

- Title:** Hardware design of laser optical tomography system for detection of bubbles column
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- Abstract:** This paper presents a hardware design and optical tomography application for fast cross sectional detection of single or two phase flows in pipes or bubble columns. Sixteen laser pointer transmitters and photodiode receivers are arranged at the object cross sectional boundary to detect the existence of bubbles inside a vertical column pipeline. A valve is installed at the bottom of the pipe to produce the source of bubbles. Due to the simple operation, good heat transfer and mass transfer of bubble columns, they can be applied in a wide range of applications in the chemical process industry. The size of the bubbles produced was estimated to be between 5 mm and 20 mm in diameter. The voltage drop at the sensor directly shows the existence of bubbles between the transmitter and receiver.