EFFECT OF PNEUMATIC FUEL PUMP PREASSURE VARIATION ON AFR AND FUEL CONSUMTION IN PROTOTYPE ENERGY SAVING VEHICLE FOR ENERGY SAVING CAR CONTEST

Ir. Dicky Adi Tyagita S.T., M.T. *As Chief Counselor*

Alif Prayoga
Study Program of Automotive Engineering
Departement of Engineering

ABSTRACT

The research aims to analyze the effect of varying pneumatic fuel pump pressure on Air Fuel Ratio (AFR) and fuel consumption in a prototype energy-efficient vehicle with a fuel injection system. The tests were conducted at pressures of 200 kPa, 300 kPa, and 400 kPa, with an engine speed range of 2000-5000 RPM. The results show that a pressure of 300 kPa provides the highest fuel efficiency with an AFR close to the stoichiometric ratio (14.7:1), indicating optimal combustion. A pressure of 200 kPa results in a lean AFR and low performance, while 400 kPa causes increased fuel consumption. The research determines that 300 kPa is the optimal pressure for balancing fuel efficiency and combustion quality in a 4-stroke gasoline engine with a fuel injection system.

Keywords: *stoichiometric ratio, fuel preassure, energy efficient vehicle*