

LAPORAN PROJEK TAHUN AKHIR  
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DEVELOPMENT OF A METALLOGRAPHIC METHOD  
FOR ESTIMATING THE RETAINED AUSTENITE IN HEAT  
TREATED STEELS FOR THE AUTOMOTIVE INDUSTRY

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SYNOPSIS

Retained austenite, which due to the service temperatures especially during use transforms into undesirable forms. It alters the mechanical properties of the material drastically. As this cannot be totally be avoided, the automobile manufacturers set a maximum tolerable retained austenite level for their products which inturn can only be estimated via X-Ray diffraction techniques. This techniques involve a highly cost operation and equipments as well as technical know how personnel. This project is aimed at developing a low cost metallographical method of estimating the amount of retained austenite through a procedure that would meet the following requirements :-

- (1) The method does not require extensive equipment procedures or training of specialised personnel and
- (2) Visual estimation of various amount of retained austenite should be possible through reference to a comparison chart.

## INTRODUCTION

Today's problem, lies in the method of estimating the retained austenite content. Although the condition under which the formation of retained austenite are known, the total elimination of the retained austenite is not practicably possible since certain small amount of retained austenite are needed for some other important properties of the material and the product. This left the only option that is to estimate the quantity having applied possible and tolerable technique to minimize the content. The estimation by x-ray radiograph methods is costly and does not lie within the economical reached of the medium or small scale manufacturer. As a result of this, the manufacturer is exposed to the verdict of the consumer of the product which could result in expensive rejection adding a bad reputation as well. Therefore it is vital important to develop and introduce a low cost, simple method of accurate estimation of the retained austenite content in the heat treated steel which the above manufacturer could employ to control the quality of the products.

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