

***Design And Construction Of A Semi-Automatic Pressure Pump To Replace The Manual Pumping Process In The Fuel System Of Light Diesel Vehicles During Cold Starts Conditions***

Aditya Wahyu Pratama, S.T., M.T.

**Badrus Hermansyah**

*Automotive Engineering Study Program, Department of Engineering, State Polytechnic of Jember*

***ABSTRACT***

*Cold start problems in light diesel vehicles are commonly caused by disruptions in fuel flow, particularly due to air lock in the fuel system. The manual priming process is considered inefficient as it requires time, effort, and produces unstable pressure. This study aims to design and evaluate a semi-automatic pressure pump as a replacement for manual priming to overcome air lock and improve cold start performance.*

*The study uses the Research and Development (R&D) method, including design, fabrication, and testing stages. The developed system employs a low-pressure electric pump (3–7 psi) with a semi-automatic switch control. Testing was conducted on a light diesel vehicle by comparing the tool's performance with manual priming based on fuel pressure and engine starting time.*

*The results show that the semi-automatic pressure pump produces more stable pressure, accelerates engine starting, and reduces the need for manual pumping. It also effectively removes air from the fuel system, ensuring smoother fuel flow. Therefore, this tool can be considered a practical and efficient solution for cold start problems.*

*Keywords: pressure pump, semi-automatic, air lock, cold start, diesel fuel system.*