

Ultrasonic tomography imaging for liquid-gas flow measurement

Abstract

This research was carried out to measure two-phase liquid - gas flow regime by using a dual functionality ultrasonic transducer. Comparing to the common separated transmitter-receiver ultrasonic pairs transducer, the dual functionality ultrasonic transceiver is capable to produce the same measurable results hence further improvises and contributes to the hardware design improvement and system accuracy. Due to the disadvantages and the limitations of the separated ultrasonic transmitter-receiver pair, this paper presents a noninvasive ultrasonic tomography system using ultrasonic transceivers as an alternative approach. Implementation of ultrasonic transceivers, electronic measurement circuits, data acquisition system and suitable image reconstruction algorithms, the measurement of a liquid/gas flow was realized.

Keywords

Flow measurement; Tomography; Transceiver; Two phase flow; Ultrasonic