Estimation of Tire Cornering Stiffness Using Static Method

By

Joel Yeo Eng Hsien

Dissertation submitted in partial fulfilment of
the requirements for the
Bachelor of Engineering (Hons)
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CERTIFICATION OF APPROVAL

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Approved by,

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May 2012

CERTIFICATION OF ORIGINALITY

This is to certify that I am accountable for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgement, and that the original work herein has not been undertaken or done by unspecified sources or persons.

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(JOEL YEO ENG HSIEN)

ABSTRACT

This paper presents the tire testing apparatus estimating for sideslip angle, lateral forces and cornering stiffness of a tire. This project aims to design, fabricate and test an apparatus to obtain tire cornering stiffness using static method as of the title. The test was manually done using the designed apparatus by measuring the weight on wheel with a weighing scale and the forces required to turn the wheel with a hanging scale, done on the tar road. The estimated results from the apparatus were verified by the results taken from the UTP team 2012 vehicle by the Satellite Data Logger DL2 paired with Race Technology V7 software. It was found that there was a difference of 36% on the result collected using the static apparatus compared to the software data. Additionally, this apparatus presents a lower cost alternative to estimate the cornering stiffness of a tire.

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Yours truly,
Joel Yeo Eng Hsien

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ABBREVIATIONS

UTP	Universiti Teknologi PETRONAS
UTP 2012 team	Team gen89 participated in the Shell Eco-Marathon 2012