

1.3.84. DIRECTIVITY DIAGRAM ANALYSIS OF DIRECT ONE-ELEMENT LONGITUDINAL WAVE EMA TRANSDUCER FOR THICKNESS MEASUREMENTS

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EMA thickness gauges are widely applicable for non-contact thickness measurements on metals. Traditionally these thickness gauges are equipped with the EMA transducers for excitation and reception of shear waves. Though for highly anisotropic materials EMA thickness gauges working with shear waves give additional higher measuring error. Therefore the application of EMATs working on longitudinal waves would be more reasonable for these cases.

One of the main characteristics of the EMA transducer is its directivity diagram. On the base of the analytic design of the EMA transducer's field done for a real construction for sending and receiving longitudinal waves the directivity diagram was built. Studies were made on experimental analysis of the directivity diagram, the influence of the gap size and wedging on it. The results were compared to the designed data. On the base of the conclusions the recommendations were made for choosing the parameters of the longitudinal wave EMA transducer for thickness measurements.