Concurrent Bubbly Flow In Large Diameter Vertical Pipe Experimental And Analytical Study

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Concurrent Bubbly Flow In Large

Concurrent Bubbly Flow in Large Diameter Vertical Pipe: Experimental and Analytical Study Paperback – August 20, 2009 by Mohamed E. Shawkat (Author)

Concurrent Bubbly Flow in Large Diameter Vertical

Pipe ...

In macroscale channels, the large gas (or vapor) bubbles that are observed in slug flow originate from the coalescence of numerous smaller bubbles spanning the width and length of the flow channel, essentially coming from a bubble “cluster.”

Bubbly Flow - an overview |

ScienceDirect Topics

The bubbly flow regime was observed at low gas volumetric flux or high liquid volumetric flux conditions and it is developing in the main flow direction in averaged-manner. The bubbly flow regime (see Fig. 5(b)) is characterized by small dispersed bubbles moving upward along the main flow. Significant local chaotic bubbly motions,

namely co-existing of upward and downward flows of liquid and bubbles with random swirling motions, appear especially in low liquid flow rate bubbly flow.

Bubbly-to-cap bubbly flow transition in a long-26 m ...

The two-phase flow structure of an air-water, bubbly, upward flow in a 20 cm

diameter pipe is presented with particular emphasis on the local interfacial area concentration.

Two-Phase Bubbly Flow Structure in Large-Diameter Vertical ...

In large circular pipes, the gas-liquid bubbly flow shows the following characteristics: (1) the strong turbulence and the secondary flow

induced by large cap bubbles, (2) a small wall peak of the...

Interfacial area of bubbly flow in a relatively large ...

While the flow of bubbly liquids in channels and pipes is well investigated, flow in slots or high-aspect ratio ducts has received little attention. This work describes the design, construction, and

operation of a novel experimental apparatus for the quantitative investigation and characterization of bubbly flow in a slot geometry.

A novel experimental apparatus for investigating bubbly ...

The bubbly flow is unable to be observed. In vertical counter-

current two-phase flow, it is known that bubbly and slug flow patterns are not unique under given conditions. One among bubbly, slug or annular flow possibly exists at the Zone A in Fig. 5. Similarly, slug or annular flow can exist at Zone B.

Flow pattern and flow characteristics for counter-current ...

In dispersed bubbly

flows, the large-scale turbulent structures interact with bubbles and are responsible for the macroscopic bubble motion, whereas small-scale turbulent structures only affect small-scale bubble oscillations.

Large Eddy Simulation for Dispersed Bubbly Flows: A Review

In the bubbly regime the bubbles are

confined to a region near the top of the pipe. On increasing the gas flow rate, the bubbles become larger and coalesce to form long bubbles giving what is known as the plug flow regime. At still higher gas flow rates the gas plugs join to form a continuous gas layer in the upper part of the pipe.

Cocurrent Flow - an overview |

ScienceDirect Topics

We investigate argon bubble flow in liquid gallium within a container large enough to avoid wall effects. Flow with and without applied horizontal magnetic field is studied.

(PDF) Phase boundary dynamics of bubble flow in a thick ...

Countercurrent exchange is a

mechanism occurring in nature and mimicked in industry and engineering, in which there is a crossover of some property, usually heat or some chemical, between two flowing bodies flowing in opposite directions to each other. The flowing bodies can be liquids, gases, or even solid powders, or any combination of those. For example, in a

distillation column, the vapors bubble up through the downward flowing liquid while exchanging both heat and mass. The maximum amount o

Countercurrent exchange - Wikipedia

Bubbly flows in a vertical large-diameter square duct are measured in detail. Four-sensor probes are applied in the local

measurements at 3 axial positions. A database of various local flow parameters in the square duct is obtained. Obtained radial and axial flow characteristics are presented for the bubbly flows.

Experimental study on interfacial area transport of two ...

phase and each bubble is tracked on basis of a balance of forces

acting upon (Mousavi et al., 2007). In the present work an attempt has been made to understand the hydrodynamic behavior multiphase flow and mass transfer mass transfer of a concurrent gas(air)-liquid(water) up-flow bubble column by CFD analysis.

CFD Simulation of Bubbly Flow Through a Bubble

Column

A laser beam was modulated in frequency and attenuated in light intensity during its passes through the bubbly flow. The modulation rate in frequency gave the local liquid velocity and the attenuation rate in light intensity gave the line void fraction. The developed laser Doppler velocimeter was confirmed to give

accurately the local liquid velocity and its turbulence intensity in bubbly flows.

Simultaneous measurement of local liquid velocity and void ...

The liquid turbulence kinetic energy transfer between the liquid and gas phases was investigated for upward air-water bubbly flow in a 200 mm diameter pipe. The

liquid and gas axial momentum equations were analyzed to estimate the interfacial drag from experimental measurements, and hence the liquid turbulence production due to the relative ...

Liquid Turbulence Kinetic Energy Budget of Co-Current ...

The concurrent upward two-phase flow of air

and water in a long vertical large diameter pipe with an inner diameter (D) of 200 mm and a height (z) of 26 m (z/D = 130) was investigated ...

Flow Characteristics and Void Fraction Prediction in Large ...

The higher water flow rate will result in smaller bubbles diameter as it have less chances to merge

when travelling along the pipe towards the upper elevation, where the liquid slowly become steady flow. Very large bubbles normally occur near pipe wall at where the heavier medium, which is water, would travel slower.

ACKNOWLEDGMENT

Bubbles Size Estimation in Liquid Flow Through a Vertical Pipe

The concurrent upward two-phase flow of air and water in a long vertical large diameter pipe with an inner diameter (D) of 200 mm and a height (z) of 26 m (z/D = 130) was investigated ...

Interfacial area concentration in gas–liquid bubbly to ...

Investigation of Refractive Bubble Distortions in PIV of

Liquid Phase Turbulence in Gas-Liquid Two-phase Flow With Large Bubbles Undergraduate Honors Thesis Presented in Partial Fulfillment of the Requirements for Graduation with Distinction in the Department of Mechanical Engineering at The Ohio State University By: Joshua Jones May 2012

Investigation of Refractive Bubble Distortions in PIV of ...

The Concurrent function evaluates multiple formulas at the same time. Normally, multiple formulas are evaluated by chaining them together with the ; operator, which evaluates each sequentially in order. When the app performs operations

concurrently, users wait less for the same result.