



**A STUDY OF FAILURE PHENOMENA ON PROTON WAJA'S DOOR
HANDLE**

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ABSTRACT

The nation's automotive industries have increased tremendously during the recent years. In Malaysia, Proton is one of the automotive industries companies which are top among the Malaysian car users. As a manufacturer of Waja car, Proton basically has improved their research and development in order to ensure that Waja car satisfies the highly standard for quality. However, customers have been facing many problems since the first model was launched. The problems include electrical system, body, power window and door handle. Door handle failure is one the major problems which frequently occur on Waja's car and this failure can impact the overall satisfaction of the users. In order to get better understanding on the failure mechanism of the door handle, failure analysis is required to determine causes so that changes can be made to minimize the failure. Finite element approach is used in the study by using CATIA. The density test also performed to justify the failure phenomena on Proton Waja's door handle. This project also investigates how to reduce failure phenomenon of Waja's door handle. There are several approach have been made in order to minimize the problems. It includes thickness and diameter modification, material modification and some concentration in parameters of injection molding process. It is found that, by increasing the thickness, the stress concentration at the failure area reduced. Material selection also has an important implication on the door handle performance. It is because the proper material properties reduce the possibility of failure on door handle. The insitu monitoring process for injection molding also improved the quality of Proton Waja's door handle.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Perusahaan Otomobil Nasional Berhad (PROTON) incorporated on May 7, 1983 to assemble, manufacture, and sell motor vehicles and related products, including accessories, spare parts and other components. PROTON produced Malaysia's first car, the Proton SAGA, commercially launched on July 9, 1985 by Malaysian Prime Minister at that time, Tun Dr. Mahathir Mohamad, who had firstly conceived the idea of producing a Malaysian car. PROTON model line up includes the Waja, Satria, GTi, Wira, Iswara, Arena, Perdana V6, Juara and the latest is Gen-2. The range of 1.3, 1.5, 1.6, 1.8, and 2.0 liter engines satisfies a wide spectrum of customers both locally and abroad. PROTON made a major step in upgrading its engineering capabilities with the acquisition of Lotus Group International Limited, a British automotive engineering company and manufacturer of luxury sports cars in October 1996. Together, PROTON and Lotus offer large-scale manufacturing capabilities with excellent engineering expertise.

PROTON cars are making their mark internationally as competitive and innovative automobiles. They are being exported to 50 countries including the highly competitive United Kingdom and continental European markets. The latest strategy, they try to enter the West Asian countries such as Kuwait, Oman, Syria, Qatar, Iran and Asian countries like Brunei and Singapore.