

Abstract Submitted
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Slugs in a large diameter column with air and high viscosity silicone oil¹ ABBAS HASAN, BARRY AZZOPARDI, University of Nottingham — Very little information is known about the behaviour of high viscous liquids (> 100 Pa.s) in two phase slug flows. Experiments were carried out to study the behaviour of silicone oil (300 Pa.s) in gas bubble column using electrical capacitance tomography technique. The main aim of this paper is to study the characteristics and parameters of gas-liquid slug flows through large scale experiments with realistic liquids in a large diameter pipe (240 mm). These include; mean void fraction, Taylor bubble velocity, lengths of liquid slugs and Taylor bubbles, liquid film and fraction flowing down past the Taylor bubble. It was found that the gas mainly travels as large bubbles with ellipsoidal shape which occupy a significant portion of the pipe cross section with tiny bubbles in the liquid. In addition, the top surface of the gas-liquid column experiences a periodic oscillation (rising and falling) as the large bubbles rise to the top surface and burst. The results presented in this work have been compared with previous studies to show the effects of the viscosity and the pipe diameter on the behaviour of large bubbles in gas-liquid two phase slug flows.

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