



Desalination and Water Treatment

www.deswater.com

1944-3994 / 1944-3986 © 2010 Desalination Publications. All rights reserved.

doi: 10/5004/dwt.2010.1549

22 (2010) 65–71
October

Magnetic water treatment for scale control in heating and alkaline conditions

Viljem Kozic^a, Anton Hamler^b, Irena Ban^a, Lucija C. Lipus^{c*}

^aFaculty of Chemistry and Chemical Technology, University of Maribor, Smetanova 17, 2000 Maribor, Slovenia

^bFaculty of Electrical Engineering and Computer Science, University of Maribor, Smetanova 17, 2000 Maribor, Slovenia

^cFaculty of Mechanical Engineering, University of Maribor, Smetanova 17, 2000 Maribor, Slovenia

Tel. +386 (2) 220 7762; email: lucija.crepinsek-lipus@uni-mb.si, lucija.lipus@uni-mb.si

Received 2 October 2009; Accepted 7 April 2010

ABSTRACT

Magnetic water treatment (MWT), an alternative solution for scale control, is discussed with emphasis on the construction of the magnetic devices and the mechanism of MWT influence on the scale formation. Two applications in high-temperature and high-pH conditions are presented. The treatment noticeably reduced the scale thickness on the heating spiral and removed preciously precipitated scale from hot tap-water outlet pipe; on the walls in the zone with heated alkaline water, instead of hard scale, only thin, brittle coating was formed. The morphology analyses showed the acceleration of aragonite nucleation and raised formation of fine suspended particles.

Keywords: Scale control; Magnetic water treatment; Crystallization

* Corresponding author.