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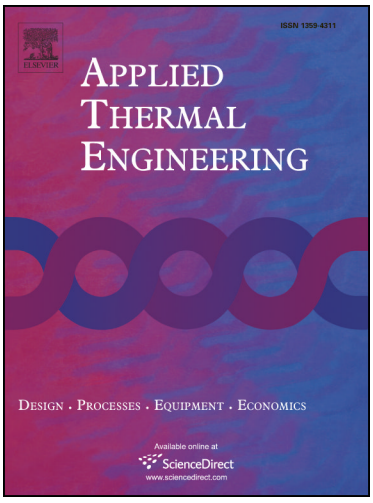

Research Paper

Similitude criterion derivation and pipe physical property test and suitable analysis for water hammner scale model of long distance district heating pipeline

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Similitude criterion derivation and pipe physical property test and suitable analysis for water hammer scale model of long distance district heating pipeline

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Abstract

Based on a new district heating (DH) based on absorption heat exchangers, long distance district heating pipelines are developed rapidly in China. Water hammer protection is one of the most important design issues encountered in district heating pipeline safety. In order to analyze water hammer in DH pipe systems, scale models are introduced in this paper. Traditional similitude criterion numbers are derived from the motion equations based on the assumption of incompressible fluid. Therefore, traditional similitude criterion numbers are invalid in water hammer analysis, considering that water hammer is caused by the elasticity of the fluid. Therefore, similitude criterions used in water hammer analysis are derived by us and put forward in the article. In order to find out suitable pipes for scale models of DH pipeline

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