DESIGN AND BUILT POWER PLAN FOR THREE WHEELED HYBRID VEHICLE “SAPUJAGAD”

Nama Mahasiswa : Hangga Dwi Perkasa
NRP : 2107 100 038
Jurusan : Teknik Mesin FTI-ITS
Dosen Pembimbing : Prof. Ir. I Nyoman Sutantra, M.Sc., Ph.D.

ABSTRACT

Hybrid technology was found since last 1800’s, and developed to modern hybrid since 1960’s. One of the reason that hybrid technology being developed is effort to gain more energy efficiency. Beside hybrid technology, researches about renewable fuel also needed. Because fossil fuel being more rare and its price growing up continuously. One of popular renewable fuel is bioethanol.

In this final project I will try to design a power plan that will be applicated at three wheeled hybrid vehicle named “Sapujagad”. Designing start with define the specification requirement of vehicle, then doing calculation and and choosing the components. And the last is midificating gasoline fueled engine to be E-15 (85% gasoline mixed with 15% bioethanol) fueled engine and designing hybrid system. I will use parallel hybrid system with bioethanol engine and electric motor will work together at low speed (0-40 km/h).

The results of this final project are with raising the compression ratio of engine from 9 to 10.2 and change the fuel from gasoline to E-15 Hasil yang didapatkan dari tugas akhir ini adalah dengan menaikkan rasio kompresi dari 9 menjadi 10.2 the power raises from 15.52 HP to 16.8 HP and torque will raise from
15.2 Nj to 16.8 Nm. From designing hybrid system I can make a wiring diagram that can be applied for Sapujagad and also other vehicle with doing more adaptation in specification. With this hybrid system, vehicle will have more acceleration at low speed.

*Kata kunci : Sapujagad, hybrid, ethanol, roda tiga.*