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An experimental investigation of the motion of long bubbles in high viscosity slug flow in horizontal pipes

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**Highlights**

- The effect of viscosity on slug bubble velocities has been quantified, based on a series of 240 experiments, in order to improve predictive models of slug flow in the laminar region.
- The dependency of individual slug bubble velocities on slug lengths and bubble nose shape and position has been investigated in detail for selected experiments.
- A new slug bubble velocity model is presented, incorporating viscosity, which compares well with available high viscosity slug flow data.

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