Determination of gas pressure in voids in epoxy casting using an ultrasonic measuring technique

Results of measurements performed on a large open void, where pressure can be controlled from the outside, are compared to the theory of ultrasound transmission. The results verify the theory that the attenuation of transmitted ultrasonic signals through a void depends on the gas pressure inside the void. The results are based on the use of time delay spectrometry. This method gives a sufficiently high signal-to-noise ratio for detecting the transmitted part of the ultrasonic signal which has travelled through the void. Because of differences in the density and velocity of ultrasonic signals for the materials involved, that part of the signal is dependent on the pressure inside the void.