

Plastic Pipe Defect Detection Using Nonlinear Acoustic Modulation

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Abstract : This paper discusses about the defect detection of plastic pipe by using nonlinear acoustic wave modulation method. It is a sensitive method for damage detection and it is based on the propagation of high frequency acoustic waves in plastic pipe with low frequency excitation. The plastic pipe is excited simultaneously with a slow amplitude modulated vibration pumping wave and a constant amplitude probing wave. The frequency of both the excitation signals coincides with the resonances of the plastic pipe. A PVP pipe is used as the specimen as it is commonly used for the conveyance of liquid in many fields. The results obtained are being observed and the difference between uncracked specimen and cracked specimen can be distinguished clearly.

Keywords : plastic pipe, defect detection, nonlinear acoustic modulation, excitation

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