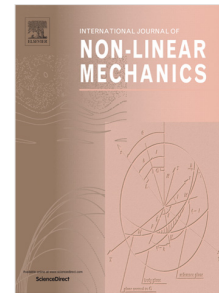


## Accepted Manuscript

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PII: S0020-7462(17)30147-6  
DOI: <http://dx.doi.org/10.1016/j.ijnonlinmec.2017.05.015>  
Reference: NLM 2855

To appear in: *International Journal of Non-Linear Mechanics*

Received date: 24 February 2017  
Revised date: 28 May 2017  
Accepted date: 30 May 2017

Please cite this article as: A.H. Assumpção, M.L. Martins-Costa, F.B. Freitas Rachid, R.M. Saldanha da Gama, Modeling slack flow in hydraulic pipelines by means of a consistent thermodynamic theory, *International Journal of Non-Linear Mechanics* (2017), <http://dx.doi.org/10.1016/j.ijnonlinmec.2017.05.015>

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# Modeling slack flow in hydraulic pipelines by means of a consistent thermodynamic theory

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## Abstract

This work presents a consistent thermodynamic model to describe cavitating flows in hydraulic pipelines. Although the model is capable to describe the vaporous cavitation phenomenon in unsteady as well as steady regimes, the application presented herein is restricted to slack flow condition, which takes place under steady state. The flow is assumed to be homogeneous and isothermal and the fluid is regarded as a pseudo-mixture, comprising the liquid, its vapor and an inert gas. The constituents are assumed to be compressible and to coexist at every material point and time instant. The balance equations of mass for each constituent are considered in the model,

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