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C.A. Dorao, T. Langeland, M. Fernandino

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Effect of heating profile on the characteristics of pressure drop oscillations

Dorao, C.A.*, Langeland. T.*, Fernandino, M.*

Department of Energy and Process Engineering, Norwegian University of Science and Technology, Norway

Abstract

The effect of the heating profile on the characteristics of pressure drop oscillations (PDO) are studied. The experiments are performed in a 2m horizontal test section of 5mm I.D. and R134a as working fluid. The PDOs are characterised by a low frequency oscillation with a superimposed high frequency oscillation at the minimum of the flow oscillation for some conditions. This work has focused on identifying how the heating profile can modify the presence of the high frequency oscillations. In particular it was observed that the high frequency oscillations appear in a given range of heat flux, while at low and high heat fluxes with a uniform heating profile the high frequency oscillations vanish. In addition, a decreasing power distribution can increase the presence of high frequency oscillations, and at high heat fluxes only high frequency oscillations are observed.

Keywords: Pressure Drop Oscillation, Two Phase Flow Instabilities, Boiling

*e-mail: carlos.dorao@ntnu.no; tel. (+47) 73598462