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Holdup Analysis of a Bubble Column Using an Industrial Fourth Generation Like γ-Ray Tomography

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This work has been performed using the fourth-generation-like industrial computed tomography developed at the IPEN, constituted with 70 NaI(Tl) 25.4 mm $\times$ 50.8 mm (diameter $\times$ length) and a bubble column for industrial process was evaluated. The column is a Perspex glass cylindrical tube of 80 mm internal diameter, 100 mm external diameter and 1400 mm height constituted the following parts: liquid circuit (water), a gas circuit (4 ℓ/min) bubbled into a system containing two limiting holes of 4 mm and 2 mm, located at 65 mm from the centre of the column each one in opposite side. γ-ray tomography experiments were carried out, using this simulator column both empty and filled with water plus gas bubbling. In this work the scanner was set for 5 views and 14 projections each. The resulting images describe the liquid or gas phase holdup distributions for bubbles generated in a hole of 4 mm and 2 mm diameters located at 15 mm of the column wall in a opposite side, respectively. It was established that the newly developed fourth-generation-like fan-beam arrangement γ-scanner unit has a good temporal resolution acceptable given the size of the column used in this study and capable to infer the relative proportional of gas and liquid proportion in the column.

Country/Organization invited to participate

Brazil

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