Analysis Of Braking Force
And Generated Energy
With Regenerative Braking Portion

Name : Gito Wijaya
NRP : 21.11.106.019
Major : Mechanical Engineering
Supervisor : Yohanes ST., M.Sc.

ABSTRACT

One of the advantages of Hybrid Electrical Vehicle is Regenerative Braking feature. Regenerative braking is braking process by an electric braking system resulting in decreased vehicle speed then absorb the kinetic energy that is flowing on the vehicle and converted into electrical energy by the generator. In order to absorb large kinetic energy but does not reduce the performance of the braking system then we have to determine good regenerative braking portion, it is necessary to know the distribution of ideal braking and braking minimum distributions to be formed into a braking curve.

This Final Project are perform analysis of ideal braking distribution, minimum braking distribution based on ECE braking regulation and analysis of electrical-mechanical braking portion where the electric braking system will always be designed to operate at the beginning of the braking process to limit certain braking then followed by a mechanical braking system and modeling performance of regenerative braking systems on the vehicle to ascertain the magnitude of the torque, power and energy that can be generated by the design of the regenerative braking in NEDC driving cycle.

From this study, obtained a portion of 0.03g regenerative braking on the front wheels when early braking stages as the good ratio, then use a generator that is able to convert the power of 3kW. Ratio of the mechanical braking on the front wheels is 0.65g with
1111.04136Nm braking torque, while ratio of mechanical braking on the rear wheels is 0.22g with 376.0447768Nm braking torque. By using the design of electrical and mechanical braking which has been done the calculation and analysis on NEDC driving cycle, obtained the energy generated by 0.089kW/h.

Keyword; Braking distribution, Regenerative braking, ECE braking regulation, Energy generated.