

**THE EFFECTS OF COUPLANT AND THE RELATION BETWEEN
PROBE ANGLE AND DEFECT VARIATION IN ULTRASONIC
INSPECTION.**

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ABSTRACT

Couplant and defect variation plays a main role to the inspection process. In this study, the effects of couplant to the inspection have been investigated and the relation between the probe angles and defect variations has been studied. Using the pulse echo technique, inspection has been done to the high measurement block with angle probes and the type of couplant is varies. This height measurement block is a standard block which has several side drill holes in many variation of angle. These side drill holes will act as the defects in the sample. The best probe and couplant and is the probe and couplant which gives the highest maximum reflection with low gain consumed. As a result, the best couplant is the Krautkramer Gel couplant and the relation of probe angle and defect variation is concluded. When the best probe is 45° , the range of variation of defect is about from 40° to 50° . When the best probe is 60° , the range of variation of defect is about from 25° to 35° . When the best probe is 70° , the range of variation of defect is about from 15° to 25° .

CHAPTER 1

INTRODUCTION

1.1 Background of the study

The frequency of sound impression (tone) is a direct measure for the pitch of a tone. As the frequency is increase, the tone will be higher. As the frequency goes higher and higher, a limit will be attained beyond the pitch of the tone which cannot be received by human ear. Sound wave having the frequency higher than the human ear can hear is called the ultrasound. Generally, the frequency range for the audible sound is 20 Hz to 20 kHz. Whereas any sound which have the frequency higher than 20 kHz are considered as the ultrasound.

The ultrasonic inspection is a type of inspection where we make use of the ultrasound that been introduced into the material. This ultrasonic inspection can be used in:

1. Defect detection
2. Thickness measurement of materials
3. To determine the elastic modulus of materials
4. To study the metallurgical structure of materials