase CaCO₃ particle formation so that reduced concentration of Ca²⁺ ions in bulk solution, in the other hand ion mechanisms with its memory effect on CO₃ could suppress CaCO₃ formation. Magnetization followed by deposition and filtration could increase effectiveness of AMT process.