Feasibility Study of Using Acoustic Signal for Material Identification in Underwater Application Using a Single Transceiver

ABSTRACT

Structural inspection is a process to evaluate the condition of a structure in order to determine whether cracks, flaws defects or damages occur in structural build. This work explores the feasibility study of using acoustic signal as a sensing modality for material identification in underwater application with a single transceiver. Using the measured reflected signal, a reflection coefficient for different material types is calculated and compared to that of an ideal or standard case. Various materials with different density and surface reflection properties were used as test objects with respect to the optimum operating frequency in this work. Early results indicate that there is potential for further exploration in utilizing acoustic signal for structural inspection underwater.