ANALISA PENGARUH VARIASI SUDUT *DRIVE PULLEY* DAN PEGAS *PULLEY* SEKUNDER PADA SISTEM CVT SEPEDA MOTOR 4 LANGKAH TERHADAP TORSI DAN DAYA

Faruq Avero Azhar, S.ST., M.Eng. *As Chief Counselor*

Fajar Alifio Fauzan
Study Program of Automotive Engineering
Departement of Engineering

ABSTRACT

This study evaluates the impact of variations in the drive pulley angle and the stiffness of the secondary pulley spring in a Continuously Variable Transmission (CVT) system on torque and power performance in a Honda Beat 110cc PGM-FI motorcycle. Using an experimental approach, the research combined a standard 14° drive pulley angle with modified angles of 13.5° mixed with 13.8°, along with CVT springs of two stiffness levels: 800 rpm (3.59 N/mm) and 1000 rpm (4.14 N/mm). Testing was conducted using a chassis dyno to measure torque (Nm) and power (HP) across an engine speed range of 3000–8000 rpm, with three data acquisitions per parameter. Results revealed that the combination of the modified 13.5° mix 13.8° pulley angle and the softer 800 rpm spring achieved optimal performance, producing a peak torque of 8.98 Nm and maximum power of 8.28 HP, both at 6500 rpm. Conversely, pairing the same modified pulley angle with the stiffer 1000 rpm spring reduced performance to 7.92 Nm and 7.81 HP. The findings indicate that spring stiffness significantly influences the responsiveness of CVT ratio adjustments, with the softer spring (800 rpm) enabling quicker acceleration and enhanced power efficiency. These results suggest that combining shallower pulley angles with lower-stiffness springs can improve the performance of automatic motorcycles, particularly under high-load conditions, offering practical implications for optimizing CVT systems in similar applications.

Keywords : *Motorcycle, CVT, Torque, Power, Drive Pulley, CVT Spring.*