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MODELING AND VIBRATION ANALYSIS OF LIMESCALE DEPOSITION IN GEOTHERMAL PIPES

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Abstract

Failures of geothermal system pipes are often caused by limescale buildup on the walls of the pipes. The primary aim of this work is to investigate the influence of the scale formed on the walls of the pipes on the vibration parameters and natural frequencies of pipelines. To this end, the different phases of deposition are artificially simulated in the model experiments. In the different states, vibration tests are preformed to evaluate the status of the pipe section and the rate of deposition by a nondestructive technique. The experimental system is also analyzed by the finite element method (FEM), and the obtained results are compared.

Key words: finite elements, limescale buildup, natural frequencies, piping vibration

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