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# Development of the Ultrasonic Method for Two-Phase Mixture Level Measurement

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## ABSTRACT

*An ultrasonic method is developed for the measurement of the two-phase mixture level in the reactor vessel or steam generator. The ultrasonic method is selected among the several non-nuclear two-phase mixture level measurement methods through two steps of selection procedure. A commercial ultrasonic level measurement method is modified for application into the high temperature, pressure, and other conditions. The calculation method of the ultrasonic velocity is modified to consider the medium as the homogeneous mixture of air and steam, and to be applied into the high temperature and pressure conditions. The cross-correlation technique is adopted as a detection method to reduce the effects of the attenuation and the diffused reflection caused by suface fluctuation. The waveguides are developed to reduce the loss of echo and to remove the effects of obstructs. The present experimental study shows that the developed ultrasonic method measures the two-phase mixture level more accurately than the conventional methods do.*